29th Asian-Pacific Conference on International Accounting Issues 2017

“DISRUPTIVE INNOVATION/TECHNOLOGIES: ACCOUNTING & BEYOND”

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CONFERENCE ASSISTANTS .................................................................. 2

BEST PAPER AWARDS SELECTION COMMITTEE .................................. 3

REVIEWERS FOR PAPERS .................................................................... 3

CONFERENCE PROGRAM ...................................................................... 4

PROCEEDINGS .......................................................................................... 18
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TWENTY-NINTH ASIAN-PACIFIC CONFERENCE ON INTERNATIONAL ACCOUNTING ISSUES

CONFERENCE PROGRAM

SUNDAY, NOVEMBER 5

8:30 a.m. – 6:30 p.m.  GENERAL REGISTRATION  Foyer, Level 14

9:00 a.m. – 1:00 p.m.  DOCTORAL COLLOQUIUM  Bronx VI
“DISRUPTIVE INNOVATION/TECHNOLOGIES: ACCOUNTING AND BEYOND”

Facilitators:
Prem Sikka, University of Essex, U.K.
Robert Faff, University of Queensland, Australia
Tanja Mitrovic, University of Canterbury, New Zealand

9:00 a.m. – 5:00 p.m.  WORKSHOP  Bronx V
“FRAMEWORK BASED TEACHING OF IFRS”

Facilitator:
Mike Wells, Former Education Director, International Accounting Standards Board

6:30 p.m. – 8:30 p.m.  WELCOME RECEPTION  Broadway Lounge

Welcome Remarks:
Mohamad Kamal Nawawi, Vice Chancellor, UNITAR International University, Malaysia
Ali Peyvandi, Chairman, Asian-Pacific Conference on International Accounting Issues, U.S.A.

MONDAY, NOVEMBER 6

8:00 a.m. – 9:30 a.m.  GENERAL REGISTRATION  Foyer, Level 14

9:15 a.m. – 9.45 a.m.  OPENING CEREMONY  Manhattan II

Master of Ceremonies:
Nor Diyana Shamsul Kamar, Head, Corporate Communications Office, UNITAR International University, Malaysia
Crystal Cui, Conference Manager, Asian-Pacific Conference on International Accounting Issues, U.S.A.

Welcoming Remarks:
Mohamad Kamal Nawawi, Vice Chancellor, UNITAR International University, Malaysia
Ali Peyvandi, Chairman, Asian-Pacific Conference on International Accounting Issues, U.S.A.
Susela Devi, Chairman Organizing Committee, 29th Asian-Pacific Conference on International Accounting Issues, Malaysia

9.45 a.m. – 10:45 a.m.  KEYNOTE SPEECH  Manhattan II
“DISRUPTIVE INNOVATIONS/TECHNOLOGIES: IMPLICATIONS FOR CORPORATE MALAYSIA”

Speaker:
Yang Berbahagia Tan Sri Rafidah Aziz, Chairman, AirAsia X Berhad, Malaysia
11:00 a.m. - 11:30 a.m.  COFFEE BREAK  
Foyer, Level 14

11:30 a.m. – 1:00 p.m.  PLENARY SESSION  
“DISRUPTIVE INNOVATIONS/TECHNOLOGIES: ACCOUNTING & BEYOND”  
Manhattan II

Moderator:
Prem Sikka, University of Essex, U.K.

Panelists:
Nick Parker, President, Institute of Chartered Accountants in England and Wales
Patrick Stalburg, Chief Financial Officer, Microsoft
Thillai Raj Ramanathan, Chief Technology Officer, MIMOS
Ravi Eswarapu, President, IT Association of Andra Pradesh

1:00 p.m. – 2:15 p.m.  LUNCHEON  
Manhattan I & III

Chairperson:
Peter Kajüter, University of Münster, Germany

2:15 p.m. – 3:40 p.m.  CONCURRENT SESSIONS

SESSION 1(A): “CAPITAL MARKETS ISSUES”  
Bronx II
Moderator: Simon Ho, Hang Seng Management College, Hong Kong

VALUE-BASED MANAGEMENT AND TAXES
Andreas Schueler, Universitaet der Bundeswehr Munich, Germany

CUSTOMER SATISFACTION AND THE IMPLIED COST OF EQUITY: MODERATING EFFECTS OF MARKET CONDITIONS
Youngdeok Lim, University of New South Wales, Australia
Jenny Lee, University of New South Wales, Australia
Hyungtae Kim, California State University, Fresno, U.S.A.

SHARE REPURCHASE ANNOUNCEMENTS TOGETHER WITH EARNINGS FORECAST REVISIONS AND LONG-TERM STOCK PERFORMANCE: EVIDENCE FROM JAPAN
Yoshinori Shimada, Tokyo University of Science, Japan

SESSION 1(B): “INTERNATIONAL FINANCIAL REPORTING STANDARDS ISSUES”  
Manhattan V

Moderator: Cindy Yoshiko Shirata, Hosei University, Japan

IS ENFORCEMENT OF IFRS TOO COSTLY? EVIDENCE FROM DOWNLISTINGS
Joerg-Markus Hitz, Goettingen University, Germany
Stephanie Mueller-Bloch, Goettingen University, Germany

META-ANALYSIS OF THE IMPACT OF IFRS ADOPTION ON FINANCIAL REPORTING COMPARABILITY, MARKET LIQUIDITY, AND COST OF CAPITAL
Solomon Opare, Victoria University of Wellington, New Zealand
Noor Houqe, Victoria University of Wellington, New Zealand
Tony van Zijl, Victoria University of Wellington, New Zealand

THE UNACHIEVABLE GLOBAL ADOPTION OF IFRS AS A IASB LEGITIMATION GAP
Francesco De Luca, “G. d'Annunzio" University, Italy
Jenice Prather-Kinsey, University of Alabama at Birmingham, U.S.A.
SESSION 1(C): “FINANCIAL ACCOUNTING ISSUES”  
Moderator: CS Agnes Cheng, The Hong Kong Polytechnic University, Hong Kong

DISCLOSURE QUALITY, COST OF CAPITAL AND FIRM PROFITABILITY  
Weiyi Cynthia Cai, Charles Sturt University, Australia

EXAMINE THE ACCOUNTING FOR HERITAGE ASSETS: IS IT NECESSARY TO PUT HERITAGE ASSET IN FINANCIAL STATEMENT?  
Padwin Leinardo, University of Birmingham, U.K.  
Raden Cahyo Dibyo Wibhowo, Trisakti University, Indonesia

FINANCIAL DISTRESS PREDICTION IN THE AUSTRALIAN MINING INDUSTRY USING TREE-BASED STOCHASTIC TECHNIQUES  
Khaled Halteh, Bond University, Australia  
Adrian Gepp, Bond University, Australia  
Kuldeep Kumar, Bond University, Australia

SESSION 1(D): “AUDITING & CORPORATE SOCIAL RESPONSIBILITY ISSUES”  
Moderator: Salima Y. Paul, Plymouth University, U.K.

AUDITORS’ RESPONSE TO ANALYSTS’ FORECAST PROPERTIES: SOME EVIDENCE FROM AUDIT FEE PRICING  
William Y.Y. Foo, The Hong Kong Polytechnic University, Hong Kong  
Mark A. Bliss, Deakin University, Australia  
Ferdinand A. Gul, Deakin University, Australia  
Karen M.Y. Lai, Monash University, Australia

SMALL BUSINESSES, PASS THROUGH BUSINESSES, AND AUDITS  
Paul Lee, Cleveland State University, U.S.A.  
Stephanie Lee, Cleveland State University, U.S.A.  
Craig Foltin, Cleveland State University, U.S.A.

CORPORATE PERFORMANCE AND SOCIAL INDICATORS IN JAPAN: FOCUSING ON RETURN ON EQUITY  
Hiroko Inokuma, Tohoku University, Japan  
Masatoshi Sakaki, Ernst & Young ShinNihon LLC, Japan

SESSION 1(E): “MANAGERIAL ACCOUNTING ISSUES”  
Moderator: Anna Karmanska, Warsaw School of Economics, Poland

HOW CAN WE USE INTELLECTUAL PROPERTIES TO FINANCE NEW VENTURES? THE CASE OF JAPAN  
Takashi Shimizu, The University of Tokyo, Japan

UNIVERSITY BUDGETS AND STRATEGY: A SURVEY OF CURRENT PRACTICES IN CANADA  
Bryan Boles, Brock University, Canada  
Staci Kenno, Brock University, Canada  
Michelle Lau, Brock University, Canada  
Barbara Sainty, Brock University, Canada

PERFORMANCE MANAGEMENT AS PRACTICE AND KNOWING IN ACTION: EXPERIMENTING WITH BOURDIEU’S THEORY OF PRACTICE  
Zahirul Hoque, La Trobe University, Australia  
Chaturika Seneviratne, La Trobe University, Australia
SESSION 1(F): “CORPORATE GOVERNANCE ISSUES”
Moderator: Peter Kajüter, University of Münster, Germany

BOARD EFFECTIVENESS AND FIRM INVESTMENT EFFICIENCY
Liyu He, Macquarie University, Australia
Rong He, Macquarie University, Australia
Elaine Evans, Macquarie University, Australia

CEO COMPENSATION EFFECTS OF POOR ECONOMIC DECISIONS
Kin Wai Lee, Nanyang Technological University, Singapore

GOVERNMENT REGULATION, EXECUTIVE COMPENSATION INCENTIVE AND HEDGING PREMIUM: EVIDENCE FROM CHINA
Lingsha Cheng, Ningbo University, China
Joanna L.Y. Ho, University of California, Irvine, U.S.A.
Ruijun Zhang, Renmin University, China

SESSION 1(G): “ACCOUNTING EDUCATION ISSUES”
Moderator: Abdel K. Halabi, Federation University Australia, Australia

GENERIC SKILLS IN ACCOUNTING EDUCATION: PERSPECTIVES OF SAUDI FINAL YEAR STUDENTS
Mohammed Ali Al Mallak, Massey University, New Zealand
Lin Mei Tan, Massey University, New Zealand
Fawzi Laswad, Massey University, New Zealand

BREAKING NEW GROUND IN THE TEACHING OF TAXATION: A TECHNOLOGY BASED INTEGRATED TEACHER APPROACH FOR DISTANCE LEARNING
Mildred Lopez, UNITAR International University, Malaysia

KEY EMPLOYABILITY COMPETENCIES REQUIRED OF TAX ACCOUNTANTS: A CONTENT ANALYSIS OF JOB ADVERTISEMENTS
Lin Mei Tan, Massey University, New Zealand
Fawzi Laswad, Massey University, New Zealand

SESSION 1(H): “CORPORATE SOCIAL RESPONSIBILITY ISSUES”
Moderator: Naoki Watanabel, Nagoya University, Japan

DO FIRMS WITH STRONG COMMITMENT TO CORPORATE SOCIAL RESPONSIBILITY PREFER LESS FREQUENT FINANCIAL REPORTING? EVIDENCE FROM ELIMINATING MANDATORY QUARTERLY FINANCIAL REPORTING IN EUROPE
Lisa Goh, Hang Seng Management College, Hong Kong
Yue Li, University of Toronto, Canada
Feng Tang, The Hong Kong Polytechnic University, Hong Kong

QUANTIFYING ENVIRONMENTAL PROFILES OF FINANCIAL FIRMS: A SCORECARD MODEL
Lukas Prorokowski, HL Prorokowski LLC, Luxembourg

WHAT IS THE STATE OF ENVIRONMENT DISCLOSURES IN GHANA?
Edem Emerald Welbeck, University of Ghana, Ghana
Godfried M.Y. Owusu, University of Ghana, Ghana
Rita Amoah Bekoe, University of Ghana, Ghana
John A. Kusi, University of Ghana, Ghana

3:40 p.m. – 4:00 p.m. COFFEE BREAK
Foyer, Level 14
4:00 p.m. – 5:40 p.m.  CONCURRENT SESSIONS

SESSION 2(A): “CAPITAL MARKETS ISSUES”  
Moderator:  Solomon Opare, Victoria University of Wellington, New Zealand

A PRELIMINARY STUDY OF THE EFFECTS OF TRANSITIONING TO A PURE HOLDING COMPANY
  Chieko Matsuda, Tokyo Metropolitan University, Japan

IMPACT OF INTELLECTUAL CAPITAL AND CORPORATE GOVERNANCE ON MANUFACTURING BUSINESS ORGANISATIONS IN DEVELOPING COUNTRIES: A STUDY OF PAKISTAN
  Farooq Yahya Butt, Central Queensland University, Australia
  Mahmud Hossain, King Fahd University of Petroleum and Minerals, Saudi Arabia
  Md Kazi Saidul Islam, Central Queensland University, Australia

DO CORPORATE GOVERNANCE REFORM IN EMERGING COUNTRIES IMPROVE CAPITAL MARKETS? EVIDENCE IN MALAYSIA
  Susela Devi, UNITAR International University, Malaysia
  YoungKyung Ko, UNITAR International University, Malaysia
  Ravichandran Subramaniam, Monash University, Malaysia

SESSION 2(B): “INTERNATIONAL ACCOUNTING ISSUES”  
Moderator:  Akmalia Mohamad Ariff, Universiti Malaysia Terengganu, Malaysia

MAIN BANK RELATIONSHIP AND ACCOUNTING CONSERVATISM: EVIDENCE FROM JAPAN
  Hideaki Sakawa, Nagoya University, Japan
  Naoki Watanabel, Nagoya University, Japan

IMPACT OF GLOBALISATION OF ACCOUNTING PROFESSION IN DEVELOPING COUNTRIES: THE CASE OF MALAYSIA 1953 – 2017
  Chiu Phua, Charles Sturt University, Australia

CONCEPTUAL CONSIDERATION OF THE LIMITS OF LEVEL 3 FAIR VALUE MEASUREMENT: BASED ON REVIEW OF THE CONCEPTUAL FRAMEWORK
  Nobuhito Ochi, Shobi University, Japan

THE EFFECT OF ADOPTION OF IFRS ON THE INFORMATION OF DEFERRED TAX EXPENSE FOR LOSS FIRMS—EVIDENCE FROM KOREA
  Tony Kang, McMaster University, Canada
  Junyong Sim, Korea University, Korea
  Nanhee Hong, Korea University, Korea

SESSION 2(C): “FINANCIAL ACCOUNTING ISSUES”  
Moderator:  Tony van Zijl, Victoria University of Wellington, New Zealand

IFRS GLOBAL ADOPTION: HOW HAS IT BEEN DIFFUSED AND ITS INSTITUTIONAL IMPLICATIONS
  Ersa Tri Wahyuni, Universitas Padjadjaran, Indonesia

USEFULNESS OF FINANCIAL ANALYSTS’ CASH FLOW FORECASTS IN AUSTRALIA
  Charlene Chen, Macquarie University, Australia
  Meiting Lu, Macquarie University, Australia
  Yaowen Shan, University of Technology Sydney, Australia
  Yizhou Zhang, Macquarie University, Australia
SESSION 2(C): “FINANCIAL ACCOUNTING ISSUES” – CONT’D

READABILITY OF MD&A EXTRACTED FROM IXBRL: COMPUTATIONAL LINGUISTIC APPROACH
Yoshitaka Hirose, Takasaki University of Commerce Junior College, Japan
Hirohisa Hirai, Kanagawa University, Japan
Kohei Arai, Gunma University, Japan

SESSION 2(D): “AUDITING ISSUES”

Moderator: Irena Hejduk, Warsaw School of Economics, Poland

AUDITORS’ PERCEPTION OF THE ASSURANCE FOR MANAGEMENT REPORTS
Peter Kajüter, University of Muenster, Germany
Matthias Nienaber, University of Muenster, Germany
Martin Nienhaus, University of Muenster, Germany

ON THE GLOBAL DEMAND FOR BIG N AUDITS
Takashi Yaekura, Waseda University, Japan
Takashi Obinata, The University of Tokyo, Japan

THE EFFECT OF INTERNAL AUDITOR INDEPENDENCE ON EFFECTIVENESS OF GOVERNMENT INTERNAL AUDIT: GROUP COHESIVENESS AS AN INTERVENING VARIABLE – CASE STUDY AT THE REGIONAL INSPECTORATES AT JAVA ISLAND
Moh Ubaidillah, Universitas PGRI, Indonesia
Ari Kuncara Widagdo, Sebelas Maret University, Indonesia

SESSION 2(E): “CORPORATE GOVERNANCE ISSUES”

Moderator: Lisa Goh, Hang Seng Management College, Hong Kong

VIETNAMESE ACCOUNTANTS’ ETHICAL DECISION MAKING PROCESSES IN EARNINGS MANAGEMENT SITUATIONS
Lan Anh Nguyen, RMIT University, Australia
Brendan T. O’Connell, RMIT University, Australia
Gillian Vesty, RMIT University, Australia

HOW DID NON-CONTROLLING INTERESTS AFFECT FIRMS’ DIVIDEND POLICY?
ChenChen Su, Hitotsubashi University, Japan

COUNTING THE NUMBERS OR MAKING THE NUMBERS COUNT? ENVIRONMENTAL ENABLERS AND INHIBITORS OF FIRMS’ INTRINSIC MOTIVATION TO FOSTER FEMALE RISE TO CORPORATE BOARDS AROUND THE WORLD
Sucheta Nadkarni, University of Cambridge, U.K.
Elaine Yen Nee Oon, University of Malaya, Malaysia
Jenny Chu, University of Cambridge, U.K.

SESSION 2(F): “ACCOUNTING EDUCATION ISSUES”

Moderator: Geetha Vathi, Asia Pacific University, Malaysia

ACCOUNTANTS’ FROM BANGLADESH: THEIR SATISFACTION WITH CONTINUING PROFESSIONAL DEVELOPMENT
Abdel Halabi, Federation University Australia, Australia
Mohammad Salahuddin Chowdhury, University of Dhaka, Bangladesh

FACTORS AFFECTING STUDENT RETENTION LEVEL IN A MALAYSIAN PRIVATE UNIVERSITY
Haliza Mohd Said, UNITAR International University, Malaysia
Gayatri d/o Anbalaganb, UNITAR International University, Malaysia
SESSION 2(F): “ACCOUNTING EDUCATION ISSUES” – CONT’D

ATTITUDES TOWARDS ACCOUNTING AND INTENTION TO MAJOR IN ACCOUNTING: EMPIRICAL EVIDENCE FROM UNIVERSITY OF GHANA BUSINESS SCHOOL
Rita Amoah Bekoe, University of Ghana, Ghana
Godfred M.Y. Owusu, University of Ghana, Ghana
Charles Ofori Gyamfi, University of Ghana, Ghana
Edem Emerald Welbeck, University of Ghana, Ghana
Anthony Essel-Anderson, University of Ghana, Ghana

SESSION 2(G): “TAXATION ISSUES” Manhattan VII
Moderator: Paul Lee, Cleveland State University, U.S.A.

TAXATION PROFESSION IN AUSTRALIA
Prem Yapa, RMIT University, Australia
Michael Curran, RMIT University, Australia

MACHIAVELLIANISM, SOCIAL NORMS, AND TAXPAYER COMPLIANCE
William Shafer, Lingnan University, Hong Kong
Zhihong Wang, Clark University, U.S.A.

POTENTIAL ISSUES PERCEIVED BY MALAYSIAN BUSINESS TAXPAYERS ON THE IMPLEMENTATION OF THE GOODS AND SERVICES TAX
Appadu Santhariah, RMIT University, Australia
Binh Tran-Nam, The University of New South Wales, Australia
Dale Boccabella, The University of New South Wales, Australia
Nthati Rametse, RMIT University, Australia

IDX TAXONOMY AND FINANCIAL REPORTING PRACTICES OF INDONESIAN LISTED COMPANIES
Tahbis Gesta Rachma, University of Indonesia, Indonesia
S. Nurwahyu Harahap, University of Indonesia, Indonesia

7:00 p.m. – 10:30 p.m. GALA DINNER Manhattan Ballroom

Co-Chairs:
Cindy Yoshiko Shirata, Hosei University, Japan
Simon Ho, Hang Seng Management College, Hong Kong

TUESDAY, NOVEMBER 7

8:30 a.m. – 10:00 a.m. CONCURRENT SESSIONS

SESSION 3(A): “CAPITAL MARKETS ISSUES” Bronx II
Moderator: Shu Lin, California State University, Fresno, U.S.A.

AN EMPIRICAL INVESTIGATION OF BANKS’ DERIVATIVE DISCLOSURE ON INFORMATION ASYMMETRY
Woody Wu, Chinese University of Hong Kong, Hong Kong

IRREGULARITIES IN FULFILLMENT OF QUARTERLY REPORTING REQUIREMENTS ON NEW CONNECT
Katarzyna Klimeczak, Warsaw School of Economics, Poland
SESSION 3(A): “CAPITAL MARKETS ISSUES” – CONT’D

THE EFFECT OF OWNERSHIP STRUCTURE ON FUTURE STOCK PRICE CRASH RISK: KOREAN EVIDENCE
Soo Yeon Park, Korea University, Korea
Young Hyo Song, Korea University, Korea

SESSION 3(B): “INTERNATIONAL FINANCIAL REPORTING STANDARDS ISSUES” Bronx III
Moderator: Magdi El-Bannany, University of Sharjah, U.A.E.

IFRS ADOPTION, INSTITUTIONAL QUALITY AND FOREIGN DIRECT INVESTMENT INFLOWS: A DYNAMIC PANEL ANALYSIS
Godfred M.Y. Owusu, University of Ghana, Ghana
Nur Ashikin Mohd Saat, Universiti Putra Malaysia, Malaysia
Susela Devi, UNITAR International University, Malaysia
Hook Siong Law, Universiti Putra Malaysia, Malaysia

THE REAL EFFECT OF ACCOUNTING EARNINGS ATTRIBUTES: EVIDENCE FROM JAPAN
Ryosuke Fujitani, Hitotsubashi University, Japan

IMPAIRMENT OF NONFINANCIAL FIXED ASSETS IN POLISH BIGGEST COMPANIES LISTED ON WARSAW STOCK EXCHANGE
Katarzyna Bareja, Warsaw School of Economics, Poland
Magdalena Gledroyc, Warsaw School of Economics, Poland

SESSION 3(C): “FINANCIAL ACCOUNTING ISSUES” Bronx IV
Moderator: Wan Suk Ko, Hankuk University of Foreign Studies, Korea

IS THERE AN OPTIMUM ACCOUNTS RECEIVABLE LEVEL?
Salima Paul, Plymouth University, U.K.
Cherif Guermat, University of the West of England, U.K.
Rebecca Boden, University of Tampere, Finland

DOES JAPANESE COMPANIES’ “ROE” EXPRESS PROFITABILITY? —LONG-TERM OBSERVATION CLASSIFIED BY ORIGINAL SAF RATING—
Cindy Shirata, Hosei University, Japan

THE ROLE OF INSTITUTIONAL HOLDING AND BANK LOAN ON DISCRETIONARY ACCRUALS – SOME INDIAN EVIDENCES
Somnath Banerjee, NSHM Knowledge Campus, India
Satyajit Dhar, University of Kalyani, India

DOES FAIR VALUE ACCOUNTING MEASUREMENT PRODUCE HIGHER FINANCIAL REPORTING QUALITY?
Tatyana Ryabova, California State University, Fresno, U.S.A.
Keji Chen, California State University, Northridge, U.S.A.

SESSION 3(D): “AUDITING ISSUES” Manhattan VII
Moderator: William Y.Y. Foo, The Hong Kong Polytechnic University, Hong Kong

THE IMPACT OF ANTECEDENTS AND CONSEQUENCES OF BURNOUT ON INTERNAL AUDITORS PREMATURE SIGN-OFF OF AUDIT PROCEDURE
Mohannad Obeid, University Malaysia Terengganu, Malaysia
Zalailah Salleh, University Malaysia Terengganu, Malaysia
Mohd Nazli Mohd Nor, University Malaysia Terengganu, Malaysia
SESSION 3(D): “AUDITING ISSUES” – CONT’D

SECRECY AND THE IMPACT OF MANDATORY IFRS ADOPTION ON AUDIT FEES
Noor Houque, Victoria University of Wellington, New Zealand
Tony van Zijl, Victoria University of Wellington, New Zealand

THE IMPACT OF THE INTERACTIVE USES OF PERFORMANCE MEASUREMENT SYSTEMS ON PERCEIVED SOCIAL LOAFING AND TEAM PERFORMANCE
Paul Grandoni, The Australian National University, Australia
Habib Mahama, United Arab Emirates University, U.A.E.
Rebecca Tan, The Australian National University, Australia

SESSION 3(E): “MANAGERIAL ACCOUNTING AND SMEs ISSUES” Bronx VI

Moderator: Barbara Sainty, Brock University, Canada

COST STICKINESS AND INFORMATION OF TAX ACCOUNTS FOR LOSS REPORTING FIRMS
Ji Hye Kim, Korea University, Korea
Jin Bae Kim, Korea University, Korea
Gun Lee, Changwon National University, Korea

PMSS IN SMALL, MEDIUM-SIZED, AND LARGE COMPANIES
Tarmo Kadak, Tallinn University of Technology, Estonia

RESPONSE STRATEGIES TO DISRUPTIVE INNOVATION IN ACCOUNTING: KNOWLEDGE PERSPECTIVE
Freida Ozavize Ayodele, Universiti Malaysia Pahang, Malaysia
Liu Yao, Universiti Malaysia Pahang, Malaysia
Hasnah Haron, Universiti Malaysia Pahang, Malaysia

DEVELOPING SUSTAINABLE SMALL AND MEDIUM SCALE ENTERPRISES IN GHANA: THE ROLE OF COMPUTERIZED ACCOUNTING INFORMATION SYSTEMS
Samuel Nana Yaw Simpson, University of Ghana, Ghana
Joseph Onumah, University of Ghana, Ghana
Hope Kwaku Tetteh, University of Ghana, Ghana

SESSION 3(F): “CORPORATE GOVERNANCE ISSUES” Manhattan VI

Moderator: Ainon Jauhari Abu Samah, UNITAR International University, Malaysia

DOES CAPITAL ADEQUACY RATIO MODERATE THE RELATIONSHIP BETWEEN OWNERSHIP STRUCTURE AND PERFORMANCE?
Nasyra Ab. Jamil, UNITAR International University, Malaysia
Rasidah Mohd. Said, Universiti Kebangsaan Malaysia, Selangor, Malaysia

CORPORATE GOVERNANCE IMPLEMENTATION AND FIRM PERFORMANCE IN THE NEW ZEALAND AGRICULTURAL COMPANIES
Jamal Roudaki, Lincoln University, New Zealand

THE ROLE OF GOVERNANCE IN THE MARKET VALUATION OF RELATED PARTY TRANSACTIONS
Akmalia M. Ariff, Universiti Malaysia Terengganu, Malaysia
Effiezal Aswadi Abdul Wahab, Curtin University of Technology, Australia
Adzhamsyah Abdul Hamid, Rangsit University, Thailand
SESSION 3(G): “RESEARCH FORUM: FINANCIAL ACCOUNTING AND CAPITAL MARKETS ISSUES”

Moderator: Khairatun Hisan, UNITAR International University, Malaysia

IMPLICATION OF COMPREHENSIVE INCOME AND ITS COMPONENTS FOR BANKING SUPERVISORY RATING APPROACH CAMEL – EVIDENCE FROM CHINESE LISTED BANKS
Hong Xiao, Xiamen University, China
Theerawit Kapanya, Xiamen University, China

THE EFFECT OF FULL IFRS CONVERGENCE ON EARNINGS MANAGEMENT: MALAYSIAN CONTEXT
Karen Ling Nee Wong, RMIT University, Australia
Mahesh Joshi, RMIT University, Australia
Prem Yapa, RMIT University, Australia

RISK AND RETURN ANALYSIS OF ECONOMIC-FINANCIAL CONGLOMERATE USING THE DATA ENVELOPMENT ANALYSIS AND MODERN PORTFOLIO THEORY
Paulo Rodrigues, Banco do Brasil - Diretoria de Controladoria, Brazil
Carlos Renato Theophilo, Universidade Estadual de Montes Claros, Brazil
Idalberto Neves Jr., Banco do Brasil - Diretoria de Controladoria, Brazil

8:30 a.m. – 12:00 p.m. WORKSHOP ON COMPANIES ACT 2016

Facilitator: Wai Meng Chan, University of Malaya, Malaysia

10:00 a.m. – 10:30 a.m. COFFEE BREAK

10:30 a.m. – 12:00 p.m. CONCURRENT SESSIONS

SESSION 4(A): “CAPITAL MARKETS ISSUES”

Moderator: Ersa Tri Wahyuni, Universitas Padjadjaran, Indonesia

EARNINGS QUALITY IN EMERGING ECONOMIES: THE BANKS CASE
Magdi El-Bannany, University of Sharjah, U.A.E.

THE FAIRNESS LEVEL OF SUBCONTRACTING AND COST OF EQUITY
Sang Hoon Shin, Kyonggi University, Korea
Seon Mi Kim, Chonnam National University, Korea
Seung Weon Yoo, Korea University, Korea
Il Han Yu, Korea University, Korea

THE ROLE OF MULTI-LEVEL CAPITAL MARKET IN INVESTOR REACTION TO THE SPECIFIC DISCLOSURE OF SOCIAL RESPONSIBILITY: EVIDENCE IN CHINA
Shiyu Wang, Southeast University, China
Guanzhen Wang, Southeast University, China
Zhibin Chen, Southeast University, China

FUND PERFORMANCE IN MALAYSIA
Susela Devi, UNITAR International University, Malaysia
YoungKyung Ko, UNITAR International University, Malaysia
SESSION 4(B): “ETHICS AND TAXATION ISSUES”                         Bronx III

**Moderator:** Nor Zarina Abu, UNITAR International University, Malaysia

**CORPORATE TAX AVOIDANCE, DEBT RATIO AND CORPORATE GOVERNANCE: EVIDENCE FROM JAPAN**
Hiroshi Ohnuma, Tokyo University of Science, Japan
Keikichi Kato, Hirosaki University, Japan

**PROPOSAL OF AUTOMATED TAX FRAUD DETECTION MODEL IN CONTEXT OF POLISH TAX SYSTEM**
Malgorzata Mierzejewska, Warsaw School of Economics, Poland

**THE PERCEPTION OF FEMALE ACCOUNTANTS IN EXPLAINING THEIR MOTIVATIONS AND GENDER GAP AMONG JAPANESE ACADEMIC COMMUNITY**
Yuki Tanaka, Hosei University, Japan
Fumiko Hiki, Hitotsubashi University, Japan

**ETHICS AND ACCOUNTING: WHICH REGIME BEST PROTECTS THE PUBLIC INTEREST?**
Saeed Askary, Gulf University for Science and Technology, Kuwait

SESSION 4(C): “HUMAN RESOURCE ISSUES”                         Bronx IV

**Moderator:** Kim Loy Chong, UNITAR International University, Malaysia

**FACTORS INFLUENCING JOB-SEEKERS INTENTION TO USE ONLINE RECRUITMENT**
Nor Asiah Mahmood, UNITAR International University, Malaysia
Feng Ling Ng, UNITAR International University, Malaysia

**THE RELATIONSHIP BETWEEN SERVANT LEADERSHIP AND PERFORMANCE OF UNIVERSITY LEADERS: WORKING ENVIRONMENT AS A MODERATOR**
Sharfika Raime, UNITAR International University, Malaysia
Raemah Abdullah Hashim, Open University, Malaysia

**EXAMINING THE INFLUENCE OF EMPLOYEE EMPOWERMENT, TEAMWORK, AND INCENTIVE TOWARDS JOB SATISFACTION AMONG RMN PERSONNEL**
Md Saiful Anuar Bin Mohd Nasirruddin, Royal Malaysian Navy, Malaysia
Shahrizal Bin Ismail, Royal Malaysian Navy, Malaysia
Anwar Redhwan Bin Lokman Hakim, Royal Malaysian Navy, Malaysia
Siti Nor Bayaah Ahmad, UNITAR International University, Malaysia

SESSION 4(D): “GOVERNMENTAL ACCOUNTING ISSUES”                                           Manhattan VII

**Moderator:** Tarmo Kadak, Tallinn University of Technology, Estonia

**ACCRUALS AND STANDARD BASED GOVERNMENT ACCOUNTING: DO WE NEED A NEW THEORETICAL BASIS?**
Andreas Bergmann, Zurich University of Applied Sciences, Switzerland

**VIRTUAL ENTERPRISE BUSINESS MODELS**
Irena Hejduk, Warsaw School of Economics, Poland
Anna Karmanska, Warsaw School of Economics, Poland
Ryszard Bartkowiak, Warsaw School of Economics, Poland
Sylwester Gregoreczyk, Warsaw School of Economics, Poland
Piotr Wachowiak, Warsaw School of Economics, Poland
SESSION 4(D): “GOVERNMENTAL ACCOUNTING ISSUES” – CONT’D

THE EFFECT OF LOCAL GOVERNMENT PERFORMANCE DISCLOSURES ON THE WEBSITE/INTERNET: SIGNALING INCUMBENT’S INCENTIVES ON INDONESIAN CASE
Sasono Adi, University of Indonesia, Indonesia
Dwi Martani, University of Indonesia, Indonesia
Bambang Pamungkas, University of Indonesia, Indonesia
Robert A. Simanjuntak, University of Indonesia, Indonesia

SESSION 4(E): “RESEARCH FORM: MANAGERIAL ACCOUNTING ISSUES” – Bronx VI
Moderator: Saifiah Rashid, UNITAR International University, Malaysia

GOVERNMENT PROCUREMENT CONTRACT DESIGN FOR ENCOURAGING COST REDUCTION
Taichi Kimura, Keio University, Japan
Takahiro Morimitsu, Japan University of Economics, Japan

DATA IN SEARCH OF A THEORY: UNDERSTANDING HOW ICTS “DISRUPT” ACCOUNTING PROFESSIONALS
Tianyuan Feng, Macquarie University, Australia
Lorne Cummings, Macquarie University, Australia
Dale Tweedi, Macquarie University, Australia

THE USE OF ACCOUNTING INFORMATION FOR SUGAR BUSINESS OPERATIONS AT THE SOUTH SEAS DEVELOPMENT COMPANY
Yuta Sumi, Kobe University, Japan
Masayoshi Noguchi, Tokyo Metropolitan University, Japan

RELATIONSHIP STUDY BETWEEN MARKETING MIX AND PURCHASE INTENTION OF AFFORDABLE HOMES
Wan Muhd Hisham Wan Hawari, Selangor State Development Corporation, Malaysia
Mazrul Hisyam Che Rose, Selangor State Development Corporation, Malaysia
Nurulazwanita Bahari, Selangor State Development Corporation, Malaysia
Rudzi Binti Munap, UNITAR International University, Malaysia

THE EFFECT OF EXECUTIVE MANAGEMENT SUPPORT AND COST ACCOUNTANT COMPETENCY ON CMS DESIGN EFFECTIVENESS AND ITS CONSEQUENCES: AN EMPIRICAL RESEARCH OF MANUFACTURING BUSINESS IN THAILAND
Nattawut Tontiset, Mahasarakham University, Thailand

SESSION 4(F): “RESEARCH FORM: FINANCIAL ACCOUNTING AND TAXATION ISSUES” – Manhattan VI
Moderator: Hanifah Mohsin, UNITAR International University, Malaysia

UNDERSTANDING THE TAX SITUATION OF ENTREPRENEURS IN THE GUESTHOUSE INDUSTRY IN SOWETO, SOUTH AFRICA
Marina Bornman, University of Johannesburg, South Africa
Pusheletso Ramutumbu, University of Johannesburg, South Africa

ORGANIZATIONAL REPORTING OF VOLUNTEERS: THE EXTENT AND MOTIVATION OF CURRENT PRACTICES
Stuart Tooley, Queensland University of Technology, Australia
Jill Hooks, Massey University, New Zealand

FINANCIAL PERFORMANCE AND EARNINGS MANAGEMENT OF SOCIALLY RESPONSIBLE INVESTING FUND FIRMS
Wan Suk Ko, Hankuk University of Foreign Studies, Korea
SESSION 4(F): “RESEARCH FORM: FINANCIAL ACCOUNTING AND TAXATION ISSUES” – CONT’D

THE ROLE OF NAP IN IMPROVING VENDOR INNOVATION AND PERFORMANCE
Mohd Lutfi Iskandar Bin Sahid, UNITAR International University, Malaysia

SESSION 4(G): “RESEARCH FORUM: IT-BIG DATA ANALYSIS AND SOCIAL MEDIA ISSUES”

Moderator: Misyer Mohamed Tajudin, UNITAR International University, Malaysia

AN APPROACH TOWARDS DEVELOPING AN ALGORITHM FOR SOFTWARE APPLICATION ERROR ANALYSIS
Hoo Meng Wong, UNITAR International University, Malaysia

THE STUDY ON BIG DATA ANALYTICS USING EMBEDDED ALGORITHM FOR OIL PALM PLANTATION
Pushparani Marappan, UNITAR International University, Malaysia
Sagaya Amalathas, UNITAR International University, Malaysia

USING BIG DATA ANALYTICS MODEL TO ASSESS SENHENNG PERFORMANCE
Hussein Raad, UNITAR International University, Malaysia
Sagaya Amalathas, UNITAR International University, Malaysia

RELATIONSHIP BETWEEN SERVICE QUALITY ON CUSTOMER LOYALTY: MEDIATED BY CUSTOMER SATISFACTION AT TELECOMMUNICATION SERVICE PROVIDER
Norizzati Azudin, UNITAR International University, Malaysia
Nirmala d/o Subramanian, UNITAR International University, Malaysia
Marfuzah Muhamad, UNITAR International University, Malaysia

USE OF SOCIAL MEDIA AS A SOURCE OF INFORMATION IN EMPLOYMENT MATTERS
Shazanah Sarwar Khan, UNITAR International University, Malaysia
Hussain Alim Shakoor, UNITAR International University, Malaysia

12:15 p.m. – 2:00 p.m. LUNCHEON

PRESENTATION OF VERNON ZIMMERMAN BEST PAPER AWARDS

Chairperson:
Shu Lin, California State University, Fresno, U.S.A.

Presenters:
Shu Lin, California State University, Fresno, U.S.A.
Salima Paul, Plymouth University, U.K.
Wai Meng Chan, University of Malaya, Malaysia
2:00 p.m. – 5:30 p.m.  REGISTRATION FOR WORKSHOPS  Foyer, Level 14

2:30 p.m. – 4:00 p.m.  WORKSHOPS

WORKSHOP #1  Bronx V
“ACCOUNTING EDUCATION – THE WAY FORWARD”

Facilitator:
Wai San Siew, Regional Head of Education, South-East Asia, Institute of Chartered Accountants in England and Wales

Speakers:
Joel L. Tan-Torres, Chairman, Professional Regulatory Board of Accountancy, Philippines
David Lyford-Smith, Technical Manager, Institute of Chartered Accountants in England and Wales
Sagaya Sabestinal, Associate Professor, UNITAR International University, Malaysia

WORKSHOP #2  Manhattan V
“BIG DATA ANALYTICS”

Facilitator:
MIMOS Team

WORKSHOP #3  Bronx VI
“EVALUATION: A DISRUPTIVE INNOVATIVE FOR IMPROVING ACCOUNTABILITY”

Welcome remark:
Erica Mattellone, Evaluation Specialist, UNICEF

Facilitators:
Arunaselam Rasappan, President, Asia-Pacific Evaluation Association
Lim Kheng Joo, Past President, Malaysian Evaluation Society

4:00 p.m. – 4:30 p.m.  COFFEE BREAK  Foyer, Level 14

4:30 p.m. – 6:00 p.m.  PANEL DISCUSSION AND WORKSHOP  Bronx VI
“AACSB ACCREDITATION”

Moderator:
Tony van Zijl, Victoria University of Wellington, New Zealand

Panelists:
Anne K. Lo, Senior Vice President and Chief Officer, Association to Advanced Collegiate Schools of Business of Asia Pacific
Ancella Hermawan, Dean, Faculty of Economics, University of Indonesia, Indonesia
Haim Hilman, Dean, School of Business Management, Universiti Utara Malaysia, Malaysia

WORKSHOP #2 – CONT’D  Manhattan V
“BIG DATA ANALYTICS”

Facilitator:
MIMOS Team

WEDNESDAY, NOVEMBER 8

9:00 a.m. – 4:00 p.m.  OPTIONAL KUALA LUMPUR TOUR
29th Asian-Pacific Conference on International Accounting Issues

Conference Theme
Disruptive Innovation/Technologies: Accounting & Beyond

PROCEEDINGS

November 5-8, 2017
Kuala Lumpur, Malaysia
TABLE OF CONTENTS

“VALUE-BASED MANAGEMENT AND TAXES”
Andreas Schueler.............................................................................................................1

“CUSTOMER SATISFACTION AND THE IMPLIED COST OF EQUITY: MODERATING EFFECTS OF MARKET CONDITIONS”
Youngdeok Lim, Jenny (Jiyeon) Lee, and Hyungtae Kim..............................................2

“SHARE REPURCHASE ANNOUNCEMENTS TOGETHER WITH EARNINGS FORECAST REVISIONS AND LONG-TERM STOCK PERFORMANCE: EVIDENCE FROM JAPAN”
Yoshinori Shimada ..........................................................................................................3

“IS ENFORCEMENT OF IFRS TOO COSTLY? EVIDENCE FROM DOWNLISTINGS”
Joerg-Markus Hitz and Stephanie Mueller-Bloch ...........................................................4

“META-ANALYSIS OF THE IMPACT OF IFRS ADOPTION ON FINANCIAL REPORTING COMPARABILITY, MARKET LIQUIDITY, AND COST OF CAPITAL”
Solomon Opare, Muhammad Nurul Houqe, and Tony van Zijl......................................5

“THE UNACHEIVABLE GLOBAL ADOPTION OF IFRS AS A IASB LEGITIMATION GAP”
Francesco De Luca and Jenice Prather-Kinsey ...............................................................6

“DISCLOSURE QUALITY, COST OF CAPITAL AND FIRM PROFITABILITY”
Weiyi Cynthia Cai...........................................................................................................7

“EXAMINE THE ACCOUNTING FOR HERITAGE ASSETS: IS IT NECESSARY TO PUT HERITAGE ASSET IN FINANCIAL STATEMENT?”
Padwin Leinardo and Raden Cahyo Dibyo Wibhowo ....................................................8

“FINANCIAL DISTRESS PREDICTION IN THE AUSTRALIAN MINING INDUSTRY USING TREE-BASED STOCHASTIC TECHNIQUES”
Khaled Halteh, Adrian Gepp, and Kuldeep Kumar.........................................................9

“AUDITORS’ RESPONSE TO ANALYSTS’ FORECAST PROPERTIES: SOME EVIDENCE FROM AUDIT FEE PRICING”
William Y.Y. Foo, Mark A. Bliss, Ferdinand A. Gul, and Karen M.Y. Lai...............10

“SMALL BUSINESSES, PASS THROUGH BUSINESSES, AND AUDITS”
Paul Lee, Stephanie Lee, and Craig Foltin....................................................................11

“CORPORATE PERFORMANCE AND SOCIAL INDICATORS IN JAPAN: FOCUSING ON RETURN ON EQUITY”
Hiroko Inokuma and Masatoshi Sakaki ..............................................................12
“HOW CAN WE USE INTELLECTUAL PROPERTIES TO FINANCE NEW VENTURES? THE CASE OF JAPAN”
Takashi Shimizu ..................................................................................................................13

“UNIVERSITY BUDGETS AND STRATEGY: A SURVEY OF CURRENT PRACTICES IN CANADA”
Bryan Boles, Staci Kenno, Michelle Lau, and Barbara Sainty ........................................14

“PERFORMANCE MANAGEMENT AS PRACTICE AND KNOWING IN ACTION: EXPERIMENTING WITH BOURDIEU’S THEORY OF PRACTICE”
Zahirul Hoque and Chaturika Seneviratne ......................................................................15

“BOARD EFFECTIVENESS AND FIRM INVESTMENT EFFICIENCY”
Liyu He, Rong He, and Elaine Evans .............................................................................16

“CEO COMPENSATION EFFECTS OF POOR ECONOMIC DECISIONS”
Kin-Wai Lee ....................................................................................................................17

“GOVERNMENT REGULATION, EXECUTIVE COMPENSATION INCENTIVE AND HEDGING PREMIUM: EVIDENCE FROM CHINA”
Lingsha Cheng, Joanna L.Y. Ho, and Ruijun Zhang .....................................................18

“GENERIC SKILLS IN ACCOUNTING EDUCATION: PERSPECTIVES OF SAUDI FINAL YEAR STUDENTS”
Mohammed Ali Al Mallak, Lin Mei Tan, and Fawzi Laswad ........................................19

“BREAKING NEW GROUND IN THE TEACHING OF TAXATION: A TECHNOLOGY BASED INTEGRATED TEACHER APPROACH FOR DISTANCE LEARNING”
Mildred Lopez .................................................................................................................20

“KEY EMPLOYABILITY COMPETENCIES REQUIRED OF TAX ACCOUNTANTS: A CONTENT ANALYSIS OF JOB ADVERTISEMENTS”
Lin Mei Tan and Fawzi Laswad ....................................................................................21

“DO FIRMS WITH STRONG COMMITMENT TO CORPORATE SOCIAL RESPONSIBILITY PREFER LESS FREQUENT FINANCIAL REPORTING? EVIDENCE FROM ELIMINATING MANDATORY QUARTERLY FINANCIAL REPORTING IN EUROPE”
Lisa Goh, Yue Li, and Feng Tang ..................................................................................22

“QUANTIFYING ENVIRONMENTAL PROFILES OF FINANCIAL FIRMS: A SCORECARD MODEL”
Lukas Prorokowski .........................................................................................................23

“What is the state of environment disclosures in Ghana?”
Emerald Edem Welbeck, Godfred Matthew Yaw Owusu, Rita Amoah Bekoe, and John Amoah Kusi ..................................................................................................................24
“A PRELIMINARY STUDY OF THE EFFECTS OF TRANSITIONING TO A PURE HOLDING COMPANY”
Chieko Matsuda

“IMPACT OF INTELLECTUAL CAPITAL AND CORPORATE GOVERNANCE ON MANUFACTURING BUSINESS ORGANISATIONS IN DEVELOPING COUNTRIES: A STUDY OF PAKISTAN”
Farooq Yahya Butt, Mahmud Hossain, and Md Kazi Saidul Islam

“DO CORPORATE GOVERNANCE REFORM IN EMERGING COUNTRIES IMPROVE CAPITAL MARKETS? EVIDENCE IN MALAYSIA”
Susela Devi, YoungKyung Ko, and Ravichandran Subramaniam

“MAIN BANK RELATIONSHIP AND ACCOUNTING CONSERVATISM: EVIDENCE FROM JAPAN”
Hideaki Sakawa and Naoki Watanabel

“IMPACT OF GLOBALISATION OF ACCOUNTING PROFESSION IN DEVELOPING COUNTRIES: THE CASE OF MALAYSIA 1953 - 2017”
Chiu Phua

“CONCEPTUAL CONSIDERATION OF THE LIMITS OF LEVEL 3 FAIR VALUE MEASUREMENT: BASED ON REVIEW OF THE CONCEPTUAL FRAMEWORK”
Nobuhito Ochi

“THE EFFECT OF ADOPTION OF IFRS ON THE INFORMATION OF DEFERRED TAX EXPENSE FOR LOSS FIRMS – EVIDENCE FROM KOREA”
Tony Kang, Junyong Sim, and Nanhee Hong

“IFRS GLOBAL ADOPTION: HOW HAS IT BEEN DIFFUSED AND ITS INSTITUTIONAL IMPLICATIONS”
Ersa Tri Wahyuni

“USEFULNESS OF FINANCIAL ANALYSTS’ CASH FLOW FORECASTS IN AUSTRALIA”
Charlene Chen, Meiting Lu, Yaowen Shau, and Yizhou Zhang

“READABILITY OF MD&A EXTRACTED FROM IXBRL: COMPUTATIONAL LINGUISTIC APPROACH”
Yoshitaka Hirose, Hirohisa Hirai, and Kohei Arai

“AUDITORS’ PERCEPTION OF THE ASSURANCE FOR MANAGEMENT REPORTS”
Peter Kajueter, Matthias Nienaber, and Martin Nienhaus

“ON THE GLOBAL DEMAND FOR BIG N AUDITS”
Takashi Yaekura and Takashi Obinata
“THE EFFECT OF INTERNAL AUDITOR INDEPENDENCE ON EFFECTIVENESS OF GOVERNMENT INTERNAL AUDIT: GROUP COHESIVENESS AS AN INTERVENING VARIABLE (CASE STUDY AT THE REGIONAL INSPECTORATE AT JAVA ISLAND)”
Moh. Ubaidillah and Ari Kuncara Widagdo .................................................................37

“VIETNAMESE ACCOUNTANTS’ ETHICAL DECISION MAKING PROCESSES IN EARNINGS MANAGEMENT SITUATIONS”
Lan Anh Nguyen, Brendan T. O’Connell, and Gillian Vesty ........................................38

“How Did Non-Controlling Interests Affect Firms’ Dividend Policy?”
ChenChen Su.................................................................................................................39

“COUNTING THE NUMBERS OR MAKING THE NUMBERS COUNT? ENVIRONMENTAL ENABLERS AND INHIBITORS OF FIRMS’ INTRINSIC MOTIVATION TO FOSTER FEMALE RISE TO CORPORATE BOARDS AROUND THE WORLD”
Sucheta Nadkarni, Elaine Yen Nee Oon, and Jenny Chu ........................................40

“ACCOUNTANTS’ FROM BANGLADESH: THEIR SATISFACTION WITH CONTINUING PROFESSIONAL DEVELOPMENT”
Abdel K. Halabi and Mohammad Salahuddin Chowdhury.........................................41

“FACTORS AFFECTING STUDENT RETENTION LEVEL IN A MALAYSIAN PRIVATE UNIVERSITY”
Haliza Mohd Said and Gayatri d/o Anbalaganb............................................................42

“ATTITUDES TOWARDS ACCOUNTING AND INTENTION TO MAJOR IN ACCOUNTING: EMPIRICAL EVIDENCE FROM UNIVERSITY OF GHANA BUSINESS SCHOOL”
Rita Amoah Bekoe, Godfred Mathwe Yaw Owusu, Edem Emerald Welbeck, Charles Ofori Gyamfi, and Anthony Essel-Anderson.........................................................43

“TAXATION PROFESSION IN AUSTRALIA”
Prem Yapa and Michael Curran ....................................................................................44

“MACHIAVELLIANISM, SOCIAL NORMS, AND TAXPAYER COMPLIANCE”
William E. Shafer and Zhihong Wang .................................................................45

“POTENTIAL ISSUES PERCEIVED BY MALAYSIAN BUSINESS TAXPAYERS ON THE IMPLEMENTATION OF THE GOODS AND SERVICES TAX”
Appadu Santhariah, Binh Tran-Nam, Dale Boccabella, and Nthati Rametse ..........46

“IDX TAXONOMY AND FINANCIAL REPORTING PRACTICES OF INDONESIAN LISTED COMPANIES”
Tahbis Gesta Rachma and S. Nurwahyu Harahap .........................................................47
“AN EMPIRICAL INVESTIGATION OF BANKS’ DERIVATIVE DISCLOSURE ON INFORMATION ASYMMETRY”
Woody Wu ........................................................................................................................................48

“IRREGULARITIES IN FULFILLMENT OF QUARTERLY REPORTING REQUIREMENTS ON NEW CONNECT”
Katarzyna Klimczak ......................................................................................................................49

“THE EFFECT OF OWNERSHIP STRUCTURE ON FUTURE STOCK PRICE CRASH RISK: KOREAN EVIDENCE”
Soo Yeon Park and Young Hyo Song ..............................................................................................50

“IFRS ADOPTION, INSTITUTIONAL QUALITY AND FOREIGN DIRECT INVESTMENT INFLOWS: A DYNAMIC PANEL ANALYSIS”
Godfred Mathew Yaw Owusu, Nur Ashikin Mohd Saat, Susela Devi, and Siong Hook Law ........................................................................................................................................51

“THE REAL EFFECT OF ACCOUNTING EARNINGS ATTRIBUTES: EVIDENCE FROM JAPAN”
Ryosuke Fujitani ..................................................................................................................................52

“IMPAIRMENT OF NONFINANCIAL FIXED ASSETS IN POLISH BIGGEST COMPANIES LISTED ON WARSAW STOCK EXCHANGE”
Katarzyna Bareja and Magdalena Giedroyc .......................................................................................53

“IS THERE AN OPTIMUM ACCOUNTS RECEIVABLE LEVEL?”
Salima Y. Paul, Cherif Guermat, and Rebecca Boden .......................................................................54

“DOES JAPANESE COMPANIES’ “ROE” EXPRESS PROFITABILITY? —LONG-TERM OBSERVATION CLASSIFIED BY ORIGINAL SAF RATING—”
Cindy Yoshiko Shirata ......................................................................................................................55

“THE ROLE OF INSTITUTIONAL HOLDING AND BANK LOAN ON DISCRETIONARY ACCRUALS – SOME INDIAN EVIDENCES”
Somnath Banerjee and Satyajit Dhar ...............................................................................................56

“DOES FAIR VALUE ACCOUNTING MEASUREMENT PRODUCE HIGHER FINANCIAL REPORTING QUALITY?”
Tatyana Ryabova and Keji Chen ........................................................................................................57

“THE IMPACT OF ANTECEDENTS AND CONSEQUENCES OF BURNOUT ON INTERNAL AUDITORS PREMATURE SIGN-OFF OF AUDIT PROCEDURE”
Mohannad Obeid, Zalailah Salleh, and Mohd Nazli Mohd Nor ...............................................................58

“SECRECY AND THE IMPACT OF MANDATORY IFRS ADOPTION ON AUDIT FEES”
Noor Houqe and Tony van Zijl ...........................................................................................................59
“THE IMPACT OF THE INTERACTIVE USES OF PERFORMANCE MEASUREMENT SYSTEMS ON PERCEIVED SOCIAL LOAFING AND TEAM PERFORMANCE”
Paul Grandoni, Habib Mahama, and Rebecca C.W. Tan

“COST STICKINESS AND INFORMATION OF TAX ACCOUNTS FOR LOSS REPORTING FIRMS”
Ji Hye Kim, Jin Bae Kim, and Gun Lee

“PMSS IN SMALL, MEDIUM-SIZED, AND LARGE COMPANIES”
Tarmo Kadak

“RESPONSE STRATEGIES TO DISRUPTIVE INNOVATION IN ACCOUNTING: KNOWLEDGE PERSPECTIVE”
Freida Ozayize Ayodele, Liu Yao, and Hasnah Haron

“DEVELOPING SUSTAINABLE SMALL AND MEDIUM SCALE ENTERPRISES IN GHANA: THE ROLE OF COMPUTERIZED ACCOUNTING INFORMATION SYSTEMS”
Samuel Nana Yaw Simpson, Joseph Onumah, and Hope Kwaku Tetteh

“DOES CAPITAL ADEQUACY RATIO MODERATE THE RELATIONSHIP BETWEEN OWNERSHIP STRUCTURE AND PERFORMANCE?”
Nasyra Ab. Jamil and Rasidah Mohd. Said

“CORPORATE GOVERNANCE IMPLEMENTATION AND FIRM PERFORMANCE IN THE NEW ZEALAND AGRICULTURAL COMPANIES”
Jamal Roudaki

“THE ROLE OF GOVERNANCE IN THE MARKET VALUATION OF RELATED PARTY TRANSACTIONS”
Akmalia M. Ariff, Effiezal Aswadi Abdul Wahab, and Adzhamsyah Abdul Hamid

“IMPLICATION OF COMPREHENSIVE INCOME AND ITS COMPONENTS FOR BANKING SUPERVISORY RATING APPROACH CAMEL – EVIDENCE FROM CHINESE LISTED BANKS”
Hong Xiao and Theerawit Kapanya

“THE EFFECT OF FULL IFRS CONVERGENCE ON EARNINGS MANAGEMENT: MALAYSIAN CONTEXT”
Karen Ling Nee Wong, Mahesh Joshi, and Prem Yapa

“RISK AND RETURN ANALYSIS OF ECONOMIC-FINANCIAL CONGLOMERATE USING THE DATA ENVELOPMENT ANALYSIS AND MODERN PORTFOLIO THEORY”
Paulo Henrique Rodrigues, Carlos Renato Theophilo, and Idalberto Jose das Neves Junior
“EARNINGS QUALITY IN EMERGING ECONOMIES: THE BANKS CASE”
Magdi El-Bannany ..............................................................71

“THE FAIRNESS LEVEL OF SUBCONTRACTING AND COST OF EQUITY”
Sang Hoon Shin, Seon Mi Kim, Seung Weon Yoo, and Il Han Yu .........................72

“THE ROLE OF MULTI-LEVEL CAPITAL MARKET IN INVESTOR REACTION TO THE SPECIFIC DISCLOSURE OF SOCIAL RESPONSIBILITY: EVIDENCE IN CHINA”
Shiyu Wang, Guanzhen Wang, and Zhibin Chen .................................................73

“FUND PERFORMANCE IN MALAYSIA”
Susela Devi and YoungKyung Ko .................................................................74

“CORPORATE TAX AVOIDANCE, DEBT RATIO, AND CORPORATE GOVERNANCE: EVIDENCE FROM JAPAN”
Hiroshi Ohnuma and Keikichi Kato .................................................................75

“PROPOSAL OF AUTOMATED TAX FRAUD DETECTION MODEL IN CONTEXT OF POLISH TAX SYSTEM”
Malgorzata Mierzejewska ...........................................................................76

“THE PERCEPTION OF FEMALE ACCOUNTANTS IN EXPLAINING THEIR MOTIVATIONS AND GENDER GAP AMONG JAPANESE ACADEMIC COMMUNITY”
Yuki Tanaka and Fumiko Hiki .......................................................................77

“ETHICS AND ACCOUNTING: WHICH REGIME BEST PROTECTS THE PUBLIC INTEREST?”
Saeed Askary .................................................................................................78

“FACTORS INFLUENCING JOB-SEEKERS INTENTION TO USE ONLINE RECRUITMENT”
Nor Asiah Mahmood and Feng Ling Ng ............................................................79

“THE RELATIONSHIP BETWEEN SERVANT LEADERSHIP AND PERFORMANCE OF UNIVERSITY LEADERS: WORKING ENVIRONMENT AS A MODERATOR”
Sharfika Raimea and Raemah Abdullah Hashim ..............................................80

“EXAMINING THE INFLUENCE OF EMPLOYEE EMPOWERMENT, TEAMWORK, AND INCENTIVE TOWARDS JOB SATISFACTION AMONG RMN PERSONNEL”
Md Saiful Anuar Bin Mohd Nasiruddin, Shahrizal Bin Ismail, Anwar Redhwan Bin Lokman Hakim, and Siti Nor Bayaah Ahmad .....................................................81

“ACCRUALS AND STANDARD BASED GOVERNMENT ACCOUNTING: DO WE NEED A NEW THEORETICAL BASIS?”
Andreas Bergmann .........................................................................................82
“VIRTUAL ENTERPRISE BUSINESS MODELS”
Irena Hejduk, Anna Karmanska, Ryszard Bartkowiak, Sylwester Gregorczyk, and Piotr Wachowiak ................................................................. 83

“THE EFFECT OF LOCAL GOVERNMENT PERFORMANCE DISCLOSURES ON THE WEBSITE/INTERNET: SIGNALING INCUMBENT’S INCENTIVES ON INDONESIAN CASE”
Sasono Adi, Dwi Martani, Bambang Pamungkas, and Robert A. Simanjuntak .......... 84

“GOVERNMENT PROCUREMENT CONTRACT DESIGN FOR ENCOURAGING COST REDUCTION”
Taichi Kimura and Takahiro Morimitsu ................................................................. 85

“DATA IN SEARCH OF A THEORY: UNDERSTANDING HOW ICTS “DISRUPT” ACCOUNTING PROFESSIONALS”
Tianyuan Feng, Lorne Cummings, and Dale Tweedi ............................................. 86

“THE USE OF ACCOUNTING INFORMATION FOR SUGAR BUSINESS OPERATIONS AT THE SOUTH SEAS DEVELOPMENT COMPANY”
Yuta Sumi and Masayoshi Noguchi ................................................................. 87

“RELATIONSHIP STUDY BETWEEN MARKETING MIX AND PURCHASE INTENTION OF AFFORDABLE HOMES”
Wan Muhd Hisham Wan Hawari, Mazrul Hisyam Che Rose, Nurulazwanita Bahari, and Rudzi Binti Munap ................................................................. 88

“THE EFFECT OF EXECUTIVE MANAGEMENT SUPPORT AND COST ACCOUNTANT COMPETENCY ON CMS DESIGN EFFECTIVENESS AND ITS CONSEQUENCES: AN EMPIRICAL RESEARCH OF MANUFACTURING BUSINESS IN THAILAND”
Nattawut Tontiset ............................................................................................... 89

“UNDERSTANDING THE TAX SITUATION OF ENTREPRENEURS IN THE GUESTHOUSE INDUSTRY IN SOWETO, SOUTH AFRICA”
Marina Bornman and Pusheletso Ramutumbu ..................................................... 90

“ORGANIZATIONAL REPORTING OF VOLUNTEERS: THE EXTENT AND MOTIVATION OF CURRENT PRACTICES”
Stuart Tooley and Jill Hooks ................................................................................ 91

“FINANCIAL PERFORMANCE AND EARNINGS MANAGEMENT OF SOCIALLY RESPONSIBLE INVESTING FUND FIRMS”
Wan Suk Ko ........................................................................................................ 92

“THE ROLE OF NAP IN IMPROVING VENDOR INNOVATION AND PERFORMANCE”
Mohd Lutfi Iskandar Bin Sahid ........................................................................... 93
“AN APPROACH TOWARDS DEVELOPING AN ALGORITHM FOR SOFTWARE APPLICATION ERROR ANALYSIS”
Hoo Meng Wong ...........................................................................................................94

“THE STUDY ON BIG DATA ANALYTICS USING EMBEDDED ALGORITHM FOR OIL PALM PLANTATION”
Pushparani Marappan and Sagaya Sabastinal Amaladas ..............................................95

“USING BIG DATA ANALYTICS MODEL TO ASSESS SENHENNG PERFORMANCE”
Hussein Raad and Sagaya Amalathas ...........................................................................96

“RELATIONSHIP BETWEEN SERVICE QUALITY ON CUSTOMER LOYALTY: MEDIATED BY CUSTOMER SATISFACTION AT TELECOMMUNICATION SERVICE PROVIDER”
Norizzati Azudin, Nirmala d/o Subramanian, and Marfuzah Muhamad ......................97

“USE OF SOCIAL MEDIA AS A SOURCE OF INFORMATION IN EMPLOYMENT MATTERS”
Shazanah Sarwar Khan and Hussain Alim Shakoor .....................................................98
VALUE-BASED MANAGEMENT AND TAXES

Andreas Schueler
Universitaet der Bundeswehr Munich
Germany
Andreas.schueler@unibw.de

ABSTRACT

In practice, value added (residual income) is often used by companies as a key performance indicator in management control systems. An empirical analysis of annual reports of listed European companies reveals that pre-tax value added is used as a performance indicator for management control systems in these companies often. In these cases, the cost of capital is divided by the term ‘1-tax rate’ to obtain the cost of capital before taxes. However, this approach might lead to wrong decisions because the NPV before and after taxes is usually not identical. Furthermore, the ranking of investment opportunities can change when taxes are considered. Under the conditions discussed in the paper, there can also be a change in sign of the NPV. The paper analyzes the consequences of using pre-tax value added if the tax system is not neutral. The differences between pre-tax and post-tax value addeds and net present values are explained and interpreted. If managers rely upon pre-tax value added, they might make decisions that harm the interests of the owners. For instance, managers might invest into value-decreasing projects or miss value-increasing opportunities. Other mistakes could be an erroneous capital allocation or a wrongful performance-based compensation. Definitions of modified cost of capital are derived that could link a pre-tax calculation with the NPV after tax. However, these definitions depend upon the post-tax results. Thus, they cannot be applied autonomously and suffer from a circular reference. We conclude that capital budgeting and value-based performance measurement in general should be conducted based on value added after taxes, because the mistakes of using pre-tax indicators cannot be corrected in a simple manner. If the tax system that applies to a company is – as usual – not neutral, companies should adjust pre-tax performance indicators to the tax code and should work with these post-tax indicators.
CUSTOMER SATISFACTION AND THE IMPLIED COST OF EQUITY: MODERATING EFFECTS OF MARKET CONDITIONS

Youngdeok Lim  
University of New South Wales  
Australia  
youngdeok.lim@unsw.edu.au

Jenny (Jiyeon) Lee  
University of New South Wales  
Australia  
jylee@unsw.edu.au

Hyungtae Kim  
California State University, Fresno  
U.S.A.  
hkim@csufresno.edu

ABSTRACT
We examine whether customer satisfaction measured by the American Customer Satisfaction Index affects the implied cost of equity and whether this association is subject to product and financial market conditions. Using a sample of 1,246 US companies in the period 1995 to 2014, we test the relationship between customer satisfaction and the implied cost of equity that is measured by the ex-ante approach. In addition, we test the moderating effects of product market conditions (market competition and demand uncertainty) and financial market conditions (systematic and idiosyncratic risks) on this association. Our results show that customer satisfaction is negatively associated with the implied cost of equity. We also find that this negative association is weaker when product markets are highly competitive and market demands are uncertain but is stronger when idiosyncratic risks are high.
SHARE REPURCHASE ANNOUNCEMENTS TOGETHER WITH EARNINGS FORECAST REVISIONS AND LONG-TERM STOCK PERFORMANCE: EVIDENCE FROM JAPAN

Yoshinori Shimada
Tokyo University of Science
Japan
y.shimada@rs.tus.ac.jp

ABSTRACT
This article examines whether the presence of revisions in management EPS forecasts alongside repurchase announcements offers an appropriate measurement for ex-post actual repurchase implementations. I also investigate whether repurchase announcements alongside revisions in management EPS forecasts are over-performed relative to repurchase announcements with no revisions in management EPS forecasts.

The results empirically suggest that repurchase programmes are likely to be implemented if announcements accompany revisions in management EPS forecasts. This finding implies that EPS forecasts revisions around repurchase programmes announcements convey information on the ex-post actual implementation of repurchase programmes. The results also indicate that management reporting behaviour regarding EPS forecast revisions is significantly related to ex-post long-term stock performance. This suggests that investors might evaluate the reliability of the signal in each repurchase programme based on the presence or absence of EPS forecast revisions. These results are robust concerning measurements of long-term stock performance.
IS ENFORCEMENT OF IFRS TOO COSTLY? EVIDENCE FROM DOWNLISTINGS

Joerg-Markus Hitz*
Goettingen University
Germany
hitza@wiwi.uni-goettingen.de

Stephanie Mueller-Bloch
Goettingen University
Germany
stephanie.mueller-bloch@wiwi.uni-goettingen.de

ABSTRACT
This paper investigates the potential role that enforcement plays for firms’ decisions to opt out of regulated stock exchanges. We exploit the German setting, where recent court rulings lowered barriers to opting out of EU-regulated stock markets, which allows us to infer characteristics of firms that choose to migrate to an unregulated stock market (downlisting). We find that incremental to factors that prior literature has demonstrated to be associated with firm opt outs from regulated stock exchanges, downlisting firms are more likely to have been censured by enforcement bodies for erroneous accounting, compared to a sample of control firms. Market reactions to downlisting announcements shed more light on these enforcement-related costs, suggesting that managers may deliberately choose to evade enforcement supervision to secure private control benefits. Also, it turns out that half of the downlisting firms continue to prepare IFRS financial statements on a voluntary basis. Taken together, these findings are consistent with firms adopting avoidance strategies to deliberately opt out of enforcement supervision. Our results shed light on the hitherto virtually unexplored costs of the EU’s IAS regulation and its potentially unintended effects.

Keywords: Enforcement, disclosure regulation, downlisting, IFRS
META-ANALYSIS OF THE IMPACT OF IFRS ADOPTION ON FINANCIAL REPORTING COMPARABILITY, MARKET LIQUIDITY, AND COST OF CAPITAL

Solomon Opare*
School of Accounting & Commercial Law
Victoria University of Wellington
New Zealand
Solomon.Opare@vuw.ac.nz

Muhammad Nurul Houqe
School of Accounting & Commercial Law
Victoria University of Wellington
New Zealand

Tony van Zijl
School of Accounting & Commercial Law
Victoria University of Wellington
New Zealand

ABSTRACT
An extensive number of empirical studies have been devoted to the adoption of IFRS but the results have been inconclusive. We use meta-analysis of 34 empirical studies with 58 independent samples to determine whether IFRS adoption has impacted on financial reporting comparability, market liquidity, and the cost of capital. This approach provides a logical and objective view of the empirical results, in contrast to narrative reviews which offer subjective conclusions. We find that IFRS adoption has significantly increased financial reporting comparability and market liquidity, and reduced the cost of capital. However, our assessment of sources of heterogeneity shows that the above relationship is moderated by differences in modes of adoption, peculiarities in legal systems, the divergence of local GAAP from IFRS, and the level of standards and regulatory enforcement of the country in which a firm operates. Our findings are not affected materially after controlling for studies that are potential outliers. This study is beneficial to regulators and policymakers of jurisdictions that are considering the adoption of IFRS.

Keywords: IFRS adoption; Meta-analysis; Financial reporting comparability; Market liquidity; Cost of capital
THE UNACHIEVABLE GLOBAL ADOPTION OF IFRS AS A IASB LEGITIMATION GAP

Francesco De Luca
Department of Business Administration
“G. d’Annunzio” University
ITALY
fdeluca@unich.it

Jenice Prather-Kinsey
Department of Accounting and Finance
COLLAT School of Business
University of Alabama at Birmingham
U.S.A.
pratherkinsey@uab.edu

ABSTRACT
We show why “adoption” of one set of globally accepted accounting standards is presently unachievable. By “adoption” we mean that a jurisdiction incorporates IFRS instantly into its national accounting as issued by the IASB after its due process. We state that the IASB has used a Legitimacy Theory strategy to gain acceptance of its standards by more than 120 countries across the globe but it has only gained pseudo-“adoption” (not as written by the IASB) of its standards by several countries. We show that achieving policing and enforcement of its standards globally has proven to be empirically illusive. This legitimacy deficit explains why convergence between the IASB and FASB is currently idle and thus offers a possible solution to global adoption of one GAAP. Bridging this legitimacy gap using an internationally respected regulator and firm level adoption of a global GAAP, or alternatively appointing the IOSCO for this role, may be the output legitimacy approach needed to gain adoption of one set of accounting standards globally.
DISCLOSURE QUALITY, COST OF CAPITAL AND FIRM PROFITABILITY

Weiyi Cynthia Cai*
Department of Accounting
Charles Sturt University
Australia
ccai@studygroup.com

ABSTRACT
Based on a production-based economy model with perfect competition among investors, this paper investigates the impact of disclosure on a firm’s cost of capital over different time periods. The analyses demonstrate three points. First, in a production-based economy both the overall cost of capital and the investors’ ex ante welfare can be affected by disclosure quality. As disclosure quality improves, the post-disclosure cost of capital may either increase or decrease, as may the pre-disclosure cost of capital. The change in the post-disclosure cost of capital is not fully offset by the change in the pre-disclosure cost of capital, and therefore the overall cost of capital can either increase or decrease. Also, as disclosure quality improves, investors’ ex ante welfare can either increase or decrease. Second, a firm’s profitability of existing and new production are critical factors in determining whether cost of capital increases or decreases in disclosure quality. Third, when disclosure affects an interrelated firm’s production decision, the disclosing firm’s overall cost of capital changes with disclosure quality, even when the marginal (unconditional) distribution of the disclosing firm’s cash flow is not affected by the disclosure.
EXAMINE THE ACCOUNTING FOR HERITAGE ASSETS: IS IT NECESSARY TO PUT HERITAGE ASSET IN FINANCIAL STATEMENT?

Padwin Leinardo  
University of Birmingham  
U.K.  
padwin.leinardo@ojk.go.id

Raden Cahyo Dibyo Wibhowo  
Trisakti University  
Indonesia  
cahyo.dibyo@ojk.go.id

ABSTRACT

Accounting for heritage assets has been a longstanding debate over last decade. As the growth of information demands, it seems that both monetary and non-monetary accountability are essentially considered to enhance development. Thus, adoption of accrual accounting is seen as one of solution. However, implementation of accrual accounting for heritage assets still remains problematic. On the one hand, many scholars contend that the value of this type of assets is not necessary to be measured economically as heritage assets provide more social benefit than economic benefit. On the other hand, it is argued that presenting heritage assets in financial statement would necessarily improve accountability in public sector. Indonesia is currently walking towards full adoption of accrual accounting for its public sector. Having many abundant historical and heritage properties, the government is essentially required an appropriate accounting system to hold accountability on them. This study tends to critically discuss the issue surrounding the accounting for heritage asset in international context and using accounting practice for heritage assets in Indonesia’s public sector at national level to draw conclusion.

Keywords: Heritage assets, accrual accounting, Indonesia’s public sector
FINANCIAL DISTRESS PREDICTION IN THE AUSTRALIAN MINING INDUSTRY USING TREE-BASED STOCHASTIC TECHNIQUES

Khaled Halteh
Business School
Bond University
Australia
Khaled.halteh@student.bond.edu.au

Adrian Gepp
Business School
Bond University
Australia
Adgepp@bond.edu.au

Kuldeep Kumar
Business School
Bond University
Australia
Kkumar@bond.edu.au

ABSTRACT

Financial distress is a socially and economically important problem that affects mining companies the world over. Having the power to better understand – and hence aid mining businesses from failing, has the potential to save not only the company, but potentially prevent economies from sustained downturn. Mining in Australia generates around $138 billion annually, making up more than half of total goods and services. This paper uses financial data from hundreds of Australian companies in the mining sector to work on advancing financial distress modelling by utilizing cutting-edge stochastic models, namely: decision trees, stochastic gradient boosting, and random forests, to develop the most accurate technique in forecasting insolvency risk. Our results indicate that stochastic gradient boosting was the best technique at correctly classifying the successful and distressed companies within the mining sector. Our model showed that net gearing, return on equity, and book value per share ratios were found to be the variables with the best explanatory power pertaining to predicting financial distress of mining companies.

Keywords: bankruptcy prediction; financial distress; insolvency risk; tree-based stochastic techniques; mining sector
AUDITORS’ RESPONSE TO ANALYSTS’ FORECAST PROPERTIES: SOME EVIDENCE FROM AUDIT FEE PRICING

William Y.Y. Foo
Faculty of Business
The Hong Kong Polytechnic University
Hong Kong
williamfoo@yahoo.com

Mark A. Bliss*
Department of Accounting
Faculty of Law and Business
Deakin University
Australia
mark.bliss@polyu.edu.hk

Ferdinand A. Gul
Department of Accounting
Faculty of Law and Business
Deakin University
Australia
Ferdinand.gul@deakin.edu.au

Karen M.Y. Lai
Monash Business School
Monash University
Australia
Karen.Lai@monash.edu

ABSTRACT
This study investigates the association between analysts’ forecast properties (accuracy and dispersion) and audit fee pricing in U.S. publicly listed firms for years 2000 to 2012. Our findings provide evidence that analysts’ earnings forecast accuracy (dispersion) is negatively (positively) associated with audit fee pricing. These results suggest that analysts, as important financial intermediaries in the information environment, provide useful information to auditors in their assessment of client risk. We find that these associations are stronger for small firms and younger firms in line with these firms having a higher extent of information asymmetry.

Keywords: analysts’ forecasts; forecast accuracy and dispersion; audit fee pricing

Data Availability: All analyses are based upon publicly available data
SMALL BUSINESSES, PASS THROUGH BUSINESSES, AND AUDITS

Paul Lee  
Cleveland State University  
U.S.A.  
p.j.lee@csuohio.edu

Stephanie Lee  
Cleveland State University  
U.S.A.

Craig Foltin  
Cleveland State University  
U.S.A.

ABSTRACT

Today in the business world, there has been an increasing number of closely held small business employers, such as C corporations, S Corporations, partnerships and sole proprietorships. These closely held small businesses have assets of 10 million dollars or less. A significant portion of these small businesses are pass-throughs, especially sole-proprietorships. Both small and large pass-through businesses have become the economic powerhouse in the United States because they earn more net business income than C corporations (although C corporations surpass pass-throughs in gross receipts), employ over half the workforce in the United States, and are often taxes at top individual tax rates. An Internal Revenue Service (IRS) study reveals the organization’s interest and increasing focus on pass through businesses, in terms of both its structure and priorities, have tripled in size since 1980 (Pomerleau 2015). From the approximate 92,000 IRS employees, about 47,000 of them work in the small business/self-employed unit, one of four operating units in the IRS (Treasury Inspector General for Tax Administration 2014). However, the IRS currently audits schedule C filers 18.5 times more than partnerships or S Corporations. In 2014, schedule C filers without EITC were audited at a rate of 7.4 percent (all income groups combined) versus the 0.4 percent for partnerships and 0.4 percent for S corporations.

To understand the audit risks of pass-throughs, especially small business, it is helpful to know the basic tax return data regarding the volume and type of returns, as well as the IRS’s current and evolving strategies to process tax returns and minimize the tax gap. The IRS relies heavily upon 1) sophisticated automation to help search through hundreds of millions of returns for math errors, underreporting, and non filing, 2) analytics including the discriminant index function formula (DIF scores) and 3) ongoing research of taxpayer behavior on specific compliance issues through its National Research Program. All this is done in pursuit to ensure tax compliance.

When examining the audit risks to small businesses (most of which are pass-throughs), one must be aware of many dynamics at work in the IRS and the economy at large. There are not confined specific “triggers” that initiate an audit, as this is too simplistic an approach and one taken by a plethora of tax attorneys who write thousands of internet articles on what to do to avoid an audit (thoroughly document travel, meal and entertainment expenses, document home office deductions, take a reasonable salary if you are an S corporation working shareholder, et cetera). To truly appreciate the complexity of the subject of audit risks to small business, one must consider the many different factors in play, since all these forces ultimately drive the constantly evolving IRS enforcement strategy. While the IRS may be politically unpopular and face hampering budget cuts that are responsible for modest dips in audits, it is still the world’s most efficient tax administration partly because it is constantly evolving and adapting its enforcement strategies even in the face of shrinking resources.

This article studies audit risk to small businesses considers 1) current demands on IRS resource (especially those devoted to both processing tax returns and enforcement) 2) the Small Business/Self Employed unit at the IRS in charge of auditing and servicing small businesses and the self employed, 3) small businesses and pass-through businesses’ increasing role in the overall economy and tax base, and finally, 4) IRS enforcement basics and strategies.
CORPORATE PERFORMANCE AND SOCIAL INDICATORS IN JAPAN: FOCUSING ON RETURN ON EQUITY

Hiroko Inokuma*
International Graduate School of Accounting Policy
Tohoku University
Japan
hinokuma@econ.tohoku.ac.jp

Masatoshi Sakaki
Ernst & Young ShinNihon LLC
Japan
Masatoshi.Sakaki@jp.ev.com

ABSTRACT

In order for companies to achieve sustainable growth, they must generate a consistent profit, but must also perform in a socially responsible manner. The policy statement of the Japanese government (Japan revival plan produced by Abe cabinet) focuses on companies' ability to achieve mid- to long-term development, and sets specific return on equity (ROE) targets that companies must accomplish to fulfill the requirement of the capital market.

In this study, we clarify the problems and issues associated with adopting ROE as a management index and as an investment index, and examine the relationship between the corporate management index and the contribution to society. In particular, we focus on the “creation of value” (value creation) as a degree of corporate social contribution. We consider that creating new value is one of the methods available as a corporate social contribution. However, because enterprise value is not measurable, we define two variables as proxies for “corporate value.”

The first proxy is the value added by the enterprise, while the second is the total market capitalization of the stock price, which is an evaluation of the company in the capital market. After examining these two variables, we find that ROE is not necessarily the best indicator of sustainable development in an enterprise, and in some cases, an indicator such as the return on assets may be a better management index to capture companies’ social value.

Keywords: corporate value, corporate performance indicator, corporate social indicator, return on equity
HOW CAN WE USE INTELLECTUAL PROPERTIES TO FINANCE NEW VENTURES? THE CASE OF JAPAN

Takashi Shimizu
The University of Tokyo
Japan
tshimizu@waka.c.u-tokyo.ac.jp

ABSTRACT
This paper is an attempt to examine whether and how we can utilize intellectual properties (IPs) of startups for their financing. Financing for startup is a big issue for entrepreneurs as well as governments that wants to stimulate innovations. In Japan, government tried to promote the idea of IP-backed lending, i.e., providing loans by using IPs as collateral. However, this attempt did not seem successful, and the government itself is now seeking other ways to utilize collateral.

Based on a questionnaire survey and interviews for startups and fund providers in Japan, we found that the most important reasons why IP-backed lending was not so successful were (1) difficulty in evaluating the value of IPs and (2) cautious attitude toward providing loans without collateral. Some methods of supporting financing of startups will also be discussed.
UNIVERSITY BUDGETS AND STRATEGY: A SURVEY OF CURRENT PRACTICES IN CANADA

Bryan Boles
Brock University
Canada
bboles@brocku.ca

Staci Kenno*
Brock University
Canada
skенко@brocku.ca

Michelle Lau
Brock University
Canada
mlau@brocku.ca

Barbara Sainty
Brock University
Canada
bsainty@brocku.ca

ABSTRACT
There is a growing demand for policymakers to ensure that public funds are being spent wisely and effectively. In Canada, most universities are publically funded and face increased scrutiny and accountability for to show progress, budgets, and plans for the future. As a result, mission and strategy have become important in the post-secondary institution marketplace. There is a body of research that examines the relationship between budgeting and strategic planning but many questions remain, especially in the public sector. Our survey was designed to determine if there is a link between budgeting and strategic planning in universities. Administered to the Vice Presidents - Finance and Administration, our results identify a number of elements in the budgeting process that may lead to enhanced strategic planning. The results may influence choices made in how best to budget and how to relate the budgeting process to strategic planning and funding initiatives. In determining funding and assessing accountability, governments could be interested in a university’s budget model and may consider the budget model as one element to assess the ability of the institution to achieve its strategic goals.

Keywords: Budgeting, University, Survey, Strategic Planning
PERFORMANCE MANAGEMENT AS PRACTICE AND KNOWING IN ACTION: EXPERIMENTING WITH BOURDIEU’S THEORY OF PRACTICE

Zahirul Hoque
La Trobe University
Australia
z.hoque@latrobe.edu.au

Chaturika Seneviratne
La Trobe University
Australia
spseneviratne@latrobe.students.edu.au

ABSTRACT
In this study, we empirically explore the externally imposed performance management mechanism in its practical sense and how agent-micro processes impact on performance management practice in a public university setting. Building upon the Bourdieu’s theory of practice, our findings revealed that internal agents are significant as they possessed necessary properties in the field where they operate to make effects in determining the practical tendencies of enabling uses of performance management practice. Further, we document the dialogue of the micro processual activities by highlighting the significance of exploring the singularity of agents in terms of their viewpoints, trajectory, capital possession and position occupy in the field who may not be mechanically pulled by the external enforcements in the fulfilment of the imposition of performance management practice. Opening the non-rationalist, non-conscious or non-strategic avenues, our study further contributes to the literature by arguing that performance management as the practice may operate beyond the formal, calculable and abstract form in a public organisational setting.

Keywords: performance management practice, field, capital, habitus, agents, public sector, internal practices, practical knowledge, enabling control approach
ABSTRACT

Business leaders and the Australian Securities Exchange (ASX) are calling for more effective boards, to ensure the goal of long-term survival and prosperity of firms. Efficient investment is the key to achieving this goal. Using 14-year panel data of all the companies listed on the ASX, this study investigates the association between a variety of board attributes and firm investment efficiency. The study provides evidence that boards with more concentrated functional expertise and higher director shareholdings are more effective in reducing both over-investment and under-investment. Smaller boards can reduce under-investment but not over-investment, while boards with longer average tenure restrain over-investment but not under-investment.
CEO COMPENSATION EFFECTS OF POOR ECONOMIC DECISIONS

Kin-Wai Lee
Accounting Department
Nanyang Business School
Nanyang Technological University
Singapore
akwlee@ntu.edu.sg

ABSTRACT
This paper examines the association between CEO compensation and tangible long-lived assets impairment. We find that the level of CEO compensation is negatively associated with the tangible long-lived assets impairment charges. We also document that in firms with CEOs who have more decision-making power, the negative association between CEO compensation and tangible long-lived assets impairment charges is mitigated. Specifically, the negative association between CEO compensation and tangible long-lived assets impairment charges is less pronounced (1) when CEO chairs the board, (2) when CEO is the founder of the firm, (3) when the CEO is involved in the director selection process, and (4) when overall board independence is low.
We investigate whether and how government regulation influences the effectiveness of executive compensation on curbing hedging activities and therefore the value of hedging. Using a matched sample of Chinese listed companies over the period 2007 to 2013, we find pay-performance sensitivity has an inverted U-shaped effect on the relationship between hedging and firm performance. In addition, the incentive effect of executive compensation is weaker for SOEs than for non-SOEs, which may be attributed to more stringent government regulation on SOEs. Our results are robust to alternative measures of various subsamples and a potential selection bias. Overall, our study provides comprehensive evidence of the impact of corporate governance on the value of hedging.

Keywords: Financial derivatives; Pay performance sensitivity; Government regulation; Firm performance
GENERIC SKILLS IN ACCOUNTING EDUCATION: PERSPECTIVES OF SAUDI FINAL YEAR STUDENTS

Mohammed Ali Al Mallak  
School of Accountancy  
Massey University  
New Zealand  
maam2008nz@hotmail.com

Lin Mei Tan  
School of Accountancy  
Massey University  
New Zealand  
l.m.tan@massey.ac.nz

Fawzi Laswad  
School of Accountancy  
Massey University  
New Zealand  
f.laswad@massey.ac.nz

ABSTRACT

This study examines Saudi university students’ perceptions of the importance of developing generic skills in their accounting education, the level of competence they should acquire and expect to achieve during academic study, and the constraints that may limit the development of generic skills in accounting education. The study uses the skills outlined in IES 3 (categorised as intellectual, personal, organizational and business management, and interpersonal and communication) and IES 4 (ethics in accounting/business). A questionnaire survey is used to collect the data.

The findings show that Saudi final-year accounting students perceive all five generic skill categories to be important, with ethical skills being rated as the most important and personal skills as the least important. However, the students expect that they will achieve a somewhat lower level of generic skill by the end of their university studies in all areas except for ethical skills. This indicates that the students perceive a gap in their university education.

The results of this study are broadly consistent with the findings in the accounting education literature on expectation performance gap and suggest that the Saudi accounting education system should do more to provide students with opportunities to develop the generic skills to enable them to succeed in future careers.

Keywords: accounting education, constraints, expectation-performance gap, final year students, generic skills, Saudi Arabia
BREAKING NEW GROUND IN THE TEACHING OF TAXATION: A TECHNOLOGY BASED INTEGRATED TEACHER APPROACH FOR DISTANCE LEARNING

Mildred Lopez
UNITAR International University
Malaysia
mildredlopez13@yahoo.com

ABSTRACT
The complications of taxation and its impact on business is critical. Yet there is an expectation gap. Tax education is experiencing a crisis. Practitioners feel the education model is flawed. Employers feel that accounting professionals hired by their tax departments are not able to perform according to professional firms’ expectation. This crisis is real, the demand for competent tax educators is critical. Studies have also shown that there is the educators performance gap.

Another major constraint is the ability of the educator to perform. They fail to maximise the use of resources under their control to achieve the teaching objectives. Educators have many personal attributes and creative abilities which are not explored. The result is students do not enjoy the class and fail to develop competencies the educators expects of them. Lecturers use the same material over and over again and put no effort in developing dynamic materials. Often the lecturers do not develop their own material but use the PowerPoint slides produced by book publishers. Student felt that lecturers lacked the ability to explain subject matter clearly. Lecturers also failed to produce material that is stimulating and motivating to students. Accounting courses include too few examples and case studies. Hence students failed to recognise the practical relevance of topics covered and they failed to enhance their understanding and interest in the subject matter. Student are often disappointment that lecturers in the case study programmes were not passionate and excited about the material they are teaching.

Lecturer attitude has a real impact on students’ interest and motivation. A student that has an appreciation for the concepts i.e. the “whats” and the “whys” understand the how to perform compared with a student with an appreciation of only the application. If a student gets stuck, they will have a difficult time drawing on their knowledge to resolve problems. (Geiger, 1989/90). Educators attitudes must change to produce industry relevant graduates.

Amid this, Distance Learning has grown phenomenally in the past decade. It has been used to deliver corporate training courses as well as degree courses. From the vantage point of view, it allows training providers and universities a new mechanism for providing access to knowledge. Distance learning and cyber-campus concepts are creating new and challenging paradigms in education. The prospective students find this concept attractive because participation in an educational experience is no longer bound by the constraints of time and place. Notwithstanding, there is an ongoing debate as to the efficiency, effectiveness and efficacy of this mode of education. (Rad, 2002).

PowerPoint slides provided as notes for Distant Learning has dismal effects. But the introduction of TalkingPowerPoints where the lecturer delivers an digital lecture of the entire syllabus explaining the interconnectedness of every topic and the intricacies of the law has had a major impact on the student teacher experience with improved learning outcomes in Distance Learning at UNITAR International University.
KEY EMPLOYABILITY COMPETENCIES REQUIRED OF TAX ACCOUNTANTS: A CONTENT ANALYSIS OF JOB ADVERTISEMENTS

Lin Mei Tan  
School of Accountancy  
Massey University  
New Zealand  
l.m.tan@massey.ac.nz

Fawzi Laswad  
School of Accountancy  
Massey University  
New Zealand

ABSTRACT

Over the past three decades, numerous studies on important generic skills have focused on a broad category of employability skills in accounting without differentiating its disciplines or providing more information about various job occupations within one discipline (e.g., tax, financial accounting, etc). As an extension and contribution to the literature, this study identifies the key employability competencies or skills required by employers of tax accountants in comparison with non-tax accountants. A content analysis of skills specified in job advertisements in Australia and New Zealand is conducted over a 12-month period.

The results show that personal and interpersonal skills were the most frequently required skills in advertisements for tax and non-tax accountants. However, advertisements for tax jobs placed more emphasis on some skills than others. Tax jobs in Australia indicated information technology competence as a critical skill which was not so often mentioned in the NZ advertisements. Two other skills, i.e., one who can think and act independently and strategically, were highly valued in the tax work environment in NZ. Of further note is that initiating and conducting research is one skill that was mentioned much more frequently for tax jobs than for non-tax jobs.
DO FIRMS WITH STRONG COMMITMENT TO CORPORATE SOCIAL RESPONSIBILITY PREFER LESS FREQUENT FINANCIAL REPORTING? EVIDENCE FROM ELIMINATING MANDATORY QUARTERLY FINANCIAL REPORTING IN EUROPE

Lisa Goh
Hang Seng Management College
Hong Kong
lisagoh@hsmc.edu.hk

Yue Li
University of Toronto
Canada
yuell@rotman.utoronto.ca

Feng Tang
The Hong Kong Polytechnic University
Hong Kong
feng.tang@polyu.edu.hk

ABSTRACT
This study examines whether corporate commitment to CSR and sustainability affects firms’ choice of financial reporting frequency. Specifically, we examine whether firms with superior CSR performance and commitment to sustainability choose to abandon quarterly financial reporting voluntarily following the reporting regime change in Europe in 2013. We argue that corporate commitment to CSR and sustainability symbolizes firms’ long-term investments and disapproval of management short-termism. As such, firms with strong commitment to CSR would reduce financial reporting frequency to avoid undesired pressure from short-term oriented investors. Using a sample of the London Stock Exchange (LSE) listed companies, we find that firms with superior CSR performance are more likely to abandon the quarterly Interim Management Statement (IMS) voluntarily following the change in the U. K’s Disclosure and Transparency Rules in 2014. In addition, firms with superior CSR performance are more likely to use Trading Updates to communicate with investors instead of IMS at fixed quarterly intervals. Our results are robust to different specifications and controls for firm characteristics known to affect firms’ financial reporting decision. Overall, the evidence in this study is consistent with corporate commitment to CSR symbolizes a firm’s long-term investments and management orientation towards sustainability affects firms’ financial reporting frequency decision.

Keywords: Corporate social responsibility, short-termism, financial reporting frequency
QUANTIFYING ENVIRONMENTAL PROFILES OF FINANCIAL FIRMS: A SCORECARD MODEL

Lukas Prorokowski
H.L. Prorokowski LLC
Luxembourg
lukas.prorokowski@gmail.com

ABSTRACT
This paper introduces a new model benchmarking financial services firms against their environmental and social profiles. The Sustainability Scorecard Model (SSM) reviews the Corporate Social Responsibility (CSR) of banks and other financial institutions by highlighting the link between becoming sustainable and profitable. As it transpires, addressing social and environmental issues by banks serves not only to improve the sustainability profile, but reduces operational costs and improves financial performance. Applying the SSM to a geographically diversified sample of financial services firms shows that European banks outperform institutions from other regions with their advanced environmental and social profiles. Interestingly, the modelled scores for the sample banks and the revenue figures are almost uncorrelated for large banks. This confirms that any bank, despite its global presence and revenue, can develop similar environmental and social risk initiatives on its path to sustainability.
WHAT IS THE STATE OF ENVIRONMENT DISCLOSURES IN GHANA?

Emerald Edem Welbeck  
Department of Accounting  
University of Ghana  
Ghana  
edem.emerald@gmail.com

Godfred Matthew Yaw Owusu  
Business School  
University of Ghana  
Ghana  
gmowusu@gmail.com

Rita Amoah Bekoe  
Business School  
University of Ghana  
Ghana  
celestialrita@gmail.com

John Amoah Kusi  
Business School  
University of Ghana  
Ghana  
jkusiamoah@gmail.com

ABSTRACT
The purpose of the paper is to examine the type of environmental-related information firms disclose mostly in Ghana and investigate the determinants of environmental disclosures by firms in Ghana. Using the Global Reporting Initiative (GRI) index as a benchmark, a content analysis of the corporate annual report of 17 firms listed on the Ghana Stock Exchange (GSE) was conducted over a ten-year period (2003 to 2012) to determine the total environmental disclosure scores of the sampled firms. The determinants of environmental disclosure practices of the firms were ascertained by means of a regression analysis. Results of this study indicate that listed firms in Ghana disclose some amount of environmental-related information espoused by GRI though the level of disclosure is low. Disclosures are focused on product and service information. Also, the level of disclosure by environmental-sensitive firms is higher than the less sensitive firms similar to existing studies. Moreover, the study finds firm size, auditor type, age and industry type to be significant predictors of firms’ environmental disclosure practices.

The study contributes to literature on environmental disclosures from the perspective of a developing economy. The longitudinal nature of the study reveals the area of concentration for environmental information by firms in Ghana. The study recommends further studies enquiring the low level of disclosures relatively despite the existence of environmental laws in Ghana. Additional studies could focus on environmental performance and actions by firms.

Keywords: Environmental Disclosures, Ghana, Ghana stock exchange, legitimacy theory
A PRELIMINARY STUDY OF THE EFFECTS OF TRANSITIONING TO A PURE HOLDING COMPANY

Chieko Matsuda
Tokyo Metropolitan University
Japan
cmatsuda@tmu.ac.jp

ABSTRACT
This study analyzes the delisting of companies in Japan—particularly, delisting by being made a pure holding company, which has increased in recent years. Pure holding companies do not engage in business activity themselves, but are rather formed with the goal of controlling the business activities of commercial enterprises through stock ownership. Many of these companies positively announced that the transition to pure holding companies would lead to accelerate decision-making related to business portfolio management. However, there is a possibility that the transition may cause the group management problem of “whether pure holding companies can demonstrate healthy governance practices for the companies under their umbrella”. As the real condition of the commercial enterprises is difficult to grasp from the capital markets, which should demonstrate the functionality of corporate governance, there are fears that the rights of shareholders and the transparency of information disclosure are inhibited by transitioning to a pure holding company. This study analyses these negative impacts and empirically reveals the reaction of shareholders and the influence on corporate value, by transitioning to a pure holding company. It also clarifies that the factors leading to decisions of the transition.

Keywords: holding company, delisting, event study, governance, capital market
IMPACT OF INTELLECTUAL CAPITAL AND CORPORATE GOVERNANCE ON MANUFACTURING BUSINESS ORGANISATIONS IN DEVELOPING COUNTRIES: A STUDY OF PAKISTAN

Farooq Yahya Butt  
Central Queensland University  
Australia  
farooq.yaya@gmail.com

Mahmud Hossain  
Department of Accounting and MIS  
King Fahd University of Petroleum & Minerals  
Saudi Arabia

Md Kazi Saidul Islam  
Department of Accounting Systems and Assurance  
School of Business and Law  
Central Queensland University  
Australia

ABSTRACT
Brain drain has been a prolonged problem for developing countries. The lack of intellectual individual hinders the economic growth of these countries. From the end of 20th century, businesses in these countries began to realize the importance of retaining skilled people by paying higher compensation. This slowed down brain drain and simultaneously resulted in higher returns for companies accommodating the elements of IC in their capital structure and governance model. This study is undertaken on 101 manufacturing firms listed on Pakistan Stock Exchange. The study covers a period 2005 - 2014. The results suggest that the manufacturing companies in Pakistan have achieved higher results by implementing the IC in their business and governance model.
DO CORPORATE GOVERNANCE REFORM IN EMERGING COUNTRIES IMPROVE CAPITAL MARKETS? EVIDENCE IN MALAYSIA

Susela Devi  
Faculty of Business, Technology, and Accounting  
UNITAR International University  
Malaysia  
susela@unitar.my

YoungKyung Ko*  
Finance, Center for Research and Consultancy  
UNITAR International University  
Malaysia  
youngkyung.ko@unitar.my

Ravichandran Subramaniam  
Monash University  
Malaysia

ABSTRACT
This study review corporate governance reform and its effect on capital market in Malaysia. Malaysian authorities such as Security Commission Malaysia and Malaysia Institute of Corporate Governance introduce reform measure in corporate governance, enhance investor rights protection, and evaluate adaptation by listed companies. We explore whether external enforcement is related to money inflow in M&A and equity markets and improvement in financial disclosure of corporate reporting. We figure out that slight growth in M&A markets and higher scores of corporate reporting in criteria of transparency and disclosure rather than anti-corruption and sustainability. Particularly, listed government-linked companies (GLCs) are more likely to adopt reform measure than non-GLC in three dimensions, and the differences between GLCs and non-GLCS is significant. This result indicates that the reform is more effective to public companies controlled by the government and is required to turn around investors that have left emerging markets.
MAIN BANK RELATIONSHIP AND ACCOUNTING CONSERVATISM: EVIDENCE FROM JAPAN

Hideaki Sakawa
Graduate School of Economics
Nagoya City University
Japan
sakawa@econ.nagoya-cu.ac.jp

Naoki Watanabel
Graduate School of Economics
Nagoya City University
Japan
naoki-watanabe@econ.nagoya-cu.ac.jp

ABSTRACT
We analyze the effect of main bank system on accounting conservatism. In the market oriented economy like U.S., the role of lending monitoring mitigate lenders demand for accounting conservatism (Erken et al., 2014). On the other hands, Japanese corporate governance is bank-dominated or relation oriented systems. Under the bank-dominated systems, main bank are expected for effective monitors. We construct that main bank take a role of reducing lender’s demand for accounting conservatism by reducing information asymmetry. We find that main bank would reduce the demand for accounting conservatism. To use a propensity score matching, we check the robustness of our findings. Our findings contribute to understand accounting conservatism related to agency problems. In addition, we also provide an empirical evidence to contribute banking literatures such as relationship banking.

Keywords: Accounting conservatism; Agency Problem; Corporate Governance; Main Bank
IMPACT OF GLOBALISATION OF ACCOUNTING PROFESSION IN DEVELOPING COUNTRIES: THE CASE OF MALAYSIA 1953 - 2017

Chiu Phua
Charles Sturt University
Australia
cwphua@gmail.com

ABSTRACT

The accounting profession has been beleaguered by power struggle and domination. The domination of the British professional accounting bodies began through the process of ‘exclusion, segmentation and merger’ (Willmott, 1986) and ‘creation, amalgamation and fragmentation’ (Edwards, 1989). Subsequently, the professional accounting bodies began to spread to other countries through the process of colonisation. The new settlers brought along the professional accounting bodies and displayed their superiority through the process of closure. The process of professional closures was be achieved in several forms such as race, class, ethnicity (Annisette, 1999, 2000, 2003), gender (Chua & Sinclair, 1994), language (Hammond, Clayton, & Arnold, 2009). The effects of imperialism remains ingrained in the accounting profession in post-colonial countries such as Jamaica (Bakre, 2005, 2006), Trinidad and Tobago (Annisette, 2000), Sri Lanka and South Africa despite the state’s independence. Ever since Malaysia gained independence in 1957, the Malaysian Institute of Certified Public Accountants (MICPA) was the only Malaysian professional accounting body. In 1967, the Malaysian Accountants Act was passed to form the Malaysia Institute of Accountants (MIA). The MICPA which was supported by the big 4 audit firms played a dominant role in regulating the accounting profession while the MIA had remained dormant until 1987. The MIA was reactivated to be the statutory regulating body with the aim of increasing more accountants, in particular the Bumiputera accountants and weed off unqualified accountants. In recent years, the effects of globalisation has been strongly felt in the accounting profession with the increased influence by the Transnational Corporations (TNC). The TNCs includes major corporations such as the big 4 audit firms and transnational agencies like the World Bank and International Monetary Fund has been very influential in dictating the management of a country. In 2012, the World Bank had issued a Report on the Observation of Standards and Codes in Accounting and Auditing (ROSC) to the Malaysian Securities Commissioner. One of the key recommendation stemming from the report was to mandate candidates without a recognised professional accounting designation to sit for a qualifying examination (The World Bank Group 2012). This has gratifying impact as the First Schedule Part I of the Malaysian Accountants Act recognises accounting graduates from Malaysian Universities direct membership pathways into MIA. The Committee of Strengthening of Accounting Profession (CSAP) was form to address this issue but was resisted by certain parties claiming that it is a new form of imperialism. Meanwhile, accounting professions reform by the Hong Kong Institute of Certified Public Accountants (HKICPA) and the Institute of Chartered Accounting of Singapore (ISCA) had successfully elevated their status to be part of the accounting profession elite, the Global Accounting Alliance (GAA).

This study will investigate if globalisation leads to a new form of ‘imperialism’ that may threaten the sovereignty of the Malaysian accounting profession.
CONCEPTUAL CONSIDERATION OF THE LIMITS OF LEVEL 3 FAIR VALUE MEASUREMENT: BASED ON REVIEW OF THE CONCEPTUAL FRAMEWORK

Nobuhito Ochi
Shobi University
Japan
n-ochi@s.shobi-u.ac.jp

ABSTRACT
The IASB stated that if measurement uncertainty is very high, a measurement basis different from fair value may provide more appropriate information. If there is material uncertainty in measurement and lack of reliability, then fair value measurement may be inappropriate for both financial performance and financial condition. Level 3 fair value measurements are inappropriate for areas (called "Level 4" by the author) in which models are not formulated and that have material uncertainty in measurement. In this case, even if the estimate is appropriately disclosed, "faithful representation" cannot be considered sufficient.

The purpose of this paper is to elucidate “measurement uncertainty,” which impacts "faithful representation" in fair value measurement, from the perspective of “verifiability.” To do so, it will employ a conceptual examination of the limits of Level 3 fair value measurement based on IFRS 13 (Fair Value Measurement). In other words, with regard to Level 3 fair value measurement in financial investments, the author will conceptually delve into the areas not meeting the minimum reliable level from the perspective of the qualitative characteristics of accounting information. While taking into consideration recent discussions on reviewing conceptual framework, the author will reorganize the conceptual categories of verifiability (i.e., clarification of the “reasonable verifiability” categories) to underpin the fact that material uncertainties in measurement have obstructed constructing faithful representation. In addition, the author will discuss the problem that the dichotomy of direct and indirect found in IASB is not accurate enough to fully understand the concept of verifiability. In this context, the author will also suggest that the concept of verifiability, reorganized through “reasonable verifiability,” can satisfy the requirements for constructing faithful representation.

The core of the issue is the case of Level 3 fair value involving material uncertainty due to a lack of a formularized model (“Level 4”). In empirical research regarding value relevance of additional disclosure related to Level 3 fair value in the notes to financial statements, it would be desirable to employ more exhaustive analysis of value relevance by dividing Level 3 into “Level 4” and “other Level 3,” based on normative and conceptual arguments.
THE EFFECT OF ADOPTION OF IFRS ON THE INFORMATION OF DEFERRED TAX EXPENSE FOR LOSS FIRMS – EVIDENCE FROM KOREA

Tony Kang
McMaster University
Canada
Kangt@mcmaster.ca

Junyong Sim
Korea University
Korea
Junyong00@naver.com

Nanhee Hong
Korea University
Korea
Rany0218@hanmail.net

ABSTRACT
While prior literature has mainly examined the combined effects of International Financial Reporting Standards (IFRS) adoption, this study examines the effect of the standards on the information of tax accounting for loss reporting firms. In 2011, Korea has experienced a change in recognition threshold of deferred tax asset as well as the IFRS adoption. Due to these changes, we expected that the information contents of deferred tax accounting about loss reversal probability would decrease. Using a sample of 2,885 observations from Korea listed loss firms between 2007 and 2014, we classify loss-firm years into Good News or Bad News based on whether management appear to have recognized a material change in the deferred tax asset. The results of our study show that our tax dummy contain information about probability of loss reversal (or loss persistency) before IFRS, that mean management using private forward-looking information about the loss reversal in setting deferred tax. But after IFRS this effect of deferred tax balance disappears. Finally, we find that investors underweight the information of the deferred tax accounting before IFRS, and after IFRS investors cannot obtain buy-and-hold return by buying GN firm-years and selling BN firms-years. However, this is not because investors understand the information of DTAs but because the informativeness of DTAs deteriorates after IFRS adoption.
IFRS GLOBAL ADOPTION: HOW HAS IT BEEN DIFFUSED AND ITS INSTITUTIONAL IMPLICATIONS

Ersa Tri Wahyuni
Universitas Padjadjaran
Indonesia
ersa@unpad.ac.id

ABSTRACT
The aim of this study is to develop an understanding of the rapid diffusion of IFRS as a set of global accounting standards and explored any institutional implications of such diffusion to the national and international regulatory fields. In achieving the aim, this study examines the process by which a selected number of countries formally chose to adopt or converge to IFRS over US GAAP, namely Philippine, Brazil, Canada, Indonesia, Japan and the US. In considering countries where the option was arguably to choose between one of two ‘quality’ sets of accounting standards, the paper provides a valuable opportunity to consider the extent to which the case for quality (so often made in support of the value and rise of IFRS) was influential in the adoption process and the extent to which other factors played a significant role.

The study finds that the diffusion of IFRS can only be explained partly by the capital dependency arguments or coercive isomorphism often offered by individual country case study of IFRS adoption. Another explanation for IFRS diffusion offered by this study is due to the diffusion of “one global accounting standard” as a global accepted norm. This study argues that it is the idea of ‘one global accounting standard’ which has been diffused and not only just IFRS. This study finds that technical accounting issues, comparing the quality of both standards, did not dominate the debate during the decision making process, but other factors such as maintaining (or advancing) their international influence have been dominant reasons for choosing IFRS in most sample countries. This study finds two institutional implications of IFRS diffusions. Firstly, IFRS diffusion leads to the diffusion of a similar model of accounting standard-setting. Upon the adoption of IFRS, national standard-setters are becoming more similar in their governance and due process, mimicking the IASB model. Secondly, the IFRS diffusion has created a new actor with potential influential in the international standard-setting arena. The need to survive upon surrendering most of their authorities to the IASB, has encouraged the emergence of regional groups of national standard-setters, which in turn may evolve to become a new regulatory field operating within and between the international and national regulatory fields. Such developments have a number of important implications in respect of the development of future research and regulatory policy in the area of international standard settings.

Keyword: IFRS, adoption, convergence, national standard-setters, regulatory field
USEFULNESS OF FINANCIAL ANALYSTS’ CASH FLOW FORECASTS IN AUSTRALIA

Charlene Chen  
Macquarie University  
Australia  

Meiting Lu  
Macquarie University  
Australia  

Yaowen Shan  
University of Technology, Sydney  
Australia  

Yizhou Zhang  
Macquarie University  
Australia  
yi.zhang11@students.mq.edu.au

ABSTRACT

This study examines the extent to which analysts’ cash flow forecasts are useful to investors and financial analysts. Our results indicate that analysts’ cash flow forecasts are more accurate than the forecasts produced by the time-series models in terms of predictive ability of future cash flows, suggesting that analysts generally outperform a mechanical time-series model. However, we find no association between analysts’ and stock returns, and find no evidence showing the improved accuracy of earnings forecasts when analysts issue both cash flow and earnings forecasts. Overall, despite extensive evidence in the US-based research, this study provides additional insights into the attributes of analysts’ cash flow forecasts by providing the first evidence on the usefulness of analysts’ cash flow forecasts in Australia, a market providing a unique setting to understand the accuracy of analysts’ cash flow forecasts.
READABILITY OF MD&A EXTRACTED FROM iXBRL: COMPUTATIONAL LINGUISTIC APPROACH

Yoshitaka Hirose
Takasaki University of Commerce Junior College
Japan
y-hirose@uv.tuc.ac.jp

Hirohisa Hirai
Kanagawa University
Japan

Kohei Arai
Gunma University
Japan

ABSTRACT
This paper clarifies determinants of the readability of Management and Discussion & Analysis (MD&A) section from annual reports of Japanese companies extracted from Inline Extensible Business Reporting Language (iXBRL). Previous studies have focused on English-language information, with no studies discussing the characteristics of Japanese MD&A using large-sample data. Thus, we extracted the character information Japanese companies from iXBRL and analyzed the readability using text mining. We found that 1) companies with large market value at the end of the term and companies with a high age have low readability, 2) companies with a large market value at the end of the term and companies with many foreign segments have many characters, and 3) companies with high age have fewer characters. Further, MD&A in Japan had greater readability than comparable United States documents. Our results suggest that firms with asymmetric information use simpler words for shareholders and, further, are conscious of shareholders who have poor Japanese. The academic contribution of this paper is to show the usefulness of iXBRL as well as the readability of Japanese MD&A using large-sample data through a computational linguistic approach. In addition, this research compares the results of Li (2008), which targeted the United States, with the results for Japan.
AUDITORS’ PERCEPTION OF THE ASSURANCE FOR MANAGEMENT REPORTS

Peter Kajüter
Chair of International Accounting
University of Muenster
Germany
peter.kajueter@wiwi.uni-muenster.de

Matthias Nienaber
University of Muenster
Germany
matthias.nienaber@wiwi.uni-muenster.de

Martin Nienhaus
University of Muenster
Germany
martin.nienhaus@wiwi.uni-muenster.de

ABSTRACT
We provide novel survey-based evidence on how auditors perceive the audit of management reports. By exploiting a unique setting in Germany where the audit of management reports has been mandatory for many years, we find that auditors perceive a lower auditability and a higher audit risk associated with the audit of management reports compared to the audit of financial statements. We also provide evidence that specific elements of the management report such as management forecasts or sustainability information are particularly challenging to audit for auditors. The extent to which auditors perceive a low auditability of management reports, however, varies with client characteristics such as size or listing status. In a last step, we shed light on the particular audit procedures used by auditors when auditing management reports. Our findings may be helpful for regulators in gauging the consequences of introducing a mandatory audit requirement for management reports. The findings may also inform the current debate about the assurance of sustainability reports or integrated reports, which share similar characteristics.

Keywords: management reports, audit, assurance, survey
ON THE GLOBAL DEMAND FOR BIG N AUDITS

Takashi Yaekura
Waseda University
Japan
yaekura@waseda.jp

Takashi Obinata
The University of Tokyo
Japan
tobin1022@gmail.com

ABSTRACT
We argue that regressing firm and country factors on Big N auditor choice is missing another important determinant, namely the supply function of Big N audit services. In addition, the extant literature suffer from endogeneity in most of the case. The first part of this paper demonstrates why this is the case and the second half of this paper proposes potential but not sufficient remedy for this problem by using SEM.

Keywords: Big N audit, Structural Equation Model (SEM), endogeneity
THE EFFECT OF INTERNAL AUDITOR INDEPENDENCE ON EFFECTIVENESS OF GOVERNMENT INTERNAL AUDIT: GROUP COHESIVENESS AS AN INTERVENING VARIABLE (CASE STUDY AT THE REGIONAL INSPECTORATE AT JAVA ISLAND)

Moh. Ubaidillah
Universitas PGRI Madiun
Indonesia

Ari Kuncara Widagdo
Universitas Sebelas Maret
Indonesia
widagdo2002@yahoo.com

ABSTRACT
The objective of this study is to examine the effect of auditor independence, group cohesiveness, and individual factors on internal audit effectiveness of regional inspectorates. In addition, this study also intends to examine whether group cohesiveness mediates relationship between auditor independence and internal audit effectiveness. Population of this study is regional inspectorates located in some regencies/municipalities in Central Java Province and East Java Province, Indonesia. Method of analysis of this study is structural equation modeling by using SmartPLS. The results indicate that, as predicted, auditor independence has a positive and significant relationship with internal audit effectiveness. Interestingly, this study proves that group cohesiveness partially mediates relationship between auditor independence and internal audit effectiveness. Unfortunately, individual factors (i.e. level of education and work experience) do not have significant relation with audit effectiveness.

Keywords: Audit effectiveness, auditor independence, group cohesiveness
VIETNAMESE ACCOUNTANTS’ ETHICAL DECISION MAKING PROCESSES IN EARNINGS MANAGEMENT SITUATIONS

Lan Anh Nguyen  
RMIT University  
Australia

Brendan T. O’Connell*  
RMIT University  
Australia  
Brendan.oconnell@rmit.edu.au

Gillian Vesty  
RMIT University  
Australia

ABSTRACT
This study investigates the potential impact of culture on Vietnamese accountants’ responses to earnings management situations. This study contributes to prior research by investigating participants’ ethical awareness, ethical judgment and ethical intention for earnings management vignettes. Using a large sample of Vietnamese accountants randomised in an experimental design, we found that accountants recognised earnings management as unethical but they responded differently in terms of their ethical awareness, ethical judgment and ethical intention to different earnings management scenarios manipulated to reflect potential cultural dimensions. Vietnamese accountants are shown to possess reasonable levels of ethical awareness, judgment and intention and tend to be rule-orientated with a strong preference to follow standards rather than exercising their own professional judgment. They also perceive that their peers are more likely than them to practice earnings management.

Keywords: ethical awareness, ethical judgment, ethical intention, cultural dimensions, earnings management
HOW DID NON-CONTROLLING INTERESTS AFFECT FIRMS’ DIVIDEND POLICY?

ChenChen Su
Hitotsubashi University
Japan
CD172003@g.hit-u.ac.jp

ABSTRACT
This study empirically examines the effect of non-controlling interests of listed subsidiaries on the dividend policies of companies. The results indicate that in firms with few investment opportunities, the higher the ownership ratio of non-controlling shareholders, the lower the dividends of their subsidiaries. This result is robust under several conditions. This study suggests that when subsidiaries have fewer investment opportunities, parent shareholders could exercise their residual control rights and exploit non-controlling shareholders by restraining their dividends, which may originate from their precautionary motive. This study also demonstrates that conflicts of interest arise between parent company shareholders and non-controlling shareholders with regard to the dividend policy of subsidiaries in Japan.
COUNTING THE NUMBERS OR MAKING THE NUMBERS COUNT? 
ENVIRONMENTAL ENABLERS AND INHIBITORS OF FIRMS’ INTRINSIC MOTIVATION TO FOSTER FEMALE RISE TO CORPORATE BOARDS AROUND THE WORLD

Sucheta Nadkarni  
Cambridge Judge Business School  
University of Cambridge  
U.K.

Elaine Yen Nee Oon  
Faculty of Business & Accountancy  
University of Malaya  
Malaysia  
onelaine@um.edu.my

Jenny Chu  
Cambridge Judge Business School  
University of Cambridge  
U.K.

ABSTRACT

Utilizing cognitive evaluation theory, we theorized and tested the differential effects of global environmental factors on firms’ intrinsic motivation to foster balanced female board inclusivity across different dimensions. Specifically, we focused on female board proportion, female board turnover and strong female board candidate pipeline. Based on a longitudinal (2004 – 2013) dataset of 1071 firms across 42 countries and qualitative interviews of 67 board members of financial services companies from 12 countries, this study yielded two broad sets of results: 1) female economic empowerment (female education and employment levels in a country, FEE) enhanced firms’ intrinsic motivation to foster female rise to boardrooms. This result is evidenced in the positive effects of FEE on female board proportion and female board pipeline, and the negative effects of FEE on female board turnover. 2) Mandated legislative quotas inhibited extrinsic motivation as reflected in its mixed effects: positive effects on both female board proportion, but positive effects on female board turnover and lack of significant effect on female board pipeline. This study contributes to extant research by: 1) positing a new theoretical mechanism underlying the relationship between external environmental drivers and gender inclusivity on corporate boards – intrinsic (or extrinsic) motivation of the firm, and 2) presenting a broad and holistic conceptualization of female rise to the boardrooms.

Keywords: Female board representation; cognitive evaluation theory; intrinsic motivation; extrinsic motivation
ACCOUNTANTS’ FROM BANGLADESH: THEIR SATISFACTION WITH CONTINUING PROFESSIONAL DEVELOPMENT

Abdel K Halabi*
Faculty of Business
Federation University Australia
Australia
abdel.halabi@federation.edu.au

Mohammad Salahuddin Chowdhury
Department of Finance
Faculty of Business Studies
University of Dhaka
Bangladesh
msc_104@yahoo.com

ABSTRACT
This paper examines accountant’s views on their satisfaction with Continuing Professional Development (CPD) offered by members of the Institute of Chartered Accountants of Bangladesh (ICAB). While there is a great deal of research on CPD and accountants in developed countries, less developing countries are absent from this literature (see Ross and Anderson, 2013; Wines et al., 2013; de Lange, Jackling and Basioudis, 2013; Halabi, 2015; de Lange, Jackling and Suwardy, 2015). As noted by de Lange, Jackling & Suwardy (2015: 54) there are “opportunities for further research in regard to how new CPD requirements are operationalised by member bodies around the globe”.

Results show that accountants in Bangladesh are highly satisfied with the CPD provided by their profession, and when satisfaction is compared with more developed countries, Bangladesh is higher. The study has important implications not only for accountants from Bangladesh, but also for the International Federation of Accountants and other less developed countries, and advance the understanding of professional accounting bodies from an international perspective.

Keywords: Continuing Professional Development; Less Developed Countries; Bangladesh, IFAC
FACTORS AFFECTING STUDENT RETENTION LEVEL IN A MALAYSIAN PRIVATE UNIVERSITY

Haliza Mohd Said*
UNITAR International University
Malaysia
lizasaid@unitar.my

Gayatri d/o Anbalaganb
UNITAR International University
Malaysia

ABSTRACT

The purpose of this research is to find the relationship between cognitive factors, institutional factors and social factors toward student retention level conducted at a Malaysian Private University in Klang Valley. This study aims to identify the factors contributing to student retention level and find the relationships between goal commitments, academic support and time management towards student retention level. Data are collected from approximately two hundred respondents. The respondent comprises both local and international students of a private university located in Klang Valley, Malaysia. A quantitative experimental design has been conducted to analyze the relationship between independent and dependent variables. Non-probability sampling designs using convenient sampling were administered. The secondary data are from online database to search journals from internet such as EBSCO and Emerald database. This research used Statistical Package for the Social Science (SPSS) to analyze the data. Statistical data analysis is performed to display descriptive statistics such as plots, frequencies, charts, as well analysis of variance (ANOVA), factor analysis, cluster analysis, and categorical data analysis.

Based on the analysis, all three hypotheses are accepted. Goal commitment, academic support and time management are found to have significant relationship toward student retention level. The important factors identified to help the students to complete their studies at this private university includes (i) the students commitment to complete the degree, (ii) lecturers support, (iii) family support and (iv) use of technology in teaching. Thus, this research is constructive for the future researcher to have a better understanding on student retention level that will eventually help to reduce student attrition rate at a higher learning institution. The ability in retaining students creates a win-win situation for both higher institution and students.

Keywords: student retention level, goal commitment, academic support, time management, Malaysian private university
ATTITUDES TOWARDS ACCOUNTING AND INTENTION TO MAJOR IN ACCOUNTING: EMPIRICAL EVIDENCE FROM UNIVERSITY OF GHANA BUSINESS SCHOOL

Rita Amoah Bekoe
Business School
University of Ghana, Ghana
celestialrita@gmail.com/rbekoe@ug.edu.gh

Godfred Mathew Yaw Owusu
Business School
University of Ghana, Ghana
gmowusu@gmail.com/gmyowusu@ug.edu.gh

Edem Emerald Welbeck
Business School
University of Ghana, Ghana
edem.emerald@gmail.com

Charles Ofori Gyamfi
Business School
University of Ghana, Ghana
coforigyamfi@gmail.com

Anthony Essel-Anderson
Business School
University of Ghana, Ghana
tony4dml@gmail.com

ABSTRACT
This study examines the attitude of University of Ghana Business Students towards the accounting profession and investigates the relationship between students’ attitude and their intention to pursue a degree in accounting. A survey method of research was adopted and a set of questionnaire based on the Theory of Planned Behaviour (TPB) was developed and administered to second year students from the University of Ghana Business School. A total of 457 fully answered questionnaires were included in the empirical analysis of the study. Descriptive statistics, exploratory factor analysis and logistic regression were employed to analyze the data. The results from the logistic regression analysis demonstrate that intrinsic interest in the accounting discipline, prior exposure to accounting at the senior high level and the desire to pursue professional accounting qualification in future are good predictors of students’ intention to major in accounting at the university. The results also suggest family members, course instructors and other referent group members play a crucial role in influencing students’ intention to pursue a career in accounting. The findings of this study have important implications for the professional accountancy body and business educators interested in addressing the skill shortage in the accounting profession in Ghana. The study makes important contributions to the accounting education literature by examining the key drivers of students’ intention to pursue accounting degree at the tertiary level from a Ghanaian context.
TAXATION PROFESSION IN AUSTRALIA

Prem Yapa
RMIT University
Australia
Prem.yapa@rmit.edu.au

Michael Curran
RMIT University
Australia
Michael.curran@rmit.edu.au

ABSTRACT
This paper examines the nature of the taxation profession in Australia and its development over the past three decades and then uses that framework to analyse important initiatives that have taken place. Using secondary sources and organising principles (State, Market, Community) (Puxty et al, 1987) we begin with the subject of tax policies/legislation introduced by the state and what it can mean to form a profession. We follow this with a discussion relating to the recognition of Australian tax practice as a profession. The paper then focusses on two key areas of professional development during the last three decades, namely: tax laws and tax administration. The paper finds interesting issues relating to professionalization of taxation in Australia. With the involvement of the state, market and the society over the last three decades, there is a requirement to recognise taxation practice as a profession in Australia. The paper suggests that the establishment of the Tax Practitioners Board (The Minister of Small Business and Assistant Treasurer appoint the Board, so there is some degree of control by the state), a statutory body to regulate the taxation profession in Australia, in conjunction with approved professional associations, may have enhanced the effective maintenance of the tax profession which has contributed to social, political and economic development in Australia.

Keywords: Australia, Taxation Profession, Australian Tax Office, Australian Taxation Institute, State, Market, Community
MACHIAVELLIANISM, SOCIAL NORMS, AND TAXPAYER COMPLIANCE

William E. Shafer
Lingnan University
Hong Kong
weshafer@ln.edu.hk

Zihong Wang
Clark University
U.S.A.

ABSTRACT
This study is the first to examine the relationships among Machiavellianism, social norms and taxpayer intentions to fraudulently overstate their deductions. Recent studies have found significant direct relationships between reported social norms and tax compliance intentions. Based on such findings, they have suggested that tax authorities may improve compliance through educational or media campaigns designed to influence social norms. We argue that such conclusions are premature because these studies have not considered the implications of fundamental personality traits such as Machiavellianism for the social norm/tax compliance link.

In the current paper we theorize and empirically document that (1) high Machiavellian taxpayers report significantly less ethical social norms, suggesting that reported social norms are influenced by cognitive biases such as social projection and Machiavellian cynicism; (2) reported social norms are, in general, significantly associated with tax evasion intentions; and (3) social norms partially mediate the relationship between Machiavellianism and tax evasion. In light of our findings, we call for additional research on the interactive effects of personality traits and social influences on tax compliance, which should provide useful insights into the potential effectiveness of interventions designed to influence social norms.
ABSTRACT
The implementation of the Goods and Services Tax (GST) in Malaysia, on 1 April, 2015, was part of the Malaysian government’s taxation reforms aimed at reducing the country’s budget deficit, hence improving the collection of revenue. This article presents findings of some of the major issues and concerns that the Malaysian business taxpayers perceived as key challenges in preparing for the implementation of the GST. Using a survey questionnaire, 1,500 Malaysian business taxpayers were surveyed in June 2013 to investigate their GST implementation readiness. The results confirmed that overall, business taxpayers were poorly prepared for the GST implementation, with only nine percent claiming to be substantially ready. Around 22% of the respondents stated that they were well equipped with computer systems for GST purposes. Over 25% of eligible potential GST registrants stated that they would not register. Over 74% of respondents felt that the GST would place an additional compliance burden on them. Only 24% of respondents were confident that they would get the required assistance with the GST implementation, from the Royal Malaysian Customs Department. Additionally, whilst enterprises businesses confirmed that they were better prepared for the GST, smaller businesses felt more stressed out with preparing for the GST. This article concludes with policy implications for Malaysian GST system, particularly those that would alleviate businesses’ compliance burden.

Keywords: Malaysian GST Compliance issues, Goods and Services Tax, Business taxpayers, Royal Malaysian Customs Department
IDX TAXONOMY AND FINANCIAL REPORTING PRACTICES OF INDONESIAN LISTED COMPANIES

Tahbis Gesta Rachma
University of Indonesia
Indonesia
rachma.gesta@yahoo.com

S. Nurwahyu Harahap
University of Indonesia
Indonesia
s.nurwahyu@ui.ac.id

ABSTRACT

XBRL is a global business reporting language that standardizes data, particularly data contained in financial statements, so that financial data can be easily compared and exchanged. The standardization is performed by taxonomy, which is developed based on accounting standards. The purpose of this study is to evaluate whether IDX taxonomy adequately reflects all financial statements data of listed companies in Indonesia. In particular, this study aims to identify misfit of the IDX taxonomy, that potentially limits the benefit of XBRL. Result of hypothesis testing of 100 samples companies reveals that misfit exists between IDX taxonomy and financial statement items. The misfit varies across industries, suggesting that industry uniqueness is not well represented in the taxonomy. However, this study finds that misfit is irrespective of companies’ size.

Keywords: XBRL; IDX Taxonomy; Internet-based Reporting; Financial Statements; Accounting Information System
AN EMPIRICAL INVESTIGATION OF BANKS’ DERIVATIVE DISCLOSURE ON INFORMATION ASYMMETRY

Woody Wu
Chinese University of Hong Kong
Hong Kong
woody@baf.msmail.cuhk.edu.hk

ABSTRACT

Debate has raged over whether the derivative positions of financial institutions should be recognized on a gross or net basis. This paper investigates the economic consequences of banks’ disclosure of gross derivatives positions as required under Statement of Financial Accounting Standard (SFAS) No. 161, “Disclosure about derivative instruments and hedging activities.” Using a sample of U.S. banks that recognize the net value of derivatives but only need to disclose their gross value in the footnotes after SFAS No. 161, we find evidence that mandatory disclosure yields a significant decrease in information asymmetry for U.S. banks that previously only disclosed the net value of their derivatives. The decrease in information asymmetry is more pronounced relative to that of European banks, which face more stringent requirements for disclosing derivatives. Taken together, these results suggest that disclosure of the gross value of derivatives, even in the footnotes, reduces information asymmetry. The results are consistent with the goal of SFAS No. 161 that aims at improving the transparency of derivative instruments disclosures.

Keywords: SFAS No.161, derivative disclosure, information asymmetry

Data Availability: Data are available from public sources indicated in the text
IRREGULARITIES IN FULFILLMENT OF QUARTERLY REPORTING REQUIREMENTS ON NEW CONNECT

Katarzyna Klimczak
Warsaw School of Economics (SGH)
Poland
katarzyna.klimczak@sgh.waw.pl

ABSTRACT

NewConnect is an alternative stock market operated by the Warsaw Stock Exchange. The main reason for WSE launching the market was facilitating the development of small and medium-sized enterprises that were not admitted to trading on regulated market due to falling short of the requirements to access capital. NewConnect offers more liberal formal requirements and disclosure obligations, and consequently lower costs of raising capital by the companies for them to pursue their corporate business growth strategy.

Companies listed on NewConnect are required to prepare current and periodic reports. The Alternative Trading System Rules adopted by the Warsaw Stock Exchange Management Board set out in detail the minimum information requirements applicable to these reports as well as the manner and deadlines for their publication. Author’s earlier research demonstrated that reporting irregularities are the most common type of breaches of the Alternative Trading System Rules. Among all the mandatory reports, companies listed on NewConnect experience most problems in filing periodic reports, amongst which the greatest number of irregularities appear in quarterly reports.

This study identifies the most frequent types of irregularities concerning quarterly reports, as well as procedural penalties applied by the NewConnect Organiser if the issuer fails to comply with the rules. Potential consequences of quarterly reporting irregularities and their influence on the condition of polish alternative market are also discussed.
THE EFFECT OF OWNERSHIP STRUCTURE ON FUTURE STOCK PRICE CRASH RISK: KOREAN EVIDENCE

Soo Yeon Park  
Korea University Business School  
Korea  
soojeonpark@korea.ac.kr

Young Hyo Song  
Korea University Business School  
Korea  
syh0511@korea.ac.kr

ABSTRACT

This paper examines the effect of ownership structure on firm-specific stock price crash risk using listed firm (KOSPI) data in Korea. Managers may stockpile negative information about the company, but when such accumulated bad news crosses a threshold, the negative information suddenly becomes publicly available and a stock price crash is observed (Hutton, Marcus, and Tehranian 2009). Prior studies have documented the determinants of future stock price crash risk (Jin and Myer 2006; Hutton et al. 2009; Kim, Li, and Zhang 2011; Hamm, Li, and Ng 2013; Xu, Jiang, Chan, and Yi 2013; Jo, Moon, and Choi 2015; Kim and Zhang 2016). However, it is hard to find the papers about corporate ownership and future stock price crash risk at the term of determinants of the risk. Compare to some financially advanced countries where ownership and management are effectively separated, there is no clear distinction between ownership and management in Korea. Using the percentage of managerial ownership and that of foreign ownership as proxies for ownership structure and measures for future stock price crash risk which was used by Callen and Fang (2013 and 2015) and Kim and Zhang (2016), we conducted an empirical analysis examining the link between corporate ownership structure and companies’ subsequent stock price crash risk.

We collect 4,294 firm-year observations listed on Korean market from 2002 to 2015, and we use the measures of firm-specific stock price crash risk based on Callen and Fang (2013 and 2015) to examine the relation between corporate ownership structure and subsequent stock price crash risk.

From the empirical tests, the percentage of managerial ownership is negatively associated with future stock price crash risk. It implies that managerial ownership increases to align the interests of shareholders and managers, it could alleviate the agency problem between them (Jensen and Meckling 1976), helping to resolve information asymmetry and prevent bad news from being withheld, ultimately lowering future stock price crash risk. In addition, we find that higher foreign ownership significantly weakens the negative relation between the percentage of managerial ownership and future stock price crash risk. We interpret this results that the negative side of foreign ownership failed to effectively reduce agency costs, weakening the negative correlation between managerial ownership and future stock price crash risk.

Our study may shed some light on the understanding of the ownership structure as a determinant of future stock price crash risk to firms and investors who want to handle crash risk in the stock market.

Keywords: Corporate Ownership Structure, Management Ownership, Foreign Investors, Stock Price Crash Risk
ABSTRACT
This study examines whether the adoption of International Financial Reporting Standards (IFRS) promotes foreign direct investment inflows (FDI) to developing countries and investigates the role that country-level institutional quality plays in the relationship. A panel data averaged over three non-overlapping years, from the period 1996 to 2013, for 116 developing was used for the empirical analysis. The efficient two-step System Generalized Methods of Moment (GMM) estimation technique with Windmeijer corrected standards errors and orthogonal deviations, was employed to examine the dynamic empirical relations. The results of this study demonstrate that IFRS adoption on its own does not affect the amount of FDI inflows to developing countries contrary to findings in most existing studies. However, the interaction of IFRS adoption and institutional quality suggests that countries with good institutions experience better FDI inflows after adopting IFRS. Taken together the findings of this study suggest that adopting IFRS alone may not be enough to attract FDI inflows to a country unless supported by quality institutions.
THE REAL EFFECT OF ACCOUNTING EARNINGS ATTRIBUTES: EVIDENCE FROM JAPAN

Ryosuke Fujitani
Graduate School of Commerce and Management
Hitotsubashi University
Japan
cd171002@g.hit-u.ac.jp

ABSTRACT

The purpose of this study is to analyze the real effects of accounting earnings attributes in Japanese financial markets. Previous studies show that useful accounting attributes optimize firm’s investment levels through alleviating asymmetric information. Biddle and Hilary (2006), however, do not find the effects in Japanese economy, and suggest that its reason is the alternative information-problem-mitigating mechanisms. For instance, main bank system can alleviate the effects of accounting information on investment. Nevertheless some researchers indicate that the financial intermediaries might not effective, and its importance shrinks after the 1990’s. Hence, not a trivial question is whether the real effects of EAs are observed in Japanese economy. Using long historical data of Japanese firms, I find that useful accounting information optimizes firm’s investment levels. Specifically, not all but most earnings attributes alleviate over-investment; Earnings volatility, persistence, predictability, accruals quality, and aggregated indicator. Meanwhile, they do not alleviate over/under-investment. In addition, smoothness does not have significant effects or does have the effects opposite from my expectation. In conclusion, the real effects can be observed even in Japanese economy.
IMPAIRMENT OF NONFINANCIAL FIXED ASSETS IN POLISH BIGGEST COMPANIES LISTED ON WARSAW STOCK EXCHANGE

Katarzyna Bareja
Warsaw School of Economics
Poland
kbarej@sgh.waw.pl

Magdalena Giedroyć
Warsaw School of Economics
Poland
mgiedr@sgh.waw.pl

ABSTRACT
Many studies on impairment are quantitative. In contrary to them our research is qualitative and normative in nature. Analyses of practices in the area of impairment is the tool to assess the quality of information provided. We want to find out if financial statement of Polish companies listed on Warsaw Stock Exchange included in WIG 20 index are informative in the area of impairment. The first aim is to check if Polish companies provide sufficient information which proves that impairment test is based on reliable data (sources). Secondly the paper seeks whether information on impairment is comparable. Third purpose is to propose a content of impairment disclosures which would provide more informative disclosures to ensure reliability and comparability of financial statements.
IS THERE AN OPTIMUM ACCOUNTS RECEIVABLE LEVEL?

Salima Y. Paul*
University of Plymouth
U.K.
salima.paul@plymouth.ac.uk

Cherif Guermat
University of the West of England
U.K.

Rebecca Boden
University of Tampere
Finland

ABSTRACT
This paper explores the contribution that accounts receivable (AR) make as a competitive device to add value when used strategically. We argue that AR are not merely a short-term collection issue; if used proactively, they are a source of competitive advantage. Our empirical model tests the relationship between AR and sales/profitability to determine whether, and the extent to which, AR constitute a strategic tool if the optimum level is obtained. We find, inter alia, evidence that, when used strategically firms can achieve a discernible optimal level of AR. Our model demonstrates a viable methodology that could be applied usefully to an extended data set.

Keywords: Trade credit, accounts receivable, strategic use
DOES JAPANESE COMPANIES’ “ROE” EXPRESS PROFITABILITY?  
—LONG-TERM OBSERVATION CLASSIFIED BY ORIGINAL SAF RATING—

Cindy Yoshiko Shirata  
The Research Institute for Innovation Management  
Hosei University  
Japan  
cindy@shirata.net

ABSTRACT
An August 2014 report published by Japan’s Ministry of Economy, Trade and Industry, titled Competitiveness and Incentives for Sustainable Growth—Building Favorable Relationships between Companies and Investors, noted that compared to other countries, ROE in Japan was low. Moreover, in the fiscal 2014 survey, Results of a Questionnaire Survey by the Life Insurance Association of Japan, it is stated that firms have an awareness that their own firm’s ROE is a problem, and that it is inherently “preferable to have a ROE in more than 8%.” However, in the first place, it is questionable whether the data it used to conclude that Japan’s ROE is low compared to other countries can be used for a comparison with other countries. This study observes 45 years financial data of Japanese listed firms to ascertain the trends of return on equity (ROE) in Japanese listed firms, investigates the factors that cause low ROE in Japan compared to other countries. We employed the DuPont formula which shows that ROE is composed of: (a) the net profit margin (PM), (b) the total asset turnover (TAT), and (C) a financial leverage variable equal to assets/equity (LEV) to investigate it.

Keywords: ROE, profitability, financial structure, Japanese firms
THE ROLE OF INSTITUTIONAL HOLDING AND BANK LOAN ON DISCRETIONARY ACCRUALS – SOME INDIAN EVIDENCES

Somnath Banerjee
NSHM Knowledge Campus
India
somnath.banerjee@nshm.com

Satyajit Dhar
University of Kalyani
India

ABSTRACT
Earnings Management, which is recently under discussion and research across the world, encompasses the ways and means of either over reporting or underreporting of profit by the organizations to sub serve certain interest of the owners or managers and thereby once again accentuating the old debate whether managers maximize shareholders’ wealth or protects the interests of the owners and maximize their own pay–off. Earnings Management has been evidenced by many literatures and there has been a deluge of studies across different countries of the world. Discretionary Accrual is the element which measures earnings management. The most popular method to measure earnings management is the modified Jones Model. We have collected data of 246 firm years of industry representative firms in India and have computed discretionary accruals for them using modified Jones model.

As evidenced from literatures, Firms under some sort of external scanning would be less proficient in making earnings management. If a firm has short term or long term bank loan, then the financial reports along with the ownership documents will be periodically examined by the banks. Not only at the time of applying for loans but also as short term loans are often rolled over to one period from another, the financial documents will also be under constant examination by the bankers. In this situation the extent of earnings management must be reduced. In our study we have tried to measure the discretionary accrual for the companies which are industry representatives and then have explored the relationship between extent of bank loan and the discretionary accruals. In line with what we were expecting, our results have shown a clear inverse relation with discretionary accruals and bank loan.

This is also evidenced from various literatures that a firm will have less freedom to construct accruals at the managerial discretion if there remains institutional holding of stocks by Foreign Institutional Investors (FIIs) and Financial Institutions (FIs). This is so because as owners of a substantial stake in the company and also as having specialized financial knowledge, these companies would oppose anything that may create risk for them in the long term or anything that serves the vested interest of a specific category of stakeholder, say CEO or managers with stock option. We have clearly established in this study that Institutional holding also bears an inverse relationship with discretionary accruals.
DOES FAIR VALUE ACCOUNTING MEASUREMENT PRODUCE HIGHER FINANCIAL REPORTING QUALITY?

Tatyana Ryabova  
California State University, Fresno  
U.S.A.  
tryabova@mail.fresnostate.edu

Keji Chen  
California State University, Northridge  
U.S.A.

ABSTRACT

There is a dissonance between the views of the corporate community and accounting standards setters in regards to fair value accounting. The purpose of this paper is to determine whether fair value accounting measurement produces higher financial reporting quality for reporting non-financial assets as the standard setters claim. We investigate if fair value (FV) produces higher financial reporting quality by examining earnings quality proxies. Based on the recent studies, there are three categories of proxies of earnings quality: properties of earnings, investor responsiveness to earnings, and external indicators of earnings misstatements.

For the first proxy of earnings quality, we use "unexplained audit fees” (UAF) where larger values of the residual indicate lower financial reporting quality. The results show significantly higher average UAF of HC firms than that of FV firms, which suggest that FV firms have a higher financial reporting quality than HC firms do. However, the above finding is not supported when earnings persistence is used as another proxy for earnings quality. Further, we use the earnings response coefficient (ERC) as a second proxy for earnings quality, which measures the investor responsiveness to earnings. ERC of the earnings per share show a much higher number in FV firms versus HC firms, which means that the earnings per share numbers in FV firms could contain more useful information than in HC firms. Finally, we investigate if FV produces the higher financial reporting quality by looking at the third proxy of earnings quality: financial restatements. The results indicate that there is a statistically significant association between HC and FV measurements and restated and non-restated financial statements. Although both FASB and IASB stress the importance of high-quality financial reports, one of the key problems found in prior literature is how to define and measure financial reporting quality.

According to the recent research, the corporate community has limited support for FV and prefers HC. While FV is viewed as “more-up-to-date”, the findings of this research indicate that FV is not producing the higher earnings quality leading to higher financial reporting quality across all three proxies of earnings quality. Since the European firms could switch from HC to FV, following mandatory IFRS adoption in Europe on 1/1/2005, it provides a good groundwork to measure financial reporting quality of two sets of firms that has not been done in prior literature.

Keywords: Fair value, historical cost, audit fees, ERC, and restatements
THE IMPACT OF ANTECEDENTS AND CONSEQUENCES OF BURNOUT ON INTERNAL AUDITORS PREMATURE SIGN-OFF OF AUDIT PROCEDURE

Mohannad Obeid  
Department of Accounting and Finance  
University Malaysia Terengganu (UMT)  
Malaysia  
mohannadobeid87@gmail.com

Zalailah Salleh  
Department of Accounting and Finance  
University Malaysia Terengganu (UMT)  
Malaysia

Mohd Nazli Mohd Nor  
Department of Accounting and Finance  
University Malaysia Terengganu (UMT)  
Malaysia

ABSTRACT
In this study, the impact and consequences of burnout as a factor that influences premature sign-offs (PMSO) by internal auditors was evaluated. To examine this, 187 internal auditors from Jordan were sampled via a questionnaire. Analysis of the questionnaire answers demonstrated that there are several antecedents for job burnout, including ethical tension, role conflict, role ambiguity, and the personality trait of neuroticism. Job burnout can result in a decreased level of job satisfaction for internal auditors. Dissatisfaction in the workplace may result in an increased level of negative behaviours, such as premature sign-offs by internal auditors. The results of this study suggest that internal auditors with a high level of job dissatisfaction may result in a risk to internal audit quality. Therefore, we should be aware that the problem of PMSO exists in the internal audit environment, and preventive steps are needed to overcome this problem. Emanating from these findings, we suggest future research to investigate viable intervention strategies designed to counteract the damaging effects of stress before they manifest into negative consequences to the individual and the company.

Keywords: ethical tension, role ambiguity, role conflict, neuroticism job satisfaction, job burnout, premature sign-off
This study examines the link between secrecy, the mandatory adoption of IFRS and audit fees. Building upon the scaffolding of existing studies we have attempted to examine on an international level the variation of fees determined by low and high secrecy countries. The 2011 Secrecy Index approximation of the secrecy level has been seen as a more dynamic and robust measure of secrecy, offering both quantitative and qualitative measures of secrecy. Examination of connections between IFRS and audit fees consideration of secrecy has been sought to be elucidated in a clear way accounting objectively in regards to what can be a difficult term to measure. The addressing of past literature and detailing of the methodology utilized, sets about establishing the impact of secrecy upon such a diverse set of countries and companies. The nature of IFRS adoption to transparency and harmonization, can be seen as a unified lens that influences countries but the does not in an outright sense diminish the impact of ingrained and indoctrinated cultural perspectives.

Keywords: IFRS adoption; Secrecy; Audit Fees; Transparency; Harmonization; Cultural influence
THE IMPACT OF THE INTERACTIVE USES OF PERFORMANCE MEASUREMENT SYSTEMS ON PERCEIVED SOCIAL LOAFING AND TEAM PERFORMANCE

Paul Grandoni  
The Australian National University  
Australia

Habib Mahama  
United Arab Emirates University  
U.A.E.

Rebecca C.W. Tan*  
The Australian National University  
Australia  
rebecca.tan@anu.edu.au

ABSTRACT
This study examines the relationships between the interactive uses of performance measurement systems and team performance and whether this relationship is mediated by perceived social loafing. Data was gathered through a survey of audit teams. We analysed the data using the partial least squares approach to structural equation modelling. Our results generally support our hypotheses. Specifically, we found a direct positive relationship between the interactive uses of performance measurement systems and team performance; a negative direct relationship between the interactive uses of performance measurement systems and perceived social loafing; and a negative direct relationship between perceived social loafing and team performance. We also found that the relationship between the interactive uses of performance measurement systems and team performance is mediated by perceived social loafing. We discuss the contribution of the study and highlight areas for further research.

Keywords: Audit team, interactive use of performance measurement systems; management control; perceived social loafing; team performance
COST STICKINESS AND INFORMATION OF TAX ACCOUNTS FOR LOSS REPORTING FIRMS

Ji Hye Kim
Korea University
Korea
Jihk47@gmail.com

Jin Bae Kim
Korea University
Korea
jinbae@korea.ac.kr

Gun Lee
Changwon National University
Korea
gunlee@changwon.ac.kr

ABSTRACT

We investigate the effect of information contained in valuation allowance for deferred tax assets on cost stickiness. Dhaliwal et al. (2013) find that managers use their private information properly in estimating valuation allowance for deferred tax assets and the information in valuation allowance for deferred tax assets gives incremental information about the persistence of loss for loss reporting firms. By using tax categories following Dhaliwal et al. (2013), we find that the magnitude of cost stickiness of firms with material increase in valuation allowance for deferred tax assets is significantly smaller than that of other firms. The results suggest that firms with managers’ positive prospect about future performance shows stickier cost behaviors because material increase in valuation allowance for deferred tax assets reflects managers’ negative perspective about future performance. This study contributes to the literature for the following two reasons. First, by examining the effect of managers’ perspective about future performance on cost stickiness, this study helps analyze the mechanism of the cost stickiness more specifically. Second, by providing the link between cost stickiness and tax information, this paper enhances understanding of the relation between cost behavior and tax information.

Keywords: sticky cost, valuation allowance for deferred tax assets, manager’s perspective
PMSS IN SMALL, MEDIUM-SIZED, AND LARGE COMPANIES

Tarmo Kadak
Tallinn University of Technology
Estonia
tarmo.kadak@ttu.ee

ABSTRACT
This study analyses the effect of firm size on performance management system (PMS). The purpose is to make use of the observed differences in PMSs between the size classes to point out the following: What are the main weaknesses and strengths of PMS in smaller firms and how these weaknesses or their consequences can be eliminated and how the strengths can be further strengthened? Is there something useful for large firms to learn from PMSs of SMEs? The following questions are investigated in this research:
1. What are the main quantified similarities and differences in PMSs between the firms of different size?
2. Does the size of a company affect the successfulness of PMS and how?
3. Does the operative-strategic focus of PMSs differ between the size groups?
4. Do more successful PMSs enable higher performance in the same way in the three size groups?
5. What can we learn from the differences between the groups and how SMEs can benefit from this learning?

Theoretically the study makes use of the chain model of the key factors (KFs) developed by Kadak and Laitinen (2016). Three sets of PMSs in different size groups are developed. Empirical data are gathered by an internet survey from Estonia and Finland. In all, the data include responses from 85 firms of different size.

Empirical evidence gave support to the research hypotheses. It was showed that the importance of KFs in successful PMSs of small and larger firms differ from each. Therefore, PMS in a small firm cannot be a simple miniature of PMS of a large firm. However, the strength of the KF chain was positively associated with the success of PMS in each size class. Small firms focused more on operational aspects in control whereas large firms pay considerable attention also to strategic aspects. Thus, in larger firms the chain of KFs was found stronger than in small firms.

Results of this study demonstrated clearly that if the design and/or use of PMS is not done carefully and/or it is done incompletely, it will lead to a weaker chain of KFs which generates a weaker PMS, which in turn is unable to support firms to achieve expected performance and may fail. The differences in small and large firm PMSs found in this study explain why “copy-paste” or “scaling down” approach creating PMSs for SMEs from PMSs of large firms does not work in practice.

Theoretical contribution of this paper consists in the quantification of measures which are useful when creating adapted PMSs for SMEs. Knowing differences in PMSs between SMEs and large firms is relevant because we can take account of “natural differences” in PMSs between these size groups.

Keywords: Performance Management Systems; SME; informal PMS; key success factors; performance
RESPONSE STRATEGIES TO DISRUPTIVE INNOVATION IN ACCOUNTING: KNOWLEDGE PERSPECTIVE

Freida Ozavize Ayodele  
Faculty of Industrial Management  
Universiti Malaysia Pahang  
Malaysia  
freida.ayodele@yahoo.ca

Liu Yao  
Faculty of Industrial Management  
Universiti Malaysia Pahang  
Malaysia  
liuyao@ump.edu.my

Hasnah Haron  
Faculty of Industrial Management  
Universiti Malaysia Pahang  
Malaysia  
hasnahharon@ump.edu.my

ABSTRACT

Employing knowledge lens, this study empirically identifies and examines the impact of potential drivers of innovative accounting practices in a disruptive economy. The research model employed in the study was derived from the systematic integration of past empirical frameworks and findings. Data was collected using questionnaire survey which was self-administered to accounting officers in a public university in Malaysia. A total of 53 usable questionnaires were collected out of 80 that were administered. The data was preliminary screened before performing the main analysis. Partial least square structural equation modelling was employed in validating the hypotheses. The findings provide evidence that accounting technologies, competent accounting staff and continuous accounting knowledge creation are potential enablers for disruptive innovative accounting practices. The research provide insight into the relevance of utilizing accounting knowledge technologies in fostering knowledge creation and innovative accounting practices. This paper is one of the first to empirically support the roles of accounting knowledge culture and accounting knowledge creation as accounting response strategy to disruptive innovations. It is recommended that this study be replicated in diverse accounting contexts to further substantiate these claims.

Keywords: Accounting; Disruptive innovation; Disruptive accounting knowledge; Structural equation modelling
DEVELOPING SUSTAINABLE SMALL AND MEDIUM SCALE ENTERPRISES IN GHANA: THE ROLE OF COMPUTERIZED ACCOUNTING INFORMATION SYSTEMS

Samuel Nana Yaw Simpson*
Department of Accounting
University of Ghana Business School
Ghana
snysimpson@ug.edu.gh

Joseph Onumah
Department of Accounting
University of Ghana Business School
Ghana

Hope Kwaku Tetteh
Department of Accounting
University of Ghana Business School
Ghana

ABSTRACT
Most businesses in developing countries, including Ghana can be classified as Small Medium Enterprises (SMEs). Moreover, they are identified as constituting an integral part of the many of the economies. Despite the vital role that they play, their survival rate, particularly in developing countries is not quite impressive due to a myriad of constraints they face which threaten their sustainability. From literature, one of the areas identified as key to the survival of Small Medium Enterprises (SMEs) is the generation and use of accurate, reliable and timely information. Moreover, CAIS is suggested in the literature as the panacea to improving the information generation for informed decision. However, many of the studies on CAIS and SMEs have focused on, among other things, the factors that influence the adoption of CAIS, extent of use of CAIS and the kinds of packages used. There are scanty studies focusing on the effectiveness of CAIS and how it ensures the sustainability of SMEs, particularly in the context of developing countries. So, this study examines the nature of the computerized accounting information systems (CAIS) used by SMEs in Ghana and the perception of users on the effectiveness of the CAIS in ensuring sustainable SMEs. To achieve these objectives data was collected using a survey strategy using questionnaires self-administered to purposively sampled SMEs located at a particular area in Accra, Ghana. Data collected were analysed descriptively. Results show that most SMEs use software installed locally within the business premises. Data storage is done on local servers for these firms. A few access their software from the web or online and store data online. Also, the grand mean of the perception score exceeded the grand mean of expectation score. This means that SMEs expect less in terms of the information quality of the computerized accounting information systems they use than they perceive that the CAIS is able to offer. These findings imply that SME only use the basic feature of CAIS and that suggest that they are not fully utilising CAIS for long term decision making, hence affecting their sustainability.

Keywords: SMEs, CAIS, Sustainability, Ghana
DOES CAPITAL ADEQUACY RATIO MODERATE THE RELATIONSHIP BETWEEN OWNERSHIP STRUCTURE AND PERFORMANCE?

Nasyra Ab. Jamil  
Faculty of Business, Technology & Accounting  
UNITAR International University, Selangor  
Malaysia  
nasyra@unitar.my

Rasidah Mohd. Said  
Graduate School of Business  
Universiti Kebangsaan Malaysia, Selangor  
Malaysia  
rasidah@ukm.edu.my

ABSTRACT

This research aims to investigate the impact of the three ownership structure (government, institutional and family) with capital adequacy ratio as the moderating element towards bank performance as measured by return on asset (ROA), return on equity (ROE), and market performance represented by Tobin’s Q, along with the five control variables. Data from eight Large Domestically-owned Commercial Banks in Malaysia for the period that runs from 2000 to 2012 are used in this research. Hierarchical moderated multiple regressions methods are applied in this study. Results suggest that capital adequacy is significant as moderating factor of the three ownership structures towards the three bank performances regardless of the mix directions. However, the interaction between the three ownership structure and capital adequacy are also found to be significant only towards return on equity (ROE).

**Keywords:** Ownership structure, ROA, ROE, Tobin’s Q, banking, capital adequacy ratio
CORPORATE GOVERNANCE IMPLEMENTATION AND FIRM PERFORMANCE IN THE NEW ZEALAND AGRICULTURAL COMPANIES

Jamal Roudaki
Department of Financial and Business Systems
Faculty of Agribusiness and Commerce
Lincoln University
New Zealand
jamal.roudaki@lincoln.ac.nz

ABSTRACT
In 2004 the Securities Commission of New Zealand published the first Corporate Governance: Principles and Guidelines assuming the enhancement of indigenous capital market responsive to international competition. Agricultural companies standing in the top of the list for enhancement as they are the most important market player in New Zealand local and exporting market. This study concentrates on the role of corporate governance characteristics and improvement of firm performance in the context of New Zealand agricultural large companies. The results indicating that although New Zealand agricultural companies are more capital intensive than other businesses, their ROA is much lower than the country benchmark. Their director ownership and compensation are low, board size is relatively higher, and the proportion of independent directors on the board of directors is lower than their counterparts from other economic sectors. They have relatively less woman as a board member in addition statistical results show that agency cost (assets turnover), shows no significant relationship with ownership and compensation structures of the company. Nevertheless, growth and women directorship show a significant relationship with profitability ratios and director compensation has a close relationship with firm performance.

Keywords: Corporate governance, firm performance, New Zealand Agricultural companies
THE ROLE OF GOVERNANCE IN THE MARKET VALUATION OF RELATED PARTY TRANSACTIONS

Akmalia M. Ariff*
Universiti Malaysia Terengganu
Malaysia
akmalia.ariff@umt.edu.my

Effiezal Aswadi Abdul Wahab
Curtin University of Technology
Australia

Adzhamsyah Abdul Hamid
Rangsit University
Thailand

ABSTRACT
This paper examines the economic consequences of related party transactions (RPTs) in East Asia and considers the role of governance in the market valuation of RPTs. The contingency theory asserts that there are contingent factors which cause different underlying incentives for RPTs. In the context of the emerging markets of East Asia, the institutional environments of the countries create conflicting effects on the value of related party transactions (RPTs) among companies. RPTs are deemed beneficial to companies in East Asia because they add value to diversified businesses by replicating the functions of institutions that are missing in emerging market. However, RPTs can be used as expropriation mechanism due to the inappropriate institutional, law and legal enforcement that shields controlling shareholders from internal governance structure in emerging market. This study examines the association between RPTs and market value and tests whether the quality of governance influences the strength of the association. RPTs is represented by total value of related party transactions and governance is measured using an aggregate index of legal and political institutions. The data is derived from 262 publicly listed companies from Hong Kong, Indonesia, South Korea, Malaysia, the Philippines, Singapore, Taiwan, and Thailand. We hypothesized that RPTs are more likely to be used to create shareholders wealth in firms with high quality governance embedded in their institutional environment. Our findings are aimed to incorporate the perspective of emerging countries in exploring the role of governance in the market valuation of RPTs. Our cross-country analysis is envisioned to provide evidence involving the role of country-level governance that is commonly neglected by prior studies that tend to focus on a single-country setting in explaining RPTs.

Keywords: Related Party Transactions, Governance, East Asia
IMPLICATION OF COMPREHENSIVE INCOME AND ITS COMPONENTS FOR BANKING SUPERVISORY RATING APPROACH CAMEL – EVIDENCE FROM CHINESE LISTED BANKS

Hong Xiao*
Department of Accounting
Xiamen University
China
xiaohong@xmu.edu.cn

Theerawit Kapanya
Department of Accounting
Xiamen University
China
theerawitkla@hotmail.com

ABSTRACT
Using data for Chinese listed banks from 2009 to 2016, this paper study relations between comprehensive income reporting and banking supervisory rating approach (CAMEL) provided an informative and signals to decision-making. The results reveal FVA reflects assets and liability management that are associated and significant, and may provide an early warning to take remedial action. This study also provided evidence on whether information contained in aggregate comprehensive income and other comprehensive income reporting compared to the traditional historical-cost earnings approach were used by analysts in their banking supervisory rating approach (CAMEL).
THE EFFECT OF FULL IFRS CONVERGENCE ON EARNINGS MANAGEMENT: MALAYSIAN CONTEXT

Karen Ling Nee Wong
RMIT University
Australia
Karen.wong@rmit.edu.au

Mahesh Joshi
RMIT University
Australia
Mahesh.joshi@rmit.edu.au

Prem Yapa
RMIT University
Australia
Prem.yapa@rmit.edu.au

ABSTRACT
This paper evaluates whether the full convergence with International Financial Reporting Standards (IFRS) in Malaysia has reduced the scope of earnings management based on discretionary accruals. This study has extended the study of Adibah Wan Ismail et al. (2013) by continuing the observation of IFRS convergence in Malaysia through focusing on the last three years of partial convergence (or close alignment) with IFRS and the first three years of full convergence (i.e. 2009 to 2014 financial periods). The study has applied Jones (1991) model and the modified version by Dechow, Sloan, and Sweeney (1995) and Kothari, Leone, and Wasley (2005) to measure the discretionary accruals. The median discretionary accruals based on these three models have shown a significant decrease in the first two years of full convergence but have increased in the third year of full convergence. The changes in median discretionary accruals of the three models are similar. The analysed results have also indicated that the earnings management have increased in the three years prior to full convergence with IFRS, different to the finding of the study by Adibah Wan Ismail et al. (2013). The findings of this study suggest that the full convergence with IFRS has restricted the practice of earnings management but might not in longer terms. The findings of this study shall provide implications to the IASB, accounting regulators in Malaysia and it's neighbourhood countries that are working towards full convergence with IFRS.
ABSTRACT

The Alpha Conglomerate is one of the largest financial conglomerates of Brazil. For the purposes of this study, was awarded this fictitious name. In a financial conglomerate, must take into consideration the return and the risk of the amount invested in each company. The study in question deals with the analysis of the risk and return of the conglomerate Alpha, using the Data Envelopment Analysis (DEA) and the modern theory of Portfolio. It is expected that the capital is allocated in investments presenting greater ROI (return) to the lowest possible volatility (risk). Thus, in this study, the subsidiaries of the Group Alpha how to efficiently create value for investors, in the period of 2011 to 2015, with the lowest risk, using the DEA, considering the risk standard deviation and the risk Range as input variables, and the return on investment (ROI) as output variable. It was found that the company 2 was the most efficient in generating value for its investors in the analysis period, followed by the Company 11. On the other hand, the company 18 was the least efficient in the analysis period. To build the ranking, it has been estimated the border composed and standard composite border. The company 16 was considered a false efficient, when we analyze the companies across the border. Although this work has included only the phase of analysis and presentation of results, a deeper study might consider the feedback loop of the template and the inclusion of other variables, or association with other techniques able to promote the improvement of the results obtained.

Keywords: Risk versus Return. DEA Model. SIAD. Portfolio Theory. Markowitz.
ABSTRACT
The purpose of this study is to investigate the determinants of earnings quality for banks in Egypt as an emerging economy over the period 2007-2013. Multiple regression analysis is used to test the relationship between the earnings quality as a dependent variable and certain independent variables. Results indicate that the variables intellectual capital performance; accounting conservatism; barriers to entry; bank size and bank age each have a significant impact on earnings quality for banks in Egypt. The study might help the banking and accounting Regulators in addressing the factors affecting earnings quality to take actions towards this issue. This study adds to the literature on the determinants of earnings quality in banks. In particular, it provides evidence that intellectual capital performance and accounting conservatism influence earnings quality in the Egyptian banking industry.

Keywords: earning quality, intellectual capital performance, accounting conservatism, barriers to entry, bank size, bank age, banks, Egypt
THE FAIRNESS LEVEL OF SUBCONTRACTING AND COST OF EQUITY

Sang Hoon Shin
Business & Economics College
Kyonggi University
Korea

Seon Mi Kim
Business School
Chonnam National University
Korea

Seung Weon Yoo
Business School
Korea University
Korea

Il Han Yu
Business School
Korea University
Korea
youunigue@korea.ac.kr

ABSTRACT
This paper examines the effect of fairness level of subcontracting in indicating the earnings persistence. We investigate whether the fairness level of subcontracting influences the firms’ cost of equity. This paper involves drawing up subcontract dispute which are constantly being raised in relation to globalization of production plants, corporate social responsibility and sustainable growth. When firms have an unfair subcontracting, the image of those firms might be hampered and threatened the survival of those firms. However, it is also true that firms are burdened with the input cost to expand the infrastructure and to conduct the system for fair subcontracting. Thus, it is meaningful to present the empirical results by using the quantitative measurement of fair subcontracting on earnings persistence.

We use the fairness level of subcontracting which is designed to promote equitable development with large, medium and small firms in Korean market according to the concept of win-win growth. In this regards, we examine the effects of subcontract fairness level on earnings persistence and firm values from 2011 to 2014 for listed firm in Korean market.

We find that firms with the index of fair subcontracting are more persistent than firms without the index of fair subcontracting. Also, the earnings persistence is consistently positive relation with the fairness level of subcontracting. Secondly, we find the negative relation between cost of equity and fairness level of subcontracting and whether it is fair subcontracting or not. This results implies that the higher fairness level of subcontracting increase firm value and minimize the earnings volatility. This result might be interpreted that investors are concerned about the financial risks of lower fair level of subcontracting.

Keywords: fairness level of subcontracting, earnings persistence, firm value, COE
THE ROLE OF MULTI-LEVEL CAPITAL MARKET IN INVESTOR REACTION TO THE SPECIFIC DISCLOSURE OF SOCIAL RESPONSIBILITY: EVIDENCE IN CHINA

Shiyu Wang
Southeast University, China, wsy_seu@163.com

Guanzhen Wang
Southeast University, China, wguanzhen1993@163.com

Zhibin Chen
Southeast University, China, seuczb@126.com

ABSTRACT
In this paper, from the perspective of information economics, we provide unique evidence in the Chinese multi-level capital market on the investor reaction to the specific disclosure of CSR. We speak to the issue of whether a specific CSR disclosure is a desirable feature of qualitative disclosure and whether the benefit of disclosure strategy is constant. To address this research question, first we explore the investors’ behavior in a multi-level capital market when they get CSR information. Then, we examine the degree of decision deviation due to investors’ rationality and its correlation to the specification level of CSR disclosure. Moreover, we do a further research considering the pollution haze of the environment. Therefore, we investigate the moderating effect of the air pollution which every Chinese enterprise and investor is facing.

On the basis of the information economics mathematic model, by combining the event study and panel data analyses, this paper investigates the preference segmentation and rationality segmentation roles of a Chinese multi-level capital market in investor reaction to the CSR disclosure, using data from 2010 to 2016 in the Chinese Mainboard and SME-GEM A-share companies. After a series of tests and analyses, we have come to the following conclusions—First, in Mainboard, the value of investor reaction is positively related to the disclosure of CSR. That is to say Mainboard investors tend to consider the social responsibility as a desirable feature of their invested firms. While in SME-GEM this relation is insignificant and suggests that SME-GEM investors have an uncertain evaluation of the CSR disclosure. This result shows the investor preference segmentation role of a multi-level capital market. Second, the specification level of CSR disclosure is insignificantly associated with the deviation of investor reaction in Mainboard, but significantly and negatively related in SME-GEM. In other words, the Chinese Mainboard investors are basically Bayesians and are rational enough to analyze different kinds of disclosure. But SME-GEM investors are under reactive heuristics and make decisions based on general disclosure. This result suggests the investor rationality segmentation role of a multi-level capital market.

In additional analyses, we also consider the pollution haze of the Chinese environment. Testing the moderating effect of this nature environment, we find that: (1) in Mainboard, the pollution haze of the environment intensifies the investors’ positive judgement of CSR information; (2) the pollution haze of the environment does not change the rationality of the Mainboard Bayesian investors; (3) against our expectations that pollution haze may change the investors’ attitude to CSR behavior, SME-GEM investors are under reactive, regardless the pollution haze moderating effect; (4) in a serious pollution haze group, SME-GEM investors are trying to get detailed CSR information, but in a lighter pollution haze group, they keep making their decisions based on general disclosure.

This paper makes several contributions. From a micro point of view, our conclusions could offer the reference to the disclosure strategy of CSR for enterprises in different capital markets, as well as give some guidance to the Chinese investors in order to diagnose themselves and make more rational investment decisions. Also, this paper gives evidence that Chinese pollution haze does affect the investor decisions in the Chinese capital market, which may be a silver lining forming a virtuous circle. From a macro point of view, this paper provides evidence from our certain perspective to depict the investor preference and rationality characteristics of a Chinese premature multi-level capital market. Using these results, we can do further research and compare the Chinese evidence with a mature capital market and predict the development direction of an emerging capital market.
FUND PERFORMANCE IN MALAYSIA

Susela Devi  
Faculty of Business, Technology, and Accounting  
UNITAR International University  
Malaysia  
susela@unitar.my

YoungKyung Ko*  
Finance, Center for Research and Consultancy  
UNITAR International University  
Malaysia  
youngkyung.ko@unitar.my

ABSTRACT

This study investigates performance of mutual funds from 2007 to 2016 in Malaysia. Malaysia is one of growing fund markets among emerging market and dealing with conventional and Islamic finance. Despite of survivorship bias in research sample, this study examine all type of unit trust funds launched in Malaysia, and whether there is any significant difference among types of funds and between conventional and Shariah-compliant funds. Furthermore this research finds whether performance persistence of funds is over 10 years. The results shows survived Malaysia funds underperform benchmarks and this underperformance persists during the period. The difference of performance between conventional and Shariah-compliant funds is not significant except for in 2010 year. This study using recent data contributes research and growth of mutual funds market in emerging countries and Islamic funds market which are not explored.
CORPORATE TAX AVOIDANCE, DEBT RATIO, AND CORPORATE GOVERNANCE: EVIDENCE FROM JAPAN

Hiroshi Ohnuma
Tokyo University of Science
Japan
yho@hoshi.net

Keikichi Kato
Hirosaki University
Japan
katok@hirosaki-u.ac.jp

ABSTRACT
This study examines whether tax avoidance is associated with corporate debt policy. Specifically, this study investigates the influence of bond investors and financial institutions such as the banks, which are long-term loan owners, on corporate governance (CG) to determine comprehensively the relationship between tax avoidance and debt ratio. Note that, the financial institutions in Japan have a larger role in indirect finance policies, relative to in the European and U.S. financial markets, and that the financial institutions of the other Asian nations seem to take on the same level of responsibility as those of Japan.

This study firstly investigates the association between debt ratio and corporate tax avoidance. Secondly, we examine the influence of effectiveness of debt governance on debt ratio and CG. Thirdly, we focus on the representative tools, such as outside directors and auditors for CG and corporate tax avoidance. Finally, we test the influence of the main banks on this effect because, in addition to their monitoring role, main banks also play a significant advisory role and are thus likely to be in a better position to make superior decisions about a firm's optimal debt and capital structure mix.

According to the main result of this study, it seems that the debt enhancement effect is more dominant than the debt substitution effect in Japanese firms. When tax avoidance increases, firms’ profitability rise. Thus, considering the ability to afford a loan from a financial institution, the firms can borrow more. With regard to interactive effects among CG, debt policy, and tax avoidance, we find the CG of firms strengthens when they carry out tax avoidance. If the outside director ratio increases, then the monitoring function of the debtholders improves due to the enhancement of CG functions, and our result suggests that the financial institutions in Japan achieve an effective monitoring function.

Keyword: debt ratio, tax avoidance, debt substitution effect, debt enhancement effect, outside directors’ ratio, corporate governance
ABSTRACT

The paper aims to present an idea of an advanced analytics model and process to identify fraudulent taxpayers. The concept assumes the usage of data from a standardised and unified files received from taxpayers. It can be assume that this approach will prevent the widening of the tax gap by the improvement of the taxpayers system quality (by shorten the reaction time and increasing the success ratio). Our goal is to present a concept of the analytical approach in the context of the tax system in Poland. To do so, first the explanation of the tax system in Poland and the analyse it at four levels to highlight problem areas was made. Against the background of broadly understood goals to be accomplished by the State, the tax system should be interpreted, not only as a set of integrated taxes binding upon the territory of a given country. The State needs to expand the notion to cover fiscal administration, laws that regulate taxes and administration connected with it, as well as, the principles of taxation, including international recommendations as to how an ideal tax system should be constructed. Secondly, we enumerates actions that have already been undertaken in relevant and inefficient areas of the system in question. First and foremost, we list what has been done in relation to the organisational structure of the fiscal administration in response to recommendations from the IMF and the European Commission. Thirdly, in the age of digitalisation of everything, also tax-related procedures, including fiscal audit, may be assisted by technology. We also describe IT solutions already implemented in this area. In fact, these systems are limited to the area of monitoring whether the tax data are complete and collected in an effective and efficient way. We will treat this as the background to form a proposal of a wider analytical solution and discuss the fundamentals of an approach focused on the multidimensional analysis of the Standard Audit File for Tax (SAF -T ) records and reports to identify fraudulent business operations.

It could be assessed that usage of these analytical techniques should result in a greater influence in tax collection, taking into account the experiences from other areas such as financial institution. This observation will give evidence that the area is worth farther scientific research.
ABSTRACT
This research demonstrates gender gaps among accounting researchers in some areas. A survey of Japan Accounting Association (JAA) members was conducted, followed by a comprehensive analysis from multiple perspectives: professional achievement, career level, age, competitive funding grants, overseas study, research field, research method, and research sources. We investigated these data by cross-tabulation, and other statistical analyses, using different combinations. Regarding most of the topics, findings couldn’t verify any significant gender gap such as hindering women's research activities. However, a slight gender gap was identified for some topics; present career level, age, competitive funding grants. However further research studies are needed, we expect our results stimulate discussion about the activities of accounting researchers, regardless of gender.
ETHICS AND ACCOUNTING: WHICH REGIME BEST PROTECTS THE PUBLIC INTEREST?

Saeed Askary
Gulf University for Science and Technology
Kuwait
askary.s@gust.edu.kw

ABSTRACT

Globalization and pluralistic business environments seem to be cause and effect. The IFRS needs to respond to this trend. And so the IFRS should help to reduce risk-related issues in pluralistic organizations. This paper theoretically examines the characteristics of a conceptual accounting environment in four different socio-political regimes by justifying the protection of the public interest by reducing ethical risk. This paper inspires IASC to consider the discussion for the forthcoming IFRSs. While the current trend towards business globalization prevails, and accounting standards-setting moves towards IFRS, the best method of accounting standard setting is to use principle-based in the form of conservative accounting measurement methods. Optimal IFRS will help managers and auditors momentously to measure and report relevant and reliable financial statements because that information will be based on the accounting measurements of.

IFRS uses principle-based accounting that allows applying their determination of accounting standards and this may trigger different interpretations in those who are in charge of preparing financial reports. This issue may repeat the traditional problem of financial reporting comprising different interpretations. In other words, preparers of the financial reports will use different methods for the same transactions of financial events to further their own interests, but not necessarily the public interest. The case of the Enron corporate collapse reminds us of this endemic problem, although it was an extreme. This explains why ethics are subjective and fluid; each society has them embedded in its own traditions and culture, as well as its religious beliefs. Ethics are partly the product of a society’s own narratives.

The accounting regime in principle-based uses rule-based accounting and relies on conservative approaches and has restrictions in selecting and applying accounting techniques and procedures that may otherwise have the potential to manipulate financial information. The techniques in this regime minimize wrong interpretations of accounting practices to produce more reliable and relevant accounting information for the decision makers. The information will certainly increase the public trust in the use of such information and in this way the protection of the public interest is better safeguarded. Furthermore, this conclusion is supported by Barth et al. (2012) whose study examined the extent to which the application of IFRS by non-US firms are comparable to those US firms where they use US GAAP. The finding was that US’s firms’ rule-based accounting generally had higher value methods than those of IFRS firm, which was principle-based. The accounting profession and its regulatory bodies have a responsibility to protect that public interest.
FACTORS INFLUENCING JOB-SEEKERS INTENTION TO USE ONLINE RECRUITMENT

Nor Asiah Mahmood
Asia Graduate School of Business
UNITAR International University
Malaysia
norasiah@unitar.my

Feng Ling Ng
Asia Graduate School of Business
UNITAR International University
Malaysia

ABSTRACT
The Malaysian Employers Federation (2015) estimates approximately 351,900 jobs available in the services sector, but with a more significant distribution in the distributive trade, accommodation and restaurant sub-sectors. There has also been recorded increase of employment in the manufacturing sector by approximately 58,200 jobs, and these are the two main sectors contributing to the hiring activities in the labor and the job market. With such robust job market conditions, it is imperative for Human Resources personnel to be diligently working on fulfilling recruitment requirements for their organizations. In Human Resource Management, recruitment involves searching, sourcing and obtaining qualified applicants that fits best in filling job openings for the organization (Jackson and Schuler, 2003). Due to the time and effort spent in getting the right candidate to fill in the vacancy, the high cost of hiring and training of the incumbents makes the recruitment process a crucial activity for all organizations. The purpose of this study is to investigate if Perceived Ease of Use, Perceived Usefulness and Trust have a direct impact towards job-seekers’ intention to use online recruitment websites to help them in their job-seeking activities using quantitative research design. A total of 208 respondents has been selected, SPSS statistical tools are used for data analysis. The result explained there is a significant relation between the variables.

Keywords: Recruitment and Selection, online recruitment websites, perceived usefulness, perceived ease of use, trust, intention to use.
THE RELATIONSHIP BETWEEN SERVANT LEADERSHIP AND PERFORMANCE OF UNIVERSITY LEADERS: WORKING ENVIRONMENT AS A MODERATOR

Sharfika Raimea  
UNITAR International University  
Malaysia  
sharfika@unitar.my

Raemah Abdullah Hashim  
Open University  
Malaysia  
raemah_abdullahhashim@oum.edu.my

ABSTRACT
In the 21st century, higher education is reported to have expanded more quickly as compared to the other education level. The rapidly growing demand for higher education has eventually created the phenomenon where numbers of universities all over the world has actively compete to be in the global rankings universities. Universities capability to be recognized as one of the top ranking global universities not only shows its higher education quality but it may also affect its competitiveness level to be able to select and attract the best students, most qualified professors and researchers especially in the effort of becoming the successful education hub. Nevertheless, Malaysian public universities’ performance as reported recently have slightly declined where none of Malaysian university manage to make it to the top 100 in both the QS Ranking and the Times Higher Education (THE) University Ranking. The major contributor to the problem is pertaining to the leadership qualities which need to be fulfilled. In the turbulent business environment, despite the fact that the job performance of university leaders are remarkably important, leadership in higher education topic nevertheless is as yet an under-researched topic but one which is clearly coming to the forefront in current higher education literature. This conceptual paper hence researches the leadership style which necessary for university leaders in governing and ensuring the worship of the university’s performance. In addition, this paper also explores the role of working environment as the moderator between relationship of the servant leadership and job performance of university’s leaders. It is essential for Higher Education Institutions in Malaysia to continuously review the performance and competence of universities leaders. This research implies to education policy makers, universities leaders, universities lecturers, human resource and students.

Keywords: servant leadership; working environment; job performance; university’s leaders
EXAMINING THE INFLUENCE OF EMPLOYEE EMPOWERMENT, TEAMWORK, AND INCENTIVE TOWARDS JOB SATISFACTION AMONG RMN PERSONNEL

Md Saiful Anuar Bin Mohd Nasirruddin  
Royal Malaysian Navy (RMN)  
Malaysia

Shahrizal Bin Ismail  
Royal Malaysian Navy (RMN)  
Malaysia

Anwar Redhwan Bin Lokman Hakim  
Royal Malaysian Navy (RMN)  
Malaysia

Siti Nor Bayaah Ahmad  
UNITAR International University  
Malaysia  
ctnor11@unitar.my

ABSTRACT

The study on job satisfaction is important in the organisation. One of vital reason is that, job satisfaction is closely related to the job performance. People, who satisfy with their job tend to perform better in their works. How they feel about the work they are doing and the results received from that work directly impact an organisation’s performance and ultimately its stability. An improved job performance will as well reflecting the organisation performance, which later will result to cost effective and profitable business. The study was conducted in the background of Royal Malaysian Navy (RMN) personnel in Lumut Naval Base. The findings reported in this study is based on the questionnaire circulated among the RMN personnel base in Lumut especially in the fleet. The data was analyzed using SmartPLS 3.0 software. The study report has followed a descriptive analytical approach of 211 employees were used for analysis. Using quantitative analysis: the data were collected through close and open – ended questionnaire coupled with Likert scale. Findings of the study reveals that all three variables (incentive, team work, and employee engagement has a significant influence toward job satisfaction).

Keywords: Job Satisfaction, Motivation, Employee Empowerment, Teamwork, Incentive
ACCRUALS AND STANDARD BASED GOVERNMENT ACCOUNTING: DO WE NEED A NEW THEORETICAL BASIS?

Andreas Bergmann
Zurich University of Applied Sciences
Switzerland
andreas.bergmann@zhaw.ch

ABSTRACT
In Government Accounting, arguably the biggest current disruptive innovation is the implementation of standard based accrual accounting. According to PwC (2013), major progress in the implementation of accrual accounting can be observed, but the implementation of IPSAS is still lagging behind. OECD (2016) confirmed some progress, but largely confirmed the findings of PwC three years earlier. But what are the effects of the implementation of standard based accrual accounting by government entities? Unlike private sector corporations, governments are not issuing shares at financial markets and bonds, while being issued, are much less volatile. Therefore, the research approach taken in private sector accounting, going back to Ball & Brown (1968) or Fama et al (1969), to look at effects of accounting information on stock markets, is not feasible for governments. Furthermore, government financial statements have a wider user base, or stakeholder group, with the main users usually defined as legislative bodies and citizens (IPSASB, 2014). This also leads to a high relevancy of reports other than the traditional general purpose financial statements, such as general-purpose financial reports (e.g. service or performance reports), audit reports or the Government Finance Statistics (GFS). Although this in itself is still a controversial debate, there might also be a stronger focus on revenues and expenses, rather than assets and liabilities.
Nevertheless, the number of scholarly articles on the adoption of IPSAS/EPSAS, or more generally standard based accrual accounting, as well as the use(fulness) of public sector accounting information has increased tremendously over the last five years. Many studies however seem to struggle identifying an appropriate theoretical basis. Jacobs (2016) identifies four theoretical bases used by public sector accounting studies: Accountability theory, New Public Management Theory, Critical theory and New Institutional theory. All four theories, while well know and widely recognized, have some significant limitations when it comes to applying them to studies on IPSAS/EPSAS adoption and the use(fulness) of public sector accounting information. This leads to the question, what a more feasible theory on public sector accounting might look like. Much more likely is the development of a public sector accounting out of an existing theory, such as the accountability theory, but reflecting the in the meantime strengthened conceptual basis of public sector accounting. As Steccolini in her 2016 APIRA keynote speech puts it, such a public sector accounting theory needs to be problem oriented, interdisciplinary, engaging with publicness but exploring the positive side of accounting. A possible starting point is the IPSAS Conceptual Framework.
VIRTUAL ENTERPRISE BUSINESS MODELS

Irena Hejduk
Warsaw School of Economics (SGH), Poland
hejduk.irena@gmail.com

Anna Karmańska
Warsaw School of Economics (SGH), Poland

Ryszard Bartkowiak
Warsaw School of Economics (SGH), Poland

Sylwester Gregorczyk
Warsaw School of Economics (SGH), Poland

Piotr Wachowiak
Warsaw School of Economics (SGH), Poland

ABSTRACT

The present study is an element of the conducted research factually justified by the dynamic changes in the business pursuit environment and related to the necessity for the verification of performance measures commonly applied in practice. The authors put the title problem within the trend of research on three issues: business models, information system assisted corporate management and performance measurement systems. The major reason behind the research is the curiosity – in view of the universal virtualisation of human activities, including business activities – about how topical are the findings made 10 years by K.M.Gupta and A.Gunansekaran and published in: Costing in new enterprise environment. A challenge for managerial accounting researchers and practitioners [Gupta, Gunansekaran, 2005]. This text presents the research results of the business models characteristic of virtual organisations. Taking into account a specific character of the virtual enterprise, at this stage of research, two theses have been put forward:

[T1] – virtual enterprise managers have to acquire an ability to apply a business model to competitive struggle and to work out mechanisms to efficiently modify a business model, which is a prerequisite of this advantage and

[T2] – a virtual organisation business model is to be perceived as a process because it is characterised by an extreme agility, which gives rise to a necessity for permanent monitoring of its ability to adjust to the environmental changes. Because of this, the authors present the general principles of the creation and evaluation of a virtual enterprise business model which is to guarantee it a permanent competitive advantage. The presented model needs to be more precisely specified, especially in the area of detailed operationalisation of the model elements. The procedure of corporate business model creation is based on G. Nadler's concept of the design and improvement of operational systems (IDEALS – Ideal Design of Effective and Logical System) [Nadler, 1967]. The authors emphasize that the complete base of parameters of a business model needs to be carefully described with a number of criteria and control lists, which will allow for the evaluation of the strategic value of the business model elements and the indication of mutual relations. Moreover, the authors propose a concept of evaluation of the change process management in the virtual organisation business model.

Keywords: performance measurement systems, virtual enterprise, business model, managerial accounting
THE EFFECT OF LOCAL GOVERNMENT PERFORMANCE DISCLOSURES ON THE WEBSITE/INTERNET: SIGNALING INCUMBENT'S INCENTIVES ON INDONESIAN CASE

Sasono Adi*
University of Indonesia
Indonesia
Sadi_id@yahoo.com

Dwi Martani
University of Indonesia
Indonesia

Bambang Pamungkas
University of Indonesia
Indonesia

Robert A. Simanjuntak
University of Indonesia
Indonesia

ABSTRACT

Pursuant to statutory provisions, local governments are required to disclose the performance of administration which provides an overview of local government activities. This information is conveyed to the public as a summary of information of local government administration report and voluntarily delivered via website/internet. The purpose of this study is to investigate the incentive of local governments to disclose their performance on the website/internet during local government election. This study uses Local Government Administration Report as a disclosure that has not been widely examined so far. The research models use logistic regressions with a total sample of 156 local governments from 2010 to 2012.

This research finds that during local general election, the probability of publishing information of local government administration report on the website/internet is positively influenced by the incumbents’ political incentives and the quality of financial and performance accountabilities. Further, political competition can limit incumbents’ opportunistic behavior. If political competition increases, the incumbents are likely not to disclose local government information report on the website/internet for signaling, since they are watched by other candidates and voters. The findings of this study show that the disclosure of performance report on the website/internet can make incumbents differentiate themselves from other candidates. As consequences, incumbents have opportunity to signal their quality for political and performance accountability.

Keywords: agency relations, incumbents, administration reports of local government, political incentives, public legitimacy.
GOVERNMENT PROCUREMENT CONTRACT DESIGN FOR ENCOURAGING COST REDUCTION

Taichi Kimura  
Graduate School of Business Administration  
Keio University  
Japan  
tkimura@kbs.keio.ac.jp

Takahiro Morimitsu  
Graduate School of Management  
Japan University of Economics  
Japan  
morimitsu@tk.jue.ac.jp

ABSTRACT
In defense procurement, owing to the restriction of technologies, laws, and patents, most items have no market prices. They have to be priced based on an accumulation of appropriate costs. In this pricing structure, government can enjoy the benefits of the contract firm’s cost reduction efforts. However, because these efforts are ordinarily neither observable nor verifiable, the contract firm is often lethargic in exerting cost reduction efforts. That is, in defense procurement, there are serious incentive problems. Typically, the government can choose between a fixed-price contract (FP) and a cost-plus-incentive fee contract (CPIF) as the cost-based pricing structure. The question remains as of what type of contract is desirable. In this paper, we present the optimal choice of contract structure that would encourage the contract firm to exert cost reduction efforts when a moral hazard problem exists. Our analysis results conclude that the principal (the government) can take more benefit with a contract including strong incentives, if the agent (the firm) is more risk tolerant and efficient. However, a contract that has the strongest incentive, that is FP, is never chosen as long as the agent is risk averse because FP imposes an unacceptable risk about cost fluctuation to the agent.
DATA IN SEARCH OF A THEORY: UNDERSTANDING HOW ICTS “DISRUPT” ACCOUNTING PROFESSIONALS

Tianyuan Feng
Macquarie University
Australia
tian-yuan.feng@hdr.mq.edu.au

Lorne Cummings
Macquarie University
Australia

Dale Tweedi
Macquarie University
Australia

ABSTRACT

Purpose: Digital disruption transforms accounting professionals. But how and why are two critical questions requiring further study. This paper analyses the extent to which accounting research adequately analyses the impact of Information and Communication Technologies (ICTs) on accounting professionals. It identifies key gaps in the field and introduces Disruptive Innovation Theory (DIT) as a promising lens to advance knowledge in the field.

Design/methodology/approach: The paper adapts Broadbent and Guthrie’s (2008) framework to systematically analyze extant research. First, a descriptive meta-analysis is used to discuss research to date. Second, the paper uses a conceptual analysis to evaluate the field and highlight gaps for future research. Third, this paper introduces DIT and critically reviews its potential to contribute to existing knowledge.

Findings: This review finds that prior literature has identified “changes” in the employment role of accounting professionals from one of core technical accounting skills to a greater focus on IT knowledge and soft skills. However, the study also finds that there is an absence of a theoretical framework in this field to explain strategic thinking behind the transformation of accounting professionals. The authors argue that the DIT might address this gap.

Research implications: The study assesses the methods of data collection and empirical analysis, and recommends adoption of more rigorous techniques in future studies.

Originality/value: As the first paper to systematically apply DIT in accounting field, this paper shows potential contributions of DIT to existing accounting research
THE USE OF ACCOUNTING INFORMATION FOR SUGAR BUSINESS OPERATIONS AT THE SOUTH SEAS DEVELOPMENT COMPANY

Yuta Sumi  
Graduate School of Business Administration  
Kobe University  
Japan  
yuta.sumi@stu.kobe-u.ac.jp

Masayoshi Noguchi  
Graduate School of Social Sciences  
Tokyo Metropolitan University  
Japan  
mynoguchi@tmu.ac.jp

ABSTRACT

This study aims to examine the role of accounting information utilized by the South Seas Development Company (SSDC), which played a pivotal role in the Japanese colonial and territorial management. The focus is placed on the SSDC’s accounting information, particularly the financial statements and the detailed schedules relating to the sugar business, which submitted, through the SSDC’s parent company, the Oriental Colonization Company, to the Ministry of Colonial Affairs, which served as its supervisory agency. In addition, this study adopted the lens of Strategic Outsourcing proposed by Nishiguchi to help understanding of relationship between the SSDC and tenant farmers, in which the relations were inclined toward the relationship between prime contractors and subcontractors of an exploitation model posited by Nishiguchi. The study demonstrates that the accounting information of SSDC’s sugar business was utilized in monitoring the relationship, i.e. the validity of profit sharing between the company and the tenant farmers, by the Japanese government agency.

Keywords: the South Seas Development Company (SSDC), special company, Japan, accounting information, colonial and territorial management, sugar business
RELATIONSHIP STUDY BETWEEN MARKETING MIX AND PURCHASE INTENTION OF AFFORDABLE HOMES

Wan Muhd Hisham Wan Hawari  
Selangor State Development Corporation (SSDC)  
Malaysia

Mazrul Hisyam Che Rose  
Selangor State Development Corporation (SSDC)  
Malaysia

Nurulazwanita Bahari  
Selangor State Development Corporation (SSDC)  
Malaysia

Rudzi binti Munap  
UNITAR International University  
Malaysia  
rudzi@unitar.my

ABSTRACT

The objective of this study was to find the relationship of 4P’s marketing mix on purchase intention of SSDC affordable homes customers (who are among the middle income group). The independent variables (IV) of the study are the 4P’s of marketing mix. Purchase intention is the dependent variable (DV). The theories applied for IV is product, price, place and promotion whilst Theory of Planned Behaviour (Ajzen, 2012) is applied to purchase intention.

The design of this study is very much correlational in nature. Due to the fact the population of this study cannot be determined, convenience sampling is the most appropriate sampling technique of the study. A total of 200 samples were randomly selected as participants of the study. The questionnaire was adopted and adapted from various reliable sources such as Daly et al. (2003), Idham et al. (2013) and Nasar K. & Manoj (2015).

Using quantitative analysis, the questionnaires was self-distributed to potential Malay buyers during the sales promotion period from July 2016 to August 2016. The data collected was keyed into Statistical Package for Social Sciences (SPSS), version 23. Descriptive statistics illustrated the demographic profile of the respondents. The use of normality analysis, Pearson correlation analysis, multiple regression analysis via stepwise were used to test and confirm the significant or insignificant relationship of the variables of interest. Correlation analysis was used to measure the strength of the relationship between the study variables.

The reliability of all the items in the construct shows a value ranging from 0.795 to 0.873. These items are considered good and reliable measurement (Nunnally, 1978). The findings revealed that all the 4P’s of marketing mix, Product ($r = 0.526$), Price ($r = 0.499$), Place ($r = 0.526$) and Promotion ($r = 0.384$) has a moderate relationship to purchase intention of SSDC affordable homes (Sekaran & Bougie, 2013). The other findings indicated that Price influenced most to purchase intention with Beta Value of 0.603.

Keywords: 4P’s of marketing mix, purchase intention, affordable homes, Selangor State Development Corporation
THE EFFECT OF EXECUTIVE MANAGEMENT SUPPORT AND COST ACCOUNTANT COMPETENCY ON CMS DESIGN EFFECTIVENESS AND ITS CONSEQUENCES: AN EMPIRICAL RESEARCH OF MANUFACTURING BUSINESS IN THAILAND

Nattawut Tontiset
Mahasarakham Business School
Mahasarakham University
Thailand
nattawut.t@acc.msu.ac.th

ABSTRACT
The objective of this research is to examine the antecedents and consequence of cost management systems (CMS) design effectiveness of manufacturing businesses in Thailand. The effects of CMS design effectiveness on cost information quality are investigated. Moreover, the effect of cost information quality on business success is investigated. Furthermore, executive management support and cost accountant competency is assumed to become the antecedents of CMS design effectiveness. Electronics manufacturing businesses in Thailand are samples of the research. The results indicate that CMS design effectiveness has a positive significant effect on cost information quality. Moreover, cost information quality has a positive significant on business success. Additionally, both executive management support and cost accountant competency have a positive significant effect on CMS design effectiveness. Theoretical and managerial contributions are explicitly provided. Conclusions, suggestions and directions for future research are also presented.

Keywords: Cost management system, Cost information quality, Executive management support, Cost accountant competency, Business success
UNDERSTANDING THE TAX SITUATION OF ENTREPRENEURS IN THE GUESTHOUSE INDUSTRY IN SOWETO, SOUTH AFRICA

Marina Bornman
University of Johannesburg
South Africa
mbornman@uj.ac.za

Pusheletso Ramutumbu
University of Johannesburg
South Africa
pramutumbu@uj.ac.za

ABSTRACT
This paper applies the conceptual framework proposed by Kamleitner, Korunka and Kirchler (2012) to highlight the particular tax situation of a sample of small business owners in the guest house industry in South Africa. The framework comprises factors influencing tax compliance from a psychological perspective. An interpretation of results obtained from an analysis of secondary data, indicate that factors such as age, gender and tax morale show favourable results in terms of positively influencing their tax compliant behaviour. However, factors such as perceptions of fairness, perceived opportunity for non-compliance, knowledge deficits, decision frames, industry, business size, and social norms embrace a high risk of non-compliance for this population. The paper acknowledges that the framework is valuable, useful and relevant in outlining the tax situation for small business owners.

Keywords: Small business owners; Tax compliance; Tax morale; Psychological factors; Decision frames, Tax knowledge; Perceived opportunity; Social norms
ORGANIZATIONAL REPORTING OF VOLUNTEERS: THE EXTENT AND MOTIVATION OF CURRENT PRACTICES

Stuart Tooley
Queensland University of Technology
Australia
stuart.tooley@qut.edu.au

Jill Hooks
Massey University, Auckland
New Zealand

ABSTRACT
Volunteers are strategic and mission-critical resources with the on-going ability of many Australian (and elsewhere) NFP organizations to serve their constituencies being both dependent and vulnerable to the availability and participation of volunteers. Although the contributions of volunteers to society are recognized at a national level, reporting at an organization level is less obvious. While we generally find some information on donated financial resources received by an organization, public disclosure on the amount and significance of donated non-financial resources in the form of volunteer contributions is less common. The invisibility of volunteer contribution and impact has the potential to lead, albeit incorrectly, to the conclusion that volunteers don’t matter and have little impact on the operating capability and capacity of the organization.

Framed within the theoretical positioning of social accounting, an on-line questionnaire was administered to organizations’ co-ordinators of volunteers to solicit their perceptions and to gain insights into organizational practices in the reporting of volunteer contributions of services. We find (N = 166) that respondents are unequivocal in their view that organizations should publicly acknowledge the contributions of their volunteers - and this requires more than a mere ‘thank you’. An elevated level of acknowledgement through reporting on contribution and impact promotes and ‘legitimizes’ volunteering as a community activity, is a public expression of organizational ‘respect’ for the work of volunteers, creates a sense of being ‘valued’ and feelings of ‘achievement and satisfaction’ on the part of volunteers, and facilitates greater [P]olitical awareness of the significance and impact of volunteers to the sustainability of NFP organizations and the broader sector.

The majority of respondents consider that a statement of volunteer contributions should be included alongside financial statements to give a more complete representation of organizational performance and its access to sufficient financial and non-financial resources to maintain its sustainability. No regulatory requirement to report and a lack of resources are cited as the predominate reasons for current non-disclosure. The findings support the need for a best practice model for recording and reporting volunteer contributions to recognise the significance of this resource. Ultimately, an organization’s reporting on volunteer contributed services is ‘the right thing to do’.
FINANCIAL PERFORMANCE AND EARNINGS MANAGEMENT OF SOCIALLY RESPONSIBLE INVESTING FUND FIRMS

Wan Suk Ko
School of Global Business and Technology
Hankuk University of Foreign Studies
Korea
wsko7@naver.com

ABSTRACT
While corporate social responsibility (CSR) activities are socially desirable, CSR firms may or may not perform financially well, depending on whether they can convey good corporate image to their customers and financial community and enhance their revenue enough to cover the expenses resulting from CSR activities. There have been many studies looking into this issue, with their conclusions being inconclusive where CSR firms are variously defined. This study examines the financial performance of CSR firms whose stocks are selected into the SRI funds. An SRI fund is the one that screens the companies whose stock investors buy on a list of socially-responsible criteria. The study will examine empirically various financial characteristics of SRI fund firms, the firms whose stocks are included in SRI fund, and their financial performance including capital market measure. If SRI fund firms are found to show good financial performance, a next question arises: Will the managers not try to have their company stock enlisted in SRI funds by earnings management when corporate earnings is an important factor for selection as an SRI firm? The study also empirically examines to answer this question, based on a sample of Korean firms, whose stocks were included in SRI funds (SRI funds were launched in the Korean market, mainly from the year).

Keyword: Corporate Social Responsibility, Social Responsibility Investing, Earnings Management
THE ROLE OF NAP IN IMPROVING VENDOR INNOVATION AND PERFORMANCE

Mohd Lutfi Iskandar Bin Sahid
Faculty of Business, Technology and Accounting (FBTA)
UNITAR International University
Malaysia
lutfi@unitar.my

ABSTRACT
The National Automotive Policy (NAP) which was implemented in 2006 as a protection and development policy for overall automotive ecosystem in Malaysia which consist of the automobile manufacturer and automotive components and parts industry. NAP aims to develop a globally competitive and sustainable automotive industry by increasing the value added activities and export volumes of vehicles and components. However, after ten years implementation, the Malaysian automotive components and parts industry is still not competitive as it was expected. It was reported that parts and components produced locally were low in value and quantity imported was more than exported which created an economic deficit condition. Many previous studies have focused on the competitiveness of national automobile manufacturer Proton but less attention was given on to the performance of the components and parts industry. In view of these issues, this research aims to measure the effectiveness of NAP in developing the local automotive vendors to become globally competitive vendor. This study to explore the role of NAP in influencing innovation and enhancing performance of the automotive vendor by determining which incentives is effective and has achieved the NAP objectives. This study will adopt quantitative research method, where a series of correlation and regression analysis will be made in all the policy initiatives and comparison analysis between the NAP objectives will be compared. This research is expected to contribute improvement to the automotive components and parts industry through the identification which policy initiative has a positive and influencing results to automotive vendor.
AN APPROACH TOWARDS DEVELOPING AN ALGORITHM FOR SOFTWARE APPLICATION ERROR ANALYSIS

Hoo Meng Wong
Information Technology
UNITAR International University
Malaysia
hoomeng@hotmail.com

ABSTRACT
The proposed algorithm is a conceptual guide which later helps as a guideline to build an Independent software plug-in component sitting at the logic tier with human-like intelligent of analysis activities. This algorithm enables the capability on analyzing software application errors which pulls the software log data and other related data from various databases such as Configuration Database, Production Support Ticketing System Database, and Application and System Monitoring Database, and base on the yield data as input information to apply automated analysis action. In addition, based on the proposed algorithm, it can categorize the repeatedly pattern of the software application errors in various categories and proactively apply resolution steps automatically to each category of software application errors. The analyzed information will be stored into a separate database catered for upcoming analysis and fine tuning the logic for better decision making in the near future.
THE STUDY ON BIG DATA ANALYTICS USING EMBEDDED ALGORITHM FOR OIL PALM PLANTATION

Pushparani Marappan  
UNITAR International University  
Malaysia  
pushpa@rcbuminiaga.com.my

Sagaya Sabastinal Amaladas  
UNITAR International University  
Malaysia

ABSTRACT

Big data analytics is an emerging technology that enables us to look at sustainable technology in a different dimension. Using data analytics in agriculture domain is a challenge as it is not a controlled environment. Big data analytics is a technology that has changed the way traditional BI were used in performing analysis. Oil palm industry is one of world’s economy contributor, there is a huge demand for palm oil related product and there is a constant shortage of it. Applying big data analytics in oil palm plantation will value add, as data can be accessed on a real-time bases and information can flow from palm produced to oil and oil related products. The objective of this research is to create a framework for big data analytics to assist in making better operational decision using embedded weight estimation algorithm. This framework will assist in performing data analytics based on data captured form various source and in various forms using weight estimation algorithm. This algorithm is also used to reduce or remove pilferage and miss management of palm produce; by estimating weight of palm bunch at plantation site and compared with actual weight from weighbridge controller. Oil quality is determined based on palm bunches, if there is delay in sending palm bunches to mill then it will affect the quality of oil produce. Getting real-time data is one way to solve these challenges and this could be achieved by embedding weight estimation algorithm in a tablet and capturing data from various location. Data analytics performed using this framework will enable efficient operational decision making.
USING BIG DATA ANALYTICS MODEL TO ASSESS SENENG PERFORMANCE

Hussein Raad
UNITAR International University
Malaysia
mc1401mc0096@student.unitar.my

Sagaya Amalathas
UNITAR International University
Malaysia

ABSTRACT
In recent times, big data analytics has become a major trend in catering data queries that has been growing dramatically. This data, which comes from various sources, e.g. media, communication devices, internet, business, etc. and there are many difficulties and challenges that one faces while handling it. Data mining is a process intended to reconnoiter analytical data (typically business or market associated data - also acknowledged as "Big data"). In this paper, we great fairly simple big data analytics models to achieve the answer why some retail outlets fail and some succeed, improve membership renewal rates, improve the return frequency of P1 member, and improve the basket size for each transaction or each member.
RELATIONSHIP BETWEEN SERVICE QUALITY ON CUSTOMER LOYALTY: MEDIATED BY CUSTOMER SATISFACTION AT TELECOMMUNICATION SERVICE PROVIDER

Norizzati Azudin
UNITAR International University
Malaysia
norizzati@unitar.my

Nirmala d/o Subramanian
UNITAR International University
Malaysia

Marfuzah Muhamad
UNITAR International University
Malaysia

ABSTRACT
Rapid changes in telecommunication technology have opened more opportunities to the services providers with wider products choice for customer to choose from. This study is carried out to determine the contributing factor that lead to customer loyalty to the telecommunication service provider in Malaysia. Data were collected from 200 user of telecommunication service in Kuala Lumpur area. The result and finding of this study indicated that the service quality dimensions which are featured in assurance, reliability and tangibility influence customer satisfaction as mediator to customer loyalty.
USE OF SOCIAL MEDIA AS A SOURCE OF INFORMATION IN EMPLOYMENT MATTERS

Shazanah Sarwar Khan
Faculty of Business, Technology and Accounting
UNITAR International University
Malaysia

Hussain Alim Shakoor
Faculty of Business, Technology and Accounting
UNITAR International University
Malaysia
alimshakoor@unitar.my

ABSTRACT
This paper investigates the legality and use of social media in matters of employment including providing employment, terminating employment, performance appraisal and other similar employment related matters. The paper investigates the current legal situation and proposes research into 3 critical questions to form a public policy position paper. The policy paper will also propose amendments to the labour law in alignment with policy position derived from the research.
# INDEX OF AUTHORS

<table>
<thead>
<tr>
<th>Author Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ab. Jamil, Nasyra</td>
<td>65</td>
</tr>
<tr>
<td>Abdul Hamid, Adzhamsyah</td>
<td>67</td>
</tr>
<tr>
<td>Abdul Wahab, Effiezal Aswadi</td>
<td>67</td>
</tr>
<tr>
<td>Abdullah Hashim, Raemah</td>
<td>80</td>
</tr>
<tr>
<td>Adi, Sasono</td>
<td>84</td>
</tr>
<tr>
<td>Ahmad, Siti Nor Bayaah</td>
<td>81</td>
</tr>
<tr>
<td>Al Mallak, Mohammed Ali</td>
<td>19</td>
</tr>
<tr>
<td>Amaladas, Sagaya Sabastinal</td>
<td>95</td>
</tr>
<tr>
<td>Amalathas, Sagaya</td>
<td>96</td>
</tr>
<tr>
<td>Anbalaganb, Gayatri</td>
<td>42</td>
</tr>
<tr>
<td>Arai, Kohei</td>
<td>34</td>
</tr>
<tr>
<td>Ariff, Akmalia M.</td>
<td>67</td>
</tr>
<tr>
<td>Askary, Saeed</td>
<td>78</td>
</tr>
<tr>
<td>Ayodele, Freida Ozayize</td>
<td>63</td>
</tr>
<tr>
<td>Azudin, Norizzati</td>
<td>97</td>
</tr>
<tr>
<td>Bahari, Nurulazwanita</td>
<td>88</td>
</tr>
<tr>
<td>Banerjee, Somnath</td>
<td>56</td>
</tr>
<tr>
<td>Bareja, Katarzyna</td>
<td>53</td>
</tr>
<tr>
<td>Bartkowiak, Ryszard</td>
<td>83</td>
</tr>
<tr>
<td>Bekoe, Rita Amoah</td>
<td>24</td>
</tr>
<tr>
<td>Bekoe, Rita Amoah</td>
<td>43</td>
</tr>
<tr>
<td>Bergmann, Andreas</td>
<td>82</td>
</tr>
<tr>
<td>Bliss, Mark A.</td>
<td>10</td>
</tr>
<tr>
<td>Boccabella, Dale</td>
<td>46</td>
</tr>
<tr>
<td>Boden, Rebecca</td>
<td>54</td>
</tr>
<tr>
<td>Boles, Bryan</td>
<td>14</td>
</tr>
<tr>
<td>Bornman, Marina</td>
<td>90</td>
</tr>
<tr>
<td>Butt, Farooq Yahya</td>
<td>26</td>
</tr>
<tr>
<td>Cai, Weiyi Cynthia</td>
<td>7</td>
</tr>
<tr>
<td>Che Rose, Mazrul Hisyam</td>
<td>88</td>
</tr>
<tr>
<td>Chen, Charlene</td>
<td>33</td>
</tr>
<tr>
<td>Chen, Keji</td>
<td>57</td>
</tr>
<tr>
<td>Chen, Zhibin</td>
<td>73</td>
</tr>
<tr>
<td>Cheng, Lingsha</td>
<td>18</td>
</tr>
<tr>
<td>Chowdhury, Mohammad Salahuddin</td>
<td>41</td>
</tr>
<tr>
<td>Chu, Jenny</td>
<td>40</td>
</tr>
<tr>
<td>Cummings, Lorne</td>
<td>86</td>
</tr>
<tr>
<td>Curran, Michael</td>
<td>44</td>
</tr>
<tr>
<td>De Luca, Francesco</td>
<td>6</td>
</tr>
<tr>
<td>Devi, Susela</td>
<td>27</td>
</tr>
<tr>
<td>Devi, Susela</td>
<td>51</td>
</tr>
<tr>
<td>Devi, Susela</td>
<td>74</td>
</tr>
<tr>
<td>Dhar, Satyajit</td>
<td>56</td>
</tr>
<tr>
<td>El-Bannany, Magdi</td>
<td>71</td>
</tr>
<tr>
<td>Essel-Anderson, Anthony</td>
<td>43</td>
</tr>
<tr>
<td>Evans, Elaine</td>
<td>16</td>
</tr>
<tr>
<td>Feng, Tianyuan</td>
<td>86</td>
</tr>
<tr>
<td>Author/Name</td>
<td>Page</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Foltin, Craig</td>
<td>11</td>
</tr>
<tr>
<td>Foo, William Y.Y.</td>
<td>10</td>
</tr>
<tr>
<td>Fujitani, Ryosuke</td>
<td>52</td>
</tr>
<tr>
<td>Gepp, Adrian</td>
<td>9</td>
</tr>
<tr>
<td>Giedroyc, Magdalena</td>
<td>53</td>
</tr>
<tr>
<td>Goh, Lisa</td>
<td>22</td>
</tr>
<tr>
<td>Grandoni, Paul</td>
<td>60</td>
</tr>
<tr>
<td>Gregorczyk, Sylwester</td>
<td>83</td>
</tr>
<tr>
<td>Guermat, Cherif</td>
<td>54</td>
</tr>
<tr>
<td>Gul, Ferdinand A.</td>
<td>10</td>
</tr>
<tr>
<td>Gyamfi, Charles Ofori</td>
<td>43</td>
</tr>
<tr>
<td>Halabi, Abdel K.</td>
<td>41</td>
</tr>
<tr>
<td>Halteh, Khaled</td>
<td>9</td>
</tr>
<tr>
<td>Harahap, S. Nurwahyu</td>
<td>47</td>
</tr>
<tr>
<td>Haron, Hasnah</td>
<td>63</td>
</tr>
<tr>
<td>He, Liyu</td>
<td>16</td>
</tr>
<tr>
<td>He, Rong</td>
<td>16</td>
</tr>
<tr>
<td>Hejduk, Irena</td>
<td>83</td>
</tr>
<tr>
<td>Hiki, Fumiko</td>
<td>77</td>
</tr>
<tr>
<td>Hirai, Hirohisya</td>
<td>34</td>
</tr>
<tr>
<td>Hirose, Yoshitaka</td>
<td>34</td>
</tr>
<tr>
<td>Hitz, Joerg-Markus</td>
<td>4</td>
</tr>
<tr>
<td>Ho, Joanna L.Y.</td>
<td>18</td>
</tr>
<tr>
<td>Hong, Nanhee</td>
<td>31</td>
</tr>
<tr>
<td>Hooks, Jill</td>
<td>91</td>
</tr>
<tr>
<td>Hoque, Zahirul</td>
<td>15</td>
</tr>
<tr>
<td>Hossain, Mahmud</td>
<td>26</td>
</tr>
<tr>
<td>Houqe, Muhammad Nurul</td>
<td>5</td>
</tr>
<tr>
<td>Houqe, Muhammad Nurul</td>
<td>59</td>
</tr>
<tr>
<td>Inokuma, Hiroko</td>
<td>12</td>
</tr>
<tr>
<td>Islam, Md Kazi Saidul</td>
<td>26</td>
</tr>
<tr>
<td>Ismail, Shahrizal</td>
<td>81</td>
</tr>
<tr>
<td>Joshi, Mahesh</td>
<td>69</td>
</tr>
<tr>
<td>Kadak, Tarmo</td>
<td>62</td>
</tr>
<tr>
<td>Kajueter, Peter</td>
<td>35</td>
</tr>
<tr>
<td>Kang, Tony</td>
<td>31</td>
</tr>
<tr>
<td>Kapanya, Theerawit</td>
<td>68</td>
</tr>
<tr>
<td>Karmanska, Anna</td>
<td>83</td>
</tr>
<tr>
<td>Kato, Keikichi</td>
<td>75</td>
</tr>
<tr>
<td>Kenno, Staci</td>
<td>14</td>
</tr>
<tr>
<td>Khan, Shazanah Sarwar</td>
<td>98</td>
</tr>
<tr>
<td>Kim, Hyungtae</td>
<td>2</td>
</tr>
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<td>Kim, Ji Hye</td>
<td>61</td>
</tr>
<tr>
<td>Kim, Jin Bae</td>
<td>61</td>
</tr>
<tr>
<td>Kim, Seon Mi</td>
<td>72</td>
</tr>
<tr>
<td>Kimura, Taichi</td>
<td>85</td>
</tr>
<tr>
<td>Klimczak, Katarzyna</td>
<td>49</td>
</tr>
<tr>
<td>Ko, Wan Suk</td>
<td>92</td>
</tr>
<tr>
<td>Ko, YoungKyung</td>
<td>27</td>
</tr>
<tr>
<td>Ko, YoungKyung</td>
<td>74</td>
</tr>
</tbody>
</table>
Kumar, Kuldeep..........................................................................................................................9
Kusi, John Amoah .........................................................................................................................24
Lai, Karen M.Y ..............................................................................................................................10
Laswad, Fawzi ..............................................................................................................................19
Laswad, Fawzi ..............................................................................................................................21
Lau, Michelle .................................................................................................................................14
Law, Siong Hook ..........................................................................................................................51
Lee, Gun .........................................................................................................................................61
Lee, Jenny (Jiyeon) .........................................................................................................................2
Lee, Kin-Wai ...................................................................................................................................17
Lee, Paul .........................................................................................................................................11
Lee, Stephanie .................................................................................................................................11
Leinardo, Padwin ...........................................................................................................................8
Li, Yue ............................................................................................................................................22
Lim, Youngdeok ............................................................................................................................2
Lokman Hakim, Anwar Redhwan ...............................................................................................81
Lopez, Mildred ...............................................................................................................................20
Lu, Meiting .....................................................................................................................................33
Mahama, Habib .............................................................................................................................60
Mahmood, Nor Asiah .......................................................................................................................79
Marappan, Pushparani ...................................................................................................................95
Martani, Dwi ....................................................................................................................................84
Matsuda, Chieko .............................................................................................................................25
Mierzejewska, Malgorzata ...........................................................................................................76
Mohd Nasiruddin., Md Saiful Anuar ...........................................................................................81
Mohd Nor, Mohd Nazli ..................................................................................................................58
Mohd Saat, Nur Ashikin ..................................................................................................................51
Mohd Said, Haliza ..........................................................................................................................42
Mohd. Said, Rasidah .......................................................................................................................65
Morimitsu, Takahiro .....................................................................................................................85
Mueller-Bloch, Stephanie .............................................................................................................4
Muhamad, Marfuzah ......................................................................................................................97
Munap, Rudzi .................................................................................................................................88
Nadkarni, Sucheta .........................................................................................................................40
Neves Junior, Idalberto Jose ..........................................................................................................70
Ng, Feng Ling .................................................................................................................................79
Nguyen, Lan Anh ...........................................................................................................................38
Nienaber, Matthias .........................................................................................................................35
Nienhaus, Martin ............................................................................................................................35
Noguchi, Masayoshi .......................................................................................................................87
O’Connell, Brendan ..........................................................................................................................38
Obeid, Mohannad ...........................................................................................................................58
Obinata, Takashi .............................................................................................................................36
Ochi, Nobuhito ...............................................................................................................................30
Ohnuma, Hiroshi ............................................................................................................................75
Onumah, Joseph .............................................................................................................................64
Oon, Elaine Yen Nee ......................................................................................................................40
Opare, Solomon ...............................................................................................................................5
Owusu, Godfred Matthew Yaw .....................................................................................................24
Owusu, Godfred Matthew Yaw .....................................................................................................43
<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owusu, Godfred Matthew Yaw</td>
<td>51</td>
</tr>
<tr>
<td>Pamungkas, Bambang</td>
<td>84</td>
</tr>
<tr>
<td>Park, Soo Yeon</td>
<td>50</td>
</tr>
<tr>
<td>Paul, Salima Y.</td>
<td>54</td>
</tr>
<tr>
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<td>29</td>
</tr>
<tr>
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</tr>
<tr>
<td>Prorokowski, Lukas</td>
<td>23</td>
</tr>
<tr>
<td>Raad, Hussein</td>
<td>96</td>
</tr>
<tr>
<td>Rachma, Tahbis Gesta</td>
<td>47</td>
</tr>
<tr>
<td>Raimea, Sharfika</td>
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</tr>
<tr>
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</tr>
<tr>
<td>Ramutumby, Pusheletso</td>
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</tr>
<tr>
<td>Rodrigues, Paulo Henrique</td>
<td>70</td>
</tr>
<tr>
<td>Roudaki, Jamal</td>
<td>66</td>
</tr>
<tr>
<td>Ryabova, Tatyana</td>
<td>57</td>
</tr>
<tr>
<td>Sahid, Mohd Lutfi Iskandar</td>
<td>93</td>
</tr>
<tr>
<td>Sainty, Barbara</td>
<td>14</td>
</tr>
<tr>
<td>Sakaki, Masatoshi</td>
<td>12</td>
</tr>
<tr>
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</tr>
<tr>
<td>Salleh, Zalailah</td>
<td>58</td>
</tr>
<tr>
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<td>46</td>
</tr>
<tr>
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<tr>
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</tr>
<tr>
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</tr>
<tr>
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<td>98</td>
</tr>
<tr>
<td>Shau, Yaowen</td>
<td>33</td>
</tr>
<tr>
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<td>3</td>
</tr>
<tr>
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<td>13</td>
</tr>
<tr>
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<td>72</td>
</tr>
<tr>
<td>Shirata, Cindy Yoshiko</td>
<td>55</td>
</tr>
<tr>
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</tr>
<tr>
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<td>84</td>
</tr>
<tr>
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<td>64</td>
</tr>
<tr>
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</tr>
<tr>
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</tr>
<tr>
<td>Subramanian, Nirmala</td>
<td>97</td>
</tr>
<tr>
<td>Subramanian, Ravichandran</td>
<td>27</td>
</tr>
<tr>
<td>Sumi, Yuta</td>
<td>87</td>
</tr>
<tr>
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</tr>
<tr>
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</tr>
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</tr>
<tr>
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</tr>
<tr>
<td>Tontiset, Nattawut</td>
<td>89</td>
</tr>
<tr>
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<td>91</td>
</tr>
<tr>
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<td>46</td>
</tr>
<tr>
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<td>86</td>
</tr>
<tr>
<td>Ubaidillah, Moh.</td>
<td>37</td>
</tr>
<tr>
<td>Name</td>
<td>Page</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>van Zijl, Tony</td>
<td>5</td>
</tr>
<tr>
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<td>59</td>
</tr>
<tr>
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<td>38</td>
</tr>
<tr>
<td>Wachowiak, Piotr</td>
<td>83</td>
</tr>
<tr>
<td>Wahyuni, Ersa Tri</td>
<td>32</td>
</tr>
<tr>
<td>Wan Hawari, Wan Muhd Hisham</td>
<td>88</td>
</tr>
<tr>
<td>Wang, Guanzhen</td>
<td>73</td>
</tr>
<tr>
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<td>73</td>
</tr>
<tr>
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</tr>
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<tr>
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<tr>
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<td>37</td>
</tr>
<tr>
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<td>94</td>
</tr>
<tr>
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<td>69</td>
</tr>
<tr>
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<td>48</td>
</tr>
<tr>
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<td>68</td>
</tr>
<tr>
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<td>36</td>
</tr>
<tr>
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<td>63</td>
</tr>
<tr>
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<td>44</td>
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<td>44</td>
</tr>
<tr>
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<td>72</td>
</tr>
<tr>
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<td>72</td>
</tr>
<tr>
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<td>18</td>
</tr>
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</tr>
</tbody>
</table>
CONCEPTUAL CONSIDERATION OF THE LIMITS OF LEVEL 3 FAIR VALUE MEASUREMENT: BASED ON REVIEW OF THE CONCEPTUAL FRAMEWORK

Nobuhito Ochi
Professor
Shobi University
Japan
n-ochi@s.shobi-u.ac.jp

ABSTRACT

The IASB stated that in the review of the conceptual framework, if measurement uncertainty is very high, a measurement basis different from fair value may provide more appropriate information. If there is material uncertainty in measurement and lack of reliability, then fair value measurement may be inappropriate for both financial performance and financial condition. Level 3 fair value measurements are inappropriate for areas (called "Level 4" by the author) in which models are not formulated and that have material uncertainty in measurement. In this case, even if the estimate is appropriately disclosed, "faithful representation" cannot be considered sufficient.

The purpose of this paper is to elucidate “measurement uncertainty,” which impacts “faithful representation” in fair value measurement, from the perspective of “verifiability.” To do so, it will employ a conceptual examination of the limits of Level 3 fair value measurement based on IFRS 13 (Fair Value Measurement). In other words, with regard to Level 3 fair value measurement in financial investments, the author will conceptually delve into the areas not meeting the minimum reliable level from the perspective of the qualitative characteristics of accounting information. While taking into consideration recent discussions on reviewing conceptual framework, the author will reorganize the conceptual categories of verifiability (i.e., clarification of the “reasonable verifiability” categories) to underpin the fact that material uncertainties in measurement have obstructed constructing faithful representation. In addition, the author will discuss the problem that the dichotomy of direct and indirect found in IASB is not accurate enough to fully understand the concept of verifiability. In this context, the author will also suggest that the concept of verifiability, reorganized through “reasonable verifiability,” can satisfy the requirements for constructing faithful representation.

The core of the issue is the case of Level 3 fair value involving material uncertainty due to a lack of a formalized model (“Level 4”). In empirical research regarding value relevance of additional disclosure related to Level 3 fair value in the notes to financial statements, it would be desirable to employ more exhaustive analysis of value relevance by dividing Level 3 into “Level 4” and “other Level 3,” based on normative and conceptual arguments.

Keywords: level 3 fair value measurement, faithful representation, measurement uncertainty, verifiability
1. Introduction

The process of revision of IAS 39 (Financial Instruments: Recognition and Measurement) ultimately was completed with the publication of IFRS 9 (Financial Instruments) in July 2014. Calling for simplification of classification and measurement based on amortized costs and fair value in accordance with more objective standards such as business models and other matters, it does not establish traditional measurement categories based on reliability. However, in connection with review of the conceptual framework the IASB clearly proposed the concept of “measurement uncertainty” for matters such as unobservable inputs, and in the exposure draft (IASB [2015]) it stated that “measurement uncertainty” could serve in a trade-off function vis-a-vis relevance. Later, in the May 2016 meeting of the IASB board a tentative decision was made, reflecting comments on the exposure draft, that measurement uncertainty was a factor impacting faithful representation rather than relevance (ASBJ [2016], p. 11).

The purpose of this paper is to elucidate “measurement uncertainty,” which impacts “faithful representation” in fair value measurement, from the perspective of “verifiability.” To do so, it will employ a conceptual examination of the limits of Level 3 fair value measurement based on IFRS 13 (Fair Value Measurement). Below, this paper first will discuss the limits of Level 3 fair value measurement using models, from the perspective of reliability. Next, in connection with a review of the conceptual framework it will consider the relationship between “faithful representation” and “measurement uncertainty” and then, through considering a reconstruction of the conceptual category of “verifiability” (clarifying the category of “reasonable verifiability”), it will develop a conceptual grounding for the material uncertainty of measurement lacking in “reasonable verifiability” along with discussing how the concept of “verifiability,” including “reasonable verifiability,” could serve as a fundamental constituent element of “faithful representation.”

2. Fair value measurement and reliability in financial investment

(1) Fair value measurement in the IFRS

IFRS 13, which comprehensively covers measurement and disclosure of fair value, describes “fair value” as an exit value that would be paid as the price received or liabilities transferred in sale of an asset under conditions of orderly trading among market participants on the date of measurement. In measuring this value, the characteristics of assets and liabilities taken into consideration by market participants are considered and in addition to the assumption that they are not based on entity-specific methods of use or plans the concept is employed of the fair value hierarchy, in which inputs used in the valuation method employed in the measurement are prioritized. However, IFRS 13 does not introduce new rules on the kinds of cases in which fair value measurement is required or accepted.

While financial instruments make up a central part of the scope of applicability of fair value, IFRS 9 employs a method of classification based on “business model conditions” (how the entity manages financial instruments) and “cash flow conditions” (contractual cash-flow characteristics of financial instruments) (IFRS 9, Section 4.1). They are classified into three categories based on amortized value and fair value in accordance with their satisfaction of these conditions (Table 1). IFRS 9 does not include threshold values for reliability, and for assets such as unquoted equity instruments as well, for which measurement at the cost of purchase is acceptable under IAS 39 from the perspective of reliability of measurement, in principle fair
value measurement is employed, considering these to be financial instruments that do not satisfy the cash flow conditions.

Table 1. Classification and measurement of financial instruments in IFRS 9

<table>
<thead>
<tr>
<th>Contractual cash flow characteristics</th>
<th>Principle and interest only</th>
<th>Other than at left</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractual recovery of cash flow</td>
<td>① Measurement of amortized cost</td>
<td></td>
</tr>
<tr>
<td>Contractual recovery of cash flow and sale</td>
<td>② Fair value measurement through other comprehensive income</td>
<td></td>
</tr>
<tr>
<td>Other than above</td>
<td>③ Fair value measurement through net income/loss</td>
<td></td>
</tr>
</tbody>
</table>

* For equity financial instruments held for purposes other than sale, fluctuations in fair value may be chosen as “other comprehensive income.”

(2) Limits of Level 3 fair value measurement in financial investment

Under the IASB conceptual framework, “reliability” was replaced by “faithful representation” as one of the fundamental qualitative characteristics of accounting information, but common understanding of the characteristics that could faithfully represent economic phenomena cannot necessarily be said to be sufficient. To make this point clear, in the discussion below, “reliability” is defined as the degree to which measured value (representation) actually approaches the actual economic phenomenon (fundamental value) that should be represented, referring to the method in Ijiri [1968], pp. 192–195.1 The constituent elements thereof include the matter of objectivity as seen in the degree of variation ($V$), even if the average values ($\bar{x}$) of the results of measurement are the same, and the issue of faithfulness as seen in the difference ($B$) between the average value and the fundamental value ($\bar{X}$). The sum of both of these ($R$) is “reliability.” Accordingly, reliability $R$ is the sum of objectivity $V$ plus faithfulness $B$ (Ochi [2012], p. 123).

$$R = V + B$$ (the smaller this value, the closer the measurement is to the fundamental value)

Although the concepts of reliability, objectivity, and faithfulness are very similar, they are separate concepts. The replacement by the IASB [2010] of the concept of reliability with faithful representation that degraded the positioning of verifiability to a sub-property under this framework can be understood, for example as in the case of fair value measurement, to be efforts to improve the usefulness of accounting information by increasing reliability ($V+B$ is smaller for ④ than for ③ in Fig. 1) even though the objectivity of the measurements has decreased (distribution is larger for ④ than for ③), due to the higher degree of faithful representation (the measurement average $<\varepsilon>$ is closer to the fundamental value $<\bar{X}>$). In addition, what IASB [2010] criticized as "an international misunderstanding of the concept of reliability" is interpreted as verifiability in the sense of accuracy in "objectivity." But reliability

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1 As used from FASB [1980] until the revision of IASB [2010], “reliability” concerned faithful representation of the subject being represented, and assurance for users of information was defined as securing through verification the fact that measured values had the characteristics represented (FASB [1980], para. 59).
consists of not only objectivity but also faithfulness, as described in the next section the concept of objectivity is closely related to that of indirect verifiability, and faithfulness is closely related to direct verifiability.

Fig. 1. Relationships among reliability, objectivity, and faithfulness in accounting measurements

Here, under the formularized models under Level 3 fair value measurement (for example, the option pricing model), the possibility of a broad base of the distribution corresponding to the diversity of input values (variation in measured values, ①–③ under Fig. 1) basically is the same as for accounting estimates (e.g., allowance for doubtful accounts, defined benefit liabilities). However, in a domain in which measurement methods are not formularized, it is not only input values that may vary. Measurement frameworks themselves may vary as well, resulting in varied distributions, and in many cases there is no decisive factor for determining which expected value is close to the fundamental value (refer to ⑤–⑥ in Fig. 2).

Fig. 2. Diversity of distribution of measurement values and convertibility

In this case, 1) when it is possible to converge the diversity of measurements through the distribution of repeated proximate recalculations, as actually conducted in real-estate
appraisal (⑤ in Fig. 2), it might be a good idea to entrust efforts to shrink these gaps to reliable experts such as real-estate appraisers. However, 2) when as seen in assessment of the economic value of a brand the distribution is highly scattered due to marked diversity caused by variation in measurement methods (⑥ in Fig. 2), it is difficult even for experts to overcome such a state because fundamentally it is an issue of appraisal theory and financial engineering, and entrusting it to the judgment of management is unlikely to resolve the situation. In a domain of Level 3 fair value measurement in which important deviations will arise in the breadth of estimates due to the immaturity of measurement techniques (Ochi [2012] refers to this as “Level 4”), doubts will arise with regard to neutrality to guarantee faithful representation as well.

Such measurement issues arise due to the fact that while originally the factors causing uncertainty in measurement of fair value are identified widely as the assumptions of market participants in making pricing decisions, since this is a concept that includes not only input values but also risks of assessment techniques, in stratification of inputs classified in the fair value hierarchy of IFRS 13 (Levels 1–3) from the perspective of whether or not they are observable, such inputs are defined with a focus only on values input in assessment techniques (data) (IFRS 13, para. 73). Here, even when variation in measurement values arises due to a high degree of uncertainty about the values input to the formularized model in Level 3 financial instruments, it is possible to derive a useful measurement basis if they converge within a certain reasonable breadth (IASB [2015], para. BC6.56), and measurement values including diversity of immature model selection, as noted above (⑥ under Fig. 2) result in a material uncertainty on a different dimension than that of uncertainty of inputs (Table 2).

Table 2. Fair value hierarchy and measurement uncertainty

<table>
<thead>
<tr>
<th>Priority</th>
<th>Content of inputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1 inputs</td>
<td>Quoted prices (uncorrected) in active markets for identical assets or liabilities to which the entity has access on the measurement date</td>
</tr>
<tr>
<td>Level 2 inputs</td>
<td>Directly or indirectly observable assets or liabilities included among inputs other than the quoted prices included under Level 1</td>
</tr>
<tr>
<td>Level 3 inputs</td>
<td>Inputs not observable with regard to assets or liabilities</td>
</tr>
<tr>
<td>Material uncertainty domains</td>
<td>Diversity of measured values etc., due to immaturity of techniques (models)</td>
</tr>
</tbody>
</table>

Source: Prepared by the author based on IFRS 13

Financial instruments for which material uncertainties in Level 3 fair value measurement (described as “Level 4” above) could be problematic include securitized instruments (such as collateralized debt obligations, or CDOs), unquoted equity instruments, and insurance liabilities. While it would appear that fair value measurement of insurance liabilities has been abandoned following international criticism in the IASB, IFRS 9 permits recording of profits and losses on securitized instruments through fair value measurement when the cash-flow conditions are not satisfied (IFRS 9, paras. B4.1.22, B4.1.26, BC4.22, BC4.26), so that prices of similar instruments and price valuation models are used when no trading prices are available.

2 IFRS 9 refers to securitized instruments having a senior-sub structure as “contractually linked financial instruments.”

3 With regard to securitized instruments etc., IFRS 9 called for valuation of the original instruments serving as sources of funding for repayment and the backing cash flow, based on a “look-through approach,” to satisfy cash flow requirements.
However, in price valuation of CDOs, securitized instruments that triggered the financial crisis, the fact that valuations fluctuated widely depending on the assumptions used even under a copula model, the model used most widely as a standard manifested itself in the subprime loan problem, so that overreliance on immature models introduced significant externalities into financial and economic society. Accordingly, the assumption of correlation among collateralized assets came to be considered important and a variety of models was developed to estimate correlation, but since generally these have not yet reached the stage of being formularized valuation can vary substantially even for identical instruments depending on which model is chosen (Table 3).

### Table 3. Credit spread evaluation for CDOs in each tranche

<table>
<thead>
<tr>
<th>Copula</th>
<th>Equity</th>
<th>Mezzanine</th>
<th>Senior</th>
<th>Super-senior</th>
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<tbody>
<tr>
<td>Normal</td>
<td>1147.43</td>
<td>63.38</td>
<td>0.65</td>
<td>0.000</td>
</tr>
<tr>
<td>t (20)</td>
<td>1061.07</td>
<td>86.94</td>
<td>2.33</td>
<td>0.002</td>
</tr>
<tr>
<td>t (6)</td>
<td>899.52</td>
<td>127.82</td>
<td>9.11</td>
<td>0.043</td>
</tr>
<tr>
<td>t (3)</td>
<td>735.55</td>
<td>165.40</td>
<td>21.81</td>
<td>0.196</td>
</tr>
<tr>
<td>Reverse Gumbel</td>
<td>1018.34</td>
<td>59.01</td>
<td>19.04</td>
<td>2.685</td>
</tr>
<tr>
<td>Clayton</td>
<td>860.61</td>
<td>135.77</td>
<td>12.65</td>
<td>0.099</td>
</tr>
<tr>
<td>Frank</td>
<td>1324.02</td>
<td>15.54</td>
<td>0.00</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Unit: bp

Note: Measurements made classifying copula models by differences in the shape of interdependence among assets.

Source: Based on Shintani, Yamada, and Yoshiba [2010], p. 109, with some revisions.

When there is diversity in distributions and the difference among multiple expected values is important enough to affect investment decision-making, if management and other decision-makers may choose or average values at their discretion then that could not be said to increase faithfulness a priori. For example, valuation of unquoted equity instruments through hybrid valuation of other methods used for purposes such as M&A deals is a method of calculating within a certain breadth the results of valuation using each method and then deriving the ultimate valuation through consideration of matters such as overlapping among individual evaluation results. However, an assumption of this approach is that the results of each valuation method will be close. While the hybrid approach used in M&As and other transactions is easy to apply when the results of each evaluation method are close to each other, sufficient caution is required when applying this approach in M&A negotiations if the results of multiple evaluation methods are markedly different from each other. Probably there is a need to think about a stricter approach to accounting measurement, which differs from measurement for trading and other purposes, in which the range of judgment and discretion is comparatively broad for decisions based on supply and demand factors, power relations, and other considerations.4

Unquoted equity instruments within the scope of IFRS 9 Financial Instruments, published in December 2012 as part of the IFRS’ educational initiatives, calls for determining the weight of

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4 While the view that sees as problematic the gap with the ideal state (perfect, complete markets) of fair value measurement (the economic income concept) (e.g., Beaver [1998]), this is an issue that even at this stage has not been elucidated fully with regard to how it arises, in what cases, and the degree of a gap that is intolerable. On this point, Nissim and Penman [2008] expresses a viewpoint similar to that of this paper on the point of seeing it as one gauge for basic application of no-arbitrage price in judging the appropriateness of application of Level 3 fair value.
valuation results under each method when choosing an amount to best express fair value within a certain scope of valuation amounts by considering ① the reasonability of the scope of valuation amounts, ② relative objectivity of inputs, and ③ individual facts and conditions (paras. 14 and 15). However, even while recognizing that there is no absolute method established for each individual approach, it is unlikely that reliable figures could result from collecting together figures that are unreliable individually through use of multiple approaches together. When accounting measurements have the nature of a diverse distribution with important differences, simply averaging these cannot be described as a faithful representation, and in fact it can be considered not to satisfy the minimum standard of reliability.

3. Relationship between measurement uncertainty and verifiability

1) Measurement uncertainty in Level 3 fair value measurement

With regard to review of the conceptual framework, the IASB added the level of measurement uncertainty to the factors to consider in selecting the basis of measurement (IASB [2015], paras. 6.55, 6.56, BC6.56). Behind this is the fact that in the 2010 revisions to the conceptual framework reliability was replaced by faithful representation as fundamental qualitative characteristics of useful accounting information, but since this point already had been the subject of strong international criticism even at the stage of the materials for discussion prior to IASB [2015] this change is understood as a proposal intended to gain the understanding of related parties by approaching the pre-2010 IASB conceptual framework through clear statement of the tradeoffs of measurement uncertainty level without changing the terminology.

When measurements include material uncertainty, then even if the uncertain nature of estimates is disclosed in the notes it would not be possible to make up for the lack of clarity of financial performance in the financial statements themselves or major errors in measurements. IASB [2015] (para. BC5.12) identifies two cases of such uncertainty: ① when the scope of possible results is extremely broad and it is very difficult to estimate the probability of each result, and ② when measurement of resources or obligations requires an abnormally difficult distribution or a highly subjective distribution of cash flow rather than relating to the subject of measurement alone. While broadly speaking it would be included in these cases, keeping in mind the domain of “Level 4” within Level 3 fair value measurement in financial investment, perhaps one also should be explicitly conscious of the case ③ when objective convergence of diversity of measurement distributions is difficult in connection with the immaturity of a model.

In the domain in which measurement involves material uncertainty (“Level 4”), since even if the fundamental value exists it is not possible for those conducting measurement to observe it in reality (the assumptions of market participants do not converge), it is not self-evident that faithfulness will increase through measurement values of immature models. Unobservable fair value that depends on the judgments of management under such conditions is a misuse of fair value (Kothari, Ramanna and Skinner [2010], pp. 265–266), and fair value that is difficult to verify could be a hotbed for window dressing (Peasnell [2006], p. 9). Excessive expansion of fair value measurement results in such phantom precision not present in measured values. It might contribute more to useful investment decision-making, by avoiding distortions in the reliability of measurements, if measurements in the financial statements themselves used
acquisition prices and variations in the measured values among different methods of fair value measurement were disclosed in the notes, as ranges\(^5\) (Ochi [2012], p. 129).

As noted above, the definition of fair value in IFRS 13 emphasizes that it is not a company-specific measurement as a market-based measurement, and since the assumptions used by an entity in measuring fair value are ones likely to be used by market participants in pricing the assets or liabilities under current market conditions, in theory even different companies should reach the same estimates for the same items, and thus the entity’s intentions should not be related to fair value measurement (IASB [2015], para. 6.44). In this case, “If an entity is estimating the fair value of a specialized item, there may sometimes be little reason for the entity to assume that market participants would use assumptions different from those that the entity itself uses. In that case, measurement from a market participant perspective and measurement from the entity’s perspective are likely to produce similar measures” (IASB [2015], para. 6.33). However, the case in which “an entity is estimating . . . a specialized item” is understood to be conspicuous in the domain of material uncertainty (“Level 4”) within Level 3 fair value measurement above. Accordingly, the assumptions specific to the entity are fictitious under the assumptions of market participants, and even though it is only the relevant entity that makes such estimates, their peculiarity and reliability could be seen to be concealed by the fiction of the assumptions of market participants (Ochi [2012], p. 60).

(2) Doubts about the IASB’s explanations concerning verifiability

While the new way of thinking adopted by the IASB (under which measurement uncertainty is a constituent element of faithful representation) overlaps with the discussion of “Level 4” and the limits fair value measurement in financial investment mentioned above, we would like to add the following consideration of the importance of verifiability as well.

Reflecting in part the description in the current conceptual framework of verifiability as being useful for convincing users that the accounting information faithfully presents economic phenomena (IASB [2010], para. QC26), ASBJ [2015] emphasizes that verifiability is one of the important characteristics of financial information that increases the reliability of financial information presented in financial statements (ASBJ [2015], para. 24). In other words, since when material measurement uncertainty arises there is a possibility that independent observers having different knowledge might not reach consensus, measurement uncertainty is related to the degree of verifiability (ASBJ [2015], para. 19), and use of unobservable inputs (as in the case of Level 3), even when it could contribute to the provision of relevant information, could make it difficult to present the values faithfully because the degree of verifiability will decrease relatively (op. cit., para. 21).

On the other hand, IASB [2010], which degraded verifiability from one of the fundamental qualitative characteristics of accounting information, is based on the understanding that even

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\(^5\) Even if one could suppose that there would be measurement values with higher degrees of faithfulness than acquisition prices, since it is possible that fundamental value could be overvalued depending on the method of measuring fair value chosen, it remains uncertain whether the resulting degree of faithfulness would be higher than that of acquisition price (Ochi [2012], p. 129). With regard to fair value measurement including Level 3, doubts long have been expressed from perspectives such as that of subjectivity of inputs (e.g., AAA [2007]), and from the point of view that even if fair value information is useful for valuing an entity it is important to differentiate between recognizing it in financial statements themselves or in the notes, the view has been expressed that it is not necessary to identify in the financial statements fair value information including noise and reflect it in profits and losses (e.g., Ball [2006]).
though most of the forward-looking estimates that are extremely important to providing relevant financial information are not directly verifiable, elimination of information related to those estimates would greatly decrease the usefulness of financial information (IASB [2010], para. BC3.36), so that even if it lacks verifiability it is not necessarily the case that information is not useful (op. cit., para. BC3.34). Since in IASB [2015] the concept of verifiability is used with a meaning that is restricted to “direct verifiability” and if observing this same terminology for ASBJ [2015] then it would be difficult to verify forward-looking financial information until the time at which it arises in the future, an understanding is indicated under which verifiability is not necessarily an essential characteristic of useful financial statements as a whole.

However, the conceptual category of verifiability under the explanation in IASB [2015] leads to questions from the following perspectives (Ochi [2017], p. 6).

① (Direct) verifiability is used in a highly limited context (i.e., one close to matching verification as in inspection of cash balances), and it has been pointed out that (direct) verifiability under that limited context is not an essential characteristic of useful information. Traditionally, the definition of verifiability refers to the ability of knowledgeable independent observers to reach consensus that a certain representation is a faithful representation even if it does not match perfectly, and quantitative information does not need to be a single point estimate. Rather, it is said to refer to conditions under which the scope of conceivable amounts and related probabilities are verifiable (IASB [2010], para. QC26). Thus, there is no need to limit direct verifiability to a perfect match6.

② While fair value measurement is a measurement of the current price, even in a case in which the inputs to the measurement method involve a breadth of estimates including forecasts of the results of future events, if the model is formalized then it is verifiable within a certain reasonable extent.

③ Indirect verification as defined by the IASB is considered to refer to “recalculating the outputs using the same methodology” (IASB [2010], para. QC26), and this is no more than “that the chosen recognition or measurement method has been applied without material error or bias” (FASB [2006], para. S9(b)) and “does not guarantee the appropriateness of the method used” (FASB [2006], para. QC26). Since the appropriateness of the method used is not included in the perspective of reasonable verification, and direct verifiability is used in the highly limited context noted above, some narrow gaps in information that should be covered by verifiability appear between direct and indirect verification.

The way of thinking concerning verifiability that involves separating it into direct verifiability and indirect verifiability has been apparent since the time of FASB [1980] (Statements of Financial Accounting Concepts: SFAC No. 2, Qualitative Characteristics of Accounting Information)7, and basically this way of thinking is followed in the conceptual framework (IASB [2010], para. QC27) as well. Direct verification refers to verification of accounting measurement values themselves using direct evidence (FASB [1980], para. 87) and is

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6 Rather than an issue of black or white, this is an issue of whether verifiability is high or low, and naturally the more the distribution of measurements is concentrated around a single point the higher the verifiability of the figures used as measurement values of the phenomenon (FASB [1980], para. 84). Put another way, this concerns whether the degree of consensus on measured values is high or low, and instead of perfectly matching values a reasonable breadth is tolerable in the sense of a consensus of multiple opinions.

7 The terms “direct verifiability” and “indirect verifiability” themselves first came to be used starting with FASB [2006].
understood as an issue of the faithfulness of measurements, mentioned above. Specific examples given include cash calculation and market prices of securities. While this explanation frequently evokes images that are close to that of matching verifiability, today it is more expansive than at the time of SFAC No. 2, including measurements from estimates and, in particular, fair value based on financial theory, so that it would appear that the scope of direct verifiability differs over time.

On the other hand, indirect verification is verification limited solely to the accounting procedures used (FASB [1980], para. 87) and is understood as an issue related to the objectivity of measurement discussed earlier. In other words, it is confirmation through verifying the inputs to models, formulas, or other methods and using the same procedures to recalculate the outputs. For example, verification of inventories is conducted by checking inputs (quantities and costs) and recalculating end-of-term balances of inventories using identical cost-flow assumptions (such as FIFO) (IASB [2010], para. QC27). In addition, for the amount of depreciation over a certain period the depreciation method, estimate factors used, and consistently of their application from the start to the end of the period are verified (FASB [1980], para. 87). Under this definition it is not possible to guarantee through indirect verification whether the applicable information has a high degree of faithfulness of representation (FASB [1980], paras. 88–89), and this leads to the understanding that indirect verifiability is not a constituent element of faithful representation, while faithful representation also may have an independent existence even in the absence of (direct) verifiability.

What must be noted here is that fair value measurement using a formularized model involves aspects that cannot be discussed on the same level under the category of indirect verifiability as measurements of book values of end-of-period inventories and depreciation in a single fiscal period. For inventories, the main focus is on how to represent in fictional terms the amount distributed to each period through a formula, bound by a certain total amount of costs. While only indirect verifiability is appropriate for such a functional distribution method, measurement of Level 3 fair value through a formularized model makes it possible to verify the rationality of whether it is a faithful representation based on a benchmark supported by a market price called a no-arbitrage price. For example, the theoretical price of an option is a portfolio reproducing the pricing process of the underlying asset and the option’s payoffs under a number of market assumptions (option pricing model). When such a no-arbitrage price is available, it is possible to approach an objective value grounded in market prices.

Even though the Black-Scholes Model is based on certain assumptions, it is important to note that the quantification method has been formularized based on financial engineering guarantees, as a common scale used by market participants. While it is true that in Level 3 fair value measurement the measured values may vary with inputs based on the judgments of management under a formularized model, the same is true of estimates such as allowance for doubtful accounts. As noted above, “Verifiability means that . . . observers could reach consensus, although not necessarily complete agreement, that a particular depiction is a faithful representation. Quantified information need not be a single point estimate to be verifiable. A range of possible amounts and the related probabilities can also be verified” (IASB [2010], para. QC26). At the same time, in the “Level 4” domain in which as noted above no model has yet been formularized, there may be material uncertainties and deviations in measured values and it is not possible to reach consensus on reasonable estimates of amounts, so that in this sense indirect verifiability is the only reasonable approach in such a domain.
(3) Reconstructing the conceptual categories of verifiability

To elaborate on the issues with IASB conceptual categories using auditing of financial statements as an example, the auditor employs the systematic approach of verifying through audit methods that include the reasonability and appropriateness of choice of methods for estimate information for which matching verifiability is not possible. Of course, in the case of accounting measurements the significance of verifiability is focused on whether or not a particular representation can be said to be a faithful representation (faithfulness), and this is not necessarily the same as in the case of an audit, in which conformity to accounting standards (objectivity) is another gauge. However, auditors also need to make practical judgments, and when the rationality of measurements is questioned during verification of account measurements using evidence verifiability is an issue in auditing in the same meaning as in account measurements, and verification is conducted to determine whether or not a representation is faithful.

Auditors should be able to verify the reasonableness of estimates through interval estimation of variance in measured values, and it is conceivable that conceptual classification of verifiability could cover clearly the definition of verifiability through classification into “matching verifiability” (as in inspection of cash balances), “reasonable verifiability” (a concept that includes verification of the reasonableness of selection of methods), and “indirect verifiability” (verification of only the application of selected methods). As noted above, the IASB explains “direct verifiability” in a very narrow context (nearly “matching verifiability”). Subdivision into the two classifications of “matching verifiability” and “reasonable verifiability” has been employed here in order to avoid rhetoric that would suggest

8 The International Auditing and Assurance Standards Board (IAASB) has published International Standard on Auditing (ISA) no. 540 on audit procedures for accounting estimates including fair value measurement, which demands, in order to confirm the appropriateness of a model, ① the model’s theoretical soundness and mathematical integrity, including the appropriateness of model parameters, ② the consistency and completeness of the model’s inputs with market practices, and ③ the model’s output as compared to actual transactions.

9 It is likely that in most cases, if inventories and depreciation were calculated based on accounting standards then that would be an issue in the domain of indirect verifiability in a measurement sense since they are fictitious values, but in an auditing sense it would be an issue of direct verifiability since they conform to accounting standards. Since such abstraction of domains in which differences in the meanings of words arise between the two does not affect the subject matter directly, this paper has discussed direct verifiability and indirect verifiability assuming domains in which both measurement and auditing are discussed within the same sphere.

10 “Matching verifiability” narrows down the verification of measurements to one point, like market price or cash balance. This is synonymous with the result of "direct verifiability" as defined by the IASB.

11 “Reasonable verifiability” is defined as independent observers with knowledge reaching an agreement on the reasonableness of the estimate, which is within the definition of "verifiability" of the standard setter. Since it is a concept including verification of rationality of method selection unlike indirect verifiability, a guarantee (not 100%, but high) of faithful representation is given.

12 "Indirect verifiability" is limited to the recalculation of outputs using the same methodology (IASB [2010], para. QC27) and does not include the viewpoint of verifying validity and rationality of method selection, so it does not guarantee faithful representation.

13 “Direct verifiability” refers to verifying measurements through direct observation (eg., inspection of cash balances) (IASB [2010], para. QC27). The range of "direct observation" of the measurements used there is limited to "matching verifiability" as defined by the author, and it is clearly distinguished from accounting estimation (IASB [2015], para. 2.12).
an external view that includes the two classifications of direct and indirect verification in their entirety. In other words, “reasonable verifiability” refers to the possibility of independent knowledgeable observers reaching consensus, and this is a reconstruction of conceptual classification in accordance with the definition of verifiability by the standard setters (Table 4).

<table>
<thead>
<tr>
<th>Table 4. Conceptual categories of verifiability</th>
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<tbody>
<tr>
<td>Common to both the IASB and this paper</td>
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<tr>
<td>Direct verifiability</td>
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<td>(Blank area)</td>
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<tr>
<td>Indirect verifiability</td>
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Note: The area inside the bold frame is considered to be a constituent element of faithful representation. Source: Ochi [2017], p.10.

Auditing requires expression of an opinion at the level of reasonable assurance\(^{14}\), and for accounts suitable for “matching verification” it is possible to secure a very high degree of confidence through physical evidence. On the other hand, for accounts that include estimates audit procedures solidify the grounds for expressing an opinion through verification of whether these are within the range of reasonable estimates, and this is conducted through “reasonable verification” including the appropriateness of management’s choice of estimation methods. At the same time, indirect verification as defined by the IASB extends no further than verification of whether the methods chosen by management are applied without bias, instead of verifying the appropriateness of the methods applied, and it need not be mentioned that this does not reach the level of reasonable assurance at an audit level.

While verification of Level 3 fair value measurement through auditing (“reasonable verification”) can be conducted within a reasonable extent, when it includes cases involving material uncertainty in estimates, such as calculations made using unformalized methods (“Level 4”), then depending on the state of holdings of such assets they could have an impact on consideration of audit materiality as well (Fig. 3). This makes it difficult to accumulate the grounding for effective judgments by auditors (“reasonable verification”), so that only indirect verification can be employed. Under such conditions, no matter how diligently the auditors carry out audit procedures addressing material uncertainties in estimates at the level of reasonable assurance may merely invite the risk of litigation (Christensen et al. [2012], p. 140).

14 According to Christensen et al. [2012], p. 137, the Big Four audit firms set confidence for appropriate presentation of financial statements at 90–95%.
If the current broadly defined Level 3 fair value measurement (particularly “Level 4”) continues to be tolerated with the function of the view of market participants (actually an entity-specific view) and the cloak of use of the models (actually unformalized in financial engineering), then it would mean that conditions in which it is difficult even to conduct reasonable verification of information (interval estimation within a reasonable extent) would remain unaddressed. If measured values lack verifiability then the danger increases that what the information seeks to represent is not in fact represented faithfully, and as a result there would be a high likelihood that users would be more cautious. Particularly since the financial crisis, which resulted from failure due to overconfidence in the utility of immature models, one probably cannot say that information for which even reasonable verification is difficult would be useful a priori. Based on the argument presented through now, even if “matching verifiability” and “reasonable verifiability” together are fundamental constituent elements of faithful representation, this would not be unnatural in any way. This can be considered to be intimately related to the lack of material uncertainties in measurements.

If we elaborate this using the relationship mentioned earlier between a measurement’s faithfulness (proximity of average measurements to the fundamental value) and its objectivity (distribution of measurements) (Fig. 4), then it goes without saying that both faithfulness and objectivity would be at their highest in a case in which “matching verifiability” narrowed to measured values at a single point, such as market prices, is appropriate. Next, in cases such as Level 2 fair value or Level 3 fair value based on a formularized model, while is assumed that there is a certain breadth of variation according to the input variables, as long as this is within a reasonable extent then independent knowledgeable observers could reach consensus on it and reasonable verifiability could be achieved. While there may be high and low levels of objectivity according to accounting estimates (variation in inputs), it reasonably can be expected that average measured values would have a higher degree of faithfulness. On the other hand, in the case of a distribution with a high degree of variation in measured values due to diversity of measurement methods, material differences in measurement not within an extent considered reasonable by independent observers would arise. As a result, it would be difficult to achieve “reasonable verification” of faithfulness, and the only way to confirm the objectivity of individual measured values would be through indirect verifiability (Ochi [2017], p. 12).

Fig. 4. The relationship between verifiability, faithfulness, and objectivity (conceptual diagram)

Source: Ochi [2017], p. 11.
Major improvements in IASB [2015] include the reintroduction of the tradeoff relationship through measurement uncertainty and the fact that it considers prudence in terms of not just caution but asymmetry as well\(^\text{15}\), but as argued clearly in the past by ASBJ [2008] and others\(^\text{16}\) there is a need for reconstruction of the qualitative characteristics of accounting information in the direction of considering verifiability a fundamental constituent element of reliability and faithful representation (in a form that includes both “matching verifiability” and “reasonable verifiability”). In doing so, the deepening of discussion of verifiability between accounting measurements and auditing must not be obstructed as a matter of a different dimension. It would seem that the gaps that appear frequently between both fields may result from the problem that the concepts of verifiability and auditability are not used as common terms based on a clear consensus.

The underlying cause is the fact that under the IASB’s division of verifiability into direct and indirect versions the conceptual domain of reasonable verifiability, which should be included in the definition of verifiability, has been overlooked (whether intentionally or unconsciously). Including “matching verifiability” and “reasonable verifiability” together as a fundamental constituent elements of faithful representation can be considered important from the perspective of the soundness of the accounting system, not just the passive sense of avoiding inconsistencies between accounting and auditing. That is, when accounting measurements are conducted without consideration for (reasonable) verifiability, not only are the grounds for usefulness in decision-making damaged but a gap domain arises in which although accounting judgments can be made auditing judgments cannot be made fully, and this could be a breeding ground for accounting fraud. A situation that lacks reasonable verifiability (or auditability) can be considered an irresponsible case that has gone too far from the perspective of the responsibility of standard setters, who are expected to provide to financial and economic society a robust accounting system.

The reason the IASB [2010] degraded the positioning of verifiability to a sub-property is that it is difficult for financial information including future predictive factors to be verified (directly) until the future period arrives, and if the information that is difficult to verify is excluded, then the usefulness of financial information will decline significantly. However, that argument has in mind only ex post factological verifiability (whether it agrees with the realization value at the future point), and reasonable verifiability in the preliminary stage with respect to the reasonable range of estimates (from the current point of view, whether information-based estimates deviate from the reasonable range) is not taken into consideration. If there is no material uncertainty such as “level 4,” reasonable verification within a certain range is possible, and finding reasonable verifiability does not exclude relevant information and does not reduce the usefulness of financial information.

It is as a result of emphasizing the judgment of information dominant persons that subjective and uncertain estimation is incorporated by management into financial information. However, in the case where assessment techniques are not formulated, it is impossible for the logic itself

\(^{15}\) “Verifiability” is a key information characteristic in enabling prudence to function efficiently for coordination of interests as well (Watts [2003], p. 208; Kothari et al. [2010], pp. 255–256).

\(^{16}\) The ASBJ [2008] commented that the IASB’s explanation that this was simply a switch in terminology was not logically sound and that retaining verifiability as one of the fundamental characteristics would help ensure reliability of investors’ accounting information. JICPA [2008] also commented that verifiability provided assurance that accounting information was being presented and that it should be considered a fundamental constituent element of faithfulness of representation.
to enable selection of the technique from a market participant’s perspective, and this is a significant difference from estimation of other inputs. The IASB itself also declares that "verifiability is useful for convincing users that the accounting information faithfully presents economic phenomena" (IASB [2010] QC26), and conversely, “for some estimates, a high level of measurement uncertainty may contribute to the resulting information having little relevance, even if the estimate is properly described and disclosed” (IASB [2015], para.5.21). As a component of faithful representation, which defines such usefulness for decision-making, the concept of reasonable verifiability is considered to play a key role (Ochi [2017], p. 13).

4. Conclusion

This paper has attempted to develop a basis for the limits of Level 3 fair value measurement (the domain of “Level 4” in which material uncertainties arise) in financial investment based on IFRS and the argument over reviewing the conceptual framework, through clarification of the relationship to faithful representation and reconstruction of the conceptual classification of verifiability (clarifying the classification of “reasonable verifiability”). While the perspective of “reasonable verifiability” identified in this paper is no more than an identification of a single issue concerning selection of the grounds for measurement and the qualitative characteristics of accounting information, more active normative and empirical discussion of these points could contribute to the development of a robust accounting system integrating the fields of financial accounting and auditing.

Empirical research has shown that the lower the level of fair value, the lower the value relevance although value relevance is relatively higher when factors such as financial soundness and efficacy of governance systems are high, and that the lower the level of fair value the more likely additional disclosure concerning matters such as the efficacy of governance systems is to provide information useful to investors. However, it must be noted here that past empirical analysis of matters such as disclosure by level in the United States (SFAS no. 157) has argued for value relevance to Level 1 and Level 2 in connection with totalized Level 3 values mainly at banks and insurers, and there is a mixture of estimates that are based on formularized models (such as the option pricing model) and those that are not.

Of course, use of reasonable estimates is an essential component of preparation of financial statements, and it is not necessarily detrimental to the usefulness of financial statements. Rather, estimates need to be disclosed appropriately. Still, as noted above even the IASB [2015] has recognized that when the level of uncertainty of estimates of fair value is very high even if it is disclosed appropriately that the figures are estimates most information based on them could not be described as a faithful representation. The core of the issue is the case of Level 3 fair value involving material uncertainty due to a lack of a formularized model (“Level 4”), and it would be desirable to employ more exhaustive analysis of value relevance by dividing Level 3 into “Level 4” and “other Level 3,” based on normative and conceptual arguments.

17 Examples of Japanese literature surveying these overseas empirical studies in detail include Tokuga [2012] and Obinata [2011].
18 Examples include Kolev [2014], Song, Thomas and Yi [2010], and Goh, Ng and Yong [2015].
19 With regard to Level 3 fair value in particular, results of analysis have shown that through optional additional disclosure of information (Chung et al. [2015]), or if investors can identify that the levels of efficacy of governance (Song, Thomas and Yi [2010]) or the capital adequacy ratio, etc. (Goh, Ng and Yong [2015]) are high, considerable improvements in value relevance result.
REFERENCE

[4] ASBJ [2016], ASAF taito sokutei: IASB sutaffu ni yoru taian (“ASAF measurement: a proposal by IASB staff”) (Minutes of the 344th meeting of the Accounting Standards Board of Japan (4)-3).
[16] IFRS Foundation Education Initiative [2012], Unquoted equity instruments within the scope of IFRS 9 Financial Instruments.
[21] Nissim, Doron, and Stephen Penman [2008], Principles for the Application of Fair Value


[23] Ochi, Nobuhito [2012], *IFRS kosei kachi joho no sokutei to kansa: mitsumori, yosoku, risuku joho kakudai he no taio* (“Measurement and auditing of IFRS fair value information: responding to expansion to estimate, forecast, and risk information”), Kunimoto Shobo.


[27] Song, Chang, Wayne Thomas, and Han Yi [2010], *Value Relevance of FAS No.157 Fair Value Hierarchy Information and the Impact of Corporate Governance Mechanisms*, *Accounting Review*, vol.85, no.4, pp.1375–1410.


IMPACT OF INTELLECTUAL CAPITAL AND CORPORATE GOVERNANCE ON MANUFACTURING BUSINESS ORGANISATIONS IN DEVELOPING COUNTRIES: A STUDY OF PAKISTAN

Farooq Yahya Butt¹
Co Author: Dr Mahmud Hossain²
2nd CO Author: Dr Md Kazi Saidul Islam³

¹ Farooq Yahya Butt is a PhD student at Central Queensland University Australia.
² Mahmud Hossain, Department of Accounting and MIS King Fahd University of Petroleum & Minerals, Saudi Arabia.
³ Kazi Islam, Discipline of Accounting, School of Business and Law Central Queensland University, Australia.
1. Introduction

The Concept of intellectual capital emerged through three different phases comprising awareness, justification and importance (Chiucchi & Dumay, 2015). Businesses in earlier eras used to search secret reasons behind the success of one company over the other with the same level of investment. This era is called static era for development of IC (Giuliani, 2015). Once apprehended, companies tend to increase their interest in incorporating more towards intellectual capital to gain more advantage on their competitors (Nimtrakoon, 2015). The era of its recognition is termed as dynamic era (Giuliani, 2015). It always wonders what makes a company successful when its investments in fixed assets are the same as others. Shareholders may be reluctant in making decisions based on the book value of the companies. Different book values of organizations with the same level of capital kept the management of the companies on their toes to find out the ways to get full value of the investments made by owners of business. These continuous struggles lead businesses in developed countries towards the notion of intellectual capital. Initially many managers were not ready to accept the secret force behind their success. They were of the view that it was amount of investment in the fixed assets that was behind the success of the company. It had nothing to do with the skill set of the labor involved in production. Investments tend to shift from tangible to intangible (Maaloul & Zéghal, 2015) and the shift was first noticed by the developed countries with an increase in the reporting of intellectual capital (Khalique, et al., 2015).

Pakistan is the sixth most populated country in the world. Pakistan has a key role to play in three major areas namely, manufacturing and export of cotton and cotton related products, manufacturing and exporting of sports goods which highly depends on the current skill levels of labour in Pakistan (Williamson, 1999). The study tests if the businesses in Pakistan have suffered due to lack of importance of skilled labour. Changes in technology has created a need to train the existing resources with the innovations in manufacturing field. We attempt to reduce the gap in research by examining the effect of governance on IC and consider whether and how these factors affecting the performance of the firms. To the best of my knowledge only a few studies have been conducted in developing country like Pakistan (Makki & Lodhi, 2008; Mir & Nishat, 2004). We studied data for 10 years ranging from year 2005 to year 2014 with 1010 firm year observations selected from manufacturing entities registered on Karachi Stock Exchange (KSE4). We attempted to develop measurement models for examining the impact of intellectual capital and corporate governance on firm’s financial performance and corporate value. We studied the importance of corporate governance and intellectual capital about organisational structure and internal control system. We also studied the impact of intellectual capital corporate governance on firm’s financial performance. We found that an organization with strong control system and organizational structure results in better intellectual capital which eventually contribute to achieve higher financial results. The study has policy implications for implementing IC in manufacturing companies with potential impact on their financial performance, corporate governance and corporate value.

The study proceeds as follows section 2 reviews prior literature and presents hypotheses investigated in this study. Section 3 explains model and the methodology used in the study. Findings of the study are explained in section 4 with summary and conclusions follows in section 5.

4 Now known as Pakistan Stock Exchange (PSE).
2. Literature and Hypotheses

Earlier in the beginning of 21st century, the management perceived that the employees play significant role in expediting the success of an organization (Fitz-Enz, 2000). Efforts of researchers caused the shift to focus on the brains in organization rather than the physical assets (Farahani & Ramezan, 2015). During the last two decades companies across the globe realized the importance of reporting intellectual capital (Nimtrakoon, 2015). However, its importance is still not fully realized in developing countries (Dumay, 2016). Previously managers in developed countries, such as Germany, Japan and Hong Kong used to focus on understanding how the reporting of IC would benefit their companies, and consequently, they missed to understand the essence of reporting IC in broader perspectives (Dumay, 2016).

Research on importance of human capital, structural capital and relationship capital will facilitate organizations to find their weak points or to build on their strong attributes. Knowledge about corporate governance will facilitate to share it between employees of the firms through various knowledge sharing activities including on-site or off-site training. At the same time, it will be beneficial for the shareholders in the developing countries to know exactly where their business stands after years and years of repetition tasks conducted in the organization. They need to make procedures where all actions can be monitored and gathered for the benefit of those who are following (Pablos, 2004). Accountability, fair procedure and control are critical effective governance in a business organization. Fair procedures are necessary for getting optimum output from the components of IC. Top level managers are entrusted with responsibilities to assess the challenges faced by employees at operative level of a business. They are hired to find solution of the challenges that are faced by human factor (human capital), the structural capital (how to utilize investments in fixed assets) or by the relationship capital (how to capitalize on relationship with customers and suppliers).

Decisions about hiring policy, creating the atmosphere for policy development and forming the way the organization interact with the outside world are factors that greatly affect the corporate value and financial performance of the organization (Benevene & Cortini, 2010). In the good corporate governance system, managers endeavour to enhance the employee skill what is known as intellectual capital (Roos & O’Connor, 2015). Vision of the top management about the future opportunities is important for the growth of business (Cortés, et al., 2015). Duty of the management is to lead by examples and create an environment where everyone can see the involvement they have in the decision making. Further, Huselid (1995) concluded that high employee productivity is the result of investment in human capital. This not only results high performance but also increases employee motivation and decreases employee turnover.

Hypothesis 1: Intellectual capital efficiency has a positive relation with corporate governance.

An effective corporate governance system is necessary to protect the interest of shareholders and other stakeholders of a firm. A firm may be able to compile the knowledge shared by its top management in the form of intellectual capital but there is a possibility that people at top level can use their powers for their own benefits. None of intellectual capital component is of any advantage for the firm without operative supervision (Khali que, et al., 2015). In other words, intellectual capital in form of corporate governance is complimentary for the investments made in tangible and intangible assets (Khanchel, 2007).

A firm with better corporate governance attracts more investors and increases firm’s corporate value. Performance of the top management can be measured in monetary as well as non-
monetary terms. For the monetary terms the performance is measured using the long-term profitability. Business with sound corporate system can create extra value for the investors (Khalique, et al., 2015). The increase in the value of firms with sound corporate governance has been observed (Yasser, 2011). Various studies discussed corporate governance and corporate value relationship and found significant positive relationship between them (Klapper & Inessa, 2002; Yu & Zhou, 1994). In case of bad corporate governance, firms with a higher dependency on sources through debt are always at the risk by involving outsiders’ money. Lack of commitment by the management may create problems in potential growth of the business (Arora & Sharma, 2016). Absence of good corporate governance makes it easier for the managers to work for their own interests and manipulate with firms’ funds (Arora & Sharma, 2016).

Hypothesis 2: Firm’s financial performance has a positive relation with good corporate governance measures.

Performance of a business can be measured using various methods to calculate profitability and productivity. Profit can be a result of higher prices or an increase in the sales can be due to higher budget on advertisement. Growth in the revenue however is an indicator that shows improvement in the business over the years. Growth is directly linked with the productivity of the employees as it increased the output in terms of unit production. A business producing more in a year as compared to previous year is more likely to be considered as growing rather than growing in terms of the dollar amount (Baines, 1997) Batt (2002) stated that high skilled employees participates in efficient and effective decision making which increases the employees’ motivation and security leading ultimately to high returns. Further in support to the argument, the study conducted by Chen.et.al. (2005) found that revenue generation increases with the increase in human capital efficiency and vice versa. According to Huselid, Jackson & Schuler (1997), return on assets of the firm is positively associated with the human capital efficiency. Likewise, Flora et al. (2003) also found that firm’s human capital has a positive relation with the return on assets of the firm.

According to Bontis (1998), a firm having strong structural capital enables the employees to do new experiments which may result in innovation and better outcomes. Teruel and Solano (2007) is of the view that as the good management of structural capital the higher will be the revenue generation or vice versa. Study conducted by Ahangar (2011) has empirically proven that relational capital has positive strong association with employee productivity. Gittell et al (2010) in support to the argument stated that the strong will be the relational capital will have positive influence on the employee productivity. The findings of the study conducted by Carmeli and Azeroual (2009) suggested that the relational capital is major cause of variation in the revenue generation of the firm. Hormiga.et.al. (2011) further supported the argument that there is a positive link between relation capital and the rapid revenue generation.

Many research studies found positive relationship between intangible resources and firm performance on resource based view (Belkaoui, 2003; Chen, et al., 2005). Bontis et al. (2000) found that value of IC reported in terms of goodwill in manufacturing sector has almost doubled in a decade. Intellectual capital is a dominant source for many enterprises to gain competitive advantage in their respective workplaces (Marr, et al., 2004). It strengthens a manufacturing firm’s long-term competitiveness through positively affecting all performance indicators (Phusavat, et al., 2011). Firms that realized the importance of intellectual capital rather than the financial capital became successful in long term. While latter firms may have been a short-term success but could not sustain it over longer period (Wang, 2011).
Hypothesis 3: Firm’s financial performance is positively related with intellectual capital efficiency.

3. The Methodology and Model

Sample construction

Sample for the study is based on 1010 firm observations from 101 entities selected from textile sector and registered on Karachi stock exchange. Observations were spread over the period of 2005 to 2014. Initially total of 208 companies were selected from Karachi Stock Exchange but 107 entities were dropped due to non-availability of data. Data was either missing from the websites of the companies or the website were not updated for some entities. We dropped companies which were either closed or merged during these years and we did not include companies which commenced their operations before 2005. Data for IC ad CG was extracted from the annual statements of the companies retrieved either form their website or by visiting Karachi Stock Exchange. To find the impact of corporate governance we used the disclosures provided by firms in the annual statements. We used different proxies (Refer to Annex A) from the annual statements for measurement of corporate governance.

Historically, different measurements have been used in order to examine the firm performance by different studies (Cochran and Wood, 1984; Ittner and Larcker, 2003). Most of the studies examined the firm performance using a diversity of financial measures such as Tobin’s Q (Yermack, 1996; Weir et al., 2002; Kiel and Nicholson, 2003), ROA (Yermack, 1996; Zajac and Westphal, 1996; Shrader et al., 1997; Kiel and Nicholson, 2003), ROE (Bhagat et al., 1999; Adjaoud et al., 2007), ROI (Boyd, 1995; Adjaoud et al., 2007) and net profit margin (Bauer et al., 2004). The above measures can be categorized into two groups: market-based and accounting-based measures. Daily and Dalton (2003) suggest that the accounting-based measures consider the current financial performance of the company. On the Contrary, market-based measures consider the investor perceptions of the company potential performance.

Researchers have different opinions about both methods. Haniffa and Hudaib (2006) argued that there is no consensus in the literature as to which measure is the best indicator of financial performance. In addition, they report that every measure has its own strengths and weaknesses; thus there is no specific measure to be the best proxy for financial performance. ROA in terms of accounting profit was cited by Demsetz and Lehn (1985) as more representative of underlying business parameters in terms of year-to-year fluctuations than stock market rates of return, because the latter are more reflective of expected future developments rather than actual business conditions. This concept had been widely deployed by corporate governance studies (Gompers et al., 2003; Haniffa and Hudaib, 2006; Klapper and Love, 2004). Historical reports such as accounting-based measures do not consider the future prospects of firm performance, but they are the most comprehensive indicators of the current status of firm performance.

Market-based measures of firm performance are particularly problematic in the context of emerging markets, where most firms are characterized by debt-financing rather equity financing. Therefore, market-based measures are unrepresentative of actual investor profits in this context (Kumar, 2004). The market share price of firms reflects their market value with the provision that the capital market is efficient according to the Efficient Market Hypothesis (EMH) (Gompers et al., 2003). Since Pakistan is one of the emerging market countries, the stock market is yet to be developed in a comparable manner with established ones. For instance, the impacts of publicly disclosed/available firm information will influence the market after a lag time which will manifest in share prices. Financial performance is subject to a great degree
of internal control, however market valuation is subject to fluctuations beyond management control, such as changes in market valuations and stock declines (Hambrick and Finkelstein, 1995; Grossman and Hoskisson, 1998).

Different researchers have pointed out some advantages of using accounting based measures in examining the firm performance. Generally, higher ROA and ROE denote an effective use of the firm assets and equities in increasing the value of the shareholders wealth by management. Moreover, another advantage of using ROA and ROE is that they exclude the problem of the company size. ROA and ROE present an effective and easy solution for the comparison between the companies (Lev and Sunder, 1979). Furthermore, Demsetz and Lehn (1985) point that ROA and ROE might consider year-to-year fluctuations in implied business conditions better than stock market return. This is due to that a stock market rate of return reflects anticipated future changes that may hide the current fluctuations in the business conditions.

We followed the studies conducted by Bontis (1998) to test the positive impact of strong structural capital which encourages employees towards innovations in traditional methods to achieve better results. We also considered studies conducted by Ahangar (2011), Gittell et al (2010, Carmeli & Azeroual (2009) to test the importance of relationship capital in employees’ productivity as well as in revenue generation. We found positive relation between empowering an employee with the increase in financial performance of the company.

Main purpose of this study is to examine the impact of intellectual capital and corporate governance on firm’s financial performance and corporate value in manufacturing industry of Pakistan. Therefore the study uses quantitative research approach to the empirical relationship among stated hypothesis. The study used Structural equation modelling (SEM) for data analysis. Structural equation modelling (SEM) is a second-generation multivariate statistical tool (Alavifar, et al., 2012) that is used to analyse the structural relationships among endogenous variable and exogenous. It is also called simultaneous equation model, because it runs multiple dependent and multiple independent variables simultaneously, while the regression is unable to do this. SEM is also the combination of factor analysis and multiple regression analysis that has been used to analyse the structural relationship between the measured variables and latent constructs. With the latent variables, it has become a quasi-standard in investigating complex causal relationships in business and social research (Bollen, 2011). This method is preferred by the scholars, as they considered the multiple and interconnected dependency in a single analysis. The dependent variables are endogenous variables and the independent variables correspond to. There are two categories of SEM, first one is the covariance-based (CB-SEM), and the second one is variance-based partial least squares (PLS-SEM) approach.

With the help of literature, the concluding hypothesis for the study is summarized below;

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>Intellectual capital efficiency has a positive relation with corporate governance.</td>
</tr>
<tr>
<td>H2</td>
<td>Firm’s financial performance has a positive relation with good corporate governance measures.</td>
</tr>
</tbody>
</table>
H3 Firm’s financial performance is positively related with intellectual capital efficiency.

Fig 1: Measurement and relation between variables.

Use of regression models:

Previous literature about management research has been dominated by the CB-SEM approach (Baumgartner and Pieters, 2003). PLS-SEM approach has now expanded some conspicuousness in the field of management studies due to its distinctive features over CB-SEM (Hair et al., 2011). PLS-SEM is a cause-effect modelling approach that is used to maximize the explained variance of endogenous latent construct and this is opposing to the objective of CB-SEM’s of reproducing the theoretical covariance matrix rather than focusing on explained variance (Hair et al., 2011). SEM is the combination of two models: structural model (inner model) and measurement model (outer model). Structural model or inner model explains the relationship between exogenous latent variables and measurement model or outer model which shows the association between the latent variables and observed manifest indicators. Figure shows the graphical representation of structural and measurement model of SEM. Normally, there are two different approaches to measure the unobserved or latent constructs: first is Reflective Measurement Model and second one is the Formative Measurement Model.

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5 Exogenous variables also called independent variables and this term is used to describe latent constructs that do not have any structural path relationships pointing at them.
6 Endogenous variables also called dependent variables and this term describes latent target constructs in the structural model that are explained by other constructs via structural model relationship.
7 Latent variables are underlying variables that cannot be observed directly, they are also called constructs or factors. Latent constructs are described as unobserved variables which are to be measured indirectly by two or more observed indicators.
8 Observed indicators also called manifest indicators and they can be measured directly, they act as indicators for and underlying latent variable.
Reflective measurement model is also called effect indicators model because indicators are reflecting the underlying construct (MacKenzie et al., 2005) and the causality directions is going from latent construct to the indicators (Wong, 2013). In fig.1 latent variables LV1 and LV2 have reflective measurement models. Moreover, in reflective measurement model indicators are interchangeable or replaceable without any scruples and they are highly correlated. On contrary, in formative measurement model the indicators cause the construct and the single headed arrow move from indicators to the latent construct. The sense of the latent construct is derived from the joint influence of the indicators. LV3 in fig1 is measured through formative measurement model. Furthermore, indicators are not interchangeable and they may have positive, negative or even no correlation among themselves (Haenlein and Kaplan, 2004). Insignificant indicators of the reflective measurement model is dropped without any hesitation, whereas, in formative model we can’t remove any indicator without solid reason or justification because it leads to the issue of content validity. It is important for the researchers to distinguish between the reflective and formative measurement model to avoid the misspecification of the model.

CB-SEM covers only reflective measurement model that has been run through AMOS, LISERL, EQS, and MPlus, whereas, PLS-SEM covers both reflective and formative and carried out by using SmartPLS, WarpPLS, VisualPLS and PLS-Graph. In this study, we have both reflective and formative measurement models and analysis has been carried out using SmartPLS. PLS-SEM is a permissive modelling technique of SEM that require no assumption about the normality of the data (Vinzi et al., 2010). That’s why PLS-SEM is a good alternative of CB-SEM when the following conditions are transpired (Bacon, 1999; Wong, 2010):

1. Sample size is small.
2. Accurate model specification can’t be guaranteed.
3. Predictive accuracy is utmost.
4. Applications have minimal available theory.
5. Indicators are lesser than three or there are too many indicators even more than 50.

Besides of all these advantages, it is also important to know that PLS-SEM is not suitable for all types of statistical analysis. So, it is necessary for the researchers to be aware about the shortcomings of PLS-SEM. Some of these are as follows:

1. PLS-SEM provides single headed arrows, it can’t provide model undirected correlation.
2. High valued structural path coefficients are required if the sample size is too small.
3. Loadings and path coefficients may be biased due to the lack of complete consistency in the values of latent variables.
4. Sometimes, there is a probability for the mis-handling of multicollinearity problem.
5. A potential lack of complete consistency in scores on latent variables may result in biased component estimation, loadings and path coefficients.

Instead of all these limitations, PLS-SEM is a useful multivariate tool that is applied in many research articles, reports and projects specifically, when the data set is too small and not normal distributed (Wong, 2013). Moreover, PLS-SEM has been become very popular in the field of
marketing, operations management, business strategy, strategic management, corporate governance, management information system and behavioural science (Bass et al., 2003; Chin et al., 2003; Henseler et al., 2009; Hulland, 1999; Sosik et al., 2009; Wong, 2013).

4. The findings

Corporate governance (CG) and intellectual capital (IC) construct of this study are measured at formative through formative approach. The evaluation criteria for formative measurement model is different form the reflective measurement model. Indicator reliability, internal consistency, convergent validity and discriminant validity are meaningless in case of formative measurement model. Formative measurement model is evaluated based on following criteria:

- Multicollinearity
- Outer Weights and Significance of Outer Weights

Collinearity among the indicators is a common issue in formative measurement model, so it important firstly we examine the collinearity. Variance inflation factor (VIF) is calculated to diagnose the multicollinearity issue. It is suggested that VIF value should be lesser than 5 (Chin, 1998; Götz et al., 2010; Hair et al., 2011; Hair et al., 2012a; Henseler and Chin, 2010). It is noticed that in table 1 to table 10 (See appendix) all the indicators of CG and IC are having VIF lesser than 5 which denotes that multicollinearity is not a problem in this study in all the years.

The next step to evaluate the formative measurement construct is to examine the weight significance of the indicators. PLS-SEM calculates the formative indicators weight that measure the contribution of each indicator towards its formative latent construct. The weights are evaluated on the basis of t-value and it provides the evidence of latent construct validity (Petter et al., 2007). Significant indicator and weight indicates that the item explains a significant portion of variance of formative latent construct. Bootstrapping procedure with 500 resampling is being used to calculate the t-values and significance of the weights of CG and IC constructs. Table 1 to table 10 depict the weights and significance of CG and IC formative constructs. The indicators of CG show the mixed trend, some are significant and some are not significant. There is contradictory view about the retention or removal of insignificant variable. Some studies suggested that insignificant indicators should be removed from the study to obtain the accurate results of significant indicators (Diamantopoulos and Winklhofer, 2001), on the other hand some PLS-SEM scholars suggested that insignificant indicators should be retain in the study due to the issue of content validity (Bollen and Lennox, 1991; Cohen et al., 1990). In this study, non-significant indicators are also retained due to the violation of content validity. It is observed that from 2012 (Refer to Table 3) to onward the CG shows better management due the revision of Pakistan Corporate Governance act.

IC is measured through VAIC model, HCE and RCE are significant in all the years. Moreover, HCE is significant at 1% throughout the study period except 2006 as the calculated t-value is highly greater than 2.57 and these results are also consistent with previous studies as the HCE is the major component of IC. HCE leads to the generation of RCE and SCE. SCE is significant in year 2014 (Refer to Table 1), 2012 (Refer to Table 3) and 2010 (Refer to Table 5) to 2006 (Refer to Table 9) at different significant level. However, it is not significant in year 2013 (Refer to Table 2), 2011 (Refer to Table 4) and 2005 (Refer to Table 10) but it is not removed from the study due to content validity issue. RCE has also showed mixed trend, in some years it is significant and in some years it is not significant.
After the satisfactory evaluation of the measurement model quality, now we move towards second stage for the assessment of PLS-SEM out that is the evaluation of the structural model. Structural model shows relationship between the exogenous and endogenous constructs. The structural model is evaluated based on following criteria:

- Coefficients of Determination ($R^2$)
- Predictive Relevance ($Q^2$)
- Path Coefficients and Significance of Path Coefficients

**Coefficients of Determination ($R^2$)**

The magnitude of $R^2$ for endogenous construct is an important measure to assess the explanation power of the structural model because the main objective of the PLS-SEM approach is to maximize the explanation power of the endogenous latent construct. The range of the $R^2$ value is 0 to 1, but higher value indicates higher degree of predictive accuracy. Furthermore, the level of $R^2$ depends upon the discipline of the research, in some disciplines 0.20 is even considered as a high value such as consumer behaviour (Hair et al., 2011). In the field of management and marketing $R^2$ value of 0.25, 0.50 and 0.75 for the endogenous latent construct can be the rough rule of thumb denote as weak, moderate and strong respectively.

In this study, IC an FP are the endogenous constructs and CG is the exogenous construct. The first hypothesis of the study is related to the CG and IC. The IC $R^2$ (Refer to Table 11) value ranges from 0.162 to 0.676. In year 2014, 2011 and 2008 the $R^2$ value are higher than 0.25, it indicates that model has the weak explanatory power, whereas, in year 2012, 2010, 2009 and 2007 the values are higher than 0.5 it implies that model has the moderate explanatory power. In short it is concluded that CG explains the IC 0.162 to 0.676 and good CG leads to higher IC efficiency. On the other hand, the CG and IC explains FP jointly 0.323 to 0.821. It varies from year to year, in 2014, 2013 and 2010 the values are higher 0.25 threshold, means model has explanatory power greater than weak power. At the same time in year 2012, 2009, 2008, 2006 and 2005 the values are high than 0.5 which depicts that model has the moderate explanatory power. Whereas, in 2007 the $R^2$ value is higher than 0.75 that implies that the model has the extensive explanatory power. Higher CG and higher IC leads to superior performance. Moreover, higher level of CG and IC also leads to the obtaining and sustaining the competitive advantage.

**Predictive Relevance ($Q^2$)**

Predictive relevance is another tool for the assessment of structural model. It provides the model’s ability to predict. Stone-Geisser’s $Q^2$ (Geisser, 1974; Stone, 1974) is a prominent measure to assess the predictive relevance. Blindfolding procedure of PLS-SEM is used to calculate the value of $Q^2$ and it is suggested that for the predictive relevance the value of $Q^2$ should be greater than 0 (Chin, 1998; Latan and Ramli, 2013). Furthermore, the $Q^2$ value of 0.02, 0.15 and 0.35 is considered as weak, moderate and strong predictive relevance respectively. In this study the $Q^2$ value of both endogenous constructs (IC & FP) are greater.
than 0 threshold which clearly depicts that the model has a strong predictive relevance in all the years of study.

Path Coefficients and Significance of Path Coefficients

The value of path coefficients are used to assess the strength of relationship among the endogenous and exogenous constructs. Chin, (1998) suggested that the value of path coefficients should be around 0.2 to consider meaningful relationship and 0.3 or above for ideal relationship. However, the lower value of path coefficients does not indicate that it is an unimportant relationship (Brown and Chin, 2004; Dibbern and Chin, 2005). The significance of each path coefficients is assessed through bootstrapping and resampling. In this study 5000 resampling is used assess the significance of the path coefficients.

The first path coefficient (β) is related to CG and IC. The statistical results depict that the path coefficient form CG to IC is highly significant at 1% in all years as the calculated t-values are higher than 2.57 as a threshold. Moreover in all the years β values are higher than 0.3 suggested by Chin (1998) as ideal relationship. These statistical values confirmed the H1. These results are also constant with previous studies, good CG leads to higher level of IC efficiency which may use to obtain and sustain competitive advantage. Second path coefficient of the study moves from CG construct to FP construct. The value of these paths are also higher than the 0.3 threshold and significant in all years except year 2013, 2007 and 2005, which implies that CG has a stronger relationship with the FP. In year 2007 the CG and FP path coefficient is negative which depicts that CG effects negatively to the FP, it is due to poor management of CG. The empirical values supports to H2 in all the years except 2013, 2007 and 2005. Moreover, it can be concluded that better CG leads to better financial performance. IC is also a key diver for strategic performance. The third hypothesis of this study is better IC efficiency leads to better FP and empirical values supports to this hypothesis because the calculated values are significant at 1%, 5% and 10%. So, finally it is concluded that IC and CG both are the components of superior business performance.

5. Summary and Conclusions

The first hypothesis of the study is related to CG and IC. Based on empirical findings, it is concluded that higher level of CG leads to better IC efficiency. If a company has better internal control system and organization structure, it would lead to higher level of IC which is a significant tool for the obtaining and sustaining competitive advantage. Board independency, CEO duality, board meeting etc. are the dominant factors of CG. As we know that independent board play positive role to promote IC because it works for the objective of company. Moreover, the achievement of greater level of IC efficiency is not possible without the support of CG.

The second hypothesis depicts the impact of CG on firm’s financial performance. The empirical findings significantly support this hypothesis that efficient CG leads to superior financial performance. The finding of this hypothesis is matched with the (Miglani et al., 2015) that higher level of CG is beneficial for the firms to achieve higher operating and financial
performance. (Collett and Hrasky, 2005) found the same results that voluntary CG disclosures positively associated with the intention to raise the equity capital rather the intention to raise debt capital.

The empirical results of this study show that IC has a significant positive impact on firm’s financial performance and it confirms the third hypothesis. These results are consistent with the studies of Firer and Williams (2003); Gan & Saleh (2008); Cabrita & Bontis (2008) and Clarke et al. (2011) but the R2 value of this study is extremely greater than these studies. Moreover, HCE is a highly significant component of IC because its t-value is extremely higher than the CEE and SCE and these results are also consistent with the studies of Joshi et al. (2010) and Clarke et al. (2011). These results indicate that the value creation of Pakistani firms mainly depends upon human capital and it is suggested that an escalation in HC investment enhances the financial performance of Pakistan Stock Exchange listed companies.
Table 1: Sample Selection and Distribution

<table>
<thead>
<tr>
<th>Sample Selection and Distribution</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of observations initially selected</td>
<td>2,070</td>
</tr>
<tr>
<td>Less</td>
<td></td>
</tr>
<tr>
<td>Firm years without any website</td>
<td>160</td>
</tr>
<tr>
<td>Firms without availability of financial reports for disclosure items</td>
<td>900</td>
</tr>
<tr>
<td>Total Firm years observations</td>
<td>1,010</td>
</tr>
</tbody>
</table>

Figure 2: Measurement and Structural Model of SEM
Appendix 1: List of Tables

Table 1: Output of Formative Measurement Model (2014)

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Indicators</th>
<th>VIF</th>
<th>Weights</th>
<th>t-values</th>
<th>p-values</th>
</tr>
</thead>
<tbody>
<tr>
<td>CG &lt;- BSIZE</td>
<td></td>
<td>3.744</td>
<td>-0.199</td>
<td>0.938</td>
<td>0.349</td>
</tr>
<tr>
<td>CG &lt;- CEOD</td>
<td></td>
<td>3.024</td>
<td>0.040</td>
<td>0.247</td>
<td>0.805</td>
</tr>
<tr>
<td>CG &lt;- REMU</td>
<td></td>
<td>1.189</td>
<td>0.686</td>
<td>5.707***</td>
<td>0.000</td>
</tr>
<tr>
<td>IC &lt;- HCE</td>
<td></td>
<td>1.178</td>
<td>0.461</td>
<td>3.355***</td>
<td>0.001</td>
</tr>
<tr>
<td>IC &lt;- RCE</td>
<td></td>
<td>1.171</td>
<td>0.290</td>
<td>1.668*</td>
<td>0.096</td>
</tr>
<tr>
<td>IC &lt;- SCE</td>
<td></td>
<td>1.208</td>
<td>0.578</td>
<td>3.948***</td>
<td>0.000</td>
</tr>
</tbody>
</table>

*p < .10, **p < .05, ***p < .01

Table 2: Output of Formative Measurement Model (2013)

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Indicators</th>
<th>VIF</th>
<th>Weights</th>
<th>t-values</th>
<th>p-values</th>
</tr>
</thead>
<tbody>
<tr>
<td>CG &lt;- BSIZE</td>
<td></td>
<td>2.516</td>
<td>-0.252</td>
<td>1.146</td>
<td>0.252</td>
</tr>
<tr>
<td>CG &lt;- CEOD</td>
<td></td>
<td>3.003</td>
<td>0.860</td>
<td>2.854***</td>
<td>0.004</td>
</tr>
<tr>
<td>CG &lt;- REMU</td>
<td></td>
<td>1.177</td>
<td>0.146</td>
<td>0.996</td>
<td>0.320</td>
</tr>
<tr>
<td>IC &lt;- HCE</td>
<td></td>
<td>1.484</td>
<td>0.539</td>
<td>3.676***</td>
<td>0.000</td>
</tr>
<tr>
<td>IC &lt;- RCE</td>
<td></td>
<td>1.896</td>
<td>0.680</td>
<td>3.843***</td>
<td>0.000</td>
</tr>
<tr>
<td>IC &lt;- SCE</td>
<td></td>
<td>1.892</td>
<td>0.277</td>
<td>1.604</td>
<td>0.109</td>
</tr>
</tbody>
</table>

*p < .10, **p < .05, ***p < .01
### Table 3: Output of Formative Measurement Model (2012)

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Indicators</th>
<th>VIF</th>
<th>Weights</th>
<th>t-values</th>
<th>p-values</th>
</tr>
</thead>
<tbody>
<tr>
<td>CG &lt;- BSIZE</td>
<td>4.451</td>
<td>-0.229</td>
<td>1.475</td>
<td>0.141</td>
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</tr>
<tr>
<td>CG &lt;- CEOD</td>
<td>3.459</td>
<td>0.142</td>
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<td>0.397</td>
<td>2.859***</td>
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<td>2.071**</td>
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*p < .10, **p < .05, ***p < .01

### Table 4: Output of Formative Measurement Model (2011)

<table>
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<tr>
<th>Constructs</th>
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<th>p-values</th>
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<tbody>
<tr>
<td>CG &lt;- BSIZE</td>
<td>2.131</td>
<td>0.119</td>
<td>0.466</td>
<td>0.641</td>
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</tr>
<tr>
<td>CG &lt;- CEOD</td>
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<td>0.333</td>
<td>1.585</td>
<td>0.114</td>
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<tr>
<td>CG &lt;- REMU</td>
<td>1.449</td>
<td>0.408</td>
<td>2.841***</td>
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<td>0.430</td>
<td>2.724***</td>
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<td>0.061</td>
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*p < .10, **p < .05, ***p < .01

### Table 5: Output of Formative Measurement Model (2010)

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<th>Weights</th>
<th>t-values</th>
<th>p-values</th>
</tr>
</thead>
<tbody>
<tr>
<td>CG &lt;- BSIZE</td>
<td>2.782</td>
<td>0.343</td>
<td>2.601***</td>
<td>0.010</td>
<td></td>
</tr>
<tr>
<td>CG &lt;- CEOD</td>
<td>3.165</td>
<td>-0.111</td>
<td>0.729</td>
<td>0.466</td>
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<tr>
<td>CG &lt;- REMU</td>
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<td>0.315</td>
<td>2.752***</td>
<td>0.006</td>
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<tr>
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<td>0.559</td>
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<tr>
<td>IC &lt;- RCE</td>
<td>1.598</td>
<td>0.271</td>
<td>2.540**</td>
<td>0.011</td>
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<td>0.012</td>
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**p < .10,  **p < .05,  ***p < .01

**Table 6: Output of Formative Measurement Model (2009)**

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<th>Weights</th>
<th>t-values</th>
<th>p-values</th>
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</thead>
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<tr>
<td>CG &lt;- BSIZE</td>
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<td>1.972</td>
<td>0.038</td>
<td>0.285</td>
<td>0.776</td>
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<tr>
<td>CG &lt;- CEOD</td>
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<td>2.103</td>
<td>0.318</td>
<td>2.421**</td>
<td>0.016</td>
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<td>0.562</td>
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<td>IC &lt;- HCE</td>
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<td>1.750</td>
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<td>IC &lt;- RCE</td>
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<td>1.064</td>
<td>0.827</td>
<td>11.945***</td>
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**Table 7: Output of Formative Measurement Model (2008)**

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<th>VIF</th>
<th>Weights</th>
<th>t-values</th>
<th>p-values</th>
</tr>
</thead>
<tbody>
<tr>
<td>CG &lt;- BSIZE</td>
<td></td>
<td>1.517</td>
<td>0.031</td>
<td>0.120</td>
<td>0.905</td>
</tr>
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<td>CG &lt;- CEOD</td>
<td></td>
<td>1.543</td>
<td>0.123</td>
<td>0.503</td>
<td>0.615</td>
</tr>
<tr>
<td>CG &lt;- REMU</td>
<td></td>
<td>1.424</td>
<td>0.348</td>
<td>1.733*</td>
<td>0.084</td>
</tr>
<tr>
<td>IC &lt;- HCE</td>
<td></td>
<td>1.706</td>
<td>0.409</td>
<td>2.583***</td>
<td>0.010</td>
</tr>
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<td>IC &lt;- RCE</td>
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<td>1.752</td>
<td>0.014</td>
<td>0.103</td>
<td>0.918</td>
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<td>IC &lt;- SCE</td>
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<td>1.050</td>
<td>0.846</td>
<td>9.605***</td>
<td>0.000</td>
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**Table 8: Output of Formative Measurement Model (2007)**

<table>
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<tr>
<th>Constructs</th>
<th>Indicators</th>
<th>VIF</th>
<th>Weights</th>
<th>t-values</th>
<th>p-values</th>
</tr>
</thead>
<tbody>
<tr>
<td>CG &lt;- BSIZE</td>
<td></td>
<td>1.174</td>
<td>0.289</td>
<td>0.991</td>
<td>0.288</td>
</tr>
<tr>
<td>CG &lt;- CEOD</td>
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<td>1.134</td>
<td>0.037</td>
<td>0.138</td>
<td>0.881</td>
</tr>
<tr>
<td>CG &lt;- REMU</td>
<td></td>
<td>2.465</td>
<td>0.342</td>
<td>1.854*</td>
<td>0.044</td>
</tr>
<tr>
<td>IC &lt;- HCE</td>
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<td>3.076</td>
<td>0.374</td>
<td>3.241***</td>
<td>0.000</td>
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<tr>
<td>IC &lt;- RCE</td>
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<td>1.799</td>
<td>0.367</td>
<td>2.490**</td>
<td>0.008</td>
</tr>
<tr>
<td>Constructs</td>
<td>Indicators</td>
<td>VIF</td>
<td>Weights</td>
<td>t-values</td>
<td>p-values</td>
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<td>------------</td>
<td>------</td>
<td>---------</td>
<td>----------</td>
<td>----------</td>
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<tr>
<td>CG &lt;- BSIZE</td>
<td>1.358</td>
<td>0.026</td>
<td>0.197</td>
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<tr>
<td>CG &lt;- CEOD</td>
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<td>2.637***</td>
<td>0.008</td>
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<tr>
<td>CG &lt;- REMU</td>
<td>2.358</td>
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<td>IC &lt;- HCE</td>
<td>3.314</td>
<td>0.252</td>
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<td>0.375</td>
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<td>IC &lt;- RCE</td>
<td>2.123</td>
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<td>1.135</td>
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<td>8.023***</td>
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*p < .10, **p < .05, ***p < .01

Table 9: Output of Formative Measurement Model (2006)

<table>
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<th>Weights</th>
<th>t-values</th>
<th>p-values</th>
</tr>
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<tbody>
<tr>
<td>CG &lt;- BSIZE</td>
<td>1.459</td>
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<td>0.034</td>
<td>0.973</td>
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<td>CG &lt;- CEOD</td>
<td>1.469</td>
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<td>0.926</td>
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<tr>
<td>CG &lt;- REMU</td>
<td>1.795</td>
<td>0.360</td>
<td>1.708*</td>
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<tr>
<td>IC &lt;- HCE</td>
<td>1.374</td>
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<tr>
<td>IC &lt;- RCE</td>
<td>1.205</td>
<td>0.359</td>
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</tr>
<tr>
<td>IC &lt;- SCE</td>
<td>1.343</td>
<td>0.121</td>
<td>0.909</td>
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*p < .10, **p < .05, ***p < .01

Table 10: Output of Formative Measurement Model (2005)
## Appendix A: $R^2$ and $Q^2$ Values

<table>
<thead>
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<th>Year</th>
<th>Constructs</th>
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<td>0.114</td>
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<td>FP</td>
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<td>0.195</td>
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<tr>
<td>IC</td>
<td>0.235</td>
<td>0.061</td>
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<tr>
<td>FP</td>
<td>0.364</td>
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<tr>
<td>IC</td>
<td>0.552</td>
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</tr>
<tr>
<td>FP</td>
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<td>IC</td>
<td>0.405</td>
<td>0.186</td>
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<td>FP</td>
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<td>IC</td>
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<td>FP</td>
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<tr>
<td>IC</td>
<td>0.557</td>
<td>0.258</td>
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</tr>
<tr>
<td>FP</td>
<td>0.662</td>
<td>0.520</td>
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<tr>
<td>IC</td>
<td>0.283</td>
<td>0.088</td>
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<tr>
<td>FP</td>
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<td>FP</td>
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<td>FP</td>
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<tr>
<td>IC</td>
<td>0.234</td>
<td>0.101</td>
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<td>FP</td>
<td>0.530</td>
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Appendix B: Path Coefficients and Significance

<table>
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<th>Path</th>
<th>Path Coefficients</th>
<th>t-values</th>
<th>p-values</th>
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<tbody>
<tr>
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<td>5.362***</td>
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<td>CG -&gt; IC</td>
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<td>IC -&gt; FP</td>
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<td>0.001</td>
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<td>22.708***</td>
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<td>5.259***</td>
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<td>CG -&gt; IC</td>
<td>0.532</td>
<td>3.193***</td>
<td>0.001</td>
</tr>
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<td>IC -&gt; FP</td>
<td>0.637</td>
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<td>CG -&gt; IC</td>
<td>0.638</td>
<td>3.992***</td>
<td>0.000</td>
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<td>CG -&gt; FP</td>
<td>0.402</td>
<td>7.728***</td>
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<td>IC -&gt; FP</td>
<td>0.207</td>
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<td>0.025</td>
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<td>0.484</td>
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<td>0.000</td>
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<td>IC -&gt; FP</td>
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*p < .10, **p < .05, ***p < .01
# Appendix C: Variable definitions and measurement

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<tr>
<th>Variable</th>
<th>Definition &amp; measurement</th>
</tr>
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<tbody>
<tr>
<td>HCE</td>
<td>Human capital efficiency: formula for HCE = VA (value added) / Human capital (HC)</td>
</tr>
<tr>
<td>SCE</td>
<td>Structural capital efficiency: formula for SCE = structural capital (SC) / value added (VA)</td>
</tr>
<tr>
<td>CEE</td>
<td>Capital employed efficiency: formula for CEE = values added (VA) / capital employed</td>
</tr>
<tr>
<td>CEOD</td>
<td>CEO’s duality: where the CEO also holds the position of chairman. Information is provided in the annual statement</td>
</tr>
<tr>
<td>REMU</td>
<td>Directors’ remunerations: Provided in the annual statement as disclosure</td>
</tr>
<tr>
<td>BSIZE</td>
<td>Board Size: provided in annual statement as disclosure</td>
</tr>
<tr>
<td>ROA</td>
<td>Return on assets: measured as net profit after tax divided by total fixed assets</td>
</tr>
<tr>
<td>ROE</td>
<td>Return on equity: measures as net profit after tax divided by total equity</td>
</tr>
<tr>
<td>RG</td>
<td>Revenue growth: measured by increase in profit each year after operations.</td>
</tr>
</tbody>
</table>
REFERENCES


THE FAIRNESS LEVEL OF SUBCONTRACTING AND COST OF EQUITY

Shin, Sang Hoon Ph.D, Business & Economics College, Kyonggi University
Kim, Seon Mi Assistant Professor, Business School, Chonnam National University
Yoo, Seung Weon Professor, Business School, Korea University
Yu, Il Han Ph.D, Business School, Korea University

Abstracts:

This paper examines the effect of fairness level of subcontracting in indicating the earnings persistence. We investigate whether the fairness level of subcontracting influences the firms’ cost of equity. This paper involves drawing up subcontract dispute which are constantly being raised in relation to globalization of production plants, corporate social responsibility and sustainable growth. When firms have an unfair subcontracting, the image of those firms might be hampered and threatened the survival of those firms. However, it is also true that firms are burdened with the input cost to expand the infrastructure and to conduct the system for fair subcontracting. Thus, it is meaningful to present the empirical results by using the quantitative measurement of fair subcontracting on earnings persistence.

We use the fairness level of subcontracting which is designed to promote equitable development with large, medium and small firms in Korean market according to the concept of win-win growth. In this regards, we examine the effects of subcontract fairness level on earnings persistence and firm values from 2011 to 2014 for listed firm in Korean market.

We find that firms with the index of fair subcontracting are more persistent than firms without the index of fair subcontracting. Also, the earnings persistence is consistently positive relation with the fairness level of subcontracting. Secondly, we find the negative relation between cost of equity and fairness level of subcontracting and whether it is fair subcontracting or not. This results implies that the higher fairness level of subcontracting increase firm value and minimize the earnings volatility. This result might be interpreted that investors are concerned about the financial risks of lower fair level of subcontracting.

Keyword: fairness level of subcontracting, earnings persistence, firm value, COE.
I. Introduction

Many firms in the world are separating the manufacturing process from the supply chain due to high efficiency and high added values in the competitive business markets. That is, many firms concentrate only on high value-added business such as R&D, marketing, sales and so on, in order to accelerate the globalization. On the other hand, those firms are entrusted to manufacturing specialists to produce their products, as the results, firms can create their profit which is related to the success or failure of forming fair contract or not (Uher 1991). It is a type of subcontracting\(^1\) to perform the specific business as part or all of the firms’ business for another entity under a contractual agreement. Most firms are joining this global value chain across national boundaries. In this way, multinational firms such as Nike and Apple have been able to gain huge profits by launching high-value products. However, Nike’ profits have been hampered by entrusting their products to Southeast Asian firms which is perceived to be poor working environment. Recently, Foxconn as Apple’s subcontractor also is suffered from suicide issues of employees due to poor working conditions and high intensity workload. In this regards, social issues related to subcontracting continuously have been showed.

As the results of subcontracting dispute, the contractors have neglected the corporate social responsibility and the customers have deemed the contract as the unfair subcontracting. Those subcontracting parties are threatened by deterioration of corporate images or profitability deterioration such as consumer boycotts. In response to such unfair subcontracting, the UN has monitored the compliance of human rights policies with subcontractor or re-subcontractor. The United States has applied punitive damages in case of subcontract violations. However, there are not specific legislation on subcontract fairness has been implemented. On the other hand, Korean companies have grown in to a model of economic development centered on large corporations by the export drive policy that stated in the 1960s. In 1970s and 1980s, the polarization and vertical structure between large companies and SMEs has become more serious as the results of the high growth policy relying on large companies. Until now, inequitable subcontracting dispute such as delay of the payment or undue reduction of the contract amount may have arisen by asymmetric negotiation powers between SMEs and large companies. This impedes the overall

\(^1\) A legal agreement by which you hire another person or company to do part of a job you have been hired to do Merrian Webster.
competitiveness of Korean markets through the equitable development of large companies and SMEs. In addition, it is one of the factors to affect a negative influence on the sustainability management.

In order to consistently improve unfair trade practices in Korean market, “win-win index”, which is a quantified index of subcontract fairness level for large companies, is annually announced to promote fair subcontracting from 2010. The policy to ease unfair trade practices aims at laying the foundation for subcontracting between large companies and SMEs by evaluating the subcontracting fairness level periodically (Suh 2005). In particular, it takes useful measures to determine the level of subcontract fairness for large companies by providing various incentives depending on win-win index results.

Together with this, subcontracting dispute is consistently raised in relation to globalization of production plants, corporate social responsibility and sustainable growth. In the process of pursuing the unfair subcontracting, the positive image of companies that has been built for a long time is undermined in a moment. That is, subcontracting practices of each government have impact on the firms’ image or their profitability if any violating activities are found out. Also, compensation for its violation, arising from unfair subcontracting has huge impact on firm’s profitability as well as their images. With regard to this as well, unfair subcontracting situation makes it to threaten the firms’ survival by deteriorating profitability. Thus, its imposition may result in financial losses on corporate social responsibility activities, such as fair subcontracting. However, it appears that companies are burdened with the input of costs to expend the system and infrastructure for fair subcontracting. 2

In order to mitigate the high building contract costs that cause a financial loss, the government policies should aim at establishing an environment in which transactional relationship between large companies and SMEs monitored unfair trade practices to promote fair subcontracting. Therefore, in Korean market, fairness evaluation index of subcontracting is announced by the government as objective subcontract fairness’s index which has enacted due to the specificity of the economic structure for the reasons of unlike the case where the corporation is managed by the norm in the world.

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2 As a result of a questionnaire survey in the Small and Medium Enterprise Cooperation Center under the Federation of Korean Industries (FKI) for 2013 on “burdens related to the promotion of win-win growth of major corporations and the status of complementary tasks” targeted companies (100 companies) that are subject to the win-win index, 95.5% of responding companies (64 out of 67 companies) present that the costs related to win-win growth are higher in 2013 than in 2010. It is 56.7% (38 companies) respond that the cost burden is “more than doubled”, and it is 7.5% (5 companies) of all respondents respond “more than 70%”. In addition, 16.4% (11 companies) of all respondents answer that “more than 50% increase” and 10.4% (7 companies) answer that “30% or more increase”.

3
In this paper, it is meaningful to suggest that the fairness index of subcontracting by using such an improved indicator provides an empirical analysis on the relation between the firm value. In particular, this paper continuously suggests the necessity of fair subcontracting activities to the companies who spend enormous expenses in relation to the subcontract fairness and to the related organizations that operate various monitoring activities and systems for fair subcontracting, in order to further enhance the fairness of subcontracting.

To this end, this paper uses the “win-win index” measure which is objective and quantitative data to evaluate the subcontracting level in Korean market, in order to empirically examine the fairness of subcontract conditions of large companies and SMEs on firm value. As results of the empirical analysis of the relationship between subcontract fairness and firm value for Korean companies that have been assessed for win-win index from 2011 to 2014, there are negative relations between them. It means that firms who announce the win-win index have higher firm value rather that firms who do not disclose the win-win index.

Also, the level of win-win index is negatively correlated with the measure of firm value. This implies that firms with high subcontract fairness level have a lower cost of equity, and that the higher the subcontract fairness level, the higher firm value.

The composition of this paper is as follows. In chapter 2, precious research and research hypothesis of this study are presented. Chapter 3 explains the research model, variable definition, and sample selection with the research design of this study. Chapter 4 presents the results of the empirical results divided into descriptive statistics, Pearson correlation, and regression. Finally, Chapter 5 presents the conclusion and implication of this study.

II. Prior literatures and hypothesis development

2.1 Win-win index

This paper examine the effect of win-win index, which is objective and quantitative data that evaluate the subcontract fairness level with the concept of win-win growth that the Korean government introduced in the market. In order to promote equalities’ growth with large companies and SMEs, Korean market introduces the win-win index as a proxy of fairness level of subcontracting in legally. And we empirically examine the relation between
subcontracting fairness and cost of equity.\textsuperscript{3} The win-win growth that the Korean government introduced in 2010 is designed to enhance mutual cooperation actions to preserve and evolve corporate ecosystem from a mid- to long-term perspective, while large companies and SMEs seek short-term profit maximization, arising from the survival base of SMEs will weaken and create a crisis in the corporate ecosystem.\textsuperscript{4} Looking at the background of the introduction of these concepts, large companies in Korea have achieved rapid catch-up and economies of scale with high investment after benchmarking of advanced companies. However, the growing complexity of the industry and the complexity of technology have led to the difficult management environment of a single company. In addition, the polarization and vertical structure between large companies and SMEs in Korea has intensified, because government has grown only by developing economic development models centered larger companies. It is recognized that subcontractors face continuously undue disadvantages such as unreasonable costs reduction or unfair subcontract costs in subcontracting practices, arising from the excessive concentration of economic power and influence from large companies. It must be realized that the inequitable trading practices between large companies and SMEs have hampered the economic foundations of fair society, such as weakening trust between them and hindering social integration. Thus, the concept of win-win growth is introduced by government initiative, in order to present fundamental solutions rather than short-term prescription through voluntary and continuous participation to improve the fair subcontracting relationship.\textsuperscript{5}

As part of the establishment of the win-win growth infrastructure, the Korean government has set up the "win-win growth index", which is a measure of the level of mutual growth for each company, in order to promote mutual growth between large, medium, and small companies. It is estimated and published every year since 2012. Generally, win-win growth index which is announced means the previous year’s fairness index of subcontracting. <Table 1> present the structure of the win-win growth index that is evaluated by Two-Track evaluation system. By evaluating the performance of fair trade of large companies, implementation of the accompanying growth convention, and survey of feeling of co-growth level by SMEs, the government have reviewed and disclosed the level of win-win growth

\textsuperscript{3} In accordance with Article 20(2) of the Act on the promotion of cooperation between large, medium and small companies, win-win index is announced by Korea Commission for Corporate Partnership.  
\textsuperscript{4} press release of Small and Medium Business Administration (2010.9.29)  
\textsuperscript{5} Basic plan for win-win growth of large companies and SMEs (‘11~’13) and “2011 implementation plan announcement”, , Ministry of Knowledge Economy (2011.7.1)
**<Table1> the structure of win-win growth index**

<table>
<thead>
<tr>
<th>Category</th>
<th>Evaluation of Fair Trade and Accompanying Growth Agreements</th>
<th>Survey on the feeling of co-growth of SMEs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Object</td>
<td>Large companies</td>
<td>Primary/Secondary SMEs</td>
</tr>
<tr>
<td>Subject of evaluation</td>
<td>Fair Trade Commission</td>
<td>Korea Commission for Corporate Partnership</td>
</tr>
<tr>
<td>Method</td>
<td>Performance evaluation by large companies (Quantitative evaluation)</td>
<td>Survey of SMEs (Qualitative evaluation)</td>
</tr>
<tr>
<td>Time</td>
<td>Once a year (January to May)</td>
<td>Twice a year (August to December, January to May)</td>
</tr>
</tbody>
</table>

1. **Fidelity of the contents of the agreement (30 points)**
   - Reflecting standards and standard agreement on support for the agreement procedure
   - Size/level of support contents (Delivery price, sales expansion, finance, payment means, etc.)
   - First partner's support plan for secondary supplier

2. **Implementation of the Convention (70 points)**
   - Fair trade compliance level
   - Level of cooperation support content
   - Primary supplier's support for secondary supplier

3. **Violation of subcontracting laws (deduction)**
   - During the agreement, if the warning is violated

4. **Behavior against win-win growth (deduction)**
   - Employee irregularities

5. **Active participation in win-win growth (Advantage)**
   - Extension of term, re-agreement, support for partner companies, etc.

6. **Satisfaction Survey (Advantage)**

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Based on the evaluation of “2015 win-win growth index”, press release of Fair Trade Commission · Korea Commission for Corporate Partnership (2016.6.30)
In terms of the structure of the win-win growth index, six major items are assessed for large corporations. It is expected that not only Fair Trade with SMEs but also management innovation, and the productivity improvement of cooperation in the field, through the evaluation of the fidelity of the agreement contents and the implementation of the agreement contents as shown in Table 1. In addition, SMEs conduct surveys on 5 major items, and investigate the degree of cooperation in productivity improvement and management innovation fields such as human resource development, production, and research and development. As the results, they reflect this in the evaluation of the win-win growth index.

Under these evaluation structures in Table 1, the evaluation target is selected from companies with high social interest and high impact of index evaluation, among companies with high sales, from the end of the evaluation year to the beginning of the next year. According to the evaluation system, the selected companies are evaluated according to the 'fair trade agreement performance evaluation' and 'SMEs feeling survey'. Based on these results, the scores are summed up to the same ratio among the selected companies, and the scores are measured as four grades: excellent, excellent, good and average, etc. The evaluation results are announced mid-year in the year t+1, and various incentives such as one or two years exemption from Fair Trade Commission will be given to companies with "Excellent" and "Excellent" ratings. Therefore, it would be meaningful to carry out an empirical analysis on the relationship between subcontract fairness level and firm value and earnings sustainability using the win-win growth index, which is evaluated in objectively and quantitatively indicates the level of subcontract fairness.

2.2 Prior literatures and hypothesis development

The prior literatures on subcontracting issues have been focused on the terms of productivity and strategies of subcontracting between contractors and subcontractors. First of all, in the arguments of subcontracting strategies, its effect is examined for Japanese, American, and European companies (Chadwick and Rajagopal 1995; Katayama and Bennet 1996; Liker 2004; Martin et al 1995; Nischguuchi 1994; Kim 2009). The results of the study show that the cooperative network between large companies and SMEs is better than general
networks. In relation to productivity, prior literatures argue that subcontracting also are likely to create rapid adaptation to changes of market environment, shortening the time of new product developments, increased production efficiency, and reduced supply and transaction costs (McIvor, R. and M. McHugh 2000; Clark, K.B. 1989, Samson, R.C. 2005; Burt, D.N. et al 2004; Buckley, P.J. and M. Casson 1998). According to Paik et al. (2012), they suggest that the win-win growth between large, medium, and small companies reduce the potential risks in business to business transactions, eliminates polarization, and secures network competitiveness among them. In addition, prior literatures (Orlitzky et al, 2003; Margolis et al., 2007) show that meta-analysis have positive impact on firm performance by using win-win growth policies. Taken together, subcontracting activities of companies can positively affect firms’ productivity and thus increased productivity can enhance the sustainability of earnings among firms with fair subcontract.

According to the prior papers to emphasize the financial evidence of subcontracting issues, Kim et al. (2013) use the win-win growth index to predict the effect of subcontracting activities. That is, they employ a non-parametric test to analyze the effect of subcontracting index on cash-generating cycle, which is an indicator of SCM operational efficiency. The results also indicate that financial results differently act if subcontractor is failing to fully fair contract conditions. Paik et al. (2012) adds to the evidence indicating that stock prices reflect the expectations about the announcement of win-win growth policies. The paper also investigate that stock prices respond in a systematic manner to the release of information of win-win growth policies about win-win growth shows the negative effect on the abnormal returns. The results in Paik et al. (2012) imply the announcement of the mutual growth in terms of entrusted companies (large companies) is the one of mean that they predominantly allocate resources to partner companies and SMEs. These policies are considered to be an inducement of expected investment expenditure. Min and Kim (2013) analyze the effects of the grade of win-win growth on the financial performance in terms of profitability, stability, efficiency. And there are no significant results for efficiency, but, they indirectly demonstrate the significant results of improved profitability, liquidity and financial structure. However, it can be said there is a limit in that inconsistent results are produced for financial indicators, and the prior papers do not demonstrate how the win-win growth index can affect firm value for firms who disclose fairness level of subcontracting in Korean market. Following Kim and Oh (2016), they just examine whether firms with mutual growth and its index can improve
accounting transparency through compensating more audit fees, and that accounting information contributes to enhance the firm value. As a result, it is shown that the firms with good evaluation results of mutual growth are likely to pay high audit fees and those firms contribute to the value relevance. To sum up the results, in the case of subcontracting, the high fairness of subcontracting has positive effect on the financial structure and profitability of these firms.

On the one hand, after social issues arising from Nike's poor subcontractor working environment in the 1990s, corporate social responsibility activities expanded to include the fairness of subcontracting. In this way, subcontract fairness level is highly related to corporate social responsibility activities. For example, Dhaliwal et al. (2009) present a study that positive image of corporate social responsibility activities affects investment decision of investors and shareholders. Richardson and Welker (2001) argue that investors interested in social responsibility are willing to pay an additional premium on corporate stock trading if firms are active in corporate social responsibility activities. The results of this study show that the level of subcontract fairness affects the corporate image and indirectly affects investors' investment decision and thus it can affect the cost of equity.

In sum, the subcontracting can improve the productivity of firms and improve the earnings quality. However, if the subcontract fairness is low, as seen in the case of Korea, it is expected that the productivity deterioration and the earnings sustainability will decrease due to various labor disputes and bankruptcy of subcontractors. Thus, the higher the fairness of subcontracting, the better the productivity of the firm, which is expected to increase the profitability of these firm. In particular, the papers (Abbey and Dickson, 1983; Capon, et al., 1992, Kelm, et al., 1995) that is the results of corporate innovation can have an impact on the firm's financial performance, considering Korea's mutual growth evaluation index, which assesses the degree of cooperation for innovation and productivity improvement. Thus, we expect the relationship between the level of subcontract fairness that is used as a substitute of win-win growth and the earnings sustainability.

On the on hand, Bhattacharaya et al. (2004) have received empirical support in the higher uncertainty of accounting transparency and the higher the cost of equity. Francis et al. (2004) suggest that firms with high quality accounting information reduce the information risk of shareholders, and thus forming a low cost of equity. The results of Cho and Cho (2007) present evidence that the cost of equity is reduced due to due to poor accuracy of financial
analyst earnings forecast as the case of low earnings quality. Also, we expect that subcontract fairness activities, which are part of corporate social responsibility activities, can improve the positive image of the company and thereby affect shareholders' investment decisions. In particular, we use useful measure to examine the effect of subcontract fairness, because the level of win-win growth index in Korea evaluates the subcontract fairness level of the company by the objective way annually and announces the result through media. In sum, it is correlated with the cost of equity and win-win growth evaluation index. Thus, the following hypothesis is established by considering the concept of the government-led evaluation and previous studies in Korea.

[Hypothesis] The cost of equity with information of subcontract fairness is lower than firms without information of subcontract fairness

**III. Research Methodology**

**3.1 Research model**

In order to examine hypothesis, we first measure the cost of equity as the proxy of firm value. CAPM, which has been used to measure the cost of equity, has been pointed out that the systematic risk and beta, is limited in explaining future returns by using post-realized returns as a proxy for future expected returns (Fama and French 1997; Elton 1999). To overcome these limitations, the Easton (2004) model, the modified MPEG model, and the Gode and Mohanram (2003) model are proposed as models for estimating the cost of equity. These models are based on the abnormal earnings growth valuation model, which is a preliminary cost of equity estimation model derived from the relationship between the current stock price and the estimates of future earnings. The Easton (2004) model is a simple model (PEG model) that measures the growth rate of stock returns without considering dividends. The MPEG model is a modified PEG model considering dividends. The Gode and Mohanram (2003) model is called the GM model and is based on the Ohlson and Jueter-Naurath (2005) model. Cost of equity by PEG model is calculated by the following equation (1).
\[
\gamma_{\text{peg}} = \sqrt{\frac{(\text{FEPS}_{t+2} - \text{FEPS}_{t+1})}{P_t}} \tag{1}
\]

\[
\gamma_{\text{peg}} : \text{Cost of equity measured by PEG model}
\]
\[
\text{FEPS}_{t+2} : \text{Earnings per shares for t+1 at the end of April provided by Fn-Guide (Using consensus data over the previous 3 months)}
\]
\[
\text{FEPS}_{t+1} : \text{Earnings per shares for t+2 at the end of April provided by Fn-Guide (Using consensus data over the previous 3 months)}
\]
\[
P_t : \text{Stock price at time t}
\]

Cost of equity measured by MPEG model is based on the assumption that \( \gamma - 1 = 0 \) in Ohlson and Juettner-Nauroth (2005). The following model (2) is used.

\[
\gamma_{\text{mpeg}} = (\text{DPS}_{t+1} + \sqrt{\text{DPS}_{t+1}^2 + 4 \times P_t \times (\text{FEPS}_{t+2} - \text{FEPS}_{t+1})}) / 2P_t \tag{2}
\]

\[
\gamma_{\text{mpeg}} : \text{Cost of equity measured by MPEG model}
\]
\[
\text{DPS}_{t+1} : \text{Dividend per shares for t+1 at the end of April provided by Fn-Guide (Using consensus data over the previous 3 months)}
\]

Finally, the cost of equity estimated by the GM model is a method of calculating the cost of equity capital using stock price and information of analyst earnings forecast. To implement the GM model, they set the difference between the risk-free interest rate and the moving average of core inflation rate (10 years) as \( \gamma - 1 \). This is shown in the following model (3).

\[
\gamma_{\text{gm}} = A + \sqrt{A^2 + \left(\frac{\text{FEPS}_{t+2}}{P_t}\right) \times \left(\frac{\text{FEPS}_{t+2} - \text{FEPS}_{t+1}}{\text{FEPS}_{t+1}} - (\gamma - 1)\right)} \tag{3}
\]

\[
\text{stg}_t = \frac{\text{FEPS}_{t+2} - \text{FEPS}_{t+1}}{\text{FEPS}_{t+1}}
\]

\[
\gamma_{\text{gm}} : \text{Cost of equity measured by GM model}
\]
\[
\text{FEPS}_{t+2} : \text{Earnings per shares for t+1 at the end of April provided by Fn-Guide (Using consensus data over the previous 3 months)}
\]
\[
\text{FEPS}_{t+1} : \text{Earnings per shares for t+2 at the end of April provided by Fn-Guide (Using consensus data over the previous 3 months)}
\]
\[
P_t : \text{Stock price at time t}
\]

We also present the results of the analysis using the arithmetic mean (\( r_{\text{mean}} \)) of the cost of equity capital measured to mitigate the measurement error problem of the equity capital.

\[\text{Where, when } \text{FEPS}_{t+2} < \text{FEPS}_{t+1}, \text{ we assume the difference value of them is zero (Ahn et al 2008).}\]
estimates ($r_{peg}, r_{mpeg}, r_{gm}$) measured from each model. In this study, we investigate the effects of subcontract fairness level on firm value using the cost of equity. The firms with win-win index means that the level of subcontract fairness is evaluated annually by the government’s evaluation system. Therefore, we use the WWIndex variables as the proxy of subcontract fairness, and the cost of equity ($r_{peg}, r_{mpeg}, r_{gm}, r_{mean}$) as the proxy of firm value in order to our hypothesis 2.

$$[\text{Model – Cost of equity}]$$

$$\text{COE} = \alpha_0 + \alpha_1 \text{WWIndex} + \alpha_2 \text{SIZE} + \alpha_3 \text{LOSS} + \alpha_4 \text{DEBT} + \alpha_5 \text{BETA} + \alpha_6 \text{VOL}$$

$$+ \alpha_7 \text{BTM} + \alpha_{7-10} \text{YRD} + \alpha_{11-26} \text{INDD} + \varepsilon$$

Where,

- COE: Cost of equity measured by PEG, MPEG, and GM model ($r_{peg}, r_{mpeg}, r_{gm}, r_{mean}$)
- WWIndex: If a firm has been given a win-win growth index, WWIndex is an indicator variable that equals 1, and 0 otherwise.
- SIZE: The natural logarithm of the market value
- LOSS: If a firm have loss for the year, LOSS is an indicator variable that equals 1, 0 otherwise.
- DEBT: The ratio of total debt to total asset in year t
- BETA: Market beta estimated by daily stock returns and market returns
- VOL: Daily volatility of stock price
- BTM: The ratio of book value to market value in year t
- YRD: Year dummies
- INDD: Industry dummies

In this study, we focus on the win-win growth index (WWIndex) in Korean market. If the win-win growth activities are used as the growth engine of the company in the short and long term, and if it is critical role of efficient redistribution of social wealth, arising the positive images of company, the cost of equity is expected to decline for firms with subcontract fairness index.

In addition, this model includes the size (SIZE), book -to- market ratio (BTM), market beta (BETA), net loss (LOSS), debt ratio (DEBT), and the volatility of returns (VOL) as control variables, expecting to affect cost of equity. We control for firm size in this model, because size captures the negative effect on cost of equity in the prior papers (Fama and French 1993; Gode and Mohanram 2003; Ahn et al. 2008; Lee et al., 2008; Kim et al., 2010; Cha et al., 2010). They argue that the larger the size of a firm, the easier it is to access the published information, and the lower the risk of information asymmetry between the firms and external users, the more negative the relationship between the cost of equity. We also include DEBT and LOSS variables to control the impact of financial risk on the firms. In particular, the debt-
to-asset ratio (DEBT) is included in the model that have a positive (+) relationship with the cost of equity because the debt default risk increases based on previous studies (Ahn et al., 2008; Lee et al., 2008).

Fama and French (1993) suggest that market beta (BETA) arising from the Capital Asset Pricing Model (CAPM) can affect the cost of equity. Hence, we control for market beta, which is measured by daily stock return and market return. In order to control the additional risk that the market beta variable does not control, the book-to-market ratio (BTM) is included in this model. Thus, we can expect that there will be a positive relation with the cost of equity capital (Kim et al. 2010). In order to control the uncertainty of the firm’s information environment on the cost of equity (Cha et al. 2010), we control for the daily volatility (VOL). And VOL could be positively correlated with cost of equity. Finally, we include the year and industry dummies to control the effect of risk free interest rate on the cost of equity according to Gebhardt et al. (2001) and Kim et al. (2010).

3.2 Sample Description

In order to analyze the effect of subcontract fairness evaluation on the cost of equity capital, we incorporate KSE-listed and KOSDAQ-listed firms operating in the non-financial industry during 2011-2014. We hand-collect the subcontracting fairness data from Korea Commission for Corporate Partnership. Analysts’ forecasts data which can measure the cost of equity were collected from the Fn-Guideline. Also, other financial and stock price data were collected from TS2000 and KISVALUE. The sample used in this paper is analyzed for companies meeting the following requirements.

(1) Firms that can extract financial analyst forecasting data from Fn-Guide
(2) Firms that can obtain stock prices and financial data from KisValue and TS2000
(3) Firms with December closing and non-financial industry.

We collect the analysts’ forecasts and stock price data at the end of April, which are needed to estimate the cost of equity according to previous papers (Ahn et al. 2008; Kim et al. 2010). This reflects the fact that the disclosure of financial information is at the end of March. In addition, we include the firms with December closing and non-financial industry for
comparability between firms and financial account (Hwang et al. 2008). In our main analysis, after eliminating 1,081 firms because of missing data to examine the earnings persistence, and 43 firms with financial industry, our final sample of earnings persistence is 6,040 firms. It has covered the final 496 firms in order to investigate our hypothesis 2 after only including firms with financial analyst’s data and control variables. [Table 1] presents the sample selection process of this paper.

[Table 1: Sample Selection]

<table>
<thead>
<tr>
<th>Categories</th>
<th>No. of Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firms listed on KSE and KOSDAQ for 2011 to 2014</td>
<td>7,164</td>
</tr>
<tr>
<td>Firms that cannot obtain earnings related data for earnings persistence analysis</td>
<td>(1,081)</td>
</tr>
<tr>
<td>Firms with Financial industry</td>
<td>(43)</td>
</tr>
<tr>
<td>Firms that cannot obtain the data to calculate cost of equity</td>
<td>(5,409)</td>
</tr>
<tr>
<td>Firms that cannot obtain the control variables used for cost of equity analysis</td>
<td>(135)</td>
</tr>
<tr>
<td>Sample for cost of equity</td>
<td>496</td>
</tr>
</tbody>
</table>

[Table 2] shows the industry-specific distribution of the samples in this paper. Overall, the manufacturing industry has the largest proportion in the industry distribution of earnings persistence (66.99 percent, respectively). Also, based on industry classifications of cost of equity samples, manufacturing industry has the largest proportion of firms (52.02 percent), while the others are in same order.

[Table 2: Industry distribution]

<table>
<thead>
<tr>
<th>Industry name</th>
<th>Cost of equity model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
</tr>
<tr>
<td>Construction</td>
<td>24</td>
</tr>
<tr>
<td>Mine</td>
<td>-</td>
</tr>
<tr>
<td>Education service</td>
<td>5</td>
</tr>
<tr>
<td>Agriculture, forestry, and fisheries</td>
<td>-</td>
</tr>
<tr>
<td>Wholesale and retail</td>
<td>51</td>
</tr>
<tr>
<td>Real estate and leasing business</td>
<td>-</td>
</tr>
<tr>
<td>Business facilities management and business support service</td>
<td>9</td>
</tr>
<tr>
<td>Accommodation and restaurant</td>
<td>-</td>
</tr>
<tr>
<td>Arts, sports and leisure services</td>
<td>6</td>
</tr>
<tr>
<td>Transportation</td>
<td>19</td>
</tr>
<tr>
<td>Electricity, gas, steam and water supply business</td>
<td>10</td>
</tr>
<tr>
<td>Professional, scientific and technical services</td>
<td>51</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>258</td>
</tr>
<tr>
<td>Publishing, video, broadcasting, communication and information service</td>
<td>61</td>
</tr>
<tr>
<td>Sewage and waste treatment, raw material recovery and environment restoration business</td>
<td>-</td>
</tr>
<tr>
<td>Associations and organizations, repair and other personal services</td>
<td>2</td>
</tr>
<tr>
<td>Final sample</td>
<td>496</td>
</tr>
</tbody>
</table>
Table 3 shows the yearly distribution of the samples used in this study. We group our samples into firms with or without win-win growth index based on each model. In the earnings persistence, 5,819 firms of the total earnings persistence samples do not disclose the win-win growth index, while 223 firms disclose the win-win growth index by Korea Commission for Corporate Partnership. According to the yearly distribution in cost of equity model, the total number of companies that disclosed the win-win growth index is 153 firms, and that of other companies is 343 firms.

[Table 3: Sample distribution by year]

<table>
<thead>
<tr>
<th>Year</th>
<th>Cost of equity model (Total sample=496 firm-year)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Others</td>
</tr>
<tr>
<td>2011</td>
<td>132</td>
</tr>
<tr>
<td>2012</td>
<td>53</td>
</tr>
<tr>
<td>2013</td>
<td>60</td>
</tr>
<tr>
<td>2014</td>
<td>98</td>
</tr>
<tr>
<td>Total</td>
<td>343</td>
</tr>
</tbody>
</table>

IV. Empirical results

4.1 Univariate analysis

This section presents the descriptive statistics and correlation tables of key variables. First, the average earnings and excess earnings related to hypothesis 1 are 0.020 and -2.268, respectively. Here, the mean of excess earnings are negative, it implies that our samples do not earn the exceeding net income applied by cost of equity underlying net assets. Looking at the cost of equity measures, the average cost of equity \((r_{peg}, r_{mpegl}, r_{ym}, r_{mean})\) is consistently highest from 13.7% to at least 12.1% in comparison with previous studies (Ahn et al. 2008; Cha et al. 2010; Kim et al. 2010).

Our main value of interest, that is \(WWIndex\), has the mean value of 0.037 based on the earnings persistence model. 30.5% of the total sample discloses the score of the win-win growth index. In addition, the descriptive statistics of other control variables are as follows. \(SIZE\) is the natural logarithm of the market value, and average (median) is 28.473 (28.571). It shows the form of bell shape. In the control variables related to financial distress, average book -to- market ratio \((BTM)\) is 0.694, debt ratio \((DEBT)\) is 0.434, and net loss \((LOSS)\) is
0.111, respectively. This shows that the financial soundness is generally good. The descriptive statistics of systematic risk (BETA) are 0.923 (0.894) and the daily volatility (VOL) is 0.161 (0.151). The results indicate firms’ financial risks are not high.

**Table 4: Descriptive statistics of key variables**

<table>
<thead>
<tr>
<th>Variables</th>
<th>No.</th>
<th>Mean</th>
<th>Min.</th>
<th>Medium</th>
<th>Max.</th>
<th>Std.</th>
</tr>
</thead>
<tbody>
<tr>
<td>WWIndex</td>
<td>6,040</td>
<td>0.037</td>
<td>0.000</td>
<td>0.000</td>
<td>1.000</td>
<td>0.189</td>
</tr>
<tr>
<td>r_{peg}</td>
<td>496</td>
<td>0.121</td>
<td>0.015</td>
<td>0.112</td>
<td>0.597</td>
<td>0.052</td>
</tr>
<tr>
<td>r_{mpeg}</td>
<td>496</td>
<td>0.132</td>
<td>0.015</td>
<td>0.123</td>
<td>0.597</td>
<td>0.054</td>
</tr>
<tr>
<td>r_{gm}</td>
<td>496</td>
<td>0.137</td>
<td>0.010</td>
<td>0.126</td>
<td>0.608</td>
<td>0.059</td>
</tr>
<tr>
<td>r_{mean}</td>
<td>496</td>
<td>0.130</td>
<td>0.034</td>
<td>0.121</td>
<td>0.600</td>
<td>0.053</td>
</tr>
<tr>
<td>SIZE</td>
<td>496</td>
<td>28.473</td>
<td>24.891</td>
<td>28.571</td>
<td>32.731</td>
<td>1.594</td>
</tr>
<tr>
<td>LOSS</td>
<td>496</td>
<td>0.111</td>
<td>0.000</td>
<td>0.422</td>
<td>2.912</td>
<td>0.239</td>
</tr>
<tr>
<td>DEBT</td>
<td>6,040</td>
<td>0.434</td>
<td>0.001</td>
<td>0.422</td>
<td>2.912</td>
<td>0.239</td>
</tr>
<tr>
<td>BETA</td>
<td>496</td>
<td>0.923</td>
<td>0.068</td>
<td>0.894</td>
<td>2.196</td>
<td>0.440</td>
</tr>
<tr>
<td>VOL</td>
<td>496</td>
<td>0.161</td>
<td>0.067</td>
<td>0.151</td>
<td>0.559</td>
<td>0.055</td>
</tr>
<tr>
<td>BTM</td>
<td>496</td>
<td>0.694</td>
<td>0.070</td>
<td>0.597</td>
<td>3.268</td>
<td>0.453</td>
</tr>
</tbody>
</table>

Where,

- **WWIndex**: If firms have been given a win-win growth index from Korea Commission for Corporate Partnership, the indicator equals 1, 0 otherwise.
- **r_{peg}**: Implied cost of equity from PEG model
- **r_{mpeg}**: Implied cost of equity from MPEG model
- **r_{gm}**: Implied cost of equity from GM model
- **r_{mean}**: Average implied cost of equity from PEG, MPEG, and GM model
- **SIZE**: The natural logarithm of the market value
- **LOSS**: If a firm has a loss for the year, LOSS is an indicator variable that equals 1, 0 otherwise.
- **DEBT**: The ratio of total debt to total asset in year t
- **BETA**: Market beta estimated by daily stock returns and market returns
- **VOL**: Daily volatility of stock price
- **BTM**: The ratio of book value to market value in year t

[Table 5] show the results of Pearson correlations of key variables. Focusing on the correlations of our main variables, the correlation between earnings measures and WWIndex are positively correlated, indicating that firms tend to sustain their earnings in the foreseeable year. Also, the cost of equity (r_{peg}, r_{mpeg}, r_{gm}, r_{mean}) is related to WWIndex and negative. These results show that fair subcontracting can positively affect firm value by promoting financial performance and efficient resources redistribution. The correlations shed more light on the relation between firm size, net loss, and debt ratio. In interpreting these relations, it is important to note that the firm size strongly positively correlated with excess earnings, and negatively correlated with cost of equity (Fama and French 1993; Gode and Mohanram 2003; Ahn et al. 2008; Lee et al. 2008; Kim et al. 2010; Cha et al. 2010, etc.). As mentioned in Table 5, cost of equity measures (r_{peg}, r_{mpeg}, r_{gm}, r_{mean}) are significantly positively...
correlated with debt ratio \((DEBT)\), book to market ratio \((BTM)\), market beta \((BETA)\), and volatility \((VOL)\).\(^8\) However, the results of the multivariate analysis will be presented later, in order to examine the more supported results between our main hypotheses.

### Table 5: Correlation of main variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>(WWIndex)</th>
<th>(r_{peg})</th>
<th>(r_{mpeg})</th>
<th>(r_{gm})</th>
<th>(r_{mean})</th>
<th>SIZE</th>
<th>LOSS</th>
<th>DEBT</th>
<th>BETA</th>
<th>VOL</th>
</tr>
</thead>
<tbody>
<tr>
<td>(r_{peg})</td>
<td>-0.052</td>
<td>(0.248)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(r_{mpeg})</td>
<td>-0.081</td>
<td>0.970</td>
<td>(0.071)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(r_{gm})</td>
<td>-0.100</td>
<td>0.851</td>
<td>0.898</td>
<td>(0.026)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(r_{mean})</td>
<td>-0.081</td>
<td>0.968</td>
<td>0.986</td>
<td>0.950</td>
<td>(0.071)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>0.568</td>
<td>-0.103</td>
<td>-0.097</td>
<td>-0.082</td>
<td>-0.097</td>
<td>(0.000)</td>
<td>(0.022)</td>
<td>(0.030)</td>
<td>(0.069)</td>
<td>(0.031)</td>
</tr>
<tr>
<td>LOSS</td>
<td>0.112</td>
<td>0.303</td>
<td>0.223</td>
<td>0.185</td>
<td>0.243</td>
<td>0.115</td>
<td>(0.013)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
</tr>
<tr>
<td>DEBT</td>
<td>0.074</td>
<td>0.220</td>
<td>0.178</td>
<td>0.205</td>
<td>0.225</td>
<td>0.250</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
</tr>
<tr>
<td>BETA</td>
<td>0.155</td>
<td>0.116</td>
<td>0.077</td>
<td>0.087</td>
<td>0.096</td>
<td>0.118</td>
<td>0.143</td>
<td>0.129</td>
<td>(0.001)</td>
<td>(0.010)</td>
</tr>
<tr>
<td>VOL</td>
<td>-0.230</td>
<td>0.126</td>
<td>0.087</td>
<td>0.097</td>
<td>0.106</td>
<td>-0.365</td>
<td>0.052</td>
<td>0.121</td>
<td>0.485</td>
<td>(0.000)</td>
</tr>
<tr>
<td>BTM</td>
<td>0.136</td>
<td>0.086</td>
<td>0.093</td>
<td>0.106</td>
<td>0.099</td>
<td>0.439</td>
<td>0.186</td>
<td>0.145</td>
<td>-0.076</td>
<td>0.224</td>
</tr>
</tbody>
</table>

Note, Refer to the description of variables in [Table 4]

### 4.2. Regression results

In this section, we examine whether the subcontracting fairness level \((WWIndex)\), which is a substitute for subcontracting fairness level, affect the cost of equity. The results of this study are as follows.

We report the results of multivariate analysis between win-win growth index and the cost of equity \((r_{peg}, r_{mpeg}, r_{gm}, r_{mean})\) in Table 6. The coefficients on cost of equity \((r_{peg}, r_{mpeg}, r_{gm}, r_{mean})\) are significantly negative at least 5% level (each coefficient is -0.0114, -0.0154, -0.0210, and -0.0160), suggesting that its index has important role to report steadily increasing earnings and take the social responsibility because investors interpret firm value such earnings more. A negative relation at least 1% level on SIZE, suggests that investors understand that lower cost of equity \((r_{peg}, r_{mpeg}, r_{gm}, r_{mean})\) is created by firm size. We propose that the larger firm size, the lower information asymmetry due to easier access

---

\(^8\) However, the VIF (Variance Inflation Factor) confirms that the numerical value does not exceed a maximum of 3, so that the effect of the multicollinearity between variables on the hypothesis testing is negligible.
inside information of that firms (Gode and Mohanram 2003; Ahn et al. 2008; Kim et al. 2010). The results of control variables in Table 7 also show the positive relation on book to market ratio (BTM), debt ratio (DEBT), and loss dummies (LOSS) with cost of equity at least 1 % level that is supported by (Ahn et al. 2008; Lee et al. 2008). Finally, the market beta (BETA) is not statistically significant but reports a positive correlation with previous studies (Fama and French 1993).

Table 6: The effect of WWIndex on cost of equity

<table>
<thead>
<tr>
<th>Variables</th>
<th>PEG model</th>
<th>MPEG model</th>
<th>GM model</th>
<th>MCOC model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>t-value</td>
<td>Coefficient</td>
<td>t-value</td>
</tr>
<tr>
<td>Intercept</td>
<td>0.2461 ***</td>
<td>4.01</td>
<td>0.2730 ***</td>
<td>4.17</td>
</tr>
<tr>
<td>WWIndex</td>
<td>-0.0114 *</td>
<td>-1.66</td>
<td>-0.0154 **</td>
<td>-2.06</td>
</tr>
<tr>
<td>SIZE</td>
<td>-0.0060 ***</td>
<td>-2.79</td>
<td>-0.0064 ***</td>
<td>-2.76</td>
</tr>
<tr>
<td>LOSS</td>
<td>0.0394 ***</td>
<td>5.25</td>
<td>0.0290 ***</td>
<td>3.59</td>
</tr>
<tr>
<td>DEBT</td>
<td>0.0525 ***</td>
<td>4.83</td>
<td>0.0496 ***</td>
<td>4.28</td>
</tr>
<tr>
<td>BETA</td>
<td>0.0017</td>
<td>0.23</td>
<td>0.0020</td>
<td>0.25</td>
</tr>
<tr>
<td>VOL</td>
<td>0.0166</td>
<td>0.26</td>
<td>-0.0222</td>
<td>-0.32</td>
</tr>
<tr>
<td>BTM</td>
<td>0.0205 ***</td>
<td>3.29</td>
<td>0.0212 ***</td>
<td>3.19</td>
</tr>
</tbody>
</table>

Year/Industry dummies Included Included Included Included
Sample size 496 496 496 496
F-value 4.93*** 3.51*** 3.47*** 3.98***
Adjusted R-sq 0.1711 0.1204 0.1186 0.1400

Note, Refer to the description of variables in [Table 4]
***, **, * means statistically significant at the 10%, 5%, and 1% levels.

4.3. Additional results

In the section above, we present the results of the empirical analysis of the relationship between the estimated cost of equity capital in PEG, MPEG, and GM models and the score of growth index (WWIndex). We use the following model in adjusting growth index (WWIndex) as the variables of interest.

[Model – Cost of equity]

\[
COE = \alpha_0 + \alpha_1 S_{WWIndex} + \alpha_2 SIZE + \alpha_3 LOSS + \alpha_4 DEBT + \alpha_5 BETA + \alpha_6 VOL + \alpha_7 BTM + \alpha_7 \cdot YRD + \alpha_{11-26} \cdot INDD + \varepsilon
\]

Where,

- \(COE\): Cost of equity measured by PEG, MPEG, and GM model (\(r_{peg}, r_{mpeg}, r_{gm}, r_{mean}\))
- \(S_{WWIndex}\): If firms have been given a win-win growth index from Korea Commission for Corporate Partnership, the indicator equals the given scores, 0 otherwise.
- \(SIZE\): The natural logarithm of the market value
- \(LOSS\): If a firm have loss for the year, LOSS is an indicator variable that equals 1, 0 otherwise.
- \(DEBT\): The ratio of total debt to total asset in year t
As expected, it is shown that there is a statistically significant negative relation at the level of 1%. It can be seen that the higher the $S_{WWIndex}$, the lower the cost of equity capital, except for the PEG model even though its results also show the negative relation. This result is consistent with hypothesis 2, and the fact show that firms with high subcontract fairness levels have higher corporate value. In addition, other control variables that are considered to affect the cost of equity are consistent with prior papers (Fama and French 1993, Gode and Mohanram 2003; Ahn et al. 2008). The statistically significant results is obtained in firm size ($SIZE$), book-to-market ratio ($BTM$), debt ratio ($DEBT$), and net loss ($LOSS$) in the same line of prior papers.

<table>
<thead>
<tr>
<th>Variables</th>
<th>PEG model</th>
<th>MPEG model</th>
<th>GM model</th>
<th>MCOC model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>0.2449 ***</td>
<td>0.2714 ***</td>
<td>0.2426 ***</td>
<td>0.2529 ***</td>
</tr>
<tr>
<td>t-value</td>
<td>3.91</td>
<td>4.06</td>
<td>3.33</td>
<td>3.88</td>
</tr>
<tr>
<td>$S_{WWIndex}$</td>
<td>-0.0036</td>
<td>-0.0063 ***</td>
<td>-2.67</td>
<td>-0.0074 ***</td>
</tr>
<tr>
<td>SIZE</td>
<td>-0.0060 ***</td>
<td>-2.71</td>
<td>-0.0063 ***</td>
<td>-2.67</td>
</tr>
<tr>
<td>LOSS</td>
<td>0.0392 ***</td>
<td>5.22</td>
<td>0.0286 ***</td>
<td>3.55</td>
</tr>
<tr>
<td>DEBT</td>
<td>0.0517 ***</td>
<td>4.77</td>
<td>0.0486 ***</td>
<td>4.20</td>
</tr>
<tr>
<td>BETA</td>
<td>0.0018</td>
<td>0.25</td>
<td>0.0020</td>
<td>0.26</td>
</tr>
<tr>
<td>VOL</td>
<td>0.0168</td>
<td>0.26</td>
<td>-0.0215</td>
<td>-0.31</td>
</tr>
<tr>
<td>BTM</td>
<td>0.0205 ***</td>
<td>3.29</td>
<td>0.0213 ***</td>
<td>3.19</td>
</tr>
</tbody>
</table>

Note, Refer to the description of variables in [Table 4]

***, **, * means statistically significant at the 10%, 5%, and 1% levels.

V. Conclusion

Using a unique data of subcontract fairness from Korea Commission for Corporate Partnership, we posit the evidence of cost of equity when the investors react to subcontract fairness issues. In order to analyze the effect of subcontract fairness level on firm value, the Korean government introduces the concept of "win-win growth" in order to promote mutual development with large corporations and SMEs.

To investigate our hypothesis, the results of this study, which analyzed the relationship

19
between subcontract fairness level and firm value for Korean companies that have been assessed for win-win growth index from 2011 to 2014, are as follows. There is a negative relationship between the cost of equity capital and the presence of win-win growth indexes. In addition, negative (-) correlation is shown between the index of win-win growth index and firm value. In sum, it is important to note that the cost of equity capital of firms with a high evaluation rating of the win-win growth index is reduced, which means that firms with high subcontract fairness levels have higher enterprise value than those without fairness index. Therefore, win-win growth index are likely to provide sufficient information for investors to assess firms’ overall subcontracting performance.

This paper contributes to the literature on overall fair contract issues. First, this study is useful to understand the relationship between the level of subcontract fairness through empirical analysis. That is, prior papers on the existing subcontracting issues do not fully impound publicly disclosed accounting aspect; they just focus on the productivity and market reaction. On the other hand, this study has contributed to the empirical analysis of the effect of subcontract fairness level on firm's accounting aspect.

Second, the evidence in this paper suggest is presented through the unique data using the win-win growth index, an objective evaluation data for subcontracting. The subcontract fairness of large firms is an important activity not only in terms of productivity improvement but also as a part of corporate social responsibility activities in relation to positive image of firms. That is, this study additionally contributes to the prior papers related to overall social responsibility issues. Finally, we propose a new approach that is the improvement in subcontract fairness level contributes to the company's substantial value. The subcontracting issues have been continuously raised. That is, this measure, which is subjective, has been limited to setting that gives the important role of subcontracting evaluation. According to this issue, this study empirically analyzed the relationship between firm value and the win-win growth index, which is the level of corporate subcontract fairness measured by the third party annually. Thus, we expect that the win-win growth assessment system with government-led growth appraisal system does not only affect the improvement of subcontract fairness level of a simple company, but also contribute to the improvement of earnings sustainability and the firm value enhancement from the competent authority.

In spite of these contributions, this study has its limitations. That is, we do not consider the
subordinate relationship between subcontract fairness level, earnings persistence and firm value. In other words, whether firms with high earnings sustainability and firm value are actively engaged in subcontract fairness activities or whether firms with high subcontract fairness are actively engaged in firm value and earnings sustainability. Thus we should make clear the order of these results through additional verification.
REFERENCE

Corporate Social and Financial Performance”, Working Paper, University of Michigan, Ann Arbor, MI.
DOES JAPANESE COMPANIES' “ROE” EXPRESS PROFITABILITY? 
—LONG-TERM OBSERVATION CLASSIFIED BY ORIGINAL SAF RATING—

Cindy Yoshiko Shirata
The Research Institute for Innovation Management
Hosei University
Japan

cindy@shirata.net

ABSTRACT
An August 2014 report published by Japan’s Ministry of Economy, Trade and Industry, titled Competitiveness and Incentives for Sustainable Growth—Building Favorable Relationships between Companies and Investors, noted that compared to other countries, ROE in Japan was low. Moreover, in the fiscal 2014 survey, Results of a Questionnaire Survey by the Life Insurance Association of Japan, it is stated that firms have an awareness that their own firm’s ROE is a problem, and that it is inherently “preferable to have a ROE in more than 8%. However, in the first place, it is questionable whether the data it used to conclude that Japan’s ROE is low compared to other countries can be used for a comparison with other countries. This study observes 45 years financial data of Japanese listed firms to ascertain the trends of return on equity (ROE) in Japanese listed firms, investigates the factors that cause low ROE in Japan compared to other countries. We employed the DuPont formula which shows that ROE is composed of: (a) the net profit margin (PM), (b) the total asset turnover (TAT), and (C) a financial leverage variable equal to assets/equity (LEV) to investigate it.

Keywords: ROE, profitability, financial structure, Japanese firms

1. INTRODUCTION

In previous financial analyses of firms, in general, the indicators used to evaluate the stability and efficiency of firms in Japan included the current ratio, fixed assets to long-term capital ratio, owner’s equity ratio, and break-even analysis. In other words, when attempting to evaluate the ongoing sustainability of the management of a firm, the main perspective adopted was that of credit risk management objective of the financial institution lending the funds and other parties that fund creditors. In Japan, this was generally because the ongoing sustainability of management would quickly be placed in danger if the funding from lenders ceased, and there were also concerns that once the collection of funds, such as accounts receivable, was delayed, a
chain reaction of bankruptcies would occur. This occurred against a background of business practices that are unique to Japan, including long payment periods for accounts payable and the generally practice to carry out transactions using bills or promissory notes, which are rarely used overseas. Thus, the cash value of assets in Japan is evaluated to be more important than temporary profits.

By contrast, managers of firms in in the United States, are normally required to evaluate a firm from the viewpoint of shareholders. In the United States, it is common to borrow by issuing corporate bonds, which is a form of direct financing, unlike Japanese firms’ tendency to secure indirect financing from financial institutions. In the case of corporate bonds, once the funds have been raised, the firm cannot be required to redeem them before the maturity date. Furthermore, if long-term bonds with low yields can be issued, the firm is able to continue stable management over the long term, and thus, the stock price in the stock market, which fluctuates on a daily basis, tends to emphasize the firm’s rating, which evaluates its ability to redeem its bonds. Since ratings are rankings according to firms’ ability to redeem bonds, firms that continually generate profits and that maintain stable dividend payments tend to have higher ratings. For managers, this acts as an incentive to try constantly to improve return on equity (ROE), which can be regarded as an alternative to the rate of return to shareholders, who are the investors.

In recent years, ROE has been attracting attention in Japan too, as it has come to be considered important information when evaluating firms, particularly for investment decisions (Sunagawa, 2016). For example, the JPX Nikkei Index 400, which the Japan Exchange Group (JPX) started publishing from January 2014, incorporates ROE into its scoring. The JPX Nikkei Index 400 was launched to provide information to support investors’ decision making. It is relevant that currently, 29.8% of investors in stocks listed on Japanese markets are overseas investors. Incidentally, the percentage that ROE contributes to the scoring is 40%, from which we understand that ROE is included as an important element in determining the scoring.

Therefore, in this research, we observe the financial data of Japanese listed firms over the long term, and by simultaneously paying attention to changes in the economic environment, we ascertain the trends of ROE in Japanese listed firms. Thereafter, we analyze the current situation, in which ROE is deemed to be lower in Japan, and we clarify the factors that cause changes to

1 The Government Pension Investment Fund announced that it was adopting the JPX Nikkei 400 as a benchmark for investment.
3 In the Japan Exchange Group “JPX Nikkei Index 400,” 400 issues are selected from issues listed on the Tokyo Stock Exchange (First Section, Second Section, Mothers, and JASDAQ), with the scoring carried out by adding qualitative factors to the average over 3 years, with a score of 1000 set for the starting date of August 2013, from the various indicators of ① 3-year average ROE (40%), ② 3-year cumulative operating profit (40%), ③ and market capitalization on the base date for selection (20%).
ROE in this country (i.e., low ROE in Japan compared to other countries) by comparing and observing changes to net assets and net profit, which are the components of ROE, in the same period. For verification, financial data of more than 93,000 fiscal years of firms listed on the stock exchange market between 1971 and 2016 were obtained from the annual reports. The changes to the listed firms’ ROE, profit margin on sales, capital adequacy ratio, and retained earnings to total assets in each year were obtained and analyzed.

II. BACKGROUND

According to DuPont analysis\(^4\), ROE is considered an indicator suitable for measuring a firm’s profitability by decomposing it into the net profit margin (PM), the total assets turnover (TAT), and a financial leverage variable equal to assets/equity (LEV). In other words, according to this interpretation, a firm with a high ROE is highly profitable and suitable to invest in. PM expresses profitability, TAT expresses the asset turnover rate, and LEV expresses the debt ratio. For calculation purposes, it is generally expected that if financial leverage increases, ROE will rise. Of course, this explanation is not incorrect in theory, but it is only based on numerical calculations. While firms with high financial leverage—in other words, a high debt ratio—and a small net assets ratio tend to have higher ROE, it is doubtful whether we can thereby conclude that such firms are suitable in which to invest.

Indicators requiring that numerical financial data be assigned to formulas are sometimes out of step with the real financial position of the firm and can mislead information users. In other words, we must remember that it is not always the case that financial indicators match the firm’s actual conditions. For example, among listed firms in Japan, there are around 10 firms with liabilities exceeding assets (excessive debt) every year. According to the current listing regulations of the Japan Exchange group, a firm will be delisted if it has excessive debt for 2 consecutive years.\(^5\) In other words, even if a firm has excessive debt for 1 fiscal year, if it is able to eliminate this excessive debt within a year, it can maintain its listing. Incidentally, there is 100% dependence on debt of firms with excessive debt, and for calculation purposes, financial leverage is negative. In addition, even if debt is not excessive, in recent years, listed firms whose “capital + capital surplus” total amount is less than the net assets total amount (i.e., firms with negative paid-in capital), have constituted around 5–6% of all listed firms in Japan. As the capital invested in these firms has already been lost, ROE cannot be calculated for them. That is, it is not possible to break down ROE from the above-described three viewpoints for all firms. Another indicator that

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\(^4\) It is said that DuPont Corporation (E.I. du Pont de Nemours and Company) started using the formula in the 1920s.

\(^5\) A criterion for delisting from the Japan Exchange Group is that “liabilities exceed assets (namely, excessive debt) and this state remains unchanged for 1 year (as a general rule, based on consolidated balance sheets).”
in the same way is difficult to calculate for excessive-debt firms is the fixed assets ratio, which is negative in excessive-debt firms in terms of the calculation result. However, the same ratio is an indicator in which the lower the value is, the better more stable the firm is, with a zero value being the most stable. In other words, the fixed assets ratio cannot be calculated for excessive-debt firms, that is, the ratio should be a missing value. In this way, some financial indicators (even if they can be calculated mathematically) cannot be used to evaluate the financial conditions of firms.

As ROE is an indicator used to observe how much profit has been generated from the present value of funds invested by shareholders, in excessive-debt firms, the funds invested have been used up, and thus, there is no basis for calculating ROE. In addition, if we consider firms with a negative amount for the “capital + surplus capital” total, although a value can be calculated for calculation purposes, it would be meaningless to obtain ROE for them. In many countries, including Japan, even if the firm has fallen into a situation of excessive debt, it is left up to management to decide whether to apply for bankruptcy, and as long as the firm does not voluntarily apply for bankruptcy, it can continue to exist as a firm. This signifies that even if the firm holds excessive debt or has a deficiency in paid-in capital, it can continue to conduct transactions on a daily basis. At times, if ROE is calculated from the same formula using, for example, simple spreadsheet software, the ROE of an excessive-debt firm that recorded a net loss will appear the same as the ROE of a financially sound firm. In this way, when using ROE, it is important to confirm the status of net assets and net profit that are the components of this indicator.

Depending on the firm’s financial condition, it might not be possible to obtain ROE as “the return obtained from investing shareholders’ equity” using a simple formula. Due to the acceleration of computer-processing speeds, which has made it possible to process and analyze large volumes of data in an instant, incorrect values that do not express the original meaning have become mixed in within the large volume of data, and this information containing distorted average and median values serves to distract users.

ROE is an indicator with extremely unstable components. Moreover, as accounting standards naturally differ from country to country, we can observe cases in which the components of net assets differ greatly, which renders a comparison of ROE in different countries meaningless. An August 2014 report published by Japan’s Ministry of Economy, Trade and Industry, titled Competitiveness and Incentives for Sustainable Growth—Building Favorable Relationships between Companies and Investors, noted that compared to other countries, ROE in Japan was low. Moreover, in the fiscal 2014 survey, Results of a Questionnaire Survey by the Life Insurance Association of Japan, it is stated that firms have an awareness that their own firm’s ROE is a
problem, and that it is inherently “preferable to have a ROE in more than 8%. However, in the first place, it is questionable whether the data it used to conclude that Japan’s ROE is low compared to other countries can be used for a comparison with other countries.

III. LITERATURE REVIEW

Reilly (1997) analyzed what kinds of factors cause ROE to change by analyzing data over 40 years from 1956 to 1995, and concluded that the main factor causing ROE to change was the external factor of inflation. This is an extremely interesting study, in that it used long-term data to analyze macro effects on firms’ finances. While it differs to the present study in terms of the time period, it is similar in that our study also uses long-term data over 45 years from 1971 to 2016. Because in 1971, Japan entered its so-called high-growth period and experienced inflationary increases, with inflation rising from around 5% to more than 20% in 1974, Reilly (1997) is a very useful prior study to compare with this study for reference purposes.

Matsumoto (2015) noted that the actual ROE conditions are improved by reducing the denominator through “share buybacks as treasury stock,” and that with regard to net assets, which is the denominator for calculating ROE, we should consider only that part attributable to the parent company and the shareholders as the investors. In addition, on observing the financial data of listed US firms in the EDGAR database, we observe that there are many firms which reduced the denominator through share buybacks as treasury stock, and if we imagine that they did not buy back their own shares, there would be many firms with ROE in the region of 5%. In other words, even among US firms, those firms maintaining stable management are accumulating an abundance of net assets and it is undeniable that ROE will be lowered if it is calculated unchanged from this. This point can be said to be the same for Japanese firms.

In addition, as pointed out by Matsumoto (2015), when calculating ROE, the calculated result would be very different depending on which value was used as equity (shareholders’ equity), which would be the denominator. Specifically, it would depend on whether net assets were used, whether shareholders’ equity was used, or whether net assets from which only share option certificates and minority shareholders’ interests have been deducted is used. This problem was analyzed in detail by Suzuki (2006). In general, the formula for net assets from which “minority shareholders’ interests and convertible bonds are deducted” is widely used, and values are

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6 Matsumoto (2015): 135
7 For example, according to the fiscal 2015 financial report of the Coca-Cola Company in the United States, while securing retained earnings of 4.6 times the amount of paid-in capital, it allocated an amount equivalent to 70% of retained earnings to supplement treasury stock, thereby reducing the net assets total amount and maintaining ROE above 11%. If it had not acquired the treasury stock, its ROE would have been only 4.2%.
disclosed using this formula in financial statement summaries and other such reports. However, when considered from the concept of ROE, it is not clear what the correct value is, and on this point, doubts remain about comparisons with the indicators used overseas. Incidentally, as previously mentioned, 5–6% of listed firms already have a deficit in “capital + capital surplus” attributable to shareholders, and thus, it can be said to be meaningless to obtain the ROE for these firms.

Altman (1968), the most well-known research of corporate bankruptcies, obtained the market value of net assets using the value from multiplying “the market price of shares” and “the number outstanding shares” instead of the net assets amount in the financial statements, constructed an indicator of “the market value of equity/par value of debt,” and applied it to a model. This is the market price version of financial leverage. Even for firms with excessive debt for their book values, if a listed firm’s shares are traded on the market, then it is possible to obtain the market value of net assets if the share price is provided. It might be said that calculating ROE using this value provides the true ROE. If this calculation method is used, it becomes possible to compare firms around the world, and even for firms—such as those in Japan—that include net assets with different elements mixed in, such as the amount of “valuation and translation adjustments,”8 the proper net assets amount can still be obtained in the sense of market value. In addition, if the net assets amount obtained using this formula is used, it can be argued that ROE can be obtained in which cross-country comparisons are possible. While various researchers have cited Altman (1968), there is hardly any research in Japan that has correctly cited Altman’s idea on net assets. The result of this type of calculation of the market price of net assets shows a value that can be called “true shareholders’ equity,” and it can be evaluated as one rational value.

As it was explained above, ROE is an unreliable indicator, and thus, Hiroki (2014) concluded that the indicator that can predict returns from the perspective of investment is not high ROE, but rather low Price Book-Value Ratio (PBR).

IV. SAMPLE SELECTION AND DATA DESCRIPTION

Data
For the data used in this study are from financial data contained in the Annual Securities Reports for 111,342 fiscal years from 1956 to 2016 for firms listed on the First Section or Second

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8 In the “difference on revaluation” amount recorded in net assets, such items as “valuation difference on other available-for-sales securities” and “foreign currency translation adjustment,” which are differences recorded from the revaluation of the market value at the end of each fiscal year, are mixed with “difference on revaluation of land,” which, in terms of Law No. 34 of March 31, 1998, and the Final Revision of Law No. 54 of May 30, 2003, can be revalued once only, but not subsequently. In addition, as “difference of the revaluation on land” is applied voluntarily, some firms do not record it, and thus, it can be said that the possibility of comparing net asset amounts between firms is low.
Section of the Tokyo Stock Exchange\textsuperscript{9}. The data were narrowed down to firms listed from 1971 to 2016, and each firm’s non-consolidated financial data were used for the analysis. The financial data finally used are shown in Table 1. The reason we used non-consolidated financial data is that consolidated financial statements were adopted in Japan as the main financial statements from 2000,\textsuperscript{10} which meant we could not use these financial statements for a long-term comparison. In addition, there are quite a few Japanese firms that do not prepare consolidated financial statements because they have no subsidiaries, and thus, we were concerned that the sample size would be reduced if consolidated financial statements were used.

Moreover, we used data from 1971 onwards because the Bretton Woods system collapsed in August 1971 when the United States terminated the convertibility of the US dollar to gold,\textsuperscript{11} and from the same year, Japan was unable to maintain a stable exchange rate of 360 yen to the US dollar.\textsuperscript{12} Up to that point, Japan, which is a process-trade country reliant on exports, was guaranteed that it could secure stable revenue from the fixed exchange rate. However, from 1971, it became exposed to international competition. Furthermore, from March 1973, Japan shifted to a completely floating exchange rate system. As a result, in order to compare Japan’s true strength as a country with the strength of other countries, we considered that it was appropriate to observe the data from 1971, when a floating exchange rate was adopted.

In recent years, a few Japanese studies have used financial ratios provided in databases, such as Nikkei Needs. However, there are cases in which these commercial databases have processed the data using their own interpretations, and thus, there are doubts about whether their data can be used for comparisons. Therefore, in this study, the authors themselves extracted the original numerical data disclosed in the annual securities reports and, while checking the content of each account item, calculated the indicators and used them for the analysis.\textsuperscript{13}

\textsuperscript{9} Tokyo Stock Exchange market was merged with Osaka stock exchange market in 2013 and it renamed to the Japan Exchange Group.

\textsuperscript{10} The consolidated financial statements system was introduced for fiscal years beginning on or after April 1, 1977, as statements to be included in the securities report and other such reports. The Ministry of Finance partially revised the consolidated financial statements regulations in April 1981, and then, the equity method was adopted in Japan for the consolidated fiscal years beginning on or after April 1, 1983. In addition, consolidated financial statements came to be treated as the main financial statements in Japan after the so-called Accounting Big Bang from the fiscal period ended March 2000, which was the year that the concept of controlling power was introduced. Therefore, in this study, which compares data from before that time, for comparability, the data were extracted only from non-consolidated liabilities financial statements.

\textsuperscript{11} This was the name of the international monetary regime primarily conceived and established by the United States and United Kingdom after the Second World War. In 1944 in Bretton Woods, New Hampshire, the United Nations Monetary and Financial Conference was held, and two agreements, known as the Bretton Woods Agreements, were concluded.

\textsuperscript{12} The yen–US dollar exchange rate rose by as much as 12.5\% in 4 months and by August 1971, it had reached a closing price of 315 yen to the US dollar from 360 yen.

\textsuperscript{13} The financial data disclosed by firms in their securities reports were obtained from the Corporate Financial Data Bank.
Data Description
For the analysis, in addition to comparing the financial data, we collected data on variables, such as the consumer price index and the total market capitalization, in order to compare the economic environment in the same period, and we compared trends in ROE and in these indicators.

A bankruptcy prediction model called SAF2002 model was used in this study. SAF-Simple Analysis of Failure-model is a bankruptcy prediction model built by analyzing 1,436 bankrupt companies in Japan by referring to their financial figures in the year immediately before they went bankrupt, and the financial figures of 3,435 companies which stayed in business over the same period by using Classification and Regression Tree (CART), an artificial intelligence technique (Shirata, 2008).  

The variables used are as shown in Table 2 and the model formula as in Formula 1.

\[
SAF\ Value = 0.0104X7 + 0.0268X10 - 0.0661X37 - 0.0237X26 + 0.7077\ldots\] FORMULA 1

The probability of bankruptcy risk of a company can be measured by substituting X1 through X4 in Formula 1 with the indicators in Table 2, and by working out the calculation result SAF value. The analysis results confirm that the bankruptcy risk increases rapidly when SAF value exceeds 0.7. SAF value can also be used for rating companies. Shirata [2003] has verified that SAF rating can be comparable to S&P rating. SAF value corresponding to the threshold value of each rating is as shown in Table 2. The relationship between SAF rating (based on five grades) and S&P rating is also clearly described in the Table.

We carried out analysis of the financial indicators according to the following procedure.
a. For all the sample data, the SAF value was obtained using the SAF model.

b. As data from 2 fiscal years is required to calculate the SAF value, firms with data for only 1 fiscal year (firms in their first year of listing or that were delisted due to bankruptcy or another reason), were excluded from the analysis.

c. The data were divided according to year, and after being sorted into descending order of SAF values for each year, it was rated according to the following categories. The rating was on a five-point scale, with firms with an SAF value in the top 5%-plus were rated AAA, firms in the 5–25% range were rated A, firms in the 25–75% range were rated BB, firms in the 75–95% range were rated B, and firms in the bottom 5% were rated C. When rating the firms, as the financial data fluctuate because of the effects of changes in the economic environment during the time period, the SAF values were recalculated for each year for the top 5%, the top 25%, the bottom 25%, and the bottom 5%; the thresholds for each of the years were determined, and then the firms were rated. As a result, there are different ratings for even the same values due to the fiscal year.

d. ROE and other related financial ratios were calculated from the financial data from all of the sample firms over the entire analysis period, and the median value for each indicator was obtained for each rating group in each year. However, as described in Section 2, in the case of excessive-debt firms, it is necessary to consider ROE as a missing value. Even if there were excessive-debt firms among firms with a C rating (bottom 5%), the firms with a C rating were included when determining the rating threshold values. However, when we prepared the graphs, we excluded firms with a C rating. Incidentally, the BB rating was for firms in the top 25–75%—in other words, the group corresponding to the middle 50% of all the listed firms in the relevant year—and thus, the median value of this rating group corresponds to the median value of all listed firms in the same year.

V. EMPIRICAL RESULTS

As Figure 1 confirms, when observing ROE as a time series by rating, for the ROE of Japanese firms from 1971 to the Oil Shock in 1974, the median value of all listed firms (the BB rating median value) ranged from 21% to 23%; in addition, the ROE median value of the AA rating group ranged from 34% to 38%. From this, we understand that Japanese firms in the period of high economic growth in the early 1970s recorded high ROE that is incomparable with the ROE recorded by firms in recent years. From around 1990, which is when the bubble economy was expanding, the ROE of Japanese firms started to decline, and although there were some slight fluctuations from around 2000, no major rises or falls, such as those that occurred in the 1970s,
are evident. In addition, after the bubble economy era to the present it has trended from 8% to 10%. Figure 2 shows the trends in consumer prices in Japan. We observe that the highest value was in 1973 and it declined thereafter, but the fluctuation trend in the descending curve shows a trend most similar to the fluctuations in the ROE of Japanese listed firms when compared with the fluctuation pattern of the total market capitalization of shares and other economic indicators. This finding can be said to affirm the findings of Reilly (1997), who stated “the importance of concentrating on inflationary expectations and the relationship between inflation ROE and growth.”

**Effects of Net Income on ROE**

The factors causing ROE to fluctuate are changes to net income, which is the numerator, and changes to net assets, which is the denominator, or alternatively a combination of both of these changes. Therefore, we compared trends in ROE and the profit margin on sales in the same period, which is shown in Figure 3. Naturally, if we compare 1971 and 2016, the sales scale on a monetary basis should grow larger. However, as product costs and selling, general, and administrative (SG&A) expenses also rise in proportion to the increase in sales, we confirm that the profit margin on sales hardly changes. Despite the fact that ROE declines to less than half its previous value over the 45 years, we verified that the profit margin on sales did not change for 80% of all the listed firms. From this, it can be estimated that the factor causing ROE to fall is not a change in net income, which is the numerator in the calculating formula. Of course, when calculating ROE, the actual net income amount, not the ratio, is used, and thus, it is not possible to prove that the profit margin on sales is unchanging and that profits have not contributed to changes to ROE. However, if expectations are high for ROE as an indicator to measure “returns to shareholders,” then ROE can be expected to rise correlatively. In other words, in firms’ management, alongside the expansion in sales scale, management improvements can be expected from the rise in the profit margin on sales from the more efficient management of SG&A expenses. However, as a result of observing data over the long term during which there were major changes to the economic environment, it was confirmed that even though the sales scale of Japanese firms expanded, their profit margin on sales hardly changed at all.

**Effects of Net Assets on ROE**

When calculating ROE, careful discussion is required on which value to use for net assets as the

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denominator. Due to repeated changes to accounting standards in Japan, currently, the net assets of Japanese firms consists of shareholders’ equity and other comprehensive income,\textsuperscript{16} stock acquisition rights, and minority shareholders’ interests. In many cases, total net assets is used, or it also is common to use a formula that deducts stock acquisition rights (formerly convertible bonds disclosed between liability items and assets) and non-controlling shareholders’ interests from the net assets amount. Conversely, in this study, we decided to obtain ROE using the entire net assets amount as the denominator. This was in order to clarify the extent to which changes in ROE were affected by changes to the accounting standards and to observe what effects significant changes in the components of shareholders’ equity had over the long-term analysis period.

Table 4 shows the correlation coefficients between each indicator for the median values of the BB rating group (the median values of all listed firms in each year); yet it can also be confirmed that they are highly inversely correlated with the net assets ratio, the denominator. Therefore, we observed the time-series changes to the capital adequacy ratio,\textsuperscript{17} as shown in Figure 4.

\textbf{INSERT TABLE 4}
\textbf{INSERT FIGURE 4}

In the 2016 data for listed firms’ median value (BB rating median value), the capital adequacy ratio exceeded 52%. In addition, the AA rating median value exceeded 78%. Furthermore, even for the median value of the lowest rating of the C rating group (the bottom 5% of listed firms), we found that the capital adequacy ratio exceeded 34%. On observing the trend in the capital adequacy ratio from 1971, while we observed a slight decline during the period of the Oil Shocks from 1973 to 1975, the ratio continued to rise up to 2016. In addition, we observed a Spearman’s rank correlation between ROE and the capital adequacy ratio for the BB rating, and as shown in Figure 5, we confirmed a clear inverse correlation. From this, it was verified that the low ROE of Japanese firms has been caused by the high capital adequacy ratio, which is unparalleled in comparison to other countries.

\textbf{INSERT FIGURE 5}

\textsuperscript{16} Other comprehensive income refers to items not included in net income (net income attributable to the shareholders of the parent company) and minority interests in the income of consolidated subsidiaries (net income attributable to non-controlling shareholders). Other comprehensive income in the consolidated financial statements includes the part related to the parent company’s shareholders and the part related to minority shareholders (non-controlling shareholders). Typical account items in comprehensive income include valuation differences with other securities, deferred hedge gains and losses, foreign currency translation adjustments, adjustments on retirement benefits, and equity interests in equity-method affiliates (Revisions of September 13, 2013, of “Accounting Standards for Consolidated Financial Statements” and “Accounting Standard for the Reporting of Comprehensive Income”).

\textsuperscript{17} The term “net assets ratio” is not commonly used, and thus, here, the term “capital adequacy ratio” is used, which refers to the ratio of net assets to total assets.
Effects of Changes to Accounting Standards on ROE

On observing the median value of the BB rating group in Figure 1, we observed that ROE continued to decline from 1991 when the bubble economy collapsed up to around 1995, and from Figure 3, we observed that during the same period, the profit margin on sales fell from 4.11% to 2.23% in the BB rating median value. Ultimately, it fell as much as 1.34% in 2002. Conversely, although it cannot be confirmed clearly in the graph, ROE started to decline from around 2000, and by 2002, had fallen to 3.62%.

Shirata (2005) analyzed data from 9,638 fiscal years, from fiscal 2001 to fiscal 2004, and verified what sorts of effects on net assets arose from the changes to the accounting standards, which were mainly carried out in 2000. The analysis was preceded by an investigation of the accounting status of revaluation excess and deferred tax asset which were placed owners’ equity section directly, and valuation gain on securities and gain from the debt restructuring which were added Income Statements as extraordinary gain. The results were as shown in Table 5. Some companies had actually implemented the accounting procedures for gain from the debt restructuring at a different time from the one published in newspapers, etc.

INSERT TABLE 5

As can be confirmed in Table 5, the applying of deferred tax asset has been decreasing since reaching a peak in 2003, but the amount debited by listed firms on the whole still amount to more than 100 trillion yen. Revaluation excess, which is directly applied in the owners’ equity section, is on the increase both in number of cases and in amount; it was confirmed that in 2004, nearly 90% of all companies applied a revaluation excess, and the average amount debited was as much as 5 billion yen per company. As a result, it was verified that the recording of “difference in revaluation of land and invested securities” and “deferred tax assets” contributed greatly to the bulking-up of net assets. In this way, it was estimated that changes to accounting standards caused expansion of the net assets amount (the capital adequacy ratio), which is the denominator of ROE, and as a result, these changes are a factor pushing the ROE ratio down. When calculating the capital adequacy ratio, increasing the numbers by introducing new accounting standards not only affects net assets, as naturally, the same amount is added to total assets. Therefore, the impact on the capital adequacy ratio is not as large as the impact on ROE.

There are major differences in the components of net assets in various countries due to the different accounting standards that they adopt. With regard to this sort of difference, it is possible to find a few firms that calculate ROE without correctly understanding it and that disclose only numerical data in their corporate governance reports. However, it might be said that firms have a responsibility to explain clearly the details of their ROE to their investors after
analyzing in detail the components of ROE so that they can ascertain whether it is low or high compared to the ROE of firms in other countries.

**Discussion**

We used long-term data over a period of 45 years to observe the changes to the ROE of Japanese listed firms. As a result, comparing changes to ROE to changes to related economic indicators, as shown in Figure 2 we confirmed a similar trend to the trend in the consumer price index, which is the same as the findings of Reilly (1997). Incidentally, in 1989, which was the economic bubble expansion period, the consumer price index continued to trend at the low level of around 5%, and the balance between the capital invested by firms and sales remained constant. By contrast, during the early 1970s in Japan, the salaries of general workers rose by more than 25% per year and prices continuously rose from the resulting expansion in consumption. Thus, even while this remained a period in which net assets, particularly retained earnings, still had not been fully accumulated, sales on the basis of a single fiscal year increased rapidly. During this period, not only salaries but also capital investment rapidly expanded at the same time. As a result, although no changes to the profit margin on sales were observed, the rate of increase of profits on a monetary basis was high, and it is estimated that as a result, ROE also showed high values. Incidentally, the median value of the capital adequacy ratio of listed firms in 1971 (the median value of the BB rating group) was 15%, and it can be confirmed that this trend continued up to the collapse of the bubble economy.

The median value of the capital adequacy ratio of Japanese listed firms in 2016 exceeded 52% and an inverse correlation with ROE was confirmed. Furthermore, from Table 4 we confirmed that the ratio of retained earnings to total assets was also an inversely correlated with ROE. In other words, we can conclude that the true cause of the low ROE of Japanese firms is the height of the ratio of retained earnings to total assets. Incidentally, the median value of the ratio of retained earnings to total assets for all listed firms in 2016 exceeded 29%, and the median value for firms with an AA rating was more than 64%. In addition, the ratio of retained earnings to total assets in Japanese firms was increasing year by year not just in listed firms, but also in non-listed firms. From this, we forecast that ROE of Japanese firms would not move in the direction of increases in the future.

**V. CONCLUSION**

From the results of the analysis in this study, the factors behind the low ROE of Japanese firms were clarified. In addition, it was confirmed that ROE showed a high value in the period when the economy expanded rapidly, and its value was not as high in the period in which the economy has stabilized to a certain extent and the expansion in the scale of firms was slowing down.
Furthermore, it was confirmed that ROE is inversely correlated with the capital adequacy ratio and the retained earnings to total assets. If retained earnings bottom out and net assets become smaller, ROE will show a high value. As you can confirm the variables of SAF Model in Table 2, retained earnings to total assets has the strongest power to predict Bankruptcy. If retained earnings to total assets ratio is less than 4%, the firm is high possibility to go into bankruptcy. In other words, it can be said that high value ROE firms with lower retained earnings to total assets/lower capital adequacy ratio have a high risk of going into bankruptcy. Therefore, we can concluded that Japanese firms with high ROE are not necessarily suitable to invest.

The current situation of Japanese firms can be interpreted as indicating a strong tendency to try to build a structure that is able to respond to sudden changes in the economic environment (i.e., accumulating retained earnings) by securing a strong corporate constitution that is able to respond to all kinds of risks. This results in the low bankruptcy rates of Japanese firms, which in recent years has been unparalleled throughout the world. Rather than temporarily high ROE, stakeholders prefer that the firm develops sustainably. The findings of this study indicate that it is precisely because Japanese firms currently have low ROE that makes them suitable in which to invest.

REFERENCES:


The Bretton Woods Agreements. 1994. *Articles of Agreement of the International Bank for Reconstruction and Development*


The Japan Exchange Group. 2016. *Criteria for Delisting (Domestic Stocks)*


The Life Insurance Association of Japan. 2015. *Questionnaire Survey by the Life Insurance Association of Japan in 2014 (Japanese)*.

TABEL and FIGURE:

TABLE 1  Number of Sample Data by Year: 1971-2016

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<td>1989</td>
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<td>2001</td>
<td>2,533</td>
<td>2013</td>
<td>2,461</td>
</tr>
<tr>
<td>1978</td>
<td>1,546</td>
<td>1990</td>
<td>1,954</td>
<td>2002</td>
<td>2,539</td>
<td>2014</td>
<td>2,449</td>
</tr>
<tr>
<td>1979</td>
<td>1,563</td>
<td>1991</td>
<td>2,016</td>
<td>2003</td>
<td>2,519</td>
<td>2015</td>
<td>2,457</td>
</tr>
<tr>
<td>1980</td>
<td>1,442</td>
<td>1992</td>
<td>2,050</td>
<td>2004</td>
<td>2,497</td>
<td>2016</td>
<td>1,896</td>
</tr>
<tr>
<td>1981</td>
<td>1,601</td>
<td>1993</td>
<td>2,071</td>
<td>2005</td>
<td>2,501</td>
<td>TOTAL</td>
<td>9,326</td>
</tr>
<tr>
<td>1982</td>
<td>1,625</td>
<td>1994</td>
<td>2,128</td>
<td>2006</td>
<td>2,500</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Excluded: 1) the first year of listed on the market and, 2) one year prior to the bankruptcy
c.f. Data in 2016 includes only between Jan to March.

TABLE 2:  INDICES FOR SAF 2002 MODEL

<table>
<thead>
<tr>
<th>Name of Indices</th>
<th>Partial R-Square</th>
<th>F Value</th>
<th>Pr &gt; F</th>
</tr>
</thead>
<tbody>
<tr>
<td>X1 Retained Earnings to Total Assets</td>
<td>0.1671</td>
<td>830.00</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>X2 Interest Expenses to Sales</td>
<td>0.0114</td>
<td>47.56</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>X3 Inventory Turnover Period</td>
<td>0.0593</td>
<td>260.73</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>X4 Net Income before tax to Total Assets</td>
<td>0.0186</td>
<td>78.31</td>
<td>&lt;.0001</td>
</tr>
</tbody>
</table>

TABLE 3:  SAF VALUE AT THE THRESHOLD OF EACH RATING
- Non-listed vs. Nikkei Listed -

<table>
<thead>
<tr>
<th></th>
<th>BBB</th>
<th>A</th>
<th>AA</th>
<th>AAA</th>
</tr>
</thead>
<tbody>
<tr>
<td>S&amp;P Rating</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAF Rating</td>
<td>C</td>
<td>B</td>
<td>BB</td>
<td>A</td>
</tr>
<tr>
<td>Non-listed firms</td>
<td>0.391315</td>
<td>0.689762</td>
<td>1.009081</td>
<td>1.378331</td>
</tr>
<tr>
<td>NIKKEI Listed</td>
<td>0.264002</td>
<td>0.613416</td>
<td>1.042071</td>
<td>1.397863</td>
</tr>
</tbody>
</table>
### TABLE 4  PEARSON COEFFICIENT OF CORRELATION:
**THE MEDIAN OF ALL SAMPLE DATA**

<table>
<thead>
<tr>
<th></th>
<th>ROE</th>
<th>ROA</th>
<th>Capital Adequacy Ratio</th>
<th>Retained Earnings/Total Asset</th>
<th>Profit Margin on Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROE</td>
<td>1</td>
<td>0.7207</td>
<td>-0.8528</td>
<td>-0.8084</td>
<td>0.3883</td>
</tr>
<tr>
<td>ROA</td>
<td>0.7207</td>
<td>1</td>
<td>-0.3157</td>
<td>1</td>
<td>0.8916</td>
</tr>
<tr>
<td>Capital Adequacy Ratio</td>
<td>-0.8528</td>
<td>-0.3157</td>
<td>1</td>
<td>0.9813</td>
<td>0.0729</td>
</tr>
<tr>
<td>Retained Earnings/Total Assets</td>
<td>-0.8084</td>
<td>-0.2756</td>
<td>0.9813</td>
<td>1</td>
<td>0.1001</td>
</tr>
<tr>
<td>Profit Margin on Sales</td>
<td>0.3883</td>
<td>0.8916</td>
<td>0.0729</td>
<td>0.1001</td>
<td>1</td>
</tr>
</tbody>
</table>

### TABLE 5:  ACCOUNTING STATUS

<table>
<thead>
<tr>
<th>Year (Total Cases)</th>
<th>revaluation excess cases (%)</th>
<th>deferred tax asset amount (yen)</th>
<th>valuation gain on securities (yen)</th>
<th>gain from the debt restructuring (yen)</th>
</tr>
</thead>
<tbody>
<tr>
<td>cases</td>
<td>1,803 (89)</td>
<td>1,448 (72)</td>
<td>33 (1.6)</td>
<td>10 (0.50)</td>
</tr>
<tr>
<td>amount</td>
<td>9,345</td>
<td>10,614</td>
<td>20</td>
<td>438</td>
</tr>
<tr>
<td>cases</td>
<td>1,436 (59)</td>
<td>1,982 (81)</td>
<td>37 (1.5)</td>
<td>17 (0.69)</td>
</tr>
<tr>
<td>amount</td>
<td>5,001</td>
<td>14,392</td>
<td>16</td>
<td>1,119</td>
</tr>
<tr>
<td>cases</td>
<td>1,510 (60)</td>
<td>1,962 (78)</td>
<td>32 (1.2)</td>
<td>14 (0.56)</td>
</tr>
<tr>
<td>amount</td>
<td>6,708</td>
<td>13,463</td>
<td>10</td>
<td>157</td>
</tr>
<tr>
<td>cases</td>
<td>1,207 (47)</td>
<td>1,994 (78)</td>
<td>57 (2.2)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>amount</td>
<td>6,410</td>
<td>9,559</td>
<td>68</td>
<td>0</td>
</tr>
</tbody>
</table>

Source: Public Financial Statements (Japan 10-K)
Unit of amount: 1 bill yen
Not: Only the positive revaluation excess were recognized.
Figure 1  Time Series Plot of ROE by Rating: 1971-2016

Source: Ministry of Internal Affairs and Communications Japan:

FIGURE 2  Japan National Accounts: Gross Domestic Product: 1971-2013
Figure 3  Time Series Plot of Profit Margin on Sales by Rating: 1971-2016
Figure 4  Time Series Plot of Capital Adequacy Ratio by Rating: 1971-2016

FIGURE 5  Pearson coefficient of correlation: ROE and Capital Adequacy Ratio
Is There an Optimum Accounts Receivable Level?

Salima Y. Paul  
University of Plymouth, UK

Cherif Guermat  
University of the West of England, UK

Rebecca Boden  
University of Tampere, Finland

Key words: Trade credit, accounts receivable, strategic use  
Corresponding author: salima.paul@plymouth.ac.uk
Abstract

This paper explores the contribution that accounts receivable (AR) make as a competitive device to add value when used strategically. We argue that AR are not merely a short-term collection issue; if used proactively, they are a source of competitive advantage. Our empirical model tests the relationship between AR and sales/profitability to determine whether, and the extent to which, AR constitute a strategic tool if the optimum level is obtained. We find, inter alia, evidence that, when used strategically firms can achieve a discernible optimal level of AR. Our model demonstrates a viable methodology that could be applied usefully to an extended data set.
1. Introduction

AR which result from selling on credit (trade credit – any delay in firm-to-firm transactions between the provision of goods/services and payment for them) constitutes a complex and heterogeneous set of business lending practices (Paul and Boden, 2008). Globally, the scale of AR is significant – in most developed countries it exceeds short-term bank credit (Blasio, 2003) and can be an important way of financing firms’ working capital (Peel and Wilson, 1996; Paul and Boden, 2008). In the UK, most firms sell goods on credit (Paul and Wilson 2006; Wilson and Summers, 2002). This extensive use of AR is, however, counter-intuitive as the practice brings with it very serious risks of late-payment or default, with all that ensues from that for businesses’ cash cycles. This begs the question as to why any firm would grant trade credit, with such questions prompting both reactive and proactive categorical explanations and if there is an optimum level for AR which firms can aim for.

The level of AR may sometimes simply be dictated by the reactive result of power asymmetries between suppliers and their customers. That is, trade credit can be a *de facto* consequence of powerful customers effectively taking credit because they can (Pike and Cheng, 2001; Paul and Boden, 2011). Moreover, in some business sectors decisions on the level of AR appears to be an historical and intractable practice (Paul and Boden, 2008). And, of course, this level may simply be the unintended result of poor internal financial management practices (Wilson, 2003). Embracing some or all of these reactive explanations suggests the need for management accounting practices designed simply to
mitigate the potential adverse effects of high level of AR, either by not granting trade credit or by managing/monitoring it better. In such circumstances the management of AR is essential but prosaic, for instance confined to back-end chasing activities, and may often be accorded little status or regard within organisations (Wilson, 2003).

In contrast, a substantial and largely normative literature now suggests that AR can offer significant competitive advantage to suppliers, enhancing sales and profitability, if it is managed proactively and these benefits are often promoted as the reason for its widespread availability (Wells, 2004). Such arguments may well be teleological, but this should not deflect consideration as to whether there is sound theory and empirical evidence supporting the argument that the proactive management of AR holds the potential (or indeed realised) capacity to give firms a competitive advantage and the extent to which it is, in reality, managed proactively towards these ends.

AR management is often something of a Cinderella subject that sits in no clear place in the accounting panoply (Paul and Boden, 2008). We hesitate to re-open the can of worms that is ‘strategic management accounting’ (Lord, 1996), but find it useful to conceptualise the proactive management of AR as a form of management accounting that might support strategic decision-making. Lord (1996) draws comparisons between military and business strategy in defining strategic management accounting. These suggest that management accounting can play a strategic role in securing competitive advantage by collecting and synthesising internal information and that on competitors and ‘making it available to the strategic process’ (Lord, 1996: 347). Lord categorises the existing literature on strategic
management accounting under three main headings: the collection of competitor information, the exploitation of cost reduction opportunities, and the matching of accounting emphasis with strategic position. She also suggests that strategic management accounting is, in reality, nothing new and merely reflects the re-branding of information collecting activities that were going on within firms anyway.

Whatever normative arguments have been or could be made for the strategic management of trade credit, there remains the question of the extent to which this is the modus operandi of UK firms. Scapens and Bromwich (2001) argue that management accounting research has revealed a significant difference between normatively defined techniques and organisational practice. Similarly, Tillmann and Goddard argue that much normative work is ‘disconnected from what actually happens in organisations’ (2008: 81).

With these caveats very much in mind, we explore in this paper the extent to which AR might be and actually is managed to achieve competitive advantage, increasing profitability, as opposed to being prudently handled as a necessary evil. Accordingly, this paper has three further sections. In section 2, we draw upon the literature to demonstrate that an optimum level of AR can indeed be used strategically to increase firms’ sales and profitability. We do so across three principal themes: that trade credit can assist in developing information flows which provide assurances as to the characteristics of a supplier’s products; that effective AR management can help to build sustainable and mutually beneficial customer relations, and; that trade credit decisions can be a useful means of intelligently managing cash flows and business finance. Having established the
theoretical case for the strategic advantage that trade credit can afford, we then set out how we approached the empirical testing of the relationship between the use of trade credit and sales/profitability. In section 3 we present empirical findings on the use of trade credit in a sample of UK firms and consider what they reveal about the relationship between sales/profitability and AR, and therefore to what extent AR decisions are used strategically to gain competitive advantage. This is followed, in Section 4, by a discussion and conclusions.

2. The Strategic Possible Use of AR

AR occur when a supplier allows a customer to delay payment for goods/services. The exact terms on which this is done varies considerably between suppliers and indeed within them. The decision to accept a delay of payments for goods/services supplied embodies considerable costs and risks for suppliers who are effectively financing the purchase for a period of time, and may be paid late or not at all. This decision can be transaction-based, relationship-based or both (Berger and Udell, 2006) and utilise both formal accounting data (such as the credit-scoring of customers) and informal information. Transaction-based credit granting decisions are driven by formal policies and/or procedures and rely upon financial data. Relationship-based decision making processes are grounded in practices of negotiation and bargaining and are more overtly subjective. In reality, most suppliers operate a mix of these technologies: for instance, a firm may have a formal credit policy and procedure but individual customers may be allowed to depart from that by agreement (Paul and Wilson, 2006). Such mixes suggest
that the effective strategic management of AR to achieve competitive advantage requires technical understanding and skills, organisational competences, and business acumen in the utilisation of “soft” information. Of course, issues of power will be evident in both transaction and relationship-based decisions and indeed in hybrids: power to either enforce processes and policies or to negotiate relationships. Power asymmetries may therefore impede suppliers’ capacity to optimise their management of AR.

The available literature suggests that a number of advantages can accrue, at least normatively, from the more proactive supply-led provision and management of AR. These can be categorised into three main areas: the communication of product information to customers, building of customer relations and financial management. We now consider each in turn.

2.1. Products

Information asymmetries may mean that purchasers are unsure or unconfident about the quality or reliability of suppliers’ goods and services and this may deter them from buying. Extension of trade credit can be used by suppliers to signal their confidence in the quality of their products because buyers receive goods or services without the necessity of immediate payment (Peel et al., 2000). Supplier-customer information asymmetries may therefore be ameliorated by placing customers in the position where they can easily return goods or negotiate the price once quality is evaluated (Pike and Cheng, 1996). Granting trade credit can therefore be seen as constituting a very strong form of warranty as the customer might simply opt not to pay at all (Lee and Stowe, 1993). The terms of trade
credit are invariably heterogeneous and may, for instance, include a discount for early payment or apply interest for credit taken. As such, ‘the difference between the credit and cash price can be interpreted as the price of a warranty attached to the product’ (Lee and Stowe, 1993: 286). This cost may be borne by either the customer or the supplier, depending on how the credit terms are constructed (for instance, the supplier bears the cost where they offer a discount for early payment). Where suppliers have little to prove in terms of quality it is rational for warranty costs to be borne by the customer.

It follows that the strategic management of AR would entail firms being self-aware of their reputation and product quality, especially vis-à-vis that of competitors (Bromwich, 1990). This information should then be utilised to determine AR level, policies and practice that enhance the strategic position of the firm via increased sales and also to exploit cost reduction opportunities by ensuring that the price of product quality warranties are rationally allocated.

2.2. Customers

The granting credit can be used to manage customer relations in three principal ways. First, suppliers may want to make informed choices about whether it is worthwhile investing in customer relationships by, for instance, developing new products or services for them. If suppliers hold insufficient or asymmetrical information about the financial status of existing or potential new customers they may be unable to make rational choices. The granting of credit can assist indirectly here by signalling the state of customers’ financial health and this information can be used to ameliorate information asymmetries
and in identifying problems earlier than otherwise possible. For instance, if buyers are offered a discount for early payment and do not take it this may signal constraints on their working capital availability, allowing suppliers to identify those with possible cash flow problems (Smith, 1987).

Second, AR decisions can constitute a direct investment in customer goodwill and loyalty, enhancing market position through higher sales. Many argue that customers are more profitable to buyers the longer the trading relationship continues (Jacob 1994). For instance, extending trade credit can assist the buyer in recovering from financial difficulty to the mutual benefit of the long-term supplier. Such investments are not cost-free as high levels of AR adversely affect suppliers’ cash flow and they also risk late payment or default. Of course ‘the seller can earn a return on the investment only if the buyer stays in business’ (Ng et al., 1999:1113) and ‘when such investments are non-salvageable, their value is lost if the buyer fails or terminates the relationship’ (Smith, 1987:865). Effective AR management protects such relationship investments through screening, which should distinguish between customers whose financial problems are temporary and those who are unlikely to survive.

Third, credit terms can also be used to favour certain customers, building market share. When suppliers cannot or do not wish to openly discriminate between customers by offering some lower prices than others, credit terms can be used to achieve a similar result, signalling a preferential status to the customer. For instance, suppliers can allow customers to pay after the agreed date without a penalty (Schwartz and Whitcomb, 1978).
or vary their two-part-terms\(^1\) to offer higher discounts to selected customers, or allow them to take an unearned discount. Suppliers can also vary their terms to attract specific customers in order to achieve a certain level of market share (Summers and Wilson, 1999).

Price discrimination through granting credit can also be a useful tool for circumventing price controls (Emery, 1984) – but this can cut both ways and some buyers may subvert official process by demanding credit. The bargaining power of some companies may have a disproportionate effect on the credit terms offered. Petersen and Rajan argue that ‘since credit terms are usually invariant to the credit quality of the buyer, trade credit reduces the effective price to low-quality borrowers. If this is the most price elastic segment of the market, then trade credit is an effective means of price discrimination’ (1997: 644).

The granting of trade credit can therefore be an extremely useful means of collecting information about potential or current customers’ financial position and this can be utilised not just in decisions about trade credit terms but also be fed into wider strategic decision-making. It can also be used to discriminate between customers, signalling “valued-customer” status to buyers, helping to build good customer relationships and sustainable customer-bases. This matches the accounting emphasis with the strategic position of the firm.

\textit{2.3. Finance}

Granting credit can be used to strategically manage financial flows with customers, either reducing suppliers’ costs or providing an advantage to customers, building goodwill.

\(^1\) Two-part term is when buyers are offered a discount for early payment.
Transaction cost theory suggests that trade credit can lower costs by providing both goods and finance from a single source (Mian and Smith, 1992), allowing the supplier to accept a lower profit or a greater loss on the credit than a financial institution could. In a similar vein, by facilitating the separation of the exchange of goods and of money, trade credit allows companies to efficiently separate the payment cycle and the delivery schedule (Petersen and Rajan, 1997). This allows suppliers to accumulate invoices, billing in bulk at regular intervals, enabling them to anticipate their cash requirements with greater certainty so that they can hold smaller precautionary cash balances and plan movement from liquid assets to cash in a cost-effective manner (Schwartz 1974). Sellers often adjust their debtors’ balances in response to deviations in demand by relaxing/tightening credit terms; suppliers who experience marked seasonal fluctuations in demand can use AR decisions to stabilise and improve their cash flows as well as to reduce monitoring costs (Emery 1984; 1987).

Granting trade credit operates as a form of finance for customers because of the delay in payment; the cost to suppliers is the opportunity cost of alternative investment. Atanasova and Wilson report that large suppliers ‘may provide an important mechanism for channelling finance down to those firms rationed by financial intermediaries’ (2003: 504). Trade credit can also act as a facilitator in that those firms that are able to borrow from financial institutions do so and pass on the benefit to those that are unable to access funds in the same way. If more liquid sellers extend credit to less liquid buyers this can build good business partnerships and generate sales. Such finance may also lock some customers into particular supply chains (Paul, 2010).
In sum, AR decisions are potentially strategically useful in the management of finance for two reasons. First, they can reduce costs and the consequent savings can be either retained or passed on to customers to deliver a competitive advantage; second, they can help build strong alliances with customers by providing them with congenial financing arrangements.

We have presented three possible ways in which AR decisions might be usefully deployed by suppliers as a means of achieving a competitive advantage. First, they can be used to signal confidence in product quality. Second, credit decisions can provide valuable information on the financial health and stability of customers and also be used to develop/manage customer relationships, generating market advantage. And third, they can help to cut financing costs and also supply customers with vital lines of credit finance, facilitating stronger supply chains.

Direct testing for the strategic use of trade credit is problematic. Firstly, it is very hard to measure intangible constructs such as “building strong alliances”. Secondly, even if the measurement of such variables were possible, we would still be measuring the differential use of trade credit across firms, not their strategic use of it. In other words, we would only be able to tell whether more or less of certain characteristics lead to more or less credit granting. It does not really tell us whether or not AR is used strategically.

A reasonable way of determining whether AR level is used strategically is to check whether it is related to both sales and profit as these two variables are, arguably, the best measure of a company’s success. A possible alternative measure is stock performance, but
this can only be observed for publicly traded companies, thereby excluding from analysis a significant number of corporate actors.

Assuming that firms are rational agents, the strategic uses of AR level discussed above are directly aimed at increasing sales and profits relative to competitors. Cost reduction, customer loyalty, and quality signalling are obvious means of obtaining such competitive advantage, thereby increasing market share and profitability. Financing the purchases of customers can also play a major role in achieving increased market share.

From the above, we anticipate the strategic use of the level of AR to be associated with enhanced profit and sales performance. Increased sales are expected with the increased use of the level of AR. However, increased use of trade credit will not necessarily lead to additional profit if it is used injudiciously. Unfortunately, we cannot measure judiciousness directly. However, increasing trade credit should increase profitability until it reaches the optimum point, at which the effect reverses – like people, firms can use too much of a good thing. Thus, we define the judicious (and therefore strategic) deployment of trade credit as using the optimal amount to enhance profitability. Hence we advance the following two main hypotheses:

**Hypothesis 1:** Sales are a strictly increasing function of trade credit.

**Hypothesis 2:** Profit and trade credit are related by a hump-shaped function, increasing up to a certain level of trade credit and then decreasing thereafter.

The above two hypotheses are conditional on other control variables, which we discuss shortly.
A standard approach to testing these two hypotheses is to use a regression in which trade credit is used as a right hand side (explanatory) variable while sales and profit are used as the dependent variables. However, there are three major considerations in modelling the strategic use of trade credit. First, strategy entails some measure of performance relative to similar firms. Unfortunately, we have not been able to collect such information. Instead, we use percentage change in sales and profit. Second, strategic success is better measured in the longer rather than the shorter term. Accordingly, we use four years cumulative percentage change in sales and profits as measures of strategic performance. The third consideration is the problem of endogeneity. The causality between trade credit on one hand and sales and profit is not one sided. For example, greater use of trade credit may be expected to increase profit, but greater profit can also affect trade credit because more profitable firms have greater ability to offer trade credit and take on more risk.

Thus, to complete the picture we add one further hypothesis:

**Hypothesis 3:** *Trade credit is a strictly increasing function of profit and sales.*

Each of the three hypotheses can be represented by an equation, yielding a system of three simultaneous equations.

\[
C = \beta_0 + \beta_1 P + \beta_2 S + \text{control}
\]

\[
P = \alpha_0 + \alpha_1 C + \alpha_2 C^2 + \alpha_3 S + \text{control}
\]

\[
S = \gamma_0 + \gamma_1 C + \gamma_2 C^2 + \text{control}
\]

where \(C, P\) and \(S\) are trade credit, profit, and sales respectively. The quadratic term in the second equation captures the hump-shaped function. The causality and interaction
between the three endogenous variables (C, P, and S) is represented graphically in Figure 1.

![Diagram of the trade credit model]

Figure 1. A graphical representation of the trade credit model.

Our research is complicated by the endogenous relation that exists between the three main variables. For example, we are trying to determine the causal effect of C on P. The inference usually involves a regression involving P as a dependent variable, and C and other control variables (say a vector Z) as explanatory variables. The question is therefore: holding Z constant, does C have an economically and statistically significant causal effect on P? If we were to proceed this way, the coefficient will be biased and may lead to spurious results (for example we may have a negative coefficient even when the true relationship is positive). The reason for this bias is that P and C are simultaneously determined. P can cause C, but C can also cause P. More importantly, both P and C can be caused by an unobservable factor (say managerial skills).
One solution to the problem of simultaneity is to estimate a system of equations. However, given the limited data points in our sample, we do not have enough degrees of freedom to estimate the full system using three stage least squares or full information maximum likelihood methods. A more appropriate approach is the Generalised Method of Moments (GMM). The GMM is able to estimate models with endogenous regressors and has the added advantage of being robust to heteroscedasticity.

We turn now to an examination of empirical data in which we explore the extent and modalities of strategic trade credit management in a sample of UK firms.

### 3. Empirical Evidence

Our data is from a mixture of primary and secondary sources. The primary data is based on a survey questionnaire sent to a large number of UK firms across a broad range of sizes and sectors in manufacturing, services, and construction. This survey is used to obtain control variables (firm characteristics) and most of the instrumental variables. Our main (dependent) variables, however, are obtained from the Fame Database.

Because we use a small fraction of the questionnaire data, we only give a brief description of the survey. The target firms were randomly selected from a credit reference agency. The questionnaire gathered data on many areas of trade credit management and business performance. The questionnaire was piloted and comments were reflected in a revised design.\(^2\) Our response rate of 17% is very similar to those found previously.\(^3\) The resulting

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\(^2\) The full questionnaire is available upon request from the authors.

\(^3\) Wilson et al. (1995) and Haworth and Westhead (2003) response rates were 16% and 17% respectively.
database was tested for non-response bias by looking for significant differences in the responses of early and late replies using t-tests on a range of characteristic variables. The results revealed no significant differences in the responses of the sub-samples.\(^4\)

The survey data was collected in 2005. The secondary data covers the period 2004 to 2007. These years were selected because they span the period of the survey data. Mixing primary and secondary data has resulted in a substantial loss of valid observations, leaving 48 and 79 observations, depending on the case. The compensating factor for the loss of observations is that we obtained the rich data set that was needed to test the viability of the methodological approach developed.

### 3.1. Definition of variables

Our empirical tests involve three main endogenous variables: profit, sales and trade credit. In modelling relative performance, the percentage change over time is usually more appropriate than levels. We therefore have the following variables:

\[ P: \text{is the four year percentage cumulative change in profit.} \]

\[ S: \text{is the four year percentage cumulative change in sales.} \]

\[ C: \text{is the four year percentage cumulative change in debtors.} \]

In principle, growth in trade credit reflects the intensity with which a firm uses it to acquire greater market share and enhance profits. However, because firms do not

\[^4\text{A comparison between the characteristics of respondents and the mailing sample were made using accounting data. T-tests on size, sector, profitability and a range of financial ratios were conducted and we were satisfied that response bias was not an issue.}\]
necessarily have the same initial conditions (for instance age and size), proportional changes in trade credit do not always coincide with its actual level. For example a young growing firm has very low levels of credit and would naturally tend to have rapid growth in trade credit. On the other hand, an established firm may have very little growth in trade credit, but still have high levels of it.

Thus, growth in trade credit needs to be complemented by its level. By using both level and growth we are able to capture a more complete picture of strategic use of trade credit. For the level of trade credit we use:

AR TA: the amount of accounts receivable relative to the firm’s total assets.

Table 1, Panel A, provides summary statistics for these dependent variables. The average firm in our sample has an ARTA ratio of 34.9% and a standard deviation of 21.2%. This indicates some variation across firms, with 95% having roughly between 4% and 72% ARTA ratios. The presence of outliers is noticeable, with the most generous firm having a surprisingly high ratio of 99.6%.

Outliers are even more noticeable in the other variables. Trade credit has a mean of around 70% cumulative growth over four years, but the maximum is more than 2000% whilst the 95th percentile is only 320%. The situation is less pronounced with sales growth, but worse with profit growth – the mean, at more than 412%, is extremely large while the median is
negative. The distribution is extremely skewed with 95% of the firms showing less than 776% growth while the 99th percentile is more than 11000%.\footnote{The lowest profit growth value is -135%. Figures less than -100% are possible because we calculate growth on a cumulative basis.}

Panel B of Table 1 shows similar information on four control variables. Growth in employment and assets has potential explanatory power for both sales and profit growth. However, these variables also suffer from outliers, especially the three asset growth variables.

There are usually three ways of dealing with such extreme outliers. One solution is to use robust estimators. However, to our knowledge, no satisfactory methodology exists that deals with both robustness and endogeneity. Another solution would be to winsorise the data by excluding a small proportion in the tail of the distribution. Our sample is relatively small, and winsorising would remove valuable information. This option, though straightforward, is therefore discarded for practical reasons. A third solution would be to perform a first pass regression and then exclude extreme residuals. Again, this would remove much needed data points from our sample. Rather, our solution to this problem is to shift the data to the right and take logarithms.

\[ NewValue = \log(136 + OldValue) \]

The number 136 coincides with the lowest growth in all variables plus one (to avoid \( \log(0) \)). Shifting all variables by the same amount preserves the relative comparability across these variables. This transformation has the advantage of allowing the use of the
GMM methodology, using every available data point and curbing the influence of extreme observations. The logarithm transformation also has a satisfactory “diminishing return” interpretation.

Panel C of Table 1 shows the main statistical features of the endogenous and control variables. The medians are now very close to the means, while the maxima do not appear too extreme. For example, in the most extreme case of profit growth the 95th percentile is 6.79 while the 99th percentile is 9.31, and the maximum follows closely at 9.51. The other variables have a similar pattern with a lot less accentuated extremes. The regression results were based on this transformation.

One of the most important elements of GMM estimation is the determination of appropriate instruments. An instrument is a variable that is uncorrelated with the regression error term but is, at the same time, correlated with one of the right hand side (both exogenous and endogenous) variables. While the above control variables can indeed be used as instruments, they may not be sufficient as the number of endogenous variables may be greater than the number of instruments. Fortunately, in our survey we collected additional information on the firms’ characteristics. To ensure that the instruments are appropriate we correlated a large number of these characteristics with our three endogenous variables. Table 2 reports summary statistics of the characteristics that were significantly correlated with one or more of the endogenous variables. Because they are significantly correlated with the endogenous variables, it is less likely that these instruments are redundant.
The variables (defined in Appendix 1) whose minima and maxima are zero and one respectively are dummy variables and CRESCOR (credit score) is a score between 0 and 100. The variable “years selling product” (PRIMYEARS) is log-transformed for two reasons. First, outliers were found in this data, with some extremely old firms (the maximum age was 399 years). Second, we do not expect the relationship between trade credit and firm age to be linear because of diminishing marginal effect.\(^6\) Thus, a logarithmic function seems more appropriate as it offers a diminishing marginal effect. The summary statistics for this variable are given for log-values rather than level values.

\(^6\) For example, a young firm grows fast in the first few years, but its growth slows down in later years as it approaches its full potential.
### Table 1: Summary Statistics of Dependent and Control Variables

<table>
<thead>
<tr>
<th>Panel A: Dependent Variables</th>
<th>Observations</th>
<th>Mean</th>
<th>Median</th>
<th>Std Error</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARTA</td>
<td>208</td>
<td>0.349</td>
<td>0.328</td>
<td>0.212</td>
<td>0</td>
<td>0.996</td>
</tr>
<tr>
<td>Trade Credit Growth (C)</td>
<td>150</td>
<td>69.753</td>
<td>9.00</td>
<td>261.382</td>
<td>-100</td>
<td>2368</td>
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<tr>
<td>Sales Growth (S)</td>
<td>90</td>
<td>30.022</td>
<td>15.50</td>
<td>75.106</td>
<td>-118</td>
<td>334</td>
</tr>
<tr>
<td>Profit Growth (P)</td>
<td>70</td>
<td>412.714</td>
<td>-6.50</td>
<td>2013.275</td>
<td>-135</td>
<td>13427</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel B: Control Variables</th>
<th>Observations</th>
<th>Mean</th>
<th>Median</th>
<th>Std Error</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment Growth (EMP)</td>
<td>96</td>
<td>19.510</td>
<td>8.00</td>
<td>53.706</td>
<td>-81</td>
<td>267</td>
</tr>
<tr>
<td>Growth in Fixed Assets (FA)</td>
<td>98</td>
<td>71.765</td>
<td>9.50</td>
<td>261.981</td>
<td>-98</td>
<td>1727</td>
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</table>

<table>
<thead>
<tr>
<th>Panel C: Transformed Variables</th>
<th>Observations</th>
<th>Mean</th>
<th>Median</th>
<th>Std Error</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade Credit Growth (C)</td>
<td>150</td>
<td>5.070</td>
<td>4.977</td>
<td>0.596</td>
<td>3.584</td>
<td>7.826</td>
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<tr>
<td>Sales Growth (S)</td>
<td>90</td>
<td>5.017</td>
<td>5.021</td>
<td>0.458</td>
<td>2.890</td>
<td>6.153</td>
</tr>
<tr>
<td>Profit Growth (P)</td>
<td>70</td>
<td>4.982</td>
<td>4.864</td>
<td>1.256</td>
<td>0.000</td>
<td>9.515</td>
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<tr>
<td>Employment Growth (EMP)</td>
<td>96</td>
<td>4.998</td>
<td>4.970</td>
<td>0.308</td>
<td>4.007</td>
<td>5.999</td>
</tr>
<tr>
<td>Growth in Fixed Assets (FA)</td>
<td>98</td>
<td>5.049</td>
<td>4.980</td>
<td>0.643</td>
<td>3.638</td>
<td>7.530</td>
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</table>

### Table 2: Summary Statistics of Instruments.

<table>
<thead>
<tr>
<th>Correlated with Profits</th>
<th>Series</th>
<th>Observation</th>
<th>Mean</th>
<th>Standard Error</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log Years selling products</td>
<td>PRIMYEARS</td>
<td>244</td>
<td>2.970</td>
<td>1.096</td>
<td>0.405</td>
<td>5.707</td>
</tr>
<tr>
<td>Competitiveness of market</td>
<td>MARCOMP</td>
<td>255</td>
<td>0.510</td>
<td>0.501</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Credit score</td>
<td>CRESOR</td>
<td>205</td>
<td>58.517</td>
<td>14.850</td>
<td>9</td>
<td>96</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Correlated with Sales</th>
<th>Series</th>
<th>Observation</th>
<th>Mean</th>
<th>Standard Error</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credit terms affected by customers</td>
<td>CUSAFTERM</td>
<td>255</td>
<td>0.059</td>
<td>0.236</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Competitiveness of market</td>
<td>MARCOMP</td>
<td>255</td>
<td>0.510</td>
<td>0.501</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Granting credit is customer relation decision</td>
<td>CREDCUSREL</td>
<td>255</td>
<td>0.082</td>
<td>0.275</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Cash management importance</td>
<td>CASHMANIMP</td>
<td>255</td>
<td>0.586</td>
<td>0.501</td>
<td>0</td>
<td>1</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Correlated with Trade Credit (ARTA, C)</th>
<th>Series</th>
<th>Observation</th>
<th>Mean</th>
<th>Standard Error</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log Years selling products</td>
<td>PRIMYEARS</td>
<td>244</td>
<td>2.970</td>
<td>1.096</td>
<td>0.405</td>
<td>5.707</td>
</tr>
<tr>
<td>Ascertain quality by simple inspection</td>
<td>QUALASSESS</td>
<td>255</td>
<td>0.141</td>
<td>0.349</td>
<td>0</td>
<td>1</td>
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<tr>
<td>Product diversification</td>
<td>PRODIVERS</td>
<td>255</td>
<td>0.165</td>
<td>0.372</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Credit score</td>
<td>CRESOR</td>
<td>205</td>
<td>58.517</td>
<td>14.850</td>
<td>9</td>
<td>96</td>
</tr>
</tbody>
</table>
3.2. Results and discussion

The regression results for profit and sales are shown in Table 3. The profit regression was carried out with 10 instruments in total. Thus, we have 10 moments and 5 coefficients, or 5 over-identifying restrictions. Hansen’s J statistic is distributed as a $\chi^2(5)$. In this case Hansen’s J statistic is very low and statistically insignificant (p-value = 0.49). This suggests that the model is appropriate. However, the number of observations is rather low due to missing observations.

<table>
<thead>
<tr>
<th>Table 3: Profit and Sales Models</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanatory variables</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Constant</td>
</tr>
<tr>
<td>Sales Growth (S)</td>
</tr>
<tr>
<td>Fixed Assets Growth (FA)</td>
</tr>
<tr>
<td>Employment Growth (EMP)</td>
</tr>
<tr>
<td>Trade Credit Growth (C)</td>
</tr>
<tr>
<td>ARTA</td>
</tr>
<tr>
<td>ARTA-square</td>
</tr>
</tbody>
</table>

The sales growth results do not seem to fully support our first hypothesis. The fixed asset growth variable was highly insignificant and adversely affected the significance of the other variables, hence its removal from the regression. Employment growth appears to be positively related to sales growth, but is statistically insignificant and, judging by the size of its coefficient, is economically unimportant. However, the three trade credit variables are highly significant. First, trade credit growth is positively related to sales growth, suggesting that firms that increased their trade credit during the four year period also
significantly increased their sales during the same period (but not necessarily the profit, as trade credit growth is not significant in the profit equation).

The coefficients for ARTA and ARTA squared suggest a U shaped function similar to the lower curve in Figure 2. This curve is a plot of the function \( y = -4.85x + 6.96x^2 \). The point of reversal is at roughly 36% ARTA. Given that the mean ARTA is about 35%, this result suggests that firms that have below average levels of trade credit have some sort of disutility of trade credit, in the sense that increasing the firm’s level of trade credit may reduce sales growth. It should be noted however that the slope in this region is very flat and may therefore not be economically important. On the other hand, above average firms (in terms of level of trade credit) do enjoy a positive relationship between level of trade credit and sales growth.

![Figure 2. Suggested relationship between sales and profit growth and ARTA.](image)

Regardless of the economic importance of the negative slope of the first half of the curve, this U shape relationship is puzzling since we would expect sales growth to be strictly increasing in ARTA. We are not able to fully explain this, but suggest two possibilities.
First, this could be due to the effect of trade credit growth (C) whose coefficient is positive. However, using our sample firms, we calculated the aggregate effect of both ARTA and C. The impact of C was found to be insufficient to change the U shape pattern. A second explanation is that low ARTA firms may be using trade credit inefficiently and hence the increased ARTA is not the result of increased sales but decreased recovery rates. Overall, the first hypothesis is not fully supported by our data.

The second regression in Table 3 involves profit growth as a dependent variable. First we note that employment growth and trade credit growth are highly insignificant and their inclusion in the model worsens the fit. In addition, these two variables are significantly positively correlated with the growth in fixed assets. Given that the inclusion of irrelevant variables may worsen the efficiency of the estimates, we decided to drop these two variables from the regression. Thus, only the level of trade credit seems to matter for profit growth.

Overall, the regression supports our second hypothesis. In particular, the coefficient of ARTA is positive while the coefficient of the square of ARTA is negative. Both are significant at the 10% level. This suggests a hump shaped relationship between profit growth and the level of trade credit. Figure 2 plots the curve $y = 15.22x - 18.79x^2$, which is shown as a dashed line. The impact of the level of trade credit on profit growth (holding other factors constant) is increasing until roughly 42% ARTA. After that increasing the level of trade credit adversely affects profit growth. The model thus suggests that an optimal trade credit level may exist that would maximise profit growth, other things being
constant. Too high levels of trade credit seem likely to adversely affect the growth of a firm’s profits.

Sales growth is highly significant and positively related to profit growth. This is not surprising since sales are the main drivers of the profitability of a firm. Fixed assets appear to be negatively correlated with profit growth. However, its coefficient is statistically insignificant at the 10% level and is economically unimportant (the coefficient is more than 5 times smaller than that of sales growth). Hence, the growth of assets does not seem to matter for profit growth.

We now turn to our third hypothesis. The regression results for the level of trade credit (ARTA) and the growth of trade credit are shown in Table 4. As before, the two Hansen’s J statistics are insignificant and suggest a good fit. We also note the low sample size due to missing values. Otherwise, the results are mostly in line with our third hypothesis.

| Table 4: Trade Credit Models |
|---|---|---|---|
| Explanatory variables | Dependent Variables | TC Growth | ARTA |
| Constant | -0.887 | 0.462 | 1.213 | 0.024 |
| Sales Growth (S) | 0.878 | 0.003 | -0.186 | 0.102 |
| Fixed Assets Growth (FA) | 0.166 | 0.026 | -0.030 | 0.562 |
| Profit Growth (P) | 0.168 | 0.040 | 0.093 | 0.040 |
| PRODDIVERS | -0.294 | 0.005 | -0.002 | 0.960 |
| PRIMYEARS | -0.031 | 0.457 | -0.085 | 0.000 |
| QUALASSESS | -0.046 | 0.764 | 0.092 | 0.151 |
| J(8)=3.131 | | J(8)=5.027 |
| Sig.(J)=0.79 | | Sig.(J)=0.54 |
| N=48 | | N=48 |

As expected, sales growth is positively associated with trade credit growth. However, sales growth is negatively related to the level of trade credit (ARTA). To some extent, this reflects the earlier result of the U shaped relationship between ARTA and sales growth.
Nevertheless, it remains inexplicable. On the other hand, profit growth is more robust and is more in line with expectation. It has a positive and highly significant impact on both the level and growth of trade credit. Overall, our third hypothesis is not completely supported by the data since sales growth is increasing in trade credit growth but not the level of trade credit.

To complete the empirical picture, we briefly note that growing firms (fixed assets growth) seem to have a better ability to grow their trade credit. However, growing firms do not necessarily have higher levels of trade credit. Product diversity does not seem to matter, although the negative sign is in line with previous findings (Summers and Wilson, 2000). The negative relationship between PRIMYEARS and ARTA shows that long-established firms have relatively lower levels of trade credit. This is in line with expectations since established suppliers are under less pressure to offer credit, given their market share, reputation and the quality of their products. However, established firms are not necessarily growing their trade credit differently from other younger firms. Finally, QUALASSESS has a positive coefficient but is not significant at the 10% level. Thus, contrary to previous findings (Paul and Wilson, 2006), the ability to assess the quality of goods does not seem to have any impact on the level or growth of trade credit.

4. Summary and Discussion

This paper has set out the case for the strategic potential of trade credit to enhance sales and profitability of firms. Theoretically, such an enhancement is realized primarily through three channels: products, customers and financing. Having established the
theoretical prospects for trade credit, we then tested the relationship between trade credit use and sales/profit in a sample of UK firms. A dynamic relationship between these variables would suggest that trade credit does have strategic potential.

We tested three hypotheses; the first two are direct tests of strategic use of trade credit, while the third is an auxiliary hypothesis needed to test the feedback effect from sales and profits to trade credit implied by the endogenous nature of these three variables.

The first hypothesis implies that increasing the use of trade credit increases the market share of a firm as proxied by the growth in sales. Our data on UK firms partially support this hypothesis, suggesting that the hypothesised strict positive relationship between trade credit and sales growth is only confirmed for firms with an above average trade credit level.

The second hypothesis is fully supported by our empirical results. The predicted hump-shaped pattern was found to be statistically significant and economically meaningful. According to this pattern, trade credit is only beneficial up to a point. Roughly speaking, increasing trade credit increases profit as long as accounts receivable does not exceed 42% of the total assets. Beyond this point, the effect becomes counter-productive, leading to an actual worsening of the profitability of the firm. One important feature of this outcome is the existence of an optimal level of trade credit for profit growth maximisation. To our knowledge, this has not been observed in prior literature. Indeed, the existence of an optimal level of trade credit is consistent with the idea of judicious use of trade credit.
The third hypothesis, which predicts a positive relationship between trade credit and profit/sales is generally confirmed. Although not directly relevant to our study (we are interested in the effect of trade credit on profit and sales), this result supports the idea of the duality between trade credit and profit/sales. Thus, not only can (a judicious use of) trade credit help the performance of a firm, the performance of that same firm is also likely to help it extend more trade credit.

We now consider the theory and our findings in the light of Lord’s (1996) three categorisations of strategic management accounting. First, there is the issue of using management accounting to secure competitive advantage by collecting and synthesising internal information and that on competitors and making good use of it. In principal, trade credit information can be usefully collected and collated to provide information on customers’ financial health and behaviour. This can be utilised in a wide range of decision making contexts. In particular, such information can help firms decide which customer relationships they should invest in and in early identification of customers’ financial stress (which may affect a wide range of decisions). Our results suggest that firms can do this up to a point. It seems likely that extending trade credit to an unlimited number of customers may not be profitable because, beyond a certain number of credit-customers, it may become too difficult or costly to maintain the same quality of internal and external information. This view is consistent with our result that profitability worsens with levels of trade credit that are beyond the optimum level.
Lord’s second categorisation – the strategic possibilities for achieving cost reductions (1996) is directly linked to our second hypothesis. In principal, trade credit can be managed highly effectively to reduce costs by, for instance, tailoring credit policies to meet the strategic needs of the organisation at least cost. We have found that, at least in terms of trade credit level, firms should have an optimal level which achieves minimal cost. In our case, this would coincide with higher profit growth, although we do recognise that other factors may influence profitability.

Third, Lord (1996) talks about how good strategic management accounting would match the accounting function to firms’ strategic objectives. Strategic trade credit management offers the prospect of the integration of the trade credit function into strategic decision making across the firm. For instance, it can be used in work with customers to build market share and advantageous customer bases. Our first hypothesis seems to be partially in line with this view, given that sales growth is generally increasing with trade credit growth. In terms of trade credit level, firms that extend low levels of trade credit (ARTA) do not seem to enjoy a build-up in market share or customer base. However, firms that grant above average levels of trade credit do seem to benefit from greater sales growth and, presumably, greater market share.

This is, of necessity, a limited study that offers twin insights. First, it develops an empirical model which exhibits the potential for the further and more nuanced analysis of trade credit as a strategic tool, an hitherto largely neglected topic. Second, it offers some insights into both strategic possibilities and practices. However, there is ample evidence
(Paul, 2010; Peel et al., 2000; Summers and Wilson, 1999) to suggest that trade credit is by no means ubiquitously well-managed, even at the prosaic level of back-end chasing activities, never mind strategically. This will make achieving the strategic advantages of trade credit problematic and somewhat elusive. Together, these insights point to the need for further work, employing our empirical model but with extended data sets.
References


Appendix A: A brief definition of the instruments

The following is a brief description of the instrumental and control variables used in the empirical models. These variables were obtained from the survey.

- **QUALASSESS**: is a dummy variable, which measures how easy it is to evaluate the quality of goods. If the goods quality is difficult to inspect, sellers are expected to grant credit to allow customers to assess the goods before paying.

- **PRODIVERS**: is a dummy variable, which measures firms’ product diversification. Those selling a wide range of products may have difficulty establishing credit terms for each product, which makes the management of credit decisions difficult and costly. Given the choice, firms in this situation tend to offer less credit.

- **PRIMYEARS**: measures the length of time firms have been selling their goods. Those that are well established give less credit as customers are familiar with their goods and do not need long inspection periods.

- **CUSAFTERM**: a dummy variable reflecting the extent to which suppliers accede to customers’ credit demands. A positive correlation between CUSAFTERM and trade credit is expected.

- **MARCOMP**: a dummy variable indicating whether the firm operates in a competitive market. A firm that sells in a competitive market may use trade credit terms to encourage sales. We expect MARCOMP to be positively correlated with trade credit.

- **CREDCUSREL**: a dummy variable indicating whether a given firm perceives credit extension as a customer relationship decision. Such firms see trade credit as a means of attracting and retaining customers and are therefore more likely to extend it. We expect this variable to be positively correlated with credit decisions.

- **CRESCOR**: suppliers’ credit scores are used as proxies for financial risk. Firms with low credit score (i.e. high risk) may find it harder to access finance and thus tend to extend less credit to their customers. CRESCOR is expected to be negatively correlated with credit decisions.

- **CASHMANIMP**: a dummy variable reflecting the importance of cash management to firms. Firms that consider cash management an important financial objective are more likely to have healthier liquidity and thus are expected to grant more credit. This variable is expected to be positively correlated with trade credit decisions.\(^7\)

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\(^7\) We also use (4 year) cumulative growth in tangible assets, total assets, fixed assets, and employment as additional instruments where necessary. These were obtained from the Fame database.
Implication of Comprehensive Income and Its Components for Banking Supervisory Rating Approach CAMEL

--------Evidence from Chinese Listed Banks

Xiao Hong

Theerawit Kapanya

Email: xiaohong@xmu.edu.cn

Department of Accounting, Xiamen University, China

通讯地址：福建省厦门市思明区思明南路 422 号厦门大学管理学院会计系 肖虹收

邮编：361000

Tel: 13600902515
Implication of Comprehensive Income and Its Components for Banking Supervisory Rating Approach CAMEL

-------Evidence from Chinese Listed Banks

Abstract

Using data for Chinese listed banks from 2009 to 2016, this paper study relations between comprehensive income reporting and banking supervisory rating approach (CAMEL) provided an informative and signals to decision-making. The results reveal FVA reflects assets and liability management that are associated and significant, and may provide an early warning to take remedial action. This study also provided evidence on whether information contained in aggregate comprehensive income and other comprehensive income reporting compared to the traditional historical-cost earnings approach were used by analysts in their banking supervisory rating approach (CAMEL).

1. Introduction

This paper contributes to the debate on whether fair value accounting (FVA) into comprehensive income reporting provides information relevant to decision-making and about consequences of financial stability. To provide insight into the fair value debate, this study examined the association of comprehensive income reporting and the components of OCI with the banking supervisory rating approach (CAMEL). This approach is internationally recognized by bank supervisory authorities to test the safety and soundness of banks as well as help mitigate the potential risks which may lead to bank failures. This study was motivated by the objective of the International Accounting Standard setting (IASB): Conceptual Framework for Financial Reporting (IASB, 2013), for which OCI is necessary to provide a presentation of the incremental information relevance to profit or loss (earnings per share) for making decisions about

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1 This research is supported by the major project of Ministry of education, humanities and social science research base (15JJJD630012)
providing resources to entities (IASB, 2013,8.46).

Proponents of FVA believe that it provides investors with more economic reality and information about the stability of markets by enhancing transparency as all financial assets and liability should be measured by this approach. Accounting standard setters’ perspectives (IASB and FASB) of FVA have expressed that it enhances market discipline and efficiency, and more closely reflects underlying economic realities. Academic research has supported this perspective (Bischof, 2012). By current accounting standards, under the mixed measurement approach, most securities and loans that are classified as held to maturity at amortized cost. These financial instruments are subject to some form of impairment review that can result in a valuation allowance and/or specific write down. Furthermore, most banks’ investment portfolios are measured at fair value, with the re-measurement between book value and fair value presented into OCI.

Opponents to FVA state that presentation in financial statements is not appropriate in assessing banks’ financial environments. American Bankers Association (ABA), which represents US commercial banks, expressed concern that historical cost accounting for non-traded financial instruments better represents banks’ core activity above FVA (ABA, 2009). In addition, fair value measured by changes in liquidity, credit risk, or interest rates are transitory and banks intend to hold a financial asset to collection or a financial liability for payment (Blankespoor et al. 2013). Therefore, during a market downturn, banks may attempt to manipulate to increase its profits (losses) as well as its bank regulatory capital.

Therefore, the mixed approach of historical cost accounting and fair value accounting are considered to be the most appropriate model by many bank supervisors and managers. However, full fair value accounting would be preferable and this is supported by standard setters, academic research, and some investors (Shaffer, 2012). These two perspectives of the current accounting debate are described in this chapter.

The aims of this chapter is to inform the fair value debate by comprehensive income reporting and to examine the association of comprehensive income reporting
with the banking supervisory rating approach CAMEL. This relationship has not been addressed by empirical study.

The main results of this study by empirical tests were:

1. In the Chinese economy from 2009 to 2016, the results suggested that the FVA of reporting in OCI provides incremental association with earning profitability \(E\) and liquidity risk \(L\) more than the traditional income approach (net income). The result showed that FVA provides a bank supervisory perspective alongside the more traditional investor’s views on decision usefulness as well as potential impacts on banks’ soundness and financial stability.

2. The result of FVA of reporting in aggregate comprehensive income (representing mixed approaches) association with earning asset quality \(A\) and profitability \(E\) is better than the traditional historical-cost earnings approach (net income). The results showed that FVA in this study enhanced information usefulness for unintended consequences of financial stability.

The study of OCI and CAMEL rating approach showed FVA reflects assets and liability management that are associated and significant, and may provide an early warning to take remedial action. The study’s findings are important for banks supervisors as they consider the development of bank regulators evaluating the regulatory monitoring for accounting risk information that reports into comprehensive income statement.

2. **Theoretical Background and Research Hypotheses**

This empirical study used the assets and liability approach (FVA) and revenue and expense approach (historical cost accounting) to conduct the investigation in this chapter, where comprehensive income statements present mixed measurement approach in the current accounting in China. During this period, financial assets and liabilities as well as markets became more complex. Fair value measures became important to measure new financial products as well as business activities began
operating with international partners and their foreign currencies became risk factors in core business.

The perspectives of agency theory were used to explain the need for the transparency of banks to improve their performances. Agency theory identifies the agency relationship as a contract under which one party (the principle) engages another party (the agent) to perform some service on their behalf which involves delegating some decision-making authority to the agent (Jensen and Meckling, 1976:308). Times horizon in terms of agency problems described that managers are concerned only during the period of their current employment. This may lead to manipulation of the accounting system and favours short-term projects over long-term projects with higher net present value. Therefore, this study believed that fair value measurement presented in financial statements is appropriate in assessing banks’ financial environments as well as providing information to bank regulators about a meaningful way of using the fair value approach.

This study anticipated that FVA of reporting in OCI provides incremental association with the CAMEL approach was better than the traditional historical-cost earnings approach. Additionally, during the market downturn of the current Chinese economy, banks may attempt to elect a measurement to manipulate increases in profits (losses) as well as their regulatory capital. Hence, this study examined the association of comprehensive income reporting with banking supervisory rating approach (CAMEL) and presented hypotheses one:

H1: Fair value approach of reporting in OCI provides incremental association with the CAMEL approach better than the traditional historical-cost earnings approach (net income).

Bank supervisors used the CAMEL framework to assess the overall safety and soundness of a banking institution which may lead to bank insolvency risk. The CAMEL rating approach is based on the evaluation of five essential components of its environmental financial and operations condition. These five factors, referred to as
CAMEL, address the adequacy of capital adequacy (C), asset quality (A), management ability (M), earnings profitability (E), and liquidity risk (L). The effects of each component of CAMEL on FVA are described.

The primary function of capital (C) is outlined in the Bank Examination Manual, and FVA can impact the quality of capital as well as level of capital. Bank supervision currently and regulatory capital (Basel III) are primary concerns for users of bank financial reporting to support operations, absorb unexpected losses or declines in asset values that would otherwise cause a bank to become insolvent, and provide protection to uninsured depositors and debt holders in the event of liquidation.

In regard to asset quality (A), both the FASB and the IASB issued guidance for all financial assets and liabilities that measure at fair value. Therefore, banks supervision is making monitoring more difficult to evaluate asset quality in terms of fair value change, distorted key ratios, and invalidated trend data. Grier (2007) noted that the asset quality indicators feature the use of NPL which represent asset quality and the allowance or provision to loan losses reserve.

For management ability (M), fair value has both direct and indirect effects on management behavior. Managers face a moral hazard problem of presenting overly optimistic fair value measures and prefer lower than optimum levels of bank debts. Plantin et al. (2008) found that FVA induced sub-optimal asset sale decisions by degrading financial reporting and generating "artificial volatility".

In relation to earnings profitability (E), bank supervisors and other users observed that FVA distorts the profits in several ways when applied to banking activity, such as taking deposits, making loans, and purchasing investments. Therefore, fair value distorted the earnings picture by management manipulation to produce desired results.

In terms of liquidity risk (L), FVA was a useful tool as supervisors evaluated liquidity risk by monitoring the trend and stability of funding sources. Convertibility of assets to be sold do not cause a significant movement in the price and there is minimum loss of value. However, fair value disclosure and reporting is enhanced to provide a better warning mechanism as well as the enhancement of the bank by greater price transparency.
Therefore, to maintain comparability with prior research and build empirical study into Chinese literature, this study predicted that the effects of FVA on each component of CAMEL are associated with OCI risk and presented hypothesis two:

H2: The fair value approach of reporting in aggregate comprehensive income association with the CAMEL approach is better than the traditional historical-cost earnings approach (net income).

3. Research Design

3.1 Sample and Data Selection

This sample used by this study included all 16 Chinese listed banks listed in both the Shenzhen and Shanghai Stock Exchanges from 2009 to 2016. To mitigate a potential outlier effect, all variables were winsorized at 1% and 99%. The final sample included 467 quarters observations. Data analyst of the variables as following comprehensive income, the CAMEL rating system and control variables were variables were collected from bankscope, a financial database maintained by Bureau Van Dike and WIND INFO developed by Wind Information Company Limited and used widely by Chinese-related capital market studies of accounting and finance reporting.

3.2 Variable Definitions and Model Design

This study set two regression models to test the hypotheses. The test variable was CAMEL rating approaches at a specific date while traditional income information (return on assets) of net assets was the main explanatory variables in the models. Definitions and description of all variables are expressed in Table 1.

This study research design for measures of CAMEL rating approaches regressions that express the traditional earnings information and comprehensive income reporting are reflected financial soundness of the banking sector. This study used five measures of CAMEL rating approaches: capital adequacy (C), asset quality (A), management ability (M), earnings profitability (E), and liquidity risk (L) will be describe the effects of FVA to such each component of CAMEL. This study interested in determining if
CAMEL rating approaches reflects the explanatory power about fair value information that disclosed in the aggregate comprehensive income and the components of OCI above the traditional earnings information.

To test hypotheses 1 paper built model (1) examined value relevant approach that reporting in OCI provides with more incremental association with CAMEL approach above the traditional historical cost income approach (profits (losses)) The regression models used in this study are listed below:

\[
\text{CAMEL}_{it} = \beta_0 + \beta_1 \text{(Income)}_{it} + \beta_2 \text{SIZE}_{it} + \beta_3 \text{LEV}_{it} + \varepsilon_{i,t} \quad (1)
\]

\(\text{CAMEL}\) is rating approaches that reflected financial soundness of the banking sector. This study used ten measures of CAMEL rating approaches: capital adequacy (C) represent by Core Tier 1 and Capital Adequacy Ratio, asset quality (A) represent by NPL ratio and Impaired Loans/Equity, management ability (M) represent by Total Assets (Growth rate over quarters-beginning) and Earning (growth rate), earnings profitability (E) represent by Net Profits (losses)/Total assets and Net Fees and Commissions/ Total assets, and liquidity risk (L) represent by Net Loans/Total assets and Deposits due to banks and other financial institution /Total assets, will be describe the effects of FVA to such each component of CAMEL. LEV is the debt to equity ratio is used as proxy for the default risk; SIZE is the total assets per share.

For regressions of model 1, this study uses three income measures: \(\text{NI}\) is return on assets (traditional income), \(\text{CI}\) is comprehensive income divided total assets (aggregate mixed approach) and \(\text{OCI}\) is other comprehensive income divided total assets (Fair value income). If provides income associate significant information, then \(\beta_1\) should be significant positive. Model 2 is used to examine whether the aggregate of CI or OCI that is incremental to earning per share provides income associate significant information. The regression models also used in this study are listed below:

\[
\text{CAMEL}_{it} = \beta_0 + \beta_1 \text{NI}_{it} + \beta_2 \text{OCI}_{it} + \beta_3 \text{SIZE}_{it} + \beta_4 \text{LEV}_{it} + \varepsilon_{i,t} \quad (2)
\]
Where \( OCI \) is the total OCI components incremental to \( NI \). Model 2 built to test hypothesis 2. If so, then \( \beta_2 \) will be positively significant. This study anticipates the correlations between OCI and CAMEL rating approaches to be positive.

### Table 1 Variables Definitions

<table>
<thead>
<tr>
<th>Variable</th>
<th>Symbol</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Tier 1</td>
<td>TIER1&lt;sub&gt;it&lt;/sub&gt;</td>
<td>Tier 1 capital divided Credit risk-adjusted assets value for bank ( i ) at quarters report ( t ) form 2013 to 2016</td>
</tr>
<tr>
<td>Capital Adequacy Ratio</td>
<td>CAR&lt;sub&gt;it&lt;/sub&gt;</td>
<td>Capital Adequacy Ratio for bank ( i ) at quarters report ( t )</td>
</tr>
<tr>
<td>NPL ratio</td>
<td>NPL&lt;sub&gt;it&lt;/sub&gt;</td>
<td>NPL ratio for bank ( i ) at quarters report ( t )</td>
</tr>
<tr>
<td>Impaired Loans/Equity</td>
<td>IMPAR&lt;sub&gt;it&lt;/sub&gt;</td>
<td>Impaired Loans divided Equity for bank ( i ) at quarters report ( t )</td>
</tr>
<tr>
<td>Total Assets (Growth rate over quarters-beginning)</td>
<td>GR&lt;sub&gt;it&lt;/sub&gt;</td>
<td>Total Assets growth rate over quarters-beginning for bank ( i ) at quarters report ( t )</td>
</tr>
<tr>
<td>Earning (growth rate)</td>
<td>ER&lt;sub&gt;it&lt;/sub&gt;</td>
<td>Earning growth rate for bank ( i ) at quarters report ( t )</td>
</tr>
<tr>
<td>Net Interest Income/Total assets</td>
<td>NII&lt;sub&gt;it&lt;/sub&gt;</td>
<td>Net Interest Income divided total assets for bank ( i ) at quarters report ( t )</td>
</tr>
<tr>
<td>Net Fees and Commissions/ Total assets</td>
<td>NFC&lt;sub&gt;it&lt;/sub&gt;</td>
<td>Net Fees and Commissions divided total assets for bank ( i ) at quarters report ( t )</td>
</tr>
<tr>
<td>Net Loans/Total assets</td>
<td>LIQUI&lt;sub&gt;it&lt;/sub&gt;</td>
<td>Net Loans divided total assets for bank ( i ) at quarters report ( t )</td>
</tr>
<tr>
<td>Deposits due to banks and other financial institution /Total assets</td>
<td>DEPO&lt;sub&gt;it&lt;/sub&gt;</td>
<td>Deposits due to banks and other financial institution divided total assets for bank ( i ) at quarters report ( t )</td>
</tr>
<tr>
<td>Net income/ Total assets</td>
<td>NI&lt;sub&gt;it&lt;/sub&gt;</td>
<td>Net income divided total assets for bank ( i ) at quarters report ( t )</td>
</tr>
<tr>
<td>Comprehensive income/Total assets</td>
<td>CI&lt;sub&gt;it&lt;/sub&gt;</td>
<td>Comprehensive income divided total assets for bank ( i ) at quarters report ( t )</td>
</tr>
<tr>
<td>Other comprehensive income/Total assets</td>
<td>OCI_{it}</td>
<td>Other comprehensive income divided total assets for bank i at quarters report t</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>----------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>The natural logarithm of total assets</td>
<td>SIZE_{it}</td>
<td>The natural logarithm of book value of total assets for bank i at quarters report t</td>
</tr>
<tr>
<td>Leverage ratio</td>
<td>LEV_{it}</td>
<td>Debt to Equity ratio for bank i at Year t</td>
</tr>
</tbody>
</table>

### 3.3 Methodology

The sample comprises all Chinese banks listed in both Shenzhen and Shanghai Stock Exchanges, while robustness test increase the sample from joint-stock listed bank incorporated in PRC with limited liability in accordance with PRC laws and the banks was listed for 10 banks in the Hong Kong Stock Exchange. Chinese listed banks have different business activities, were subject to regulatory prudential supervision and have specific financial reporting requirements. In addition, banks hold large amounts of financial assets and liabilities for multi-purposes that differ from other industry firms. CAMEL were used as an organizing principle for the paper. CAMEL serve as a convenient way to both categorize potential impacts of fair value on financial institutions, as well as provide a bank supervisory perspective alongside the more traditional investor’s views on decision usefulness. Three incomes measured of this study: NI was return on assets (traditional income), CI was comprehensive income divided total assets (aggregate mixed approach) and OCI was other comprehensive income divided total assets (Fair value income). This study anticipated that more comprehensive system of FVA, calculated using fair value all assets and liability could be associate with CAMELS approach rating than historical income volatility (return on assets). This study test both aggregate comprehensive income and the total of OCI with CAMELS approach rating. Further, this study also applied the Vuong Z-statistic, a commonly used approach to determine incremental explanatory power of an alternative model over the baseline regression model (Vuong, 1989).

### 4. Empirical Results and Analysis
4.1 Descriptive Statistics

Table 2 provides descriptive statistics for the variables used in the association tests between CAMEL rating approach and the income measure form the period 2009 to 2016. All income variables were divided by the number of total assets. The mean (median) for the return of assets was 0.7458 (0.7319) and the mean (median) for the aggregate comprehensive income was 0.7023 (0.6896), which was lower than the return of assets. In addition, the mean (median) for the total of other comprehensive income was 0.0049 (0.0054), which is lower than mean (median) of both the return of assets and aggregate comprehensive income. The mean (median) debt to equity ratio was 0.9392 (0.9395). The mean (median) for the natural logarithm of total assets was 12.4819 (12.4895).

4.2 Correlation Analysis

Table 3 presents the correlation matrix and the Pearson correlation coefficients for the explanatory variables used in the CAMEL rating approach. As anticipated, these three incomes measured positively correlated with the CAMEL rating approach and all CAMEL rating approach are positive. The above preliminary supported hypothesis H1 and H2 consistent with empirical evidence obtained in the China context. The NI (return on assets) negatively correlated with NPL ratio and significant negative correlated with deposits due to banks and other financial institution to total assets (DEPO), while remainder were positively correlated. The aggregate comprehensive income (CI) also negatively correlated with NPL ratio, Earning (growth rate) and deposits due to banks and other financial institution to total assets (DEPO), while remainder were positively correlated. Lastly, OCI most negatively correlated with Tier 1, Total Assets (Growth rate), Earning (growth rate) and deposits due to banks and other financial institution to total assets (DEPO), while remainder were positively correlated.
### Table 2  Descriptive Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Minimum</th>
<th>Median</th>
<th>Maximum</th>
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</thead>
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<tr>
<td>NI</td>
<td>467</td>
<td>0.7458</td>
<td>0.3282</td>
<td>0.1504</td>
<td>0.7319</td>
<td>1.4748</td>
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<tr>
<td>CI</td>
<td>467</td>
<td>0.7023</td>
<td>0.3030</td>
<td>0.1518</td>
<td>0.6896</td>
<td>1.5046</td>
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<tr>
<td>OCI</td>
<td>467</td>
<td>0.0049</td>
<td>0.0674</td>
<td>-0.3040</td>
<td>0.0054</td>
<td>0.2819</td>
</tr>
<tr>
<td>TIER1</td>
<td>467</td>
<td>9.8269</td>
<td>1.3670</td>
<td>7.2800</td>
<td>9.36</td>
<td>13.6500</td>
</tr>
<tr>
<td>CAR</td>
<td>467</td>
<td>12.0336</td>
<td>1.4252</td>
<td>8.1100</td>
<td>11.73</td>
<td>16.200</td>
</tr>
<tr>
<td>NPL</td>
<td>467</td>
<td>1.0310</td>
<td>0.3883</td>
<td>0.3400</td>
<td>0.95</td>
<td>2.9100</td>
</tr>
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<td>IMPAR</td>
<td>467</td>
<td>2.3579</td>
<td>0.6328</td>
<td>0.1504</td>
<td>2.2115</td>
<td>4.5257</td>
</tr>
<tr>
<td>GR</td>
<td>467</td>
<td>13.8447</td>
<td>10.2764</td>
<td>-11.3933</td>
<td>11.3831</td>
<td>73.0149</td>
</tr>
<tr>
<td>ER</td>
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<td>22.3386</td>
<td>35.5936</td>
<td>-40.556</td>
<td>16.0054</td>
<td>681.0329</td>
</tr>
<tr>
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<td>467</td>
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<td>1.2246</td>
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<td>NFC</td>
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<td>0.0395</td>
<td>0.2801</td>
<td>1.1326</td>
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<tr>
<td>LIQUI</td>
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<td>47.8988</td>
<td>7.1681</td>
<td>26.8866</td>
<td>48.4991</td>
<td>69.5020</td>
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<tr>
<td>DEPO</td>
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<td>13.4122</td>
<td>6.2362</td>
<td>2.7986</td>
<td>12.9569</td>
<td>35.3069</td>
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<td>11.1129</td>
<td>12.4895</td>
<td>13.3737</td>
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<td>LEV</td>
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<td>0.9392</td>
<td>0.0095</td>
<td>0.9914</td>
<td>0.9395</td>
<td>0.9710</td>
</tr>
<tr>
<td>Variable</td>
<td>NI</td>
<td>CI</td>
<td>OCI</td>
<td>TIER1</td>
<td>CAR</td>
<td>NPL</td>
</tr>
<tr>
<td>----------</td>
<td>-----</td>
<td>------</td>
<td>------</td>
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<td>------</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CI</td>
<td>0.867***</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OCI</td>
<td>-0.090</td>
<td>0.153***</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TIER1</td>
<td>0.136**</td>
<td>0.139**</td>
<td>-0.010</td>
<td>1</td>
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<td></td>
</tr>
<tr>
<td>CAR</td>
<td>0.178***</td>
<td>0.190**</td>
<td>0.015</td>
<td>0.972***</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>NPL</td>
<td>-0.040</td>
<td>-0.010</td>
<td>0.091**</td>
<td>0.383***</td>
<td>0.253***</td>
<td>1</td>
</tr>
<tr>
<td>IMPAR</td>
<td>0.166***</td>
<td>0.170***</td>
<td>0.042</td>
<td>-0.153**</td>
<td>0.173***</td>
<td>0.090*</td>
</tr>
<tr>
<td>GR</td>
<td>0.425***</td>
<td>0.299***</td>
<td>-0.164***</td>
<td>-0.120*</td>
<td>-0.010</td>
<td>-0.170***</td>
</tr>
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<td>ER</td>
<td>0.017</td>
<td>-0.030</td>
<td>-0.125***</td>
<td>-0.378***</td>
<td>-0.121***</td>
<td>-0.282***</td>
</tr>
<tr>
<td>NII</td>
<td>0.872***</td>
<td>0.860***</td>
<td>0.009</td>
<td>-0.060</td>
<td>0.091**</td>
<td>-0.06</td>
</tr>
<tr>
<td>NFC</td>
<td>0.662***</td>
<td>0.703***</td>
<td>0.108**</td>
<td>0.142**</td>
<td>0.190***</td>
<td>0.340***</td>
</tr>
<tr>
<td>LIQUI</td>
<td>0.044</td>
<td>0.033</td>
<td>-0.159***</td>
<td>0.353***</td>
<td>0.103**</td>
<td>0.029</td>
</tr>
<tr>
<td>DEPO</td>
<td>-0.103**</td>
<td>-0.094**</td>
<td>0.106**</td>
<td>-0.351***</td>
<td>-0.223***</td>
<td>-0.180***</td>
</tr>
<tr>
<td>SIZE</td>
<td>0.093**</td>
<td>0.158***</td>
<td>0.096**</td>
<td>0.490***</td>
<td>0.301***</td>
<td>0.506***</td>
</tr>
<tr>
<td>LEV</td>
<td>-0.169***</td>
<td>-0.218***</td>
<td>-0.114**</td>
<td>-0.598***</td>
<td>-0.318***</td>
<td>-0.288***</td>
</tr>
</tbody>
</table>

Note: *** , ** , * represent correlation is significance levels at 1%, 5%, 10%.
Table 4 Association between the Capital Adequacy and Income Measure of Chinese Listed Banks

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1) (2) (3) (4)</td>
<td>(1) (2) (3) (4)</td>
</tr>
<tr>
<td>NI</td>
<td>1.213*** (2.657)</td>
<td>0.716 (1.398)</td>
</tr>
<tr>
<td>CI</td>
<td>1.148*** (2.282)</td>
<td>0.691 (1.312)</td>
</tr>
<tr>
<td>OCI</td>
<td>-1.971** (-0.890)</td>
<td>1.063 (0.503)</td>
</tr>
<tr>
<td>SIZE</td>
<td>1.526*** (5.274)</td>
<td>5.755 (5.754)</td>
</tr>
<tr>
<td>LEV</td>
<td>-87.803** (-5.471)</td>
<td>-85.015** (-3.012)</td>
</tr>
<tr>
<td>Const.</td>
<td>73.640*** (4.508)</td>
<td>56.419* (1.862)</td>
</tr>
</tbody>
</table>

|          | Obs. 467                         | Adjust R² 0.162        |
|          | F-Value 30.849                    | Vuong Z 36.458         |

Note: ***, **, * represent correlation is significance levels at 1%, 5%, 10%.

4.3 The Association between the Capital Adequacy and Income Measure

Table 4 presents the results of the association between the capital adequacy and the incomes measure. Capital adequacy ratio represents a measure for the capital adequacy. The results from equation (1) and (2) present the coefficients on NI and CI were positive and significant at 1% and 5% respectively, while the remainder of equation (3) on OCI was statistically insignificant. With respect to equation (4), the incremental associated of OCI did not provide the capital adequacy ratio information beyond NI after controlling for the leverage ratio and the bank size. The bank size was positively significant at 1% in all models. The LEV was negatively significant in all models.

For the Core Tier represents a measure for the capital adequacy. The results from equation (1), (2) and (3) present the coefficients on NI and CI were positive but insignificant at 1% and 5% respectively, while the remainder of equation on OCI was insignificant positive. With respect to equation (4), the incremental associated of OCI did not provide the Tier 1 relevant information above NI after controlling for the leverage ratio and the bank size. The bank size was positively significant at 1% in all
models. The LEV was negatively significant in all models. Hence, Hypothesis H1 and H2 for capital adequacy were rejected.

Table 5 Association between the Asset Quality and Income Measure of Chinese Listed Banks

<table>
<thead>
<tr>
<th>Variable</th>
<th>NPL Ratio</th>
<th>Impaired Loans</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>NI</td>
<td>-0.134***</td>
<td>-0.12***</td>
</tr>
<tr>
<td></td>
<td>(-2.831)</td>
<td>(-2.773)</td>
</tr>
<tr>
<td>CI</td>
<td>-0.151***</td>
<td>0.150**</td>
</tr>
<tr>
<td></td>
<td>(-2.903)</td>
<td>(0.652)</td>
</tr>
<tr>
<td>OCI</td>
<td>0.351***</td>
<td>0.345***</td>
</tr>
<tr>
<td></td>
<td>(11.702)</td>
<td>(11.398)</td>
</tr>
<tr>
<td>SIZE</td>
<td>-8.188***</td>
<td>-7.445***</td>
</tr>
<tr>
<td></td>
<td>(-4.829)</td>
<td>(-4.372)</td>
</tr>
<tr>
<td>LEV</td>
<td>4.437***</td>
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</tr>
<tr>
<td></td>
<td>(4.437)</td>
<td>(2.651)</td>
</tr>
<tr>
<td>Const.</td>
<td>4.572***</td>
<td>4.383***</td>
</tr>
<tr>
<td></td>
<td>(2.651)</td>
<td>(2.536)</td>
</tr>
</tbody>
</table>

| Obs.     | 467       | 467            | 467       | 467       |
| Adjust R²| 0.295     | 0.296          | 0.251     | 0.294     |
| F-Value  | 65.429    | 61.879         | 49.008    | 8.419     |
| Vuong Z  | -0.2045   | 1.545          | 0.2086    | -0.457    |

Note: ***, **, * represent correlation is significance levels at 1%, 5%, 10%.

4.4 The Association between the Asset Quality and Income Measure of Chinese Listed Banks

Table 5 presents the results of the association between the asset quality and the incomes measure. NPL ratio represents a measure for the asset quality. The results from equation (1) and (2) present the coefficients on NI and CI were positive and significant at 1%, while the remainder of equation (3) on OCI was insignificant positive. With respect to equation (4), the incremental associated of OCI did not provide the NPL ratio any relevant information above NI after controlling for the leverage ratio and the bank size. The bank size was positive and significant at 1% in all models. The LEV was significant negative in all models.

For the impaired loans represents a measure of the asset quality measure. The results from equation (1) and (2) present the coefficients on NI and CI were positive and significant at 1% and 5% respectively, while the remainder of equation (3) on OCI was not positively significant. With respect to equation (4), the incremental adjusted
associated of OCI provides the impaired loans relevant information but was not significant after controlling for the leverage ratio and the banks size. The LEV was positive and significant in all models. The banks size was positively but few significant in all models. Hence, Hypothesis H1 was rejected and H2 was accepted for asset quality.

Table 6 Association between the Management Ability and Income Measure of Chinese Listed Banks

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total Assets (Growth Rate)</th>
<th>Earnings (Growth Rate)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1) (2) (3) (4)</td>
<td>(1) (2) (3) (4)</td>
</tr>
<tr>
<td>NI</td>
<td>15.432*** (13.575)</td>
<td>15.207*** (13.325)</td>
</tr>
<tr>
<td>CI</td>
<td>13.755*** (10.327)</td>
<td>12.760*** (10.860)</td>
</tr>
<tr>
<td>OCI</td>
<td>-18.012*** (-2.792)</td>
<td>-13.067*** (-4.326)</td>
</tr>
<tr>
<td>SIZE</td>
<td>-7.970*** (-1.106)</td>
<td>-12.349*** (-4.359)</td>
</tr>
<tr>
<td>LEV</td>
<td>194.327*** (4.843)</td>
<td>1070.842*** (4.628)</td>
</tr>
<tr>
<td>Const.</td>
<td>-80.712** (-1.976)</td>
<td>-821.914*** (-1.816)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Obs.</th>
<th>467</th>
<th>467</th>
<th>467</th>
<th>467</th>
<th>467</th>
<th>467</th>
<th>467</th>
<th>467</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adj R²</td>
<td>0.408</td>
<td>0.324</td>
<td>0.181</td>
<td>0.407</td>
<td>0.136</td>
<td>0.134</td>
<td>0.135</td>
<td>0.146</td>
</tr>
<tr>
<td>F-Value</td>
<td>106.573</td>
<td>75.264</td>
<td>35.439</td>
<td>81.106</td>
<td>25.530</td>
<td>24.963</td>
<td>25.318</td>
<td>19.821</td>
</tr>
<tr>
<td>Vuong Z</td>
<td>7.661***</td>
<td>6.143***</td>
<td>0.757</td>
<td>1.243</td>
<td>-0.117</td>
<td>-0.716</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: ***, **, * represent correlation is significance levels at 1%, 5%, 10%.

4.5 The Association between the Management Ability and Income Measure of Chinese Listed Banks

Table 6 presents the results of the association between the management ability and the income measure. For the total assets growth rate represent of the management ability measure. The results from equation (1), (2) and (3) present the coefficients on NI, CI and OCI were significant at 1% level, but OCI was negative. In comparison R square with Model 1, the Vuong Z- statistic are 7.661 and 6.143 significant positive at 1% , meaning that Model 2 and 3 were not explanatory power than Model 1. With respect to equation (4), the incremental associated of OCI provided total assets (Growth gate) relevant information is negatively significant at 10%, but lower than equation NI.
(1) after controlling for the leverage ratio and the bank size. The bank size was negative and significant at 1% in all models. The LEV was positive and significant in all models.

For the earnings growth rate represent of the management ability measure. The result from equation (1) and (2) the coefficients on NI and CI were positive and only NI (1) significant at 10%, while the remainder of equation (3) on OCI was negative and significant at 10%. With respect to equation (4), the incremental adjusted associated of OCI provided the earnings growth rate relevant information but was not significant after controlling for the leverage ratio and the bank size. The LEV was positive and significant in all models. Hence, Hypothesis H1 and H2 for asset quality were rejected.

### Table 7 Association between the Earning Profitability and Income Measure of Chinese Listed Banks

<table>
<thead>
<tr>
<th>Variable</th>
<th>Interest Income Ratio</th>
<th>Fees and Commissions Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>NI</td>
<td>3.372*** (42.887)</td>
<td>3.421*** (44.672)</td>
</tr>
<tr>
<td>CI</td>
<td>3.730*** (44.317)</td>
<td>2.108*** (5.688)</td>
</tr>
<tr>
<td>OCI</td>
<td>0.276 (0.325)</td>
<td>-0.368*** (7.572)</td>
</tr>
<tr>
<td>SIZE</td>
<td>0.276 (0.325)</td>
<td>-0.368*** (7.572)</td>
</tr>
<tr>
<td>LEV</td>
<td>13.843*** (4.988)</td>
<td>18.392*** (6.761)</td>
</tr>
</tbody>
</table>

|          | (1) | (2) | (3) | (4) | (1) | (2) | (3) | (4) |
| Obs. 467 | 467 | 467 | 467 | 467 | 467 | 467 | 467 | 467 |
| Adjust R² | 0.799 | 0.810 | 0.003 | 0.812 | 0.553 | 0.577 | 0.183 | 0.568 |
| F-Value | 620.115 | 662.058 | 1.448 | 504.668 | 193.440 | 213.023 | 35.681 | 154.057 |
| Vuong Z | -1.033 | 20.745*** | -2.510** | 2.899*** | 9.445*** | -2.243** |

Note: ***, **, * represent correlation is significance levels at 1%, 5%, 10%.

### 4.6 The Association between the Earning Profitability and Income Measure of Chinese Listed Banks

Table 7 presents the results of the association between the interest income ratio and the income measure. For the interest income ratio represent of the earning profitability measure. The results from equation (1) and (2) the coefficients on NI and CI were positive and significant at 1%, while the remainder of equation (3) on OCI was not...
positive and significant. With respect to equation (4), the incremental associated of OCI provided the interest income ratio information beyond NI (equation 1 R squared at 0.799 and equation 4 R squared at 0.812) significant and positive at 1%, after controlling for the leverage ratio and the bank size. In comparison R square with Model 1, the Vuong Z-statistic is -2.510 significant negative at 5%, meaning that Model 4 was explanatory power than Model 1. The bank size was negative and most significant at 1% in all models. The LEV was most positively significant in all models, excluded equation (3).

For the fees and commissions ratio represent of the earning profitability measure. The results from equation (1) and (2) the coefficients on NI and CI were positive and significant at 1%, while the remainder of equation (3) on OCI was not positive and significant. With respect to equation (4), the incremental associated of OCI provides the fees and commissions ratio information beyond NI (equation (1) R squared at 0.553 and equation (4) R squared at 0.568) positive and significant at 1%, after controlling for the leverage ratio and the bank size. In comparison R square with Model 1, the Vuong Z-statistic is -2.243 significant negative at 5%, meaning that Model 4 were explanatory power than Model 1. The bank size is positive and significant at 1% in all models. The LEV was negative and significant at 1% in equation (1) and (3), while equation (4) was negative and significant at 10% and equation (2) did not significant excluded equation (3). Hence, Hypothesis H1 and H2 for earning profitability were accepted.

4.7 The Association between the Liquidity Risk and Income Measure of Chinese Listed Banks

Table 8 presents the results of the association between the liquidity risk and the income measure. For the net loans ratio represent of the liquidity risk measure. The results from equation (1) and (2) presents the coefficients on NI and CI were positive but did not significant, while the remainder of equation (3) on OCI was negative and significant at 1%. With respect to equation (4), the incremental associated of OCI
provides the net loans ratio information beyond NI (equation 1 R squared at 0.131 and equation 4 R squared at 0.167) and was negative and significant at 1%, after controlling for the leverage ratio and the bank size. In comparison R square with Model 1, the Vuong Z-statistic is -1.958 significant negative at 5%, meaning that Model 4 was explanatory power than Model 1. The bank size was positive and significant at 1% in all models. The LEV was positive but not significant in all models.

For the customer deposits ratio represent of the liquidity risk measure. The results from equation (1) and (2) the coefficients on NI and CI were negative but did not significant, while the remainder of equation (3) on OCI was positive and significant at 1%. With respect to equation (4), the incremental associated of OCI provided the customer deposits ratio information beyond NI (equation 1 R squared at 0.071 and equation 4 R squared at 0.089) was negative and significant at 1%, after controlling for the leverage ratio and the bank size. The bank size was negative and significant at 1% in all models. The LEV was positive and significant at 1% in all models. Hence, Hypothesis H1 was accepted and H2 was rejected for liquidity risk.

Table 8 Association between the Liquidity Risk and Income Measure of Chinese Listed Banks

<table>
<thead>
<tr>
<th>Variable</th>
<th>Net Loans Ratio</th>
<th>Customer deposits Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>NI</td>
<td>0.345</td>
<td>-0.457</td>
</tr>
<tr>
<td>CI</td>
<td>(-0.434)</td>
<td></td>
</tr>
<tr>
<td>OCI</td>
<td>5.151***</td>
<td>20.696***</td>
</tr>
<tr>
<td>SIZE</td>
<td>(8.471)</td>
<td>(4.563)</td>
</tr>
<tr>
<td></td>
<td>(8.965)</td>
<td>(5.363)</td>
</tr>
<tr>
<td>LEV</td>
<td>31.799</td>
<td>-42.140</td>
</tr>
<tr>
<td></td>
<td>(1.220)</td>
<td>(-1.011)</td>
</tr>
<tr>
<td>Const.</td>
<td>-46.526</td>
<td>-33.032</td>
</tr>
<tr>
<td></td>
<td>(-1.201)</td>
<td>(-0.976)</td>
</tr>
<tr>
<td>Obs.</td>
<td>467</td>
<td>467</td>
</tr>
<tr>
<td>Adjust R²</td>
<td>0.131</td>
<td>0.131</td>
</tr>
<tr>
<td>Vuong Z</td>
<td>-0.911</td>
<td>-1.319</td>
</tr>
</tbody>
</table>

Note: ***, **, * represent correlation is significance levels at 1%, 5%, 10%.
5. Robustness Test

To test the reliability of the findings in this chapter, this study examined the robustness test of using the data sample from joint-stock listed banks incorporated in PRC with limited liability in accordance with PRC laws and 10 Chinese banks listed on the Hong Kong Stock Exchange (see Table 9)

<table>
<thead>
<tr>
<th>No.</th>
<th>Name of Banks</th>
<th>Listing Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bank of Jinzhou</td>
<td>7 December 2015</td>
</tr>
<tr>
<td>2</td>
<td>Bank of Tianjin</td>
<td>30 March 2016</td>
</tr>
<tr>
<td>3</td>
<td>Bank of Chongqing</td>
<td>6 November 2013</td>
</tr>
<tr>
<td>4</td>
<td>China Zheshang Bank</td>
<td>30 March 2016</td>
</tr>
<tr>
<td>5</td>
<td>Shengjing Bank</td>
<td>29 December 2014</td>
</tr>
<tr>
<td>6</td>
<td>Chongqing Rural Commercial Bank</td>
<td>16 December 2010</td>
</tr>
<tr>
<td>7</td>
<td>Huishang Bank</td>
<td>12 November 2013</td>
</tr>
<tr>
<td>8</td>
<td>Bank of Qingdao</td>
<td>3 December 2015</td>
</tr>
<tr>
<td>9</td>
<td>Harbin Bank</td>
<td>31 March 2014</td>
</tr>
<tr>
<td>10</td>
<td>Bank of Zhengzhou</td>
<td>23 December 2015</td>
</tr>
</tbody>
</table>

Source: WIND INFO developed by Wind Information Company limited

This study performs a series of additional test;

(1) This study included above ten banks to all model in these additional test. To tests the association between the CAMEL rating approaches and income measure were model 1 and 2. The final actual filing sample was taken from observations of 26 banks form Winds data based. It was appropriate to use the accounting information at the quarters report. The results of Table 10 observations are qualitatively similar to those reported in the Table 4. The fair value approach that reporting in OCI did not provide incremental association with both capital adequacy ratio and Core Tier 1 over the historical cost income approach (net income). The result of fair value approaches that reporting in aggregate comprehensive income association with both capital adequacy
ratio and Core Tier 1 lower the historical cost income approach (net income). Hence, Hypothesis H1 and H2 for capital adequacy were still rejected.

Table 10 Association between the Capital Adequacy and Income Measure of Chinese Listed Banks (Included Banks Listed in Hong Kong)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>NI</td>
<td>1.471</td>
<td>1.476</td>
</tr>
<tr>
<td></td>
<td>(3.838)</td>
<td>(3.504)</td>
</tr>
<tr>
<td>CI</td>
<td>-1.073</td>
<td>-0.562</td>
</tr>
<tr>
<td></td>
<td>(-0.582)</td>
<td>(-0.308)</td>
</tr>
<tr>
<td>OCI</td>
<td>0.928</td>
<td>0.881</td>
</tr>
<tr>
<td></td>
<td>(4.237)</td>
<td>(4.019)</td>
</tr>
<tr>
<td>SIZE</td>
<td>-105.410</td>
<td>-103.915</td>
</tr>
<tr>
<td></td>
<td>(-7.927)</td>
<td>(-7.728)</td>
</tr>
<tr>
<td>LEV</td>
<td>97.583</td>
<td>96.830</td>
</tr>
<tr>
<td></td>
<td>(7.487)</td>
<td>(7.359)</td>
</tr>
<tr>
<td>Const.</td>
<td>303</td>
<td>303</td>
</tr>
</tbody>
</table>

Note: ***, **, * represent correlation is significance levels at 1%, 5%, 10%.

(2) The tests association between the asset quality and incomes measure, while added Chinese banks were listed in Hong Kong into sample of banks. The results of Table 11 observations are qualitatively similar to those reported in the Table 5. The fair value approach that reporting in OCI did not provide incremental association with both NPL ratio and impaired loans over the historical cost income approach (net income). The result of fair value approaches that reporting in aggregate comprehensive income association with both NPL ratio and impaired loans over the historical cost income approach (net income). Hence, Hypothesis H1 was still rejected and H2 was still accepted for asset quality.
Table 11 Association between the Asset Quality and Income Measure of Chinese Listed Banks (Included Banks Listed in Hong Kong)

<table>
<thead>
<tr>
<th>Variable</th>
<th>NPL Ratio</th>
<th>Impaired Loans</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>NI</td>
<td>-0.094**</td>
<td>-0.091</td>
</tr>
<tr>
<td></td>
<td>(-2.046)</td>
<td>(0.657)</td>
</tr>
<tr>
<td>CI</td>
<td>-0.101**</td>
<td>0.176</td>
</tr>
<tr>
<td></td>
<td>(-2.013)</td>
<td>(0.803)</td>
</tr>
<tr>
<td>OCI</td>
<td>0.272***</td>
<td>0.144</td>
</tr>
<tr>
<td></td>
<td>(10.337)</td>
<td>(0.657)</td>
</tr>
<tr>
<td>SIZE</td>
<td>0.275***</td>
<td>0.274***</td>
</tr>
<tr>
<td></td>
<td>(10.469)</td>
<td>(10.385)</td>
</tr>
<tr>
<td></td>
<td>(-6.236)</td>
<td>(-5.846)</td>
</tr>
<tr>
<td>Const.</td>
<td>7.223***</td>
<td>6.520***</td>
</tr>
<tr>
<td></td>
<td>(4.555)</td>
<td>(4.142)</td>
</tr>
<tr>
<td>Obs.</td>
<td>583</td>
<td>583</td>
</tr>
<tr>
<td>Adjust R²</td>
<td>0.213</td>
<td>0.207</td>
</tr>
<tr>
<td>F-Value</td>
<td>52.904</td>
<td>52.949</td>
</tr>
<tr>
<td>Vuong Z</td>
<td>-0.145</td>
<td>0.878</td>
</tr>
</tbody>
</table>

Note: ***, **, * represent correlation is significance levels at 1%, 5%, 10%.

(3) The tests association between the management ability and income measure, while added Chinese listed banks was listed in Hong Kong into sample of banks. The results of Table 12 observations are qualitatively similar to those reported in the Table 6. The fair value approach that reporting in OCI did not provide incremental association with both total assets (Growth rate) and earning (Growth rate) than the historical cost income approach (net income). The result of fair value approaches that reporting in aggregate comprehensive income association with both total assets (Growth rate) and earning (Growth rate) same the traditional historical-cost earnings approach (net income). Hence, Hypothesis H1 and H2 for asset quality were still rejected.

(1) The test association between the earning profitability and income measure, while added Chinese listed banks listed in Hong Kong into sample of banks. The results of Table 13 observations are qualitatively similar to those reported in the Table 7. The fair value approach that reporting in OCI did not provide incremental association with both interest income ratio and fees and commissions ratio over the historical cost income approach (net income). The result of fair value approaches that reporting in aggregate comprehensive income association with both interest income ratio and fees
and commissions ratio over the traditional historical-cost earnings approach (net income). Hence, Hypothesis H1 and H2 for asset quality were still accepted.

Table 12 Association between the Management Ability and Income Measure of Chinese Listed Banks (Included Banks Listed in Hong Kong)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total Assets (Growth Rate)</th>
<th>Earning (growth rate)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1) (2) (3) (4)</td>
<td>(1) (2) (3) (4)</td>
</tr>
<tr>
<td>NI</td>
<td>16.119** (15.217)</td>
<td>16.009** (15.084)</td>
</tr>
<tr>
<td>CI</td>
<td>14.370*** (11.603)</td>
<td>7.975** (1.873)</td>
</tr>
<tr>
<td>OCI</td>
<td>-12.788** (-10.381)</td>
<td>-7.078 (-1.391)</td>
</tr>
<tr>
<td>SIZE</td>
<td>-7.043*** (-11.519)</td>
<td>-7.001*** (-1.446)</td>
</tr>
<tr>
<td>LEV</td>
<td>277.431*** (7.485)</td>
<td>1021.225*** (7.531)</td>
</tr>
<tr>
<td>Cons.</td>
<td>170.944*** (-4.705)</td>
<td>-795.628*** (-5.985)</td>
</tr>
<tr>
<td>Obs.</td>
<td>583</td>
<td>583</td>
</tr>
<tr>
<td>Adjust R²</td>
<td>0.418</td>
<td>0.135</td>
</tr>
<tr>
<td>F-Value</td>
<td>140.089</td>
<td>31.271</td>
</tr>
<tr>
<td>Vuong Z</td>
<td>8.157***</td>
<td>1.575</td>
</tr>
</tbody>
</table>

Note: ***, **, * represent correlation is significance levels at 1%, 5%, 10%.

Table 13 Association between the Earning Profitability and Income Measure of Chinese Listed Banks (Included Banks Listed in Hong Kong)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Interest Income Ratio</th>
<th>Fees and Commissions Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1) (2) (3) (4)</td>
<td>(1) (2) (3) (4)</td>
</tr>
<tr>
<td>NI</td>
<td>2.846*** (30.555)</td>
<td>0.328*** (18.584)</td>
</tr>
<tr>
<td>CI</td>
<td>3.111*** (30.280)</td>
<td>0.375*** (19.839)</td>
</tr>
<tr>
<td>OCI</td>
<td>0.179 (0.247)</td>
<td>0.181* (1.694)</td>
</tr>
<tr>
<td>SIZE</td>
<td>0.211*** (3.923)</td>
<td>0.156*** (15.282)</td>
</tr>
<tr>
<td>LEV</td>
<td>21.152*** (6.490)</td>
<td>-0.808 (-1.307)</td>
</tr>
<tr>
<td>Cons.</td>
<td>-22.542*** (-6.934)</td>
<td>-1.110 (-1.083)</td>
</tr>
<tr>
<td>Obs.</td>
<td>583</td>
<td>583</td>
</tr>
<tr>
<td>Adjust R²</td>
<td>0.617</td>
<td>0.497</td>
</tr>
<tr>
<td>F-Value</td>
<td>313.407</td>
<td>193.065</td>
</tr>
<tr>
<td>Vuong Z</td>
<td>0.356 16.029***</td>
<td>-3.583 9.644***</td>
</tr>
</tbody>
</table>

Note: ***, **, * represent correlation is significance levels at 1%, 5%, 10%.
(5) The tests association between the liquidity risk and income measure, while added Chinese listed banks was listed in Hong Kong into sample of banks. The results of Table 14 observations are qualitatively similar to those reported in the Table 8. The fair value approach that reporting in OCI provides incremental association with both net loans ratio and customer deposits ratio over than the historical cost income approach (net income). The result of fair value approaches that reporting in aggregate comprehensive income association with both net loans ratio and customer deposits ratio over lover the historical cost income approach (net income). Hence, Hypothesis H1 was still accepted and H2 was still rejected for liquidity risk.

Table 14 Association between the Liquidity Risk and Income Measure of Chinese Listed Banks (Included Banks Listed in Hong Kong)

| Variable | Net Loans Ratio | | | Customer deposits Ratio | | |
|----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|          | (1)    | (2)    | (3)    | (4)    | (1)    | (2)    | (3)    | (4)    |
| NI       | 0.778  | 0.011  | 0.458  | -1.1083 | -0.587 | 14.330 | 14.104 |
|          | (0.844)| (.001) | (0.505)| (-1.404)| (-0.681)| (3.846)| (3.752) |
| OCI      | 6.716*** | 6.691*** | 6.823*** | 6.837*** | -1.106*** | -1.156*** | -1.182*** |
|          | (12.626)| (12.591)| (13.073)| (13.074)| (-2.348)| (-2.577)| (-2.633) |
| SIZE     | 58.384'  | 36.639  | 39.436  | 151.274*** | 169.575*** | 164.290*** | 125.280*** |
|          | (1.811) | (1.166) | (1.236) | (5.504) | (6.283) | (5.992) | (5.992) |
|          | (-2.905)| (-2.721)| (-2.355)| (-2.407)| (-4.229)| (-4.309)| (-4.998) |
|          | (-2.905)| (-2.721)| (-2.355)| (-2.407)| (-4.229)| (-4.309)| (-4.998) |
| Obs.     | 583    | 583    | 583    | 583    | 583    | 583    | 583    |
| Adjust R²| 0.213  | 0.212  | 0.245  | 0.241  | 0.065  | 0.063  | 0.085  |
| Vuong Z  | 0.440  | -2.112" | -2.186" | 0.973  | -1.196 | -1.394 |

Note: ***, **, * represent correlation is significance levels at 1%, 5%, 10%.

6. Conclusions

The objective of this paper is to provide information to the fair value debate by comprehensive income reporting and to examine the association of comprehensive income reporting with the banking supervisory rating approach (CAMEL). During 2009 to 2016, financial assets and liabilities as well as markets were becoming more complex. Fair value assessment became important to measure new financial products as well as business activities beginning to operate with international partners and risk
factors of dealing in their foreign currencies. The empirical study examined the association of comprehensive income reporting with the banking supervisory rating approach (CAMEL) for the period 2009 to 2016. The main results were:

1. In the Chinese economy from 2009 to 2016, the results suggested that FVA of reporting in OCI provides incremental association with \textit{earning profitability} (E) and \textit{liquidity risk} (L) over historical cost income approach (net income). The result showed that FVA provided bank supervisors with a better perspective than more traditional banks’ views on fair value reporting (OCI), as well as potential impacts on safety and soundness in banking systems.

2. The result of FVA of reporting in aggregate comprehensive income (represented by mixed approaches) associated with \textit{earning asset quality} (A) and \textit{profitability} (E) was better than the historical cost income approach (net income). The results showed that FVA in this study enhanced information usefulness related to financial stability.

3. The study of OCI and the CAMEL rating approach showed FVA reflects assets and liability management that were associated and significant, and may provide an early warning of the need to take remedial action.
References


[6] International Accounting Standards Board (IASB), 2007. IASB Published a Published Versions of IFRS 9 (Replacement of IAS 39) that Introduced New Classification and Measurement Requirements (in 2009 and 2010) and a New Hedge Accounting Model (in 2013), IFRS Foundation.


[9] International Accounting Standards Board (IASB), 2012. IASB Published the Effects of Changes in Foreign Exchange Rates, IFRS Foundation.

[10] International Accounting Standards Board (IASB), 2012. IASB Published the IAS 19 Employee Benefits, IFRS Foundation.


Cost stickiness and information of tax accounts
for loss reporting firms

Jin Bae Kim
Ji Hye Kim
Gun Lee
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Abstract

We investigate the effect of information contained in valuation allowance for deferred tax assets on cost stickiness. Dhaliwal et al. (2013) find that managers use their private information properly in estimating valuation allowance for deferred tax assets and the information in valuation allowance for deferred tax assets gives incremental information about the persistence of loss for loss reporting firms. By using tax categories following Dhaliwal et al. (2013), we find that the magnitude of cost stickiness of firms with material increase in valuation allowance for deferred tax assets is significantly smaller than that of other firms. The results suggest that firms with managers’ positive prospect about future performance shows stickier cost behaviors because material increase in valuation allowance for deferred tax assets reflects managers’ negative perspective about future performance. This study contributes to the literature for the following two reasons. First, by examining the effect of managers’ perspective about future performance on cost stickiness, this study helps analyze the mechanism of the cost stickiness more specifically. Second, by providing the link between cost stickiness and tax information, this paper enhances understanding of the relation between cost behavior and tax information.

Keywords: sticky cost, valuation allowance for deferred tax assets, manager’s perspective
I. INTRODUCTION

Managers consider their prospects for future performance of firms in many decision making processes like resource allocation and/or investment decisions. Accounting information reflects managers’ prospects about future performance. Cost stickiness is also explained as a result of managers’ prospect about future performance (Anderson et al. 2003). Cost stickiness is asymmetric cost behavior. According to basic conception about the relation between cost and sales, costs increase as sales increase and decrease as sales decrease symmetrically. However, prior researches suggest empirical evidences regarding asymmetric behavior of cost (Anderson et al. 2003; Banker and Byzalov 2014). According to prior researches, the asymmetric behavior of cost stickiness is resulted from various factors like manager’s perspective for future performance, trends in sales decrease and increase, asset intensity, capacity utilization, and managerial incentives (Anderson et al. 2003; Anderson et al. 2007; Banker and Johnston 1994; Banker et al. 2013; Balarkrishnan et al. 2004; Balarkrishnan and Gruca 2007; Chen et al. 2012; Dierynck et al. 2012; Kama and Weiss 2013; Canon 2014).

In case of sales decrease, cost does not decrease in proportion to sales decrease if managers expect positive future performance. It’s not easy to conclude that cost stickiness is the result of managers’ positive prospect about future performance because cost stickiness is affected by many other factors. If the information about managers’ future prospect is figured out, it helps to infer the reason of cost stickiness and managers’ intention.

Valuation allowance for deferred tax assets for loss firm is one of accounting information which reflect managers’ future prospect about firms performance. According to SFAS 109, managerial judgements are necessary to decide whether future taxable income is enough to realize deferred tax assets in the expected future taxable income calculation. Dhaliwal et al. (2013) find that managers use their private information and perspectives in their judgement for valuation allowance for deferred tax assets (VA hereafter) and VA provide incremental information about firms’ future perspectives for loss firms. That is, in case of loss firms,
the managers’ perspectives about future performance could be inferred through VA. Using the information in VA, it is possible to find how cost behavior is affected by management perspectives about future performance. In this study, we investigate the effect of managers’ perspectives on cost behavior using tax categories in Dhaliwal et al. (2013).

Using cross-sectional US data from 1993 through 2014 for loss firms, the results suggest that managers’ positive perspective for future performance increases the magnitude of cost stickiness for loss reporting firms and costs are sticky for loss firms on average independent of management prospect.

Dhaliwal et al. (2013) categorize loss firms into three groups based on current tax expenses and deferred tax expenses. The firms with positive current tax expenses and negative deferred tax expenses are classified into the GN_TI category. The firm with negative or zero current tax expenses and negative deferred tax expenses are classified into the GN_VA category. The firm with positive or zero deferred tax expenses are classified into the BN category. The firms in GN_TI indicate that managers expect positive future performance (increase of VA) and the firms have positive taxable income in current period. The firm in GN_VA indicate that managers expect positive future performance (increase of VA) and has loss carry forward in current period. The firms in BN indicate that managers expect negative future performance. We expect that the firms in GN_TI show stickier cost behavior than the firms in GN VA and the firms in GN_TI and GN_VA show stickier cost behavior than the firms in BN. The results support those expectations.

We also perform two additional tests. First, we test the association between cost stickiness and VA with the extent of loss. We find that the stickiness is weakened as the extent of loss become larger and the effect of management positive prospect on the stickiness decrease and diminish for the large loss group. It can be inferred from the result that even though managers expect positive future performance it’s not easy to maintain the level of expense comparing with the level of prior expense in case of sales decrease due to big loss of firm. The specific reason could be lack of liquidity because it is probable that the big loss firm has financial distress. Second, the relation between cost stickiness and VA is examined in case of sales
increases. The result shows that cost increase more as sales increase when manager has positive perspective about future performance.

This paper contributes to the literature by following reasons. First, this paper extends the understanding of cost behavior considering managers’ perspective of future performance for loss firms. Although many factors are identified to affect cost stickiness, one of most important factors is managers' intention because final decision is made by managers considering all the factors. It’s difficult to see through managers’ intention and thoughts due to invisibility. If managers’ true perspective about future performance is informed, the information is useful to grasp the cause of cost stickiness. Using tax categories from Dhaliwal et al. (2013) which reflect managers’ future perspective, this paper provides the results that cost stickiness increases when manager expect positive future performance for loss reporting firms. These results suggest that managers’ prospect about future performance is one of important factors in cost stickiness.

Second, this paper links cost behavior with the information of tax account. This paper shows that tax information is related with analysis of cost stickiness. Although many pieces of information in financial statements are related with each other, information users experience difficulties in analyzing all the information of financial statement together. By showing the link between cost stickiness and valuation allowance for deferred tax assets, this paper enhances the information users’ understanding for cost behaviors.

The paper proceeds as follows. Section 2 provides literature review and hypothesis development. Section 3 describes research design. Section 4 analyzes descriptive statistics and OLS regression results. Section 5 show additional tests and the results. In section 6 we conclude.
II. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. COST STICKINESS

Considering the traditional cost accounting model, costs consist of variable cost and fixed cost. Variable costs vary with the volume of activity and fixed costs, called indirect costs or overhead costs, are expenses regardless of the volume of activities. If volume of activities increases (decreases), the amount of variable costs increase (decrease) and total amount of costs increase (decrease). Cost behavior according to sales change is symmetric with constant variable cost per unit. Economy of scale can make variable cost per unit smaller and total cost behavior asymmetric with the increase of activity. However, many empirical evidences suggest that proportion of cost change is smaller in case of sales decrease and called this phenomenon cost stickiness.

Anderson et al. (2003), which is one of early studies for cost stickiness, find that selling, general, administrative (SG&A) costs decrease less when sales fall than SG&A costs increase when sales rise by equivalent amount. Anderson et al. (2003) interpret the cause of results in view of managerial discretionary decision. Managers have discretion about the decision for resource allocation. If managers decide not to decrease expenses in response to sales decrease and to increase expenses in response to sales increase, cost stickiness is observed. Anderson et al. (2003) suggest several properties which affect cost stickiness. First, it is possible that managers show such behaviors to avoid the consequences of cost decrease like dismissal of employees and reduction of scale. Second, trade-off between the expected cost for carrying idle resources during weak demand periods and the expected adjustment costs for restoring reduced resources due to reinstated demand affects cost stickiness. Such trade-off is influenced by asset intensity, managers’ prospect about future period, macroeconomic growth, and employee intensity. Balakrishnan et al. (2004) investigate the effect of capacity utilization on cost stickiness using therapy clinic data. The results indicate that strained capacity make cost decrease less for sales decrease and excess capacity makes cost decrease more for sales decrease.
Other than firm characteristics and status, many prior studies show the factors affecting asymmetric cost behavior related with managerial incentives. Chen et al. (2012) examine cost stickiness with respect to agency problem controlling economic factors which is revealed as properties having influence on the asymmetric behavior of cost. It is possible that managers’ incentives for empire building reinforce the magnitude of cost stickiness. Empire building managers prefer maintaining business scale and are reluctant downsizing. Therefore it is expected that firms with empire building managers show that cost decreases less with sales decrease and cost increases more with sales increases. Chen et al. (2012) measure managerial incentives for empire building by free cash flow, CEO tenure, CEO horizon and CEO compensation package and the results support empire building hypothesis.

Some studies examine opposite direction of managerial incentives related with cost stickiness (Dierynck et al. 2012; Kama and Weiss 2013). Dierynck et al. (2012) find that managers’ incentive to avoid loss moderate the magnitude of cost stickiness. Kama and Weiss suggest empirical evidences that when manager want to meet or beat earnings benchmark, manager accelerate to cut slack resources and this action moderate cost stickiness.

According to above prior literatures, cost stickiness is affected by various economic properties and managerial incentives and is resulted from managers’ decision making process considering all the factors and incentives. Even though it is important to know managers’ intention laid in the cost stickiness, it’s not easy to understand managers’ purpose clearly. This paper tries to figure out managers’ intention in the cost stickiness using the information in the tax account for loss reporting firms.

2.2. COST STICKINESS FOR LOSS REPORTING FIRMS

Few researches investigate cost behavior for loss reporting firms. Dierynck et al. (2012) document cost behavior in case of managers’ facing small profit. Dierynck et al. (2012) compare cost behavior among small profit firms, big profit firms, and small loss firms. The results indicate that magnitude of cost stickiness is smaller for small profit firms than small loss firms and big profit firms. Cost behavior of small
loss firms is similar to that of big profit firms by showing cost stickiness. No further test is performed because the purpose of Dierynck et al. (2012) is not analysis of cost behavior for loss reporting firms. No further study suggests theories or empirical evidence that loss firms show different cost behavior.

Healy (1985) find that managers with missing earnings target have incentives to defer earnings by earnings management to the future period in which managers receive bonus and these behavior is called “Big bath”. If managers receive no bonus in case of missing earnings target, managers try to recognize big losses in that period. It is possible that loss reporting firms have a tendency to recognize losses as much as possible to record future period earnings highly. Many prior researches investigate “big bath” for firms which is inferred missing target like missing analyst forecast or failing to avoid loss.

Considering the finding of Dierynck et al. (2012) and big bath of loss firms, cost would be sticky for loss reporting firms.

2.3. INFORMATION IN VALUATION ALLOWANCE FOR DEFERRED TAX ASSETS

Dhaliwal et al. (2013) investigate the information content of tax account for loss reporting firms. Using loss reporting firms, Dhaliwal et al. (2013) find that change in the valuation allowance for deferred tax assets provides the information about loss persistence.

Managers estimate expected future taxable income in measuring possibility of realization for deferred tax assets. Firms should recognize the amount of deferred tax assets which is expected to have low possibility (less than 50%) to be realized as tax benefit in future periods, as valuation allowance for deferred tax assets. SFAS 109 demands managers to use their private information in recognition of valuation allowance for deferred tax assets. If firms have sufficient taxable income and record profit for current period, the possibility to recognize valuation allowance is low and the ratio of valuation allowance is smaller than loss firms. In a while, to recognize net deferred tax assets after consideration of VA, loss firms have lower possibility to have sufficient future positive taxable income than profit reporting firms. When managers use their private information properly in recognition of VA, change in VA suggests the information about the
firms’ future prospects to information users. Opportunistic managers have possibilities to report VA without reflection of their own private information and realized future performance is different from the information contained in VA.

Dhaliwal et al. (2013) link the information in VA to loss persistence. If managers of loss reporting firms expect positive future performance and estimate VA appropriately, the firms with decrease in VA have lower possibility to recognize loss than firms with increase or no change in VA. The reverse inference is also possible. The results of Dhaliwal et al. (2013) indicate that managers of loss reporting firms reflect their private information properly in recognition of VA and the change in VA in current period is related with loss persistence.

2.4 HYPOTHESIS DEVELOPMENT

Cost stickiness is the results of various reasons and many factors affect the magnitude of cost stickiness (Anderson et al. 2003; Balakrishnan et al. 2013; Chen et al. 2012; Dierynck et al. 2012; Kama and Weiss 2013; Canon 2014). Managers’ perspective is one of important factors which affect cost stickiness, because cost stickiness is related with operation plan of firms and managers make a final decision the expenditure of cost. If managers have positive prospects about future performance, magnitude of cost stickiness becomes larger. We posit that the increase in VA means managers’ positive future prospect and the firms with increase in VA show stronger cost stickiness than firms with decrease in VA for loss reporting firms.

H1: The magnitude of cost stickiness in firms with increase in VA is larger than the magnitude of cost stickiness in firms with decrease or no change in VA.

III. RESEARCH DESIGN

3.1. EMPIRICAL MEASURE OF TAX STATUS

To measure change in valuation allowance for deferred tax assets, we follow the method used in
Dhaliwal et al. (2013). Dhaliwal et al. (2013) categorize samples into three groups by current tax expenses and deferred tax expenses. The samples with negative value in deferred tax expenses are included in good news tax category (GN). Negative deferred tax expenses represent deferred tax assets increases or deferred tax liabilities decrease. The samples with positive value in deferred tax expenses are categorized as bad news category (BN). The samples in BN category are likely to experience material increase in valuation allowance for deferred tax assets. Dhaliwal et al. (2013) use the term “material” because it is hard to conclude that positive or zero value of deferred tax expense capture every extent of increase in valuation allowance for deferred tax assets.

The firms in GN category are divided into two groups as GN_VA and GN_TI by the sign of current tax expenses. The samples in GN with negative or zero current expenses are categorized as GN_VA which represents firms with increase in deferred tax assets or decrease in deferred tax liabilities which have NOL. The GN_TI category means the firms with positive taxable income and with increase in deferred tax assets or decrease in deferred tax liabilities. Dhaliwal et al. (2013) find that GN_TI category includes the firms with the least loss persistence among three categories.

To ensure the categorizing method, Dhaliwal et al. (2013) explain the verification of the algorithm by hand-collecting the footnote and checking the categories and change in valuation allowance for deferred tax assets. This algorithm categorizes 90% of firms properly.

Even though categorizing method does not capture the elaborate change in valuation allowance for deferred tax assets, the categories represent groups by rough change in valuation allowance and categorizing method is much convenient method to information users who are not familiar with tax accounts.
3.2. SAMPLE SELECTION

Sample is based on the data from 1993 to 2014 using U.S. data. We obtain accounting numbers from COMPUSTAT.

Financial service firms (two-digit SIC codes between 60 and 67) and non-classifiable establishments in public administration (two-digit SIC codes 99) are exclude because firm characteristics and debt financing activities are quite different in these industries than other industries. Variables are winsorized at the upper and the lower 1% tails of distribution to mitigate the effects of extreme values. Number of Firm-year observations used in the test is 15,212.

Table 1 shows sample distribution. Panel A of table 1 present sample distribution by categorizing loss firms by tax status. The largest proportion in the total sample is BN category with zero deferred tax expense as 51.58%. The proportion of GN category is 31.76%. Although the proportions are not the quite similar with the results of Dhaliwal et al. (2013), the ranking of groups is the same with the table with Dhaliwal et al. (2013). The reasons for different proportions are due to extended sample period. Panel B shows sample distribution by year and tax status. Even though the proportions of BN category from 2002 to 2006 are larger than other periods, the distribution of tax status by year seems stable through the sample period.

3.3. EMPIRICAL MODELS

To test the effect of tax status on cost stickiness, we use the following traditional regression model for cost stickiness following Anderson et al. (2003) by using interaction variable with tax categories and sales decrease dummy variable.

\[ \Delta \ln XSGA = \alpha_0 + \alpha_3 \Delta \ln SALE + \alpha_5 D_x \Delta \ln SALE + \alpha_7 D_x \Delta \ln SALE \times TAX \text{STATUS} + \alpha_9 D_x \Delta \ln SALE \times DD + \alpha_{11} D_x \Delta \ln SALE \times AINT + \text{INDUSTRY FIXED EFFECT} + \text{YEAR FIXED EFFECT} + \epsilon \]  

\( \Delta \ln XSGA \) = the log-change in SG&A costs (Compustat data item XSGA)

\( \Delta \ln SALE \) = the log-change in sales (Compustat data item SALE)
$D$ = dummy variable equal to 1 if sales decreased in current year, and 0 otherwise

$TAXSTATUS = POSSIG$ or $TAXCATG$

$POSSIG$ = a dummy variable that equals 1 if the firm-year is in the GN_TI or GN_VA category, and 0 otherwise (if the firm-year is in the BN category)

$TAXCATG$ = an ordinal variable that equals 0 if the firm-year is in the BN, 1 if the firm-year is in the GN_VA, and 2 if the firm-year is in the GN_TI category

$DD$ = is a dummy variable equal to 1 if sales decreased in prior year, and 0 otherwise

$AINT$ = asset intensity (Compustat data item AT/SALE)

We measure cost stickiness by the sales decrease dummy variables. Negative value of interaction variable of the sales decrease dummy variable and change in sales means the proportion of change in SG&A cost is smaller when sales decrease. Because managers with positive prospect about future performance do not decrease SG&A cost proportionally to sales decrease and GN tax category firms show intensified cost stickiness, the sign of interaction variable, $D \times \Delta \ln{SALE} \times TAXSTATUS$, is expected as negative value. Moreover, we expect the sign of interaction variable for the successive decrease of sales positive and the sign of interaction variable for asset intensity negative following the prior literatures (Anderson et al. 2003; Balakrishnan et al. 2013; Chen et al. 2012; Dierynck et al. 2012).

IV. RESULTS

4.1. DESCRIPTIVE STATISTICS

Table 2 Panel A shows descriptive statistics of main variables. While mean (median) values of $\Delta \ln{SALE}$ is amounting to -0.012 (-0.019), having negative value, mean (median) value of $\Delta \ln{XSGA}$ is amounting to 0.021(0.003), having positive value. Opposite sign for mean and median value of change in sales and cost (selling, general, and administrative cost) suggests the possibility of cost stickiness. Mean
(median) value of $AINT$ is 0.364 (0.249).

Considering tax category exhibited in panel B of table 2, sample GN_TI group has the highest value of $\Delta lnSALE$ and $\Delta lnXSGA$, amounting to 0.006 and 0.061. GN_VA group supposed to firms with decrease in VA and negative or zero current tax expense has the lowest mean (median) value of $\Delta lnSALE$, -0.029 (-0.038). 0.009 (-0.007). BN group has the lowest mean value for $\Delta lnXSGA$, amounting to -0.010 and 0.009. In a while, BN group has the highest mean (median) value of AINT, amounting to 0.394 (0.270). T-statistics and z-statistics for the differences among groups in panel C suggest that the differences among tax categories are significant at least 5% level except for the median difference between BN and GN_TI for asset intensity ($AINT$).

Table 3 shows the correlations between main variables and tax categories. High value of $TAXCATG$ and $POSSIG$ means high possibility of decrease in VA. $TAXCATG$ and $POSSIG$ have positive significant correlations with $\Delta lnXSGA$. Whereas $TAXCATG$ has an insignificant correlation with $\Delta lnSALE$ and $POSSIG$ has a weakly significant correlation with $\Delta lnSALE$. Considering tax category contain the information of managers’ perspective for future performance, these correlations suggest expenses is related with not only sales change but also future prospect. While correlations with decrease dummy of sales (D) for $TAXCATG$ and $POSSIG$ have different results, correlations with prior year decrease (DD) for $TAXCATG$ and $POSSIG$ are significant negative.
4.2. OLS REGRESSION RESULTS

To ensure the effect of tax status on cost stickiness, we investigate test by multivariate regression. Table 4 shows the results of OLS regression for the tax status of loss firms and cost stickiness. We use two tax status variables as POSSIG and TAXCATG presented in column (1) and column (2). Considering coefficient of interaction variable, “DxΔlnSALExPOSSIG” and “DxΔlnSALExTAXCATG”, GN_VA and GN_TI decreases 8.4% less than cost in BN and the differences of costs between GN_TA and GN_VA and between GN_VA and BN are on average 4.8%. These results suggest that loss persistence affect magnitude of cost stickiness for loss reporting firms. If managers expect loss is converted to profit in the future period and the possibility is high, there is possibility that managers decrease cost less than the case without managers’ positive future prospect when sales decrease.

Through the fact that managers’ real future perspective reflected in tax account is related with cost stickiness, it is confirmed that managers who see future optimistic rationally try to maintain the expense level to be prepared for the future with profit. One of factors which are assumed as reasons for cost stickiness is an incentive for empire-building. Dhaliwal et al. (2013) shows the information contained in valuation allowance for deferred tax assets is the managers’ perspective about future performance and managers estimate properly and do not manipulate their expectation for future period. Therefore, if it is inferred that information in VA is not manipulated for managers’ private interest, the magnitude of cost stickiness estimated by interaction variable with tax category is the results of managers’ proper estimation about future performance without an incentive for empire building.

[Insert Table 4 here]

Regarding the case of BN, the coefficient for stickiness is significantly negative, amounting to -0.293. Even though managers expect loss persistent in future period, managers still do not decrease cost for sales
decrease equivalently like increasing cost for sales increase. We raise several reasons for this cost stickiness in case of BN based on prior literatures. First, as Anderson et al. (2003) suggest in their research, managers do not decrease cost for sales decrease as much as cost increased for sales increase because they do not want to downsize firms’ operating size. In this case, although managers expect future performance negative, empire building managers have incentives for cost stickiness. Second, there is possibility that capacity utilization and trade-off between the expected cost for carrying idle resources during weak demand periods and the expected adjustment costs for restoring reduced resources due to reinstated demand affect the cost stickiness for BN (Anderson et al. 2003; Balakrishnan et al. 2004). However trade-off between the expected cost for carrying idle resources during weak demand periods and the expected adjustment costs for restoring reduced resources due to reinstated demand affect less than other reasons due controlling to the trade-off by interaction variable asset intensity.

The coefficients for sales decrease for prior period is significantly positive amounting to 0.425 same with prior literatures (Anderson et al. 2003). Coefficient for a couple straight years is 0.048 for GN_VA and GN_TI and 0.132 for BN. Cost stickiness disappears even when managers expect future prospect positive. Double decrease in sales makes it hard that managers decrease cost less for sales decrease. Even though empire building managers try to maintain expense level like prior year, it is possible to face challenges strongly by other monitoring factors in case of double decrease.

The coefficient of interaction variable for asset intensity is significantly negative which is consistent with findings of prior studies. More assets are intense, stickier the cost for sales decrease.

V. ADDITIONAL TEST

5.1. TAX STATUS OF LOSS FIRMS AND COST STICKINESS BY THE MAGNITUDE OF LOSS

We investigate tax status of loss firms and cost stickiness by the magnitude of loss to find the effect of
the incentive for big bath on cost stickiness for loss reporting firms. According to prior studies, loss reporting firms or firms who fail to meet or beat earnings benchmark have incentives to recognize large expenses to report more earnings for future period (Healy 1985; Strong and Meyer 1987; Dechow and Sloan 1991). The firms with small magnitude of loss are likely to fail to avoid losses and to report profit in the near future period. Loss is a kind of benchmarks to avoid. Therefore, the firms failing to meet the benchmark have motivation to recognize big cost in current period and recognize small cost in profit reporting period to be compensated more. In a while, the firms with big losses have lower possibility to report profit in near future period and have high possibility to experience financial difficulties. Thus the magnitude of cost stickiness for small loss reporting firms is bigger than that for big loss reporting firms. In case of big loss firms, even when managers have positive perspective for future period, managers have challenges to decrease cost less because big loss firms have high possibilities to have financial difficulties and be lack of liquidity.

Table 5 shows the results for tax status of loss firms and cost stickiness by the magnitude of loss which is the distribution of tax categories according to Dhaliwal et al. (2013). Dhaliwal et al. (2013) confirm the distribution of tax categories by magnitude of earnings for loss. The results according to tax status variable as POSSIG and TAXCATG are almost similar each other. Magnitude of cost stickiness increases as the magnitude of loss becomes bigger. The coefficient for $Dx\Delta ln\text{SALE}$ is -0.151 at 10% significance level and the value increases until the interval of loss between -25% and -15%. The coefficient for $Dx\Delta ln\text{SALE}\times\text{POSSIG}$ is negative significantly when the earning for loss is over -25% by not showing any pattern and do not change the increasing patter of cost stickiness.

The increasing pattern of cost stickiness implies the possibility of big bath. Managers detect in advance the fact that the firm reports loss as the magnitude of loss is bigger. Thus managers who find loss

| Insert Table 5 here |
unavoidable have incentives to recognize expense as much as possible in current period to record bigger earnings in future period. We also pay attention to the value of coefficient for $Dx\Delta \ln \text{SALE} \times \text{POSSIG}$ and $Dx\Delta \ln \text{SALE} \times \text{TAXCATG}$ which have higher magnitude in the interval of loss between -25% and 0 amounting to around -0.2 and -0.1 and the significance disappears or diminishes under -25% while the coefficients for both variable are -0.084 and -0.048 for full sample regression. This implies that the effect of managers’ perspective for future period is much larger in case that cost stickiness is possible. However, if the firms are lack of liquidity or have financial distress, cost stickiness disappears even if managers have positive future prospect.

5.2. TAX STATUS OF LOSS FIRMS AND COST STICKINESS BY CONSIDERING THE SLOPE FOR SALES INCREASES

If managers decrease cost less for sales decrease with positive future prospect, we predict that managers increase cost more for sales increase with positive future prospect. Table 6 shows the results for cost behavior for sales increase with managers’ positive future prospect. The coefficients for $\Delta \ln \text{SALE} \times \text{POSSIG}$ and $\Delta \ln \text{SALE} \times \text{TAXCATG}$ are significantly positive representing the effect of managers’ future perspectives consistent with our predictions. Significantly positive coefficients suggest that managers try to increase cost in case of demand increase in future period.

[Insert Table 6 here]

In the previous section, we find that cost is stickier at firms with more assets because adjustment cost increases with asset intensity. A negative sign is predicted for $\Delta \ln \text{SALE} \times \text{AINT}$ considering adjustment cost for sales decrease. Interestingly, the coefficient for $\Delta \ln \text{SALE} \times \text{AINT}$ is significantly positive at 5% level suggesting that firms with more assets increase cost more when sales increase. This result implies that for firms with more assets more cost is necessary to correspond to sales increase to add fixed assets.
VI. CONCLUSION

This paper examines the effect of managers’ perspective for future performance on cost stickiness for loss reporting firms by using valuation allowance for deferred tax assets. Number of observations is 15,212 and sample period is from 1993 to 2014 based on U.S. data.

We predict that firms with decrease in valuation allowance for deferred tax assets have cost behavior stickier. Dhaliwal et al. (2013) examine whether the information in valuation allowance for deferred tax assets contain managers’ private information about future performance properly. SFAS 109 demand managers to reflect their private information for future period in valuation for deferred tax asset. Opportunistic managers have incentives to recognize valuation allowance less than the amount based on their true expectations and send false signal that firms have positive future prospects. According to Dhaliwal et al. (2013), the results that valuation allowance for deferred tax assets is related with loss persistence suggest that managers use their private information properly in estimating taxable income to recognize valuation allowance for deferred tax assets. Thus we posit that magnitude of cost stickiness increase when valuation allowance for deferred tax assets decreases because managers expect positive future performance.

By using interaction variable of tax categories we find that decrease in valuation allowance for deferred tax assets is related with cost stickiness positively consistent with the prediction. The results suggest that managers with expectation that the loss is converted to profit in future period try to maintain the amount of expenses more strongly. Although the magnitude of cost stickiness is less than that in the case with managers’ positive expectations, the results show cost is still sticky even when managers do not expect future performance positively. We suggest some reasons that might affect the cost stickiness, like managerial incentive for empire building, trade-off between the expected cost for carrying idle resources during weak demand periods and the expected adjustment costs for restoring reduced resources and capacity utilization (Adnerson et al. 2003; ; Balakrishnan et al. 2004)
We also analyze the relation by the magnitude of earnings loss. We divide sample into six loss intervals and test the relation by the interval. Our regression results suggest that costs are sticky only when loss is not too big. In the intervals magnitude of loss is not too big (the intervals over -25% earnings loss), the regression results are similar with full sample test and the value of coefficient of interaction variable for tax categories is higher than the value for full sample suggesting that the effect of managers’ future prospect on stickiness is stronger in small or medium loss reporting firms.

In addition, we test the effect of managers’ perspective for future performance in case of sales increase and find that firms with managers’ positive prospect for future performance expense more cost when sales increase like the case of sales decrease.

This paper makes two contributions to the literature. First, this paper provides the evidence that managers future perspective for firm performance affect cost stickiness and show the magnitude of the effect of managers’ future prospect directly. These results make it possible to analyze the effect of managers’ perspective clearly and to exclude the effect of managers’ prospect and analyze other properties that affect cost stickiness. Second, this paper links the cost stickiness with tax information and shows the information in cost and tax accounts are related.

This paper has some limitations. First, this paper does not analyze specifically the other reasons for remaining cost stickiness after exclusion of the effect of managers’ future prospect. Second, in additional test, the explanation about big bath is not tested clearly. These parts could be further studied.
REFERENCES


### Panel A= Categorizing Loss Firms by Tax Status

<table>
<thead>
<tr>
<th>U.S. Current Tax Expense</th>
<th>Negative</th>
<th>Zero</th>
<th>Positive</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative</td>
<td>GN_VA</td>
<td>GN_VA</td>
<td>GN_TI</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1,909</td>
<td>1,142</td>
<td>1,781</td>
<td>4,832</td>
</tr>
<tr>
<td></td>
<td>(12.55%)</td>
<td>(7.51%)</td>
<td>(11.71%)</td>
<td>(31.76%)</td>
</tr>
<tr>
<td>Zero</td>
<td>BN</td>
<td>BN</td>
<td>BN</td>
<td></td>
</tr>
<tr>
<td></td>
<td>653</td>
<td>6,732</td>
<td>461</td>
<td>7,846</td>
</tr>
<tr>
<td></td>
<td>(4.29%)</td>
<td>(44.25%)</td>
<td>(3.03%)</td>
<td>(51.58%)</td>
</tr>
<tr>
<td>Positive</td>
<td>BN</td>
<td>BN</td>
<td>BN</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1,378</td>
<td>672</td>
<td>484</td>
<td>2,534</td>
</tr>
<tr>
<td></td>
<td>(9.06%)</td>
<td>(4.42%)</td>
<td>(3.18%)</td>
<td>(16.66%)</td>
</tr>
<tr>
<td>Total</td>
<td>3,940</td>
<td>8,546</td>
<td>2,726</td>
<td>15,212</td>
</tr>
<tr>
<td></td>
<td>(25.90%)</td>
<td>(56.18%)</td>
<td>(17.92%)</td>
<td>(100%)</td>
</tr>
</tbody>
</table>

### Panel A= Sample Distribution by Year and Tax Status

<table>
<thead>
<tr>
<th>Year</th>
<th>Tax Status</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BN</td>
<td>GN VA</td>
</tr>
<tr>
<td>507</td>
<td>126</td>
<td>(17.43%)</td>
</tr>
<tr>
<td>(70.12%)</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>463</td>
<td>110</td>
<td>(17.41%)</td>
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<tr>
<td>(73.26%)</td>
<td>59</td>
<td></td>
</tr>
<tr>
<td>466</td>
<td>157</td>
<td>(22.46%)</td>
</tr>
<tr>
<td>(66.67%)</td>
<td>76</td>
<td></td>
</tr>
<tr>
<td>470</td>
<td>166</td>
<td>(22.80%)</td>
</tr>
<tr>
<td>(64.56%)</td>
<td>92</td>
<td></td>
</tr>
<tr>
<td>532</td>
<td>158</td>
<td>(20.33%)</td>
</tr>
<tr>
<td>(68.47%)</td>
<td>87</td>
<td></td>
</tr>
<tr>
<td>520</td>
<td>211</td>
<td>(25.00%)</td>
</tr>
<tr>
<td>(61.61%)</td>
<td>113</td>
<td></td>
</tr>
<tr>
<td>526</td>
<td>178</td>
<td>(22.28%)</td>
</tr>
<tr>
<td>(65.83%)</td>
<td>95</td>
<td></td>
</tr>
<tr>
<td>504</td>
<td>191</td>
<td>(24.55%)</td>
</tr>
<tr>
<td>(64.78%)</td>
<td>83</td>
<td></td>
</tr>
<tr>
<td>642</td>
<td>247</td>
<td>(24.43%)</td>
</tr>
<tr>
<td>(63.50%)</td>
<td>122</td>
<td></td>
</tr>
<tr>
<td>647</td>
<td>167</td>
<td>(19.20%)</td>
</tr>
<tr>
<td>(74.37%)</td>
<td>56</td>
<td></td>
</tr>
<tr>
<td>647</td>
<td>142</td>
<td>(16.71%)</td>
</tr>
<tr>
<td>(76.12%)</td>
<td>61</td>
<td></td>
</tr>
<tr>
<td>516</td>
<td>108</td>
<td>(16.19%)</td>
</tr>
<tr>
<td>(77.36%)</td>
<td>43</td>
<td></td>
</tr>
<tr>
<td>464</td>
<td>95</td>
<td>(15.22%)</td>
</tr>
<tr>
<td>(74.36%)</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>435</td>
<td>92</td>
<td>(15.22%)</td>
</tr>
</tbody>
</table>
Following Dhaliwal et al. (2013), our sample firms (loss firms) are classified into three categories, BN, GN_VA, and GN_TI, based on the sign of U.S. current tax expense (Compustat data item TXFED) and deferred tax expense (Compustat data item TXDFED). The BN category represents firm-years with zero or positive deferred tax expense. The GN_VA category represents firm-years with negative deferred tax expense and negative or zero current tax expense. The GN_TI category represents firm-years with negative deferred tax expense and positive current tax expense.

<table>
<thead>
<tr>
<th></th>
<th>(73.73%)</th>
<th>(15.59%)</th>
<th>(10.68%)</th>
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</thead>
<tbody>
<tr>
<td>416</td>
<td>101</td>
<td>82</td>
<td>599</td>
</tr>
<tr>
<td>(69.45%)</td>
<td>(16.86%)</td>
<td>(13.69%)</td>
<td></td>
</tr>
<tr>
<td>465</td>
<td>164</td>
<td>138</td>
<td>767</td>
</tr>
<tr>
<td>(60.63%)</td>
<td>(21.38%)</td>
<td>(17.99%)</td>
<td></td>
</tr>
<tr>
<td>412</td>
<td>130</td>
<td>82</td>
<td>624</td>
</tr>
<tr>
<td>(66.03%)</td>
<td>(20.83%)</td>
<td>(13.14%)</td>
<td></td>
</tr>
<tr>
<td>359</td>
<td>117</td>
<td>59</td>
<td>535</td>
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<tr>
<td>(67.10%)</td>
<td>(21.87%)</td>
<td>(11.03%)</td>
<td></td>
</tr>
<tr>
<td>343</td>
<td>75</td>
<td>71</td>
<td>489</td>
</tr>
<tr>
<td>(70.14%)</td>
<td>(15.34%)</td>
<td>(14.52%)</td>
<td></td>
</tr>
<tr>
<td>320</td>
<td>105</td>
<td>80</td>
<td>505</td>
</tr>
<tr>
<td>(63.37%)</td>
<td>(20.79%)</td>
<td>(15.84%)</td>
<td></td>
</tr>
<tr>
<td>357</td>
<td>105</td>
<td>89</td>
<td>551</td>
</tr>
<tr>
<td>(64.79%)</td>
<td>(19.06%)</td>
<td>(16.15%)</td>
<td></td>
</tr>
<tr>
<td>369</td>
<td>106</td>
<td>75</td>
<td>550</td>
</tr>
<tr>
<td>(67.09%)</td>
<td>(19.27%)</td>
<td>(13.64%)</td>
<td></td>
</tr>
<tr>
<td>10,380</td>
<td>3051</td>
<td>1781</td>
<td>15,212</td>
</tr>
<tr>
<td>(68.24%)</td>
<td>(20.06%)</td>
<td>(11.71%)</td>
<td>100</td>
</tr>
</tbody>
</table>
### Panel A= Full Sample (n=15,212)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Q1</th>
<th>Median</th>
<th>Q3</th>
</tr>
</thead>
<tbody>
<tr>
<td>∆lnSALE</td>
<td>-0.012</td>
<td>0.181</td>
<td>-0.136</td>
<td>-0.019</td>
<td>0.108</td>
</tr>
<tr>
<td>∆lnXSGA</td>
<td>0.021</td>
<td>0.251</td>
<td>-0.111</td>
<td>0.003</td>
<td>0.140</td>
</tr>
<tr>
<td>AINT</td>
<td>0.364</td>
<td>0.836</td>
<td>-0.196</td>
<td>0.249</td>
<td>0.820</td>
</tr>
</tbody>
</table>

### Panel B= Descriptive Statistics by Tax Status

<table>
<thead>
<tr>
<th>Variables</th>
<th>(1) BN (n = 10,380)</th>
<th>(2) GN_VA (n = 3,051)</th>
<th>(3) GN_TI (n = 1,781)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Median</td>
<td>Mean</td>
</tr>
<tr>
<td>∆lnSALE</td>
<td>-0.010</td>
<td>-0.017</td>
<td>-0.029</td>
</tr>
<tr>
<td>∆lnXSGA</td>
<td>0.009</td>
<td>-0.007</td>
<td>0.038</td>
</tr>
<tr>
<td>AINT</td>
<td>0.394</td>
<td>0.270</td>
<td>0.273</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mean Differences (t-stat.)</th>
<th>Median Differences (z-stat.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)-(2)</td>
<td>(1)-(3)</td>
</tr>
<tr>
<td>0.018</td>
<td>-0.016</td>
</tr>
<tr>
<td>4.85***</td>
<td>-3.33***</td>
</tr>
<tr>
<td>-0.029</td>
<td>-0.052</td>
</tr>
<tr>
<td>-5.57***</td>
<td>-7.89***</td>
</tr>
<tr>
<td>0.120</td>
<td>0.051</td>
</tr>
<tr>
<td>6.88***</td>
<td>2.31**</td>
</tr>
</tbody>
</table>

1) *, **, and *** indicate significance at 10%, 5%, and 1%, respectively.
2) The BN category represents firm-years with zero or positive deferred tax expense. The GN_VA category represents firm-years with negative deferred tax expense and negative or zero current tax expense. The GN_TI category represents firm-years with negative deferred tax expense and positive current tax expense.
3) Variable Definitions: ∆lnSALE is the log-change in sales (Compustat data item SALE), ∆lnXSGA is the log-change in SG&A costs (Compustat data item XSGA), and AINT is asset intensity (Compustat data item AT/SALE).
### Correlation Matrix

<table>
<thead>
<tr>
<th>Variable</th>
<th>TAXCATG</th>
<th>POSSIG</th>
<th>ΔlnSALE</th>
<th>ΔlnXSGA</th>
<th>AINT</th>
<th>D</th>
<th>DD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.920</td>
<td>0.006</td>
<td>0.074</td>
<td>-0.040</td>
<td>0.000</td>
<td>0.000</td>
<td>-0.031</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.433)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.972)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.983</td>
<td>1</td>
<td>-0.015</td>
<td>0.070</td>
<td>-0.053</td>
<td>0.021</td>
<td>-0.019</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.066)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.008)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-0.001</td>
<td>-0.012</td>
<td>1</td>
<td>0.381</td>
<td>0.091</td>
<td>-0.805</td>
<td>-0.478</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.871)</td>
<td>(0.144)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.008)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.087</td>
<td>0.082</td>
<td>0.431</td>
<td>1</td>
<td>0.135</td>
<td>-0.311</td>
<td>-0.294</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-0.029</td>
<td>-0.035</td>
<td>0.098</td>
<td>0.121</td>
<td>1</td>
<td>-0.087</td>
<td>-0.074</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.012</td>
<td>0.021</td>
<td>-0.862</td>
<td>-0.371</td>
<td>-0.098</td>
<td>1</td>
<td>0.586</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.146)</td>
<td>(0.008)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-0.025</td>
<td>-0.019</td>
<td>-0.513</td>
<td>-0.347</td>
<td>-0.086</td>
<td>0.586</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.002)</td>
<td>(0.017)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1) This table reports Pearson (above) / Spearman (below) correlations. *p*-values are in parentheses.

2) Variable Definitions:
- **TAXCATG** is an ordinal variable that equals 0 if the firm-year is in the BN, 1 if the firm-year is in the GN_VA, and 2 if the firm-year is in the GN_TI category;
- **POSSIG** is a dummy variable that equals 1 if the firm-year is in the GN_TI or GN_VA category, and 0 otherwise (if the firm-year is in the BN category);
- **ΔlnSALE** is the log-change in sales (Compustat data item SALE);
- **ΔlnXSGA** is the log-change in SG&A costs (Compustat data item XSGA);
- **AINT** is asset intensity (Compustat data item AT/SALE);
- **D** is a dummy variable equal to 1 if sales decreased in current year, and 0 otherwise;
- **DD** is a dummy variable equal to 1 if sales decreased in prior year, and 0 otherwise.
### Table 4: Tax Status of Loss Firms and Cost Stickiness

<table>
<thead>
<tr>
<th>Variables</th>
<th>(1) Tax Status Variable = POSSIG</th>
<th>(2) Tax Status Variable = TAXCATG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>0.043***</td>
<td>2.50</td>
</tr>
<tr>
<td>ΔlnSALE</td>
<td>0.596***</td>
<td>24.63</td>
</tr>
<tr>
<td>DxDΔlnSALE</td>
<td>-0.293***</td>
<td>-6.95</td>
</tr>
<tr>
<td>DxDΔlnSALExPOSSIG</td>
<td>-0.084***</td>
<td>-2.96</td>
</tr>
<tr>
<td>DxDΔlnSALExTAXCATG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DxDΔlnSALExDD</td>
<td>0.425***</td>
<td>14.46</td>
</tr>
<tr>
<td>DxDΔlnSALExAINT</td>
<td>-0.250***</td>
<td>-12.08</td>
</tr>
</tbody>
</table>

Industry FE Included Included Year FE Included Included Adjusted R2 0.202 0.202 n 15,212 15,212

1) This table reports OLS regression results. t-values are computed using clustering by firm. *, **, and *** indicate significance at 10%, 5%, and 1%, respectively.

2) Variable Definitions: TAXCATG is an ordinal variable that equals 0 if the firm-year is in the BN, 1 if the firm-year is in the GN_VA, and 2 if the firm-year is in the GN_TI category; POSSIG is a dummy variable that equals 1 if the firm-year is in the GN_TI or GN_VA category, and 0 otherwise (if the firm-year is in the BN category); ΔlnSALE is the log-change in sales (Compustat data item SALE); ΔlnXSGA is the log-change in SG&A costs (Compustat data item XSGA); AINT is asset intensity (Compustat data item AT/SALE); D is a dummy variable equal to 1 if sales decreased in current year, and 0 otherwise; DD is a dummy variable equal to 1 if sales decreased in prior year, and 0 otherwise.
**Table 5** Tax Status of Loss Firms and Cost Stickiness by the Magnitude of Loss

Panel A: Tax Status Variable = *POSSIG*

<table>
<thead>
<tr>
<th>Variables</th>
<th>≤ -50%</th>
<th>(-50%, -25%]</th>
<th>(-25%, -15%]</th>
<th>(-15%, -8%]</th>
<th>(-8%, -3%]</th>
<th>(≤-3%, 0]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>0.141*</td>
<td>0.072</td>
<td>0.029</td>
<td>0.073</td>
<td>0.017</td>
<td>0.010</td>
</tr>
<tr>
<td></td>
<td>1.79</td>
<td>1.46</td>
<td>0.71</td>
<td>1.51</td>
<td>0.57</td>
<td>0.30</td>
</tr>
<tr>
<td>ΔInSALE</td>
<td>0.251***</td>
<td>0.479***</td>
<td>0.568***</td>
<td>0.614***</td>
<td>0.636***</td>
<td>0.664***</td>
</tr>
<tr>
<td></td>
<td>2.59</td>
<td>6.97</td>
<td>9.40</td>
<td>10.50</td>
<td>14.23</td>
<td>16.29</td>
</tr>
<tr>
<td>DxΔInSALE</td>
<td>0.323*</td>
<td>-0.176</td>
<td>-0.201***</td>
<td>-0.185***</td>
<td>-0.191***</td>
<td>-0.151*</td>
</tr>
<tr>
<td></td>
<td>1.78</td>
<td>-1.49</td>
<td>-2.73</td>
<td>-2.89</td>
<td>-3.17</td>
<td>-1.80</td>
</tr>
<tr>
<td>DxΔInSALE*ΔPOSSIG</td>
<td>-0.382</td>
<td>-0.182***</td>
<td>-0.303***</td>
<td>-0.272***</td>
<td>-0.257***</td>
<td>-0.203***</td>
</tr>
<tr>
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<td>-0.89</td>
<td>-2.08</td>
<td>-3.29</td>
<td>-2.86</td>
<td>-2.87</td>
<td>-3.42</td>
</tr>
<tr>
<td>DxΔInSALE*DD</td>
<td>0.335***</td>
<td>0.386***</td>
<td>0.491***</td>
<td>0.434***</td>
<td>0.487***</td>
<td>0.389***</td>
</tr>
<tr>
<td></td>
<td>2.68</td>
<td>5.26</td>
<td>7.66</td>
<td>7.28</td>
<td>7.32</td>
<td>6.59</td>
</tr>
<tr>
<td>DxΔInSALE*xAINT</td>
<td>-0.351***</td>
<td>-0.281***</td>
<td>-0.141***</td>
<td>-0.167***</td>
<td>-0.295***</td>
<td>-0.117***</td>
</tr>
<tr>
<td></td>
<td>-5.47</td>
<td>-4.89</td>
<td>-2.22</td>
<td>-3.83</td>
<td>-6.93</td>
<td>-2.88</td>
</tr>
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<td>Included</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
</tr>
<tr>
<td>Year FE</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
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<td>Included</td>
</tr>
<tr>
<td>Adjusted R2</td>
<td>0.113</td>
<td>0.200</td>
<td>0.218</td>
<td>0.221</td>
<td>0.249</td>
<td>0.287</td>
</tr>
<tr>
<td>n</td>
<td>1,295</td>
<td>2,255</td>
<td>2,271</td>
<td>2,708</td>
<td>3,423</td>
<td>3,260</td>
</tr>
</tbody>
</table>

Adjusted R²: 0.113, 0.200, 0.218, 0.221, 0.249, 0.287

n: 1,295, 2,255, 2,271, 2,708, 3,423, 3,260
Panel B= Tax Status Variable = TAXCATG

<table>
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<tr>
<th>Variables</th>
<th>≤ -50%</th>
<th>(-50%, -25%]</th>
<th>(-25%, -15%]</th>
<th>(-15%, -8%]</th>
<th>(-8%, -3%]</th>
<th>(-3%, 0]</th>
</tr>
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<tbody>
<tr>
<td>Intercept</td>
<td>0.142*</td>
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<td>0.071</td>
<td>1.45</td>
<td>0.029</td>
<td>0.72</td>
</tr>
<tr>
<td>ΔlnSALE</td>
<td>0.251***</td>
<td>2.59</td>
<td>0.479***</td>
<td>6.98</td>
<td>0.569***</td>
<td>9.41</td>
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<tr>
<td>DxΔlnSALE</td>
<td>0.320*</td>
<td>1.76</td>
<td>-0.177</td>
<td>-1.50</td>
<td>-0.336***</td>
<td>-3.37</td>
</tr>
<tr>
<td>DxΔlnSALExTAXCATG</td>
<td>-0.275</td>
<td>-0.93</td>
<td>-0.144**</td>
<td>-2.18</td>
<td>-0.149***</td>
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</tr>
<tr>
<td>DxΔlnSALExD</td>
<td>0.337***</td>
<td>2.69</td>
<td>0.385***</td>
<td>5.25</td>
<td>0.492***</td>
<td>7.68</td>
</tr>
<tr>
<td>DxAINT</td>
<td>-0.350***</td>
<td>-5.45</td>
<td>-0.282***</td>
<td>-4.90</td>
<td>-0.140**</td>
<td>-2.21</td>
</tr>
<tr>
<td>Industry FE</td>
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<td>Included</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
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<tr>
<td>Year FE</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
</tr>
<tr>
<td>Adjusted R2</td>
<td>0.113</td>
<td>0.200</td>
<td>0.218</td>
<td>0.220</td>
<td>0.248</td>
<td>0.248</td>
</tr>
<tr>
<td>n</td>
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<td>2,255</td>
<td>2,271</td>
<td>2,708</td>
<td>3,423</td>
<td>3,260</td>
</tr>
</tbody>
</table>

1) t-values are computed using clustering by firm. *, **, and *** indicate significance at 10%, 5%, and 1%, respectively.
2) The magnitude of loss is computed using income before extraordinary items (Compustat data item IB) divided by beginning asset (Compustat data item AT)
3) Variable Definitions= TAXCATG is an ordinal variable that equals 0 if the firm-year is in the BN, 1 if the firm-year is in the GN_VA, and 2 if the firm-year is in the GN_TI category; POSSIG is a dummy variable that equals 1 if the firm-year is in the GN_TI or GN_VA category, and 0 otherwise (if the firm-year is in the BN category); ΔlnSALE is the log-change in sales (Compustat data item SALE); ΔlnXSGA is the log-change in SG&A costs (Compustat data item XSGA); AINT is asset intensity (Compustat data item AT/SALE); D is a dummy variable equal to 1 if sales decreased in current year, and 0 otherwise; DD is a dummy variable equal to 1 if sales decreased in prior year, and 0 otherwise.
### Table 6: Tax Status of Loss Firms and Cost Stickiness Considering the Slope for Sales Increases

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td></td>
<td>0.042**</td>
<td>2.42</td>
<td></td>
<td>0.042**</td>
<td>2.46</td>
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<tr>
<td>ΔlnSALE</td>
<td></td>
<td>0.453***</td>
<td>16.42</td>
<td></td>
<td>0.463***</td>
<td>17.01</td>
</tr>
<tr>
<td>ΔlnSALE×POSSIG</td>
<td></td>
<td>0.445***</td>
<td>11.34</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>ΔlnSALE×TAXCATG</td>
<td></td>
<td></td>
<td></td>
<td>0.285***</td>
<td>12.45</td>
<td></td>
</tr>
<tr>
<td>ΔlnSALE×AINT</td>
<td></td>
<td>0.054**</td>
<td>2.10</td>
<td></td>
<td>0.055**</td>
<td>2.14</td>
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<tr>
<td>DxΔlnSALE</td>
<td></td>
<td>-0.150***</td>
<td>-3.46</td>
<td></td>
<td>-0.168***</td>
<td>-3.89</td>
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<td>DxΔlnSALE×POSSIG</td>
<td></td>
<td>-0.533***</td>
<td>-11.08</td>
<td></td>
<td>-0.337***</td>
<td>-11.31</td>
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<tr>
<td>DxΔlnSALE×TAXCATG</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DxΔlnSALE×DD</td>
<td></td>
<td>0.424***</td>
<td>14.46</td>
<td></td>
<td>0.426***</td>
<td>14.51</td>
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<tr>
<td>DxΔlnSALE×AINT</td>
<td></td>
<td>-0.307***</td>
<td>-8.85</td>
<td></td>
<td>-0.308***</td>
<td>-8.85</td>
</tr>
<tr>
<td>Industry FE</td>
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<td></td>
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<td></td>
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</tr>
<tr>
<td>Year FE</td>
<td>Included</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted R2</td>
<td>0.212</td>
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<td>0.211</td>
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<tr>
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<td>15,212</td>
<td></td>
<td></td>
<td>15,212</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1) t-values are computed using clustering by firm. *, **, and *** indicate significance at 10%, 5%, and 1%, respectively.

2) Variable Definitions: TAXCATG is an ordinal variable that equals 0 if the firm-year is in the BN, 1 if the firm-year is in the GN_VA, and 2 if the firm-year is in the GN_TI category; POSSIG is a dummy variable that equals 1 if the firm-year is in the GN_TI or GN_VA category, and 0 otherwise (if the firm-year is in the BN category); ΔlnSALE is the log-change in sales (Compustat data item SALE); ΔlnXSGA is the log-change in SG&A costs (Compustat data item XSGA); AINT is asset intensity (Compustat data item AT/SALE); D is a dummy variable equal to 1 if sales decreased in current year, and 0 otherwise; DD is a dummy variable equal to 1 if sales decreased in prior year, and 0 otherwise.
Corporate Governance Implementation and Firm performance in The New Zealand Agricultural Companies

Dr. Jamal Roudaki

Abstract

In 2004 the Securities Commission of New Zealand published the first Corporate Governance: Principles and Guidelines assuming the enhancement of indigenous capital market responsive to international competition. Agricultural companies standing in the top of the list for enhancement as they are the most important market player in New Zealand local and exporting market. This study concentrates on the role of corporate governance characteristics and improvement of firm performance in the context of New Zealand agricultural large companies. The results indicating that although New Zealand agricultural companies are more capital intensive than other businesses, their ROA is much lower than the country benchmark. Their director ownership and compensation are low, board size is relatively higher, and the proportion of independent directors on the board of directors is lower than their counterparts from other economic sectors. They have relatively less woman as a board member in addition statistical results show that agency cost (assets turnover), shows no significant relationship with ownership and compensation structures of the company. Nevertheless, growth and women directorship show a significant relationship with profitability ratios and director compensation has a close relationship with firm performance.

Keywords: Corporate governance, firm performance, New Zealand Agricultural companies.

1 Department of Financial and Business Systems, Faculty of Agribusiness and Commerce, Lincoln University New Zealand, Email: jamal.roudaki@lincoln.ac.nz.
Introduction

In 2003, the newly established New Zealand Exchange (NZX) amended the listing rules that the rules tied up by publishing Corporate Governance – Principles and Guidelines by Securities Commission of New Zealand in 2004. Consequently, the capital market authorities have started to align with the latest international development by considering the adaptation of corporate governance principles and guidelines (Keeper, 2012). In this process Securities Commission attempted enhancing the capital market battling for an upper hand in the international competition in the financial and commodity exporting markets (Securities Commission of New Zealand, 2002). Agricultural companies are in the top of the list for enhancement of their market competition as they are the most important market player in the New Zealand indigenous and consumer products export markets.

The performance of companies is subject to scrutinize by various stakeholders headed by the stockholder and then by investors, customers, suppliers to name those with high priority. Entering and stay in the global completion required the market players the highest performance and ability to remove barriers of company’s business activities from operating, financing and investment perspectives. The performance of the company is vital to invite investors, customers, and suppliers from all over the globe (Al-Matari, Al-Swidi, & Fadzil, 2014) as such New Zealand companies managers are held responsible and accountable for enhancing firm performance (FP) to be successful in winning the international competitive market. Literature of corporate governance (CG) advocacy suggesting that among the others, implementation of CG principles and guidelines is one of the most important recipes for success in the strategic planning in this regards.

Implementation of corporate governance codes (CGCs) by company management is a flag that signaling the stakeholder indicating sound and safe managing the public and private companies. Consequently, agency theory which is rooted in the separation of managers and owners (Bhimani, Horngren, Datar, & Foster, 2008) in the era of post huge corporate scandals enters a new phase of development. Based on the important impact of agency theory in defining the relationship (or conflict of interest) between company management and stakeholders at large, CGCs contributed in finding a solution while protecting the interest of stockholders promoted managerial performance and firm profitability aiming to enhance shareholders wealth. Literature of Implementing CGCs is overwhelming by
empirical studies elaborating on the relationship of these internal company players. Alongside the agency theory, other theories such as stewardship, stakeholders, political, and dependency are considered as the basic assumption of developing corporate governance codes (Abdullah & Valentine, 2009). Nevertheless considering one single theory or refer to many theories will change the fact that managers and agent to stockholders may act opportunistically position their interest ahead of principal (owners). Clarke (2004) based on agency theory principals (owners/stockholders) delegate the responsibility of directing the company to the agent (managers/directors) for the smooth functioning of the company. The crucial factors contributed to the importance of agency theory are the relationship of agent and principals and driving self-interest from agent side (Certo, Daily, Cannella, & Dalton, 2003). Draw back to excessive opportunistic behaviours of the agent Fama (1980) believed to be that company directors are much concern about their reputation, that they are considered as the successful stewards of the company’s wealth.

The research findings of Reddy (2010) indicating a strong relationship between CG compliance and FP in the context of large and small New Zealand companies. Therefore, this research study takes into account the role of corporate governance regulation (guidelines) on the performance of agricultural companies in the context of New Zealand large agricultural companies. The agency relationship has a marvellous impact in recruiting CGC in running the company smoothly. The common assumption that the small and medium size companies considering the large companies as a role model justify concentrating on large companies.

This study is a continuing research project about the quality of CG disclosures in the New Zealand agricultural companies (Roudaki & Shahwan, 2017). That content analysis revealed that on average NZ agriculture companies CG disclosure is at the lower side. This lower level of CG disclosure motivated the present research to explore the contributed factors by extending the previous research project. Therefore, to fulfill this goal this research posits two objectives. First, comparing the findings of Roudaki and Shahwan (2017) CG disclosure score with firm financial attributes of the NZ agriculture firms. In the second step in order to determine which factors are affecting NZ agriculture firm’s performance, the study examines the effect of CG characteristics on FP implementing the panel data models.
Nevertheless small and open economy with an established capital market of New Zealand provides the unique research environment for this research project.

Rest of the paper is organized as the second section is the literature review and hypothesis development while the third section presents research methods. Results discussion will be the fourth section while conclusion and remarks are appearing at the fifth section before the list of references.

Literature and Hypothesis

In the recent decades a considerable number of research studies have considered investigating the impact of implementation of CG regulations or principles on the FP, while the extended literature indicating lack of consensus among the researchers (Bhagat & Black, 2001; Bozec, 2005; Davidson, Nemec, & Worrell, 1996; Eisenberg, Sundgren, & Wells, 1998; Haniffa & Hudaib, 2006; Iqbal, 2006). The advocators of the significant positive relationship of CG and FP reported that Tobin's Q and market to book value are significantly related to good CG practices Brown and Caylor (2006); Drobetz, Schillhofer, and Zimmermann (2004). Nonetheless, there is a consensus that CG behave differently on various jurisdictions depend on level of implementation of CG and strength of FP while the importance of the indigenous cultural dimension and level of economic development is considered as an influential factors (MacNeil & Li, 2006; Samaha, Dahawy, Hussainey, & Stapleton, 2012). This literature review first considers CG studies continued to present firm performance measurement indicators as appear in the extended literature.

As the financial scandal heat up a number of countries from developed and developing countries consider adopting or tidying up CG rules or regulations that draw the attention of scholars to pay attention to CG implication and its effects on the FP (Allegrini & Greco, 2013). Geographically a handful of studies reporting high level of CG compliance among listed companies, for example Pass (2006) and (Hegazy & Hegazy, 2010) and Hussainey and Al-Najjar (2012) in UK, Werder, Talaulicar, and Kolat (2005) and Cromme (2005) in Germany Allegrini and Greco (2013) in Italian, Salterio, Conrod, and Schmidt (2013) in Canadian, and Klapper and Love (2004) and Aguilera and Jackson (2003) in South Africa, Asian, Eastern Europe, Latin America and Middle East countries.
Sarbanes-Oxley (SOX) and OECD corporate governance guidelines and principles are acting as two major guidelines for best practice in directing various jurisdictions for CG development around the globe (Romano, 2004). While the OECD guidelines are considered as presenting a narrow perception of CG that limited to transparency and accountability (MacMillan, Money, Downing, & Hillenbrand, 2005; Saravanamuthu, 2004). Both guidelines cover many mandated titles over-arching companies’ boards to promoting their financial transparency and accountability preventing them from financial failure. On the other hand, firm performance measurements that are related to CG reveals the effectiveness of company managers in carrying out their stewardship duty based on agency theory and relationship. Nevertheless, company performance measurement while requires some indicators it contributes in developing a healthy internal control that is the main task considering relevant to CG implementations. Paulson, Katchova, and Enlow (2013) found that under SOX regulatory environment of the USA, publicly-traded agribusiness performs better than other companies in terms of key financial ratios using Du Pont analysis.

Cadbury (2000) define CG as a system by which companies are directed and controlled. The CG control mechanism includes three golden aspects of disclosure: compliance, transparency, and accountability (MacMillan et al., 2005). As MacMillan et al. (2005) suggested it is totally under managers discretionary to exercise their function within the context of company’s rules including CG guidelines or regulations (Cadbury, 2000). As such, the importance of implementing of CGC remain in the hands of managers to craft regulations that purist not only shareholders wealth but responsive to various stakeholders demands while observing managers' interests (Page, 2005). The literature has considered CG as a multi-discipline research area that includes two layers of external players and one layer of internal acrobats. The inner layer of external players are shareholders, employees, customer, supplier, and creditors, while the outer layer of players includes market, culture, communities, and politics. Board of directors and company management are the internal players. The internal players have access to company resources and responsible for the debt of the company (Gillan, 2006). They have many tools on hand to direct the company to act effectively and efficiently, that CG is the most important and flexible of these tools.

A much-related research study to this research project is the study that considers the efficacy of CG on FP in the New Zealand context by Reddy (2010). Reddy (2010) study
considered New Zealand CG as principle-based and in the environment of "comply or explain". The results of the study reveal that companies including small, large, and public sector companies generally adopt the recommended CG. The adoption of CG principles impacted positively the financial performance of large companies while reverse results have observed for small companies. Reddy (2010) reported that New Zealand is benefited from industry-specific CG structure. In another publication from the same author, Reddy, Locke, and Scrimgeour (2010) ascertain that New Zealand large listed companies that closely follow certain CG characteristics imposed by Securities Commission have demonstrated a positive relationship between CG implementation and FP. Nevertheless, this positive relationship while is interesting is observed in the all listed companies, It is anticipated that large listed and non-listed agricultural companies which are the centre of interest in the current research may exhibit a different behaviour. Because non-listed companies implement CG guidelines voluntary, the observation shows that in generally speaking large New Zealand agricultural companies are not good at implementing and disclosing CGC (Roudaki, Babajani, & Tahriri, 2016; Roudaki & Shahwan, 2017). New Zealand economy is a smaller and healthier than Australia the US and UK that suffer from financial scandals, nevertheless, there is concern about poor firm performance (Reddy, 2010; Reddy et al., 2010). Efficacy of CG practice is considered relevance by various research studies (Godfrey & Horsely, 2003; Reddy et al., 2010) condition should be considered serious by legislators (Reddy et al., 2010). The condition became more urgent when it comes to implementation of CG best practice in the New Zealand Agricultural companies.

Purves, Niblock, and Sloan (2015) studied a CG related characteristic of the composition of the board of directors and other non-financial factors to predict failure of Australian agribusiness firms. Specifically, the composition of the board of directors has contributed to the companies' success or failure. They advocated that management decision making approaches has frozen or restricted when agribusiness companies encounter failure.

More focus on the New Zealand environment Reddy and Locke (2014) found that increase in the number of independent directors and board tenure are contributors of reducing the agency cost of New Zealand co-operative and mutual funds institutions. Moreover in these organizations source of finance, from member rather banks, reduces agency cost and increases the profitability. In the same area, Fauzi and Locke (2012) examined the role and
effect of ownership structure on the FP in the New Zealand listed firms. They documented those characteristics such as the board of directors' composition, number, and structure of board committee and managerial ownership has a significant impact on FP while variables such as board non-executive directors and gender demonstrated a lower impact in the New Zealand corporate context. Implementing Tobin Q ratio and EVA techniques Koerniadi and Tourani-Rad (2012) found that firm value impacted negatively by CG characteristics such as independent directors while this relationship is reversed when the independent directors are the minority group of the board. Al-Maskati, Bate, and Bhabra (2015) supporting the idea that board size, director busyness, and CEO ownership (compensated either by equity or not) affect the diversification of firm in New Zealand. The effect of gender diversity on the board effectiveness and efficiency is investigated by Duppati, Scrimgeour, Rao, and Schoenber (2017). They concluded that over the period of 10 years started from 2005 an insignificant effect of board gender diversity has been observed on the NZX listed companies.

In the area of the relationship between CG and FP which is the main theme of this study, the literature review is limited. Pham (2016) literature review on this area shows controversial about the impact of CG and FP. Apart from this result, no other relationship is suggested by the paper. Hassan Che Haat, Abdul Rahman, and Mahenthiran (2008) findings show that CG characteristics demonstrate a significant impact on FP in the presence of foreign ownership monitoring. Their casualty study documented a negative relationship between audit quality and FP. However, they documented that the relationship between CG and market performance is not related to the level of disclosure and timeliness. Results of Gloy, Hyde, and LaDue (2002) study reveal that firm size, the rate of production (milk) and production system (milking), as well as the accounting system, have positively impacted FP in the New York dairy farms.

In developing the research questions and hypothesis the study considers agency cost on one side and capital structure and CG characteristics including directors’ ownership and compensation, board composition, and external audit structures on the other side while recruiting FP as the basis of reference for assessment of the relationships. As indicated in the literature the relationship of CG characteristics such as number and expertise of directors, non-executive/ independent directors or agency costs (Reddy & Locke, 2014) and
FP measured by Tobin’s Q and ROA (Reddy, 2010; Reddy et al., 2010) has been the centre of the interest. This research project takes a fresh approach considering the relationship of CG practice and FP in the New Zealand agricultural listed and non-listed companies. Consistent with the extended literature, therefore, the first research hypothesis considering the relationship of PF and CG in the context of New Zealand large agricultural companies:

\[ H1: \text{There is a statistically positive relationship between firm performance and corporate governance practices in the New Zealand large agricultural companies.} \]

Based on agency relationship the management perspective focuses on firm value maximization recruit internal variables for determining the CG practices (Boone, Field, Karpoff, & Raheja, 2007; Cerbioni & Parbonetti, 2007; Cheng, 2008). This approach unsuspectedly creating a weak and divergent relationship which is attributed to an incomplete governance structure while not considering external corporate governance factors (Aguilera, Desender, Bednar, & Lee, 2015). Nevertheless, Jamali, Safieddine, and Rabbath (2008) and Jamali (2008) have provided a dynamic interrelationship among the various internal and external CG dimensions thus put forward a better picture of the implementation of CG in the companies. CG should be able to empower companies to discharge accountability to shareholders and stakeholders (Keasey & Wright, 1997).

Research Method

The study investigates the relationship between CG characteristics and FP in the context of the New Zealand agricultural companies. Descriptive statistics data analysis has implemented to compare and contrast the level of CG disclosures, reveals in the previous qualitative research project with the firm characteristics and performance. In the second step, an econometric model is developed to investigate the relationship of CG and FP.

This study uses data from three sources. First, implemented the CG disclosure quality data from (Roudaki & Shahwan, 2017) project. Second, all CG characteristic data and FP information were manually collected from NZ large agriculture firm’s annual reports over the period of 2012-2015. The study data set period is based on the availability of the maximum number of reports during the period. Finally, data from Bloomberg was used to compare the descriptive statistics of agriculture companies with NZX listed firms. Table 1
summarises the list of all variable along with their representation and measurement used in this study.

### Table 1: Definition and measurement of study variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Measurement</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent Variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Firm Performance (FP)</td>
<td>Return on Assets = Net Income divided by Total Assets</td>
<td>(Terjesen, Couto, &amp; Francisco, 2015)</td>
</tr>
<tr>
<td><strong>Independent Variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Director Ownership (DIR_OWN)</td>
<td>Director Ownership = Total Directors Shares divide by Total Firms Share</td>
<td></td>
</tr>
<tr>
<td>Director Compensation (DIR_COMP)</td>
<td>Total Director Remuneration divided by Total Assets</td>
<td></td>
</tr>
<tr>
<td>Board Size (BD_SIZE)</td>
<td>Board Size = Total Number of Directors on the firm’s board</td>
<td></td>
</tr>
<tr>
<td>Board Independence (BD_IND)</td>
<td>Board Independence = Number of Independent Director on Board divided by Board Size</td>
<td></td>
</tr>
<tr>
<td>Women on Board (Women %)</td>
<td>Gender Diversity = Number of Women Directors divided by Total Directors</td>
<td>(Huang, Raghunandan, Huang, &amp; Chiou, 2014; Thornton &amp; Moore, 1993)</td>
</tr>
<tr>
<td>Auditor Remuneration (AUD_REM)</td>
<td>Total Amount Paid for auditing</td>
<td></td>
</tr>
<tr>
<td><strong>Control Variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asst. Turn Over (ATO)</td>
<td>Asset Turn Over = Annual Sales divided by Total Assets</td>
<td>(Florackis, 2008)</td>
</tr>
<tr>
<td>Leverage (LEV)</td>
<td>Leverage = Total Liabilities divided by Total Assets</td>
<td></td>
</tr>
<tr>
<td>Growth (GW)</td>
<td>Growth = Log of Firm Capital expenditure</td>
<td></td>
</tr>
</tbody>
</table>

**Empirical Model**

As discussed earlier the study fulfills two objectives. Therefore, employed two techniques for data analysis. For the first objective, the study employs descriptive statistics of the firm financial performance characteristic and compare it with the quality of CG disclosure score. Nevertheless, the second objective is to determine the effect of firm characteristics on its financial performance, thereby employed the following regression model

$$FP_{it} = \alpha + \beta X_{it} + \lambda z_{it} + \eta_i + e_{it}$$  \hspace{1cm} Equation (1)

Where FP represent ROA, $\beta$ and $\lambda$ are vectors of the coefficient on independent variables of $X_{it}$ which are: DIR_OWN, DIR_COMP, BD_SIZE, BD_IND, Women%, and AUD_REM and control $z_{it}$ that includes ATO, WC, LEV, GW respectively. Vector “$\eta_i$” reflect the time invariant firm effect and “$e_{it}$” shows the random error term.
Result Discussion

The results of are presented in two sections, the first one discusses the descriptive statistics comparison of the level of implication of CG by agricultural companies and their firm characteristics. The second section of the result presentation empirically tests the effect of CG characteristics on firm performance using the equation 1.

Descriptive analysis

The CG quality disclosure result from Roudaki and Shahwan (2017) paper are presented in descending order in Table 2 (Column 1 to 4), while firm financial characteristics results collected for the current study is documented in column 5 to 9 of Table 2. As presented in Table 2 the quality of CG disclosures by sample companies is varied from 76.5% of the total possible disclosure to as low as 16.7 which is very low implication of CG rules that are suggested by NZX. All of the capital structure variables exhibited a low relationship with the fluctuation of the quality of CG disclosure. The capital structure variables are an average of four years data collected over 2012 to 2015.

Table 2: Agricultural Listed Companies, Quality of CG Disclosure and Capital Structure

<table>
<thead>
<tr>
<th>Company</th>
<th>CDS</th>
<th>Log CDS</th>
<th>Percentage</th>
<th>Working capital</th>
<th>Leverage</th>
<th>Growth (Capital Expenditure)</th>
<th>Investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>L07</td>
<td>101</td>
<td>2.004</td>
<td>76.50%</td>
<td>6 325 000</td>
<td>0.412</td>
<td>14.783</td>
<td>0.008</td>
</tr>
<tr>
<td>L03</td>
<td>80</td>
<td>1.903</td>
<td>60.60%</td>
<td>222 633 750</td>
<td>0.549</td>
<td>16.583</td>
<td>0.015</td>
</tr>
<tr>
<td>L06</td>
<td>77</td>
<td>1.886</td>
<td>58.30%</td>
<td>-3 368 2750</td>
<td>0.634</td>
<td>17.518</td>
<td>0.126</td>
</tr>
<tr>
<td>L08</td>
<td>68</td>
<td>1.833</td>
<td>51.50%</td>
<td>72 385 000</td>
<td>0.453</td>
<td>16.542</td>
<td>0.047</td>
</tr>
<tr>
<td>L01</td>
<td>62</td>
<td>1.792</td>
<td>47.00%</td>
<td>28 194 750</td>
<td>0.249</td>
<td>10.667</td>
<td>0.019</td>
</tr>
<tr>
<td>L09</td>
<td>50</td>
<td>1.699</td>
<td>37.90%</td>
<td>-658 000</td>
<td>1.249</td>
<td>5.679</td>
<td>0.064</td>
</tr>
<tr>
<td>L10</td>
<td>49</td>
<td>1.690</td>
<td>37.10%</td>
<td>26 894 925</td>
<td>0.299</td>
<td>5.583</td>
<td>0.086</td>
</tr>
<tr>
<td>L02</td>
<td>27</td>
<td>1.431</td>
<td>20.50%</td>
<td>163 300 000</td>
<td>0.576</td>
<td>20.601</td>
<td>0.045</td>
</tr>
<tr>
<td>L11</td>
<td>27</td>
<td>1.431</td>
<td>20.50%</td>
<td>33 123 750</td>
<td>0.253</td>
<td>16.691</td>
<td>0.092</td>
</tr>
<tr>
<td>L04</td>
<td>26</td>
<td>1.415</td>
<td>19.70%</td>
<td>59 495 250</td>
<td>0.292</td>
<td>16.389</td>
<td>0.030</td>
</tr>
<tr>
<td>L05</td>
<td>22</td>
<td>1.342</td>
<td>16.70%</td>
<td>15 700 750</td>
<td>0.455</td>
<td>13.754</td>
<td>0.053</td>
</tr>
<tr>
<td>Average</td>
<td>53.54545</td>
<td>0.405727</td>
<td>192219129.5</td>
<td>0.493</td>
<td>14.072</td>
<td>0.508</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>22</td>
<td>0.167</td>
<td>-33 682 750</td>
<td>0.249</td>
<td>5.583</td>
<td>0.008</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>101</td>
<td>0.765</td>
<td>163 300 000</td>
<td>1.249</td>
<td>20.601</td>
<td>5.086</td>
<td></td>
</tr>
<tr>
<td>STD</td>
<td>26.417</td>
<td>0.200</td>
<td>482 353 019.9</td>
<td>0.284</td>
<td>4.836</td>
<td>1.519</td>
<td></td>
</tr>
<tr>
<td>Skw</td>
<td>0.345</td>
<td>0.346</td>
<td>3.209</td>
<td>2.090</td>
<td>-0.931</td>
<td>3.313</td>
<td></td>
</tr>
</tbody>
</table>
Concentrating on the descriptive data of CG quality (Log CDS as a proxy) and the leverage of the ALC reveals as the quality of CG decreases the leverage for five companies are decreases and for other six increases as presented in Figure 1.

**Figure 1: Comparing Quality Corporate Governance and Leverage of Agricultural Listed Companies**

The same as previous (i.e. Table 2), Table 3 presents the descriptive data but for agricultural non-listed companies. Nonetheless, the capital structure variables in this table exhibited a better association with the quality of CG in non-listed agricultural companies in comparing to the data presented in table 3.

**Table 3: Agricultural Non-Listed Companies Quality of CG disclosure and Capital Structure**

<table>
<thead>
<tr>
<th>Company</th>
<th>CDS</th>
<th>Log CDS</th>
<th>Percentage</th>
<th>Working capital</th>
<th>Leverage</th>
<th>Growth (Capital Expenditure)</th>
<th>Investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>N04</td>
<td>87</td>
<td>1.940</td>
<td>65.90%</td>
<td>38032750</td>
<td>0.383</td>
<td>8.476</td>
<td>0.089</td>
</tr>
<tr>
<td>N08</td>
<td>40</td>
<td>1.602</td>
<td>30.30%</td>
<td>-47769000</td>
<td>0.540</td>
<td>15.258</td>
<td>0.003</td>
</tr>
<tr>
<td>N02</td>
<td>35</td>
<td>1.544</td>
<td>26.50%</td>
<td>67863000</td>
<td>0.462</td>
<td>18.062</td>
<td>0.268</td>
</tr>
<tr>
<td>N07</td>
<td>29</td>
<td>1.462</td>
<td>22.00%</td>
<td>197428250</td>
<td>0.431</td>
<td>17.109</td>
<td>0.104</td>
</tr>
<tr>
<td>N01</td>
<td>21</td>
<td>1.322</td>
<td>15.90%</td>
<td>40770250</td>
<td>0.691</td>
<td>11.970</td>
<td>0.003</td>
</tr>
<tr>
<td>N06</td>
<td>20</td>
<td>1.301</td>
<td>15.20%</td>
<td>67184000</td>
<td>0.532</td>
<td>17.164</td>
<td>0.067</td>
</tr>
<tr>
<td>N09</td>
<td>17</td>
<td>1.230</td>
<td>12.90%</td>
<td>21396250</td>
<td>0.291</td>
<td>11.393</td>
<td>0.038</td>
</tr>
<tr>
<td>N05</td>
<td>13</td>
<td>1.114</td>
<td>9.80%</td>
<td>26666023</td>
<td>0.717</td>
<td>16.686</td>
<td>0.085</td>
</tr>
<tr>
<td>N03</td>
<td>8</td>
<td>0.903</td>
<td>6.10%</td>
<td>245046940.8</td>
<td>0.202</td>
<td>18.198</td>
<td>0.592</td>
</tr>
<tr>
<td>Average</td>
<td>30</td>
<td>0.227</td>
<td>72957607.08</td>
<td>0.472</td>
<td>14.924</td>
<td>0.139</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>8</td>
<td>0.061</td>
<td>-47769000</td>
<td>0.202</td>
<td>8.476</td>
<td>0.003</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>87</td>
<td>0.659</td>
<td>245046940.8</td>
<td>0.717</td>
<td>18.198</td>
<td>0.592</td>
<td></td>
</tr>
<tr>
<td>STD</td>
<td>23.712</td>
<td>0.180</td>
<td>91377745.39</td>
<td>0.170</td>
<td>3.470</td>
<td>0.187</td>
<td></td>
</tr>
<tr>
<td>Skw</td>
<td>2.011</td>
<td>2.011</td>
<td>1.043211467</td>
<td>-0.023</td>
<td>-0.941</td>
<td>2.164</td>
<td></td>
</tr>
</tbody>
</table>
As included in Figure 2, the quality of CG disclosure of NON-LISTED COMPANIES and leverage shows the same mix results as their listed counterparts of listed companies. The same numbers of 5 non-listed companies’ leverages are decreased as the level of CG disclosure quality drops whiles the other four non-listed companies show opposite behaviour.

**Figure 2: Comparing Quality Corporate Governance and Leverage of Non-listed Companies**

Statistical analysis

As considered by Deloitte (Deloitte Top 200) agriculture companies are among the businesses that demand a significant amount of assets (property, plant, and equipment) consequently, their reported ROA are much lower than their counterparts other industries such as software businesses. As a result, when reading Table 4, this general idea should be considered relevant. Table 4 presents a summary of descriptive statistics for the dependent, independent, and control variables on the period of 2012-2015 for New Zealand Agricultural companies. ROA mean (0.25) included in this table is calculated based on four years financial data which is comparable to the average of means of ROA for all New Zealand companies in the same four years which are 12.20. The results related to ROA included in Table 4 prove that the mean of ROA is much lower than the country wide same ration but it is in the line of findings of Deloitte Top 200. The ROA means for NZX listed companies is reported as 8.11 for 2005 to 2016 (Duppati et al., 2017)

Director ownership and compensation are very low as the mean is 0.02 while the board size is less high, the mean number of the directors on the board, as included in table 4 is 7.45.

---

2 Note: This study uses Bloomberg data for comparison of mean with ALL other NZX listed companies.
Duppati et al. (2017) reported 6.07 as the mean of board size for NZX listed companies, which lower than the findings of this study. Mean of independent directors on board is 0.37 which indicates that a very small portion of the agricultural companies board is devoted to such directors. Independent directors are in the position to provide more time for monitoring the company's activities. Nevertheless, if the directors including independent directors are interlocked and then their role as scrutinize the company's activities is compromised. The data for interlock directors is not publicly available. Study of Roudaki, Bhuiyan, and Uddin (2015) reveals that NZX listed companies are significantly interlocked, while interlocked negatively impacted the FP.

This study shows that on average only 0.05 percent of agricultural companies' Board of Directors is occupied by female directors. This figure for all NZX listed is 0.77 which indicates that agricultural companies are lacking behind in providing chances for women glass ceiling.

The results indicating that the agricultural companies’ mean of growth was 14.46 in the period of 2012 to 2015, while result taken from Bloomberg data reveals that the NZX listed firm growth for the same period has been 7.63 which indicating a higher rate of growth for agricultural companies.

Mean of working capital in agricultural companies was 15.04 while Bloomberg data show that the same mean for all New Zealand companies in the same period was 11.04. This means that agricultural companies are more stable and keep relatively more current assets. Consider the faster rate of growth in this sector, as explained above, one may say that the excess current assets may be kept in form of inventory to facilitate more rapid growth.

This study reveals that agency cost (asset turnover as the proxy) shows no significant relationship with ownership and compensation structures. If the number of shares and amount of compensation assigned to directors considered to be based on the directors’ expertise the results of this study are comparable with Reddy and Locke (2014). In a relatively small sample of co-operative mutual securities in New Zealand, they reported a negative relationship between the increase in the expertise of independent directors’ member and agency costs. However, the nature of businesses is not similar. Agricultural companies are sharing a different organizational culture.
The mean of leverage for agricultural companies is 0.48 while Duppati et al. (2017) results show slightly higher mean (i.e. 5.3) for the same ration but for all NZX listed.

Table 4: Descriptive statistics of agricultural companies for the period of 2012-2015

<table>
<thead>
<tr>
<th></th>
<th>Obs</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>SD</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROA</td>
<td>80</td>
<td>-0.49</td>
<td>1.334</td>
<td>0.25</td>
<td>0.32</td>
<td>&quot;</td>
</tr>
<tr>
<td>Agency Cost:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asst. Turn Over (ATO)</td>
<td>80</td>
<td>0.01</td>
<td>5.63</td>
<td>1.49</td>
<td>1.20</td>
<td>1.41</td>
</tr>
<tr>
<td>Ownership Structure:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Director Ownership (DIR OWN)</td>
<td>80</td>
<td>0.00</td>
<td>0.62</td>
<td>0.02</td>
<td>0.07</td>
<td>1.04</td>
</tr>
<tr>
<td>Compensation Structure:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Director Remuneration (DIR REM)</td>
<td>80</td>
<td>0.00</td>
<td>0.02</td>
<td>0.02</td>
<td>0.01</td>
<td>2.14</td>
</tr>
<tr>
<td>Capital Structure:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working Capital (log)</td>
<td>80</td>
<td>0.00</td>
<td>21.67</td>
<td>15.04</td>
<td>6.76</td>
<td>1.23</td>
</tr>
<tr>
<td>Leverage</td>
<td>80</td>
<td>0.09</td>
<td>1.46</td>
<td>0.48</td>
<td>0.25</td>
<td>1.56</td>
</tr>
<tr>
<td>Growth</td>
<td>80</td>
<td>0.00</td>
<td>20.67</td>
<td>14.46</td>
<td>5.65</td>
<td>1.26</td>
</tr>
<tr>
<td>Board Structure:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Board Size (BD SIZE)</td>
<td>80</td>
<td>0.00</td>
<td>14.00</td>
<td>7.45</td>
<td>2.26</td>
<td>1.40</td>
</tr>
<tr>
<td>Board Independence (BD IND)</td>
<td>80</td>
<td>0.00</td>
<td>1.00</td>
<td>0.37</td>
<td>0.24</td>
<td>1.24</td>
</tr>
<tr>
<td>Gender Diversity (Women %)</td>
<td>80</td>
<td>0.00</td>
<td>0.38</td>
<td>0.05</td>
<td>0.87</td>
<td>1.12</td>
</tr>
<tr>
<td>External Audit Structure:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auditor Remuneration (AUD REM)</td>
<td>80</td>
<td>10.83</td>
<td>15.69</td>
<td>12.47</td>
<td>0.96</td>
<td>1.12</td>
</tr>
</tbody>
</table>

Table 5 presents the Pearson correlation between dependent, independent and control variables of the study. Considering the statistical model, the results show a positive statistically significant relationship between return on assets of agricultural companies with director compensation, leverage, and growth of the company. ROA has negatively correlated (-0.30) with the percentage of the woman on Board. This result is better than Duppati et al. (2017) result that no correlation has observed (-0.007). In this study and Duppati et al. (2017) research no statistically meaningful relationship observed between company leverage and women directorship while the low correlations in both studies are negative (-0.20 and -0.017 respectively). Other observations on the variables of the study such as agency cost, ownership, compensation, capital, board, and external audit structure are not presented significant relationship with the company ROA. Nevertheless, in the US environment, Paulson et al. (2013) indicators these companies performed better than all counterpart firms from other industries.
Table 5: Pearson correlation between dependent, independent and control variables

<table>
<thead>
<tr>
<th></th>
<th>ROA</th>
<th>DIR_OWN</th>
<th>DIR_COMP</th>
<th>BD_SIZE</th>
<th>BD_IND</th>
<th>Women %</th>
<th>AUD_REM</th>
<th>Asst. Turn Over</th>
<th>Working Capital</th>
<th>Leverage</th>
<th>Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROA</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIR_OWN</td>
<td>-0.11</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIR_COMP</td>
<td>0.29*</td>
<td>-0.09</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BD_SIZE</td>
<td>-0.05</td>
<td>0.02</td>
<td>-0.26*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BD_IND</td>
<td>0.09</td>
<td>-0.04</td>
<td>0.2</td>
<td>-0.32*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women %</td>
<td>-0.30*</td>
<td>0.1</td>
<td>-0.06</td>
<td>0.12</td>
<td>-0.22</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AUD_REM</td>
<td>0.01</td>
<td>0.05</td>
<td>-0.15</td>
<td>-0.01</td>
<td>0.07</td>
<td>-0.1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asst. Turn Over</td>
<td>0.16</td>
<td>0.07</td>
<td>-0.1</td>
<td>0.21</td>
<td>-0.22</td>
<td>-0.22*</td>
<td>-0.08</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working Capital (ln)</td>
<td>-0.16</td>
<td>-0.26*</td>
<td>-0.32*</td>
<td>0.37*</td>
<td>-0.08</td>
<td>0.09</td>
<td>0.06</td>
<td>0.02</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leverage</td>
<td>0.31*</td>
<td>0.03</td>
<td>0.33*</td>
<td>-0.18</td>
<td>0.05</td>
<td>-0.2</td>
<td>-0.06</td>
<td>0.27*</td>
<td>0.02</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Growth</td>
<td>0.23*</td>
<td>0.03</td>
<td>-0.22</td>
<td>0.36*</td>
<td>-0.16</td>
<td>-0.03</td>
<td>0.07</td>
<td>0.07</td>
<td>0.28*</td>
<td>-0.12</td>
<td>1</td>
</tr>
</tbody>
</table>

*Correlation is significant at the 0.05 level (2-tailed).

Diagnostic Test and Empirical Results

In order to achieve the second objective of the study, the study implemented the OLS estimators. However, as argued by Wintoki, Linck, and Netter (2012), OLS is best linear estimator only when its assumptions are met. To test the OLS assumptions, this study uses two test as shown in Table 6. First, one is the Wooldridge test of auto correlation to determine the serial correlation among data. The results as shown in Table 6 reveal significant p-value (0.0086) at one percent level of significance – confirming the presence of serial correlation in the model. Second, the study uses Breusch-Pagan test to check the heteroscedasticity of the data (Nadeem et al., 2017), once again the results in Table 6 reject the null hypothesis, thus suggesting the presence of heteroscedasticity in our data set.

Table 6: Diagnostic Tests

<table>
<thead>
<tr>
<th>Wooldridge test for autocorrelation</th>
<th>Breusch-Pagan/Cook-Weisberg test for heteroscedasticity</th>
</tr>
</thead>
<tbody>
<tr>
<td>F Statistics</td>
<td>8.584</td>
</tr>
<tr>
<td>degree of freedom</td>
<td>1</td>
</tr>
<tr>
<td>Prob. &gt; F</td>
<td>0.0086</td>
</tr>
<tr>
<td>H0: No first order Serial Correlation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5.64</td>
</tr>
<tr>
<td></td>
<td>degree of freedom</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Prob. &gt; Chi2</td>
</tr>
<tr>
<td></td>
<td>0.0176</td>
</tr>
<tr>
<td></td>
<td>H0: Constant variance, Variables: Fitted with ROA</td>
</tr>
</tbody>
</table>
Note: Both tests reject null hypothesis showing presence of autocorrelation and heteroscedasticity.

Both diagnostic tests restrict study in applying traditional OLS. Therefore, the study opted for GLS panel data models include fixed effect and random effect model. GLS is one of the estimation techniques which is applied when the variance of observations are unequal or when there are chances of a certain degree of correlation between the variables (Gujarati, 2004). These models have the ability to control the auto correlation and heterogeneity, which can produce a biased result by using traditional OLS estimation (Bell & Jones, 2015; Gujarati, 2004). The study uses the Hausman test in order to check the statistical significance of better model among fixed and random effect. The Hausman test result presented in column 6 of Table 7 reveals the insignificant result (p =0.2592), thus accept the null hypothesis that random effect model is more appropriate in explaining the effect of CG characteristics on firm financial performance. However, for comparison purpose, the OLS and fixed effect model results are also documented in Table 7.

The study uses four random effect model (model 2, 3, 4 and 4) for equation 1 for in-depth analysis. Model 2 includes only the control variable for the study and regress it over firm performance. The result reveals that Growth as a factor is statistically significant with firm performance. In Model 3, the study includes only the independent variables of the study by excluding control variable from equation 1. The results reveal that women board percentage (Woman%) is negatively significant (p= 0.001) with ROA at 5 percent level of significance. This means that if the proportion of women on the firm’s board increases it reduces the firm’s return on the asset (ROA). These results are consistent with the most recent study of Shehata, Salhin, and El-Helaly (2017), which they find the negative association between various gender diversity and firm performance in the UK SME companies. All other CG characteristics such as director ownership and compensation, board size and independence, and audit remuneration do not generate the significant result in the individual settings.

The model 5 represents the main result of the equation 1, which includes both control and independent model. The result presented in column 6 reveals that Director Ownership and women board percentage (Woman%) reveal the negative but significant (p = 0.045, 0.024) impact on the firm performance respectively. The negative association of director ownership with ROA suggests that presence of agency problem in agriculture companies. This means higher directors ownership will entrench management and create agency
problem, which will result in the lower financial performance Bathula (2008). This finding is consistent with the past study conducted in New Zealand by Bathula (2008) who found a negative association between director ownership and firm performance especially for companies with smaller boards.

The negative association of women board percentage (Woman%) reflects that any increases in the percentage of women on the board decrease the firm’s return on the assets (ROA). These results are consistent with the most recent study of Shehata et al. (2017) and (Carter, D'Souza, Simkins, & Simpson, 2010). Carter et al. (2010) argued that “theory and evidence of group dynamics suggest that board diversity may have a positive and negative effect on firm performance” (p. 399). Nevertheless, it is perceived that Woman% is an important mechanism for the firm from agency or stakeholder perspective. There is a valid explanation for these results. First, the study findings are based on the board women percentage and ROA, therefore including women in board might bring resources to the firm such as decision-making and external networking. However, it is argued that it takes some time for these resources to be utilised and demonstrate an effect on the terms of financial performance proxies such as ROA (Ali, Ng, & Kulik, 2014). In addition, women board percentage result remains negative in OLS and FE model, showing the robustness of this finding.

The other CG characteristics including directors compensation, board size, and auditor remuneration are not statistically significant (p= 0.314, 0.61 & 0.55) with ROA. One possible explanation is that the companies are not considering to disclose all information about these CG characteristics for two reasons. In the first instant non-listed companies are adopting CG guidelines on the voluntary basis and the second contributed factor is personal privacy that the NZ company are sensitive to the issue. In the context of "comply or explain" environment of implementing CG guidelines by the listed companies, their preference is to publish less information in this area (Roudaki & Shahwan, 2017).

It is generally perceived that listed firms have better CG practices and these practices are often associated with the higher firm performance. This study included the dummy variable for the listing status of the companies as 1 if a company is listed on NZX or 0 otherwise. The results presented in the last column of Table 7 reveal the same result as the main results documented in column 6 of Table 7. However, the company listed status shows statistically
negative significant (0.080) at 10 percent level of significance with ROA. This indicating that listing on NZX is negatively affecting the relationship between CG and Firm performance, it also reverses the listing coding (1 non-listed, 0 otherwise) to confirm that the results, while they show a positively significant. The possible explanation for these results is that as mostly non-listed companies are family oriented and family firm monitoring and control is more efficient than listed counterparts (Frederiek, 2007).

Table 7: Effect of corporate governance on firm performance (2012-2015)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1 DV: ROA</th>
<th>Model 2 DV: ROA</th>
<th>Model 3 DV: ROA</th>
<th>Model 4 DV: ROA</th>
<th>Model 5 DV: ROA</th>
<th>Model 6 DV: ROA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OLS</td>
<td>RE</td>
<td>RE</td>
<td>RE</td>
<td>RE</td>
<td>RE</td>
</tr>
<tr>
<td>Control Variables</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-0.56</td>
<td>-0.85</td>
<td>0.06</td>
<td>-1.23</td>
<td>-0.58</td>
<td>-0.61</td>
</tr>
<tr>
<td></td>
<td>(0.574)</td>
<td>(0.396)</td>
<td>(0.952)</td>
<td>(0.224)</td>
<td>(0.565)</td>
<td>(0.540)</td>
</tr>
<tr>
<td>Asst. Turn Over</td>
<td>0.81</td>
<td>0.83</td>
<td>0.52</td>
<td>0.81</td>
<td>0.57</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.422)</td>
<td>(0.405)</td>
<td>(0.607)</td>
<td>(0.416)</td>
<td>(0.570)</td>
<td></td>
</tr>
<tr>
<td>Working Capital (ln)</td>
<td>-0.41</td>
<td>-0.62</td>
<td>-0.90</td>
<td>-0.49</td>
<td>-0.33</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.686)</td>
<td>(0.534)</td>
<td>(0.374)</td>
<td>(0.624)</td>
<td>(0.745)</td>
<td></td>
</tr>
<tr>
<td>Leverage</td>
<td>1.21</td>
<td>2.55</td>
<td>2.09</td>
<td>0.88</td>
<td>0.87</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.230)</td>
<td>(0.011)**</td>
<td>(0.042)**</td>
<td>(0.377)</td>
<td>(0.387)</td>
<td></td>
</tr>
<tr>
<td>Growth</td>
<td>2.90</td>
<td>1.78</td>
<td>1.04</td>
<td>1.74</td>
<td>1.78</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.005)**</td>
<td>(0.074)*</td>
<td>(0.305)</td>
<td>(0.081)*</td>
<td>(0.075)*</td>
<td></td>
</tr>
<tr>
<td>IV: Independent Variables</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Director Ownership</td>
<td>-0.87</td>
<td>-1.54</td>
<td>-0.78</td>
<td>-2.00</td>
<td>-2.02</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.385)</td>
<td>(0.123)</td>
<td>(0.439)</td>
<td>(0.045)**</td>
<td>(0.043)**</td>
<td></td>
</tr>
<tr>
<td>Director Compensation</td>
<td>1.79</td>
<td>1.33</td>
<td>2.54</td>
<td>0.88</td>
<td>1.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.079)*</td>
<td>(0.183)</td>
<td>(0.014)**</td>
<td>(0.377)</td>
<td>(0.314)</td>
<td></td>
</tr>
<tr>
<td>Board Size</td>
<td>-0.23</td>
<td>0.47</td>
<td>-0.59</td>
<td>-0.21</td>
<td>-0.56</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.819)</td>
<td>(0.638)</td>
<td>(0.559)</td>
<td>(0.832)</td>
<td>(0.572)</td>
<td></td>
</tr>
<tr>
<td>Board Independence</td>
<td>0.38</td>
<td>-0.14</td>
<td>0.38</td>
<td>0.57</td>
<td>0.51</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.704)</td>
<td>(0.885)</td>
<td>(0.707)</td>
<td>(0.569)</td>
<td>(0.610)</td>
<td></td>
</tr>
<tr>
<td>Women % on Board</td>
<td>-1.68</td>
<td>-3.20</td>
<td>-1.58</td>
<td>-2.25</td>
<td>-2.81</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.074)*</td>
<td>(0.001)**</td>
<td>(0.120)</td>
<td>(0.024)**</td>
<td>(0.005)**</td>
<td></td>
</tr>
<tr>
<td>Auditor Remuneration</td>
<td>0.31</td>
<td>0.06</td>
<td>0.76</td>
<td>0.32</td>
<td>0.60</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.761)</td>
<td>(0.952)</td>
<td>(0.452)</td>
<td>(0.748)</td>
<td>(0.550)</td>
<td></td>
</tr>
<tr>
<td>Company Dummy1</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>(1 listed, 0 Non-listed)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wald Chi2/ F-test</td>
<td>2.59</td>
<td>40.04</td>
<td>27.06</td>
<td>3.10</td>
<td>116.17</td>
<td>130.29</td>
</tr>
<tr>
<td></td>
<td>(0.0082)**</td>
<td>(0.00)</td>
<td>(0.0001)**</td>
<td>(0.0031)</td>
<td>(0.000)</td>
<td>(0.000)**</td>
</tr>
<tr>
<td>R²</td>
<td>29.53</td>
<td>0.196</td>
<td>0.167</td>
<td>0.177</td>
<td>0.295</td>
<td>0.307</td>
</tr>
<tr>
<td>Hausman Test</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>13.54</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: These Symbols *** *, ** represent statistical significance at 1, 5 and 10 percent level of significance (2-tail tests).

Conclusion and remarks

This study elaborates on the role of corporate governance principles and guidelines on the firm performance in the context of New Zealand agricultural large companies. The journey started with a qualitative research considering the quality of disclosures provided by these listed and non-listed companies (which the results have been published), then this paper concentrated on the
relationship of CG characteristics and FP variables in the same environment. Descriptive results indicating that there is no relationship between the level of CG compliance with capital structure variables such as working capital, leverage and growth (capital expenditure), and investment. While New Zealand agricultural companies are capital intensive than other businesses in the country, their ROA is much lower than the country wide benchmark. Director ownership and compensation of these companies are low, but their board size is relatively larger than their counterparts from other economic sectors. Nevertheless, the proportion of independent directors on the board of directors is lower than other businesses, indicating a possible compromise on the board monitoring that may indirectly impact firm performance. In terms of board composition, agricultural companies lacking behind in providing chances for the woman to act as a member of director boards. Nevertheless, growth and women directorship show a significant relationship with return on assets while directors’ compensation has a relationship with the firm performance.

On average, working capital in agricultural companies is higher than other companies in the country indicating relatively more financial stability and support rapid financial growth. While the rate of growth for agricultural companies is higher than New Zealand benchmark, the mean of agency cost shows no significant relationship with ownership and compensation structures of the company.

The Diagnostic Test shows that CG characteristics such as director ownership and compensation, board size and independence, and audit remuneration do not generate the significant result in the individual settings. The negative association of director ownership with ROA suggests that presence of agency problem in agriculture companies. Finally, the study reveals that listed firms have better CG practices than non-listed counterparts and these practices are often associated with the higher firm performance.

Statistical results indicating a positive significant relationship between return on assets of agricultural companies with director compensation, leverage, and growth of the company. ROA has a negative statistical relationship with the proportion of the number of woman on Board. Nevertheless, agency cost, ownership, compensation, capital, board, and external audit structure are not presented significant relationship with the company ROA.

A small number of agricultural companies and lack of complete published financial information acts as two limitations to this study. Due to the size of New Zealand economy and a limited number of listed agricultural companies study turn attention to financial information of large non-listed companies available on the company websites; however, a careful consideration was to obtain as much as possible reliable information. Therefore, for generalization, these limitations should be considered relevant.
The results of this research project are beneficial for authorities and agricultural company directors in implementing CG principles and guidelines to empower such companies in the international competition.
References


THE ROLE OF MULTI-LEVEL CAPITAL MARKET IN INVESTOR REACTION TO THE SPECIFIC DISCLOSURE OF SOCIAL RESPONSIBILITY: EVIDENCE IN CHINA

Shiyu Wang
Southeast University, China, wsv_seu@163.com

Guanzhen Wang
Southeast University, China, wguanzhen1993@163.com

Zhibin Chen
Southeast University, China, seuczb@126.com

ABSTRACT

In this paper, from the perspective of information economics, we provide unique evidence in the Chinese multi-level capital market on the investor reaction to the specific disclosure of CSR. We speak to the issue of whether a specific CSR disclosure is a desirable feature of qualitative disclosure and whether the benefit of disclosure strategy is constant. To address this research question, first we explore the investors’ behavior in a multi-level capital market when they get CSR information. Then, we examine the degree of decision deviation due to investors’ rationality and its correlation to the specification level of CSR disclosure. Moreover, we do a further research considering the pollution haze of the environment. Therefore, we investigate the moderating effect of the air pollution which every Chinese enterprise and investor is facing.

On the basis of the information economics mathematic model, by combining the event study and panel data analyses, this paper investigates the preference segmentation and rationality segmentation roles of a Chinese multi-level capital market in investor reaction to the CSR disclosure, using data from 2010 to 2016 in the Chinese Mainboard and SME-GEM A-share companies. After a series of tests and analyses, we have come to the following conclusions—First, in Mainboard, the value of investor reaction is positively related to the disclosure of CSR. That is to say, Mainboard investors tend to consider the social responsibility as a desirable feature of their invested firms. While in SME-GEM this relation is insignificant and suggests that SME-GEM investors have an uncertain evaluation of the CSR disclosure. This result shows the investor preference segmentation role of a multi-level capital market. Second, the specification level of CSR disclosure is insignificantly associated with the deviation of investor reaction in Mainboard, but significantly and negatively related in SME-GEM. In other words, the Chinese Mainboard investors are basically Bayesians and are rational enough to analyze different kinds of disclosure. But SME-GEM investors are under reactive heuristics and make decisions based on general disclosure. This result suggests the investor rationality segmentation role of a multi-level capital market.

In additional analyses, we also consider the pollution haze of the Chinese environment. Testing the moderating effect of this nature environment, we find that: (1) in Mainboard, the pollution haze of the environment intensifies the investors’ positive judgement of CSR information; (2) the pollution haze of the environment does not change the rationality of the Mainboard Bayesian investors; (3) against our expectations that pollution haze may change the investors’ attitude to CSR behavior, SME-GEM investors are under reactive, regardless the pollution haze moderating effect; (4) in a serious pollution haze group, SME-GEM investors are trying to get detailed CSR information, but in a lighter pollution haze group, they keep making their decisions based on general disclosure.

This paper makes several contributions. From a micro point of view, our conclusions could offer the reference to the disclosure strategy of CSR for enterprises in different capital markets, as well as give some guidance to the Chinese investors in order to diagnose themselves and make more rational investment decisions. Also, this paper gives evidence that Chinese pollution haze does affect the investor decisions in the Chinese capital market, which may be a silver lining forming a virtuous circle. From a macro point of view, this paper provides evidence from our certain perspective to depict the investor preference and rationality characteristics of a Chinese premature multi-level capital market. Using these results, we can do further research and compare the Chinese evidence with a mature capital market and predict the development direction of an emerging capital market.
The Role of Multi-Level Capital Market in Investor Reaction to the Specific Disclosure of Social Responsibility: Evidence in China

Abstract: This paper investigates the preference segmentation and rationality segmentation roles of the Chinese multi-level capital market in investor reaction to CSR disclosure. By combining an event study and a panel data analysis, using data from 2010 to 2016 in the Chinese Mainboard and SME-GEM A-share companies we found out that (1) The Mainboard investors tend to judge the social responsibility as a desirable feature of their invested firms, but SME-GEM investors have an uncertain evaluation of the social responsibility disclosure, which shows an investor preference segmentation role of a multi-level capital market; (2) The Chinese Mainboard investors are basically Bayesians, who are rational enough to analyze different kinds of CSR disclosure, but SME-GEM investors are underreacting heuristics, who make decisions based on the general disclosure, which suggests an investor rationality segmentation role of a multi-level capital market; (3) The pollution haze of the Chinese environment exerts a moderating effect on the investor preference and rationality, when they judge CSR disclosure in a multi-level capital market, which may be a silver lining forming a benign effect.

Key words: Multi-Level Capital Market; Investor Reaction; Corporate Social Responsibility (CSR); Specific Disclosure; Pollution Haze

1. Introduction

This paper provides unique evidence in the Chinese multi-level capital market on the investor reaction to the specific disclosure of social responsibility. While prior extensive researches have examined how investors react to CSR information, very few is known about taking a special perspective on the role of multi-level capital market in the world’s biggest emerging market. In the last 3 years, the quality of Chinese listed company social responsibility performance has experienced a growth spurt, from 7.27 to 38.02 on average, and in GEM, the average quality has even risen from 4.58 to 39.56 (Institute of Finance, Chinese Academy of Social Sciences, 2014/2015/2016). As for the disclosure system, at first, Guidance on Social Responsibility of Listed Companies in Shenzhen Stock Exchange was published in 2006, and two years later Shanghai Stock Exchange published a similar guidance. Only about 260 listed companies are required to disclose their mandatory report of social responsibility. But the true situation in China is that more than one third of enterprises in Mainboard, SME board, and GEM volunteered to disclose their specific social responsibility activities. The reason why they chose to disclose their social responsibility information is the value and signal effect of the information. In 2009, China established its multi-level capital market which was designed to match more efficiently investors with financiers. In a different capital market, investors have different preference and rationality and enterprises have a different life cycle and value determinants. The current market environment puts forward burning questions that whether an enterprise should shoulder its social responsibility, or disclose its social responsibility, and how differently investors would respond to the different types of CSR disclosure.

In this paper, from the perspective of information economics, we analyze which strategy would an investor choose while facing a specific disclosure of CSR in a specific capital market. We speak to the issue of whether a specific social responsibility is a desirable feature of qualitative disclosure and whether the benefit of disclosure strategy is constant. To address this research question, first we explore the investors’ behavior in a multi-level capital market when they get CSR information. Then, we examine the degree of decision deviation due to investors’ rationality and
its correlation to the specification level of social responsibility disclosure. Moreover, we do a further research considering the pollution haze of the environment. Therefore, we investigate the moderating effect of the air pollution which every Chinese enterprise and investor is facing.

According to the CSR theories summarized by Garriga and Mele (2004), the specific disclosure of CSR information could result in a different mapping of four dimensions related to profits, political performance, social demands and ethical values by information users. To some extent, investors and a particular firm they invest in can be regarded as psychologically close (Hope, 2016) ---and corporate insider, the social responsibility is a kind of external activity whose disclosure benefit depends on the judgement whether investors think it is an instrument for wealth creation or an arena of social and political power, or a mask of a real value-creating ability. In other words, given a certain disclosure of social responsibility, the different reaction of investors would lead to a different abnormal stock return, both in quality and quantity.

To empirically examine the hypotheses based on CSR theories and test the economic consequences, we create a most detailed index to measure the specific social responsibility disclosure. Unlike the earnings quality information or risk factor information, the social responsibility information has a special feature that the signal effect is determined to a large extent by the investors’ personal and psychological judgment. Considering this and the Construal Level Theory (Trope and Liberman, 2010), we do not divide the social responsibility disclosures into mandatory and voluntary, but we concentrate on their specification level. As part of an annual report, we use 13 dummy variables as the original data to build a composite indicator, including whether the disclosed social responsibility content and other 12 specific items about CSR performance. In order to assess the objective validity of the constructed indicator, we use the sequence correlation coefficient to carry on the reliability analysis to our constructed indicator. We divide our random selected sample firm-years into 10 sub-samples, and randomly assign these sub-samples to 10 individuals with different occupational backgrounds, scoring separately and a final set of comparative results is obtained, suggesting that our measure has external validity.

In our empirical analysis, we introduce a scenario analysis consisting of event analysis and panel regression. At first, we use an event analysis to measure the investor reaction in the Chinese multi-level capital market. The event is defined by the disclosure of social responsibility and we calculate the cumulative abnormal return (both real value and absolute value) on account of this disclosure as the investor reaction. This step is to simulate an immediate response with investors in a scenario of social responsibility disclosure. Then, we build a panel regression which contains a cumulative abnormal return, social responsibility disclosure (including both weather disclosed and the specification level of disclosure) and other control variables to obtain regression coefficients and we use them to verify our hypotheses about the investors’ preference and rationality segmented by the multi-level capital market.

In our further research, we add an additional analysis related to pollution haze. As we all know, the most serious social problem in China is the choking pollution haze. One of the most important things related to both CSR and citizen rights, is to improve the air quality. We suppose that if the invested enterprises registered in regions where there is more intense haze pollution the investors would be more likely to hold a positive evaluation of their social responsibility information. Although many previous researches like Dean (2004), Flammer (2011), and Fannon (2014) have come to the conclusion that in order to shoulder their environment protection responsibility, the enterprises would get a more positive evaluation from investors regarding the enterprise value, there are few evidence about the relation between the pollution level and the investor evaluation of CSR information. To investigate the haze pollutions in a listed company registration place, we hand and collect the Air Pollutant Emissions situation in the Chinese
mainland provincial administrative regions in China Statistical Yearbook from 2010 to 2015 called HazIndex. We use HazIndex as a situational factor which may influence the investor reactions to CSR disclosure in a multi-capital market. The further conclusions give us a hint to build an influence loop among the environment, enterprises and citizens in a scenario of a multi-level capital market.

Using data from 2010 to 2016 in the Chinese Mainboard and SME-GEM A-share companies we come to the conclusion that Mainboard investors tend to judge the social responsibility as a desirable feature of their invested firms but SME-GEM investors have an uncertain evaluation of the social responsibility disclosure. Moreover, the Chinese Mainboard investors are basically Bayesians, who are rational enough to analyze different kinds of CSR disclosure. But SME-GEM investors are underreacting heuristics, who make decisions based on the general disclosure. In addition to that, we found that the pollution haze of the Chinese environment exerts a moderating effect on the investor preference and rationality when they judge the CSR disclosure in a multi-level capital market.

This paper makes several contributions. First, we take the perspective of information economics as a starting point, and test the Construal Level Theory of behavioral finance. Our evidence in a Chinese multi-level capital market shows the relative validity of the market effectiveness theory, investor preference theory and investor rational hypothesis.

Secondly, from a micro point of view, our conclusions could offer the reference to the disclosure strategy of social responsibility for enterprises in different capital markets, as well as give some guidance to the Chinese investors in order to diagnose themselves and make more rational investment decisions. Also, this paper gives some evidence of the benign effect caused by non-financial factors. In particular, Chinese pollution haze does affect the investor decisions in the Chinese capital market, which may be a silver lining forming a virtuous circle.

Thirdly, from a macro point of view, this paper provides evidence from our certain perspective to depict the investor preference and rationality characteristics of a Chinese premature multi-level capital market. Using these results, we can do further research and compare the Chinese evidence with a mature capital market and predict the development direction of an emerging capital market.

The next section provides a background and develops our hypotheses. In Section 3 we explain the empirical design and descriptive statistics. The empirical results are presented in Section 4. Section 5 is a further study about the pollution haze moderating effect. We finish the paper in Section 6.

2. Background, Literature Review, and Hypotheses Development

2.1 Institutional Background

In this paper, we fully consider the institutional background of the Chinese capital market. We believe that there are two characteristic Chinese capital markets that would significantly affect our analysis and conclusions. The first one is the emerging market stage which determines the relation between information and stock price. The other is the multi-level capital market which relates to the different investor choices.

It is well-known that China is the biggest emerging capital market. In this paper, we want to investigate those characteristics via an information economics and behavioral finance perspective. The most important event happened in the Chinese capital market in 2015; the so-called stock market crash in June. That summer it experienced thousands
of daily limits-up and limits-down. Some scholars attribute it to the misty macroeconomic trends, illegal trade, imperfect mechanism system and inefficient government regulation. However, we think that this phenomenon reflect investor sentiment was out of control. For one thing, the stock price failed to reveal the real information of an enterprise. The pricing function is out of order. For another, there is an obvious herd behavior and irrational decision-making model among our emerging market investors.

Until now, China has established a multi-level capital market despite the fact that it is a young, developing one. Taking an official second board market establishment as a milestone, NASDAQ (America) started up in 1971, JASDAQ (Japan) in 1991, AIM (England) in 1995, Neuer (Germany) in 1997 and GEM (China) in 2009. This paper put the transfer board system aside, the main role of a multi-level capital market is, for enterprises, to offer proper financing channels for enterprises in a different life cycle, and, for investors, to match different security with different risk preference, so that, all in all, achieve an optimal allocation of resources. In this institutional background, this paper tries to locate the role of a Chinese multi-level capital market in investor reaction to the specific disclosure of social responsibility.

2.2 Literature Review and Hypotheses Development

The hypotheses examined in this paper are centered on the role of a multi-level capital market in investor reactions to the specific disclosure of social responsibility. In this paper, we believe that the multi-level capital market can exert its influence via two paths: the investor preference and investor rationality. Our hypotheses are developed based on the assumptions that the market possesses in a certain degree of efficiency.

2.1.1 CSR Disclosure, Investor Preference and Reaction in Multi-Level Capital Market

In a different capital market, investors have a different estimation of the social responsibility behavior of an enterprise performance. There are always two contradictory views about the relation between the social responsibility and enterprise value. Some classic researches based on an implicit contract theory, like Cornell and Shapiro (1987), Freeman et al. (2004), and Jo and Harjoto (2011) support that the enterprise value and its social responsibility performance is positively related. However, other scholars hold the opinion that it is a kind of wasting of resources when managements fulfill stakeholders’ needs by social responsibility activities (Holman et al., 1985; Porter and Kramer, 2007; Cronqvist et al., 2009; Becchetti and Ciciretti, 2009). And there is also an uncertain relation between the social responsibility report and stock market performance which depend on the customer awareness (Servaes and Tamayo, 2013), principal-agent issues (Bernea and Rubin, 2010), communication strategies (Morsing and Schultz, 2006). This contradiction stem from different opinions about whether there is a common goal for shareholders and stakeholders.

In capital market in China, Chinese scholars found out that the social responsibility and enterprise value are short-term negatively related and long-term positively related (Li, 2006; Wen and Fang, 2008). And in a statistic yearbook Report on Quality Evaluation of Listed Firms in China (2014–2015), published by The Chinese Academy of Social Sciences Financial Research Institute, claims that short-term investors tend to consider the social responsibility as a value damage signal while long-term investors are more willing to buy securities from enterprises which have high social responsibility quality. Based on this statement, we gather data of turnover rate from Chinese Mainboard, SME board and GEM. From the statistics data (showed in table 1), we found out that the turnover rate from high to low arrangement is GEM, SME board, and Mainboard which suggests, according to previous researches, investors in GEM belong to a more social responsibility-disagree group and Mainboard investors are the opposite, judged by their short-term or long-term investment preference (SME board investors are situated between those two, the same below.).
Table 1  

<table>
<thead>
<tr>
<th></th>
<th>Turnover Rate in Different Capital Market (arithmetic average)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mainboard</td>
<td>2.6254</td>
</tr>
<tr>
<td>SME board</td>
<td>4.6797</td>
</tr>
<tr>
<td>GEM</td>
<td>6.8805</td>
</tr>
</tbody>
</table>

Data Sources: authors collected from CSMAR database.

Based on this investor preference characteristic, we build the following mathematical model to develop our hypothesis 1. The main model inspired by Stiglitz (1971).

1) We suppose that there are 3 kinds of investors in Mainboard market, SME board market and GEM. j, k, l. $x_{j,k,l}$ is the uncertain asset related to the social responsibility that investor j, k, l holds and estimates. $s_i$ is the social responsibility information disclosed by enterprise i, so $s_i$ stands for no social responsibility information disclosed. For investor j, supposes that if $s_i$ is disclosed, the value of $x_j$ would increase correspondingly, $v_{x_j} > 0$. For investor k, supposes $v_{x_k} < 0$. And for investor l, supposes $v_{x_l} = 0$.

2) $v$ is the real value of asset related to social responsibility. It is a random variable distributed normally.

3) We hypothesize that there is another investment opportunity (security of enterprise i) and every type of investors suppose that the expected value $v^*$ is not related to the social responsibility.

Supposing that the investor expectation value of asset $x_{j,k,l}$ is $E\left\{v_{x_{j,k,l}}\mid s_i\right\}$ when $s_i$ is disclosed, and $w^{x_{j,k,l}}$ is the wealth level of investor j, k, l. We could get

\[ E\left\{v_x\mid s_i\right\} > E\left\{v_k\mid s_i\right\} > E\left\{v_l\mid s_i\right\}, w^{x_j} < \frac{E\left\{v_{x_j}\mid s_i\right\}}{v^*} \quad 1-1 \]

\[ E\left\{v_{x_k}\mid s_i\right\} > E\left\{v_{x_l}\mid s_i\right\} > E\left\{v_{x_j}\mid s_i\right\}, w^{x_k} < \frac{E\left\{v_{x_k}\mid s_i\right\}}{v^*} \quad 1-2 \]

\[ \frac{E\left\{v_{x_j}\mid s_i\right\} + E\left\{v_{x_k}\mid s_i\right\}}{2} < E\left\{v_{x_l}\mid s_i\right\} = E\left\{v_{x_j}\mid s_i\right\}, w^{x_l} > \frac{E\left\{v_{x_j}\mid s_i\right\}}{v^*} \quad 1-3 \]

\[ \frac{E\left\{v_{x_k}\mid s_i\right\} + E\left\{v_{x_l}\mid s_i\right\}}{2} < E\left\{v_{x_j}\mid s_i\right\} = E\left\{v_{x_k}\mid s_i\right\}, w^{x_l} > \frac{E\left\{v_{x_k}\mid s_i\right\}}{v^*} \quad 1-4 \]

Therefore, if there is no specific social responsibility information $s_i$ is disclosed, investor j and k would rather buy security from enterprise i. Only investor l would buy security from enterprise i. According to the supposed condition, the wealth level of investor l would be higher than the relative value of the social-responsibility-related asset of enterprise i. i.e. $w^{x_l} > \frac{E\left\{v_{x_k}\mid s_i\right\}}{v^*}$.

Now we suppose that the social responsibility information $s_i$ is perfectly and specifically disclosed. Each investor knows the same responsibility at the same degree. In this situation, investor j would use all his wealth to buy security from enterprise i. However, according to our hypothesis, the wealth of investor j is not enough to buy all security i, so investor l becomes a marginal buyer.

Supposing that the expected payoff of investor j, k, l is $x_{j,k,l} = v^*w^{x_{j,k,l}}$, we would get

\[ \prod x_j = \frac{E\left\{v_{x_j}\mid s_i\right\}}{E\left\{v_{x_j}\mid s_i\right\}} v^*w^{x_j} > v^*w^{x_j} \quad 1-5 \]

\[ \prod x_k = v^*w^{x_k}, \prod x_l = v^*w^{x_l} \quad 1-6 \]

The above discussion leads to our first hypothesis:
**H1:** The value of investor reaction in Mainboard is positively associated with the disclosure of social responsibility, while in GEM is negatively associated with the social responsibility disclosure.

### 2.1.2 Specification Level of CSR Disclosure, Investor Rationality and Reaction in a Multi-Level Capital Market

Furthermore, we do some analysis on investor rationality and specification levels of CSR disclosure. In this step, we assume, divided by information using efficiency, that there are 2 kinds of information users among investors: the heuristic investor (Bernardo and Upton, 1980; Gamble and Allport, 2015) and the Bayesian investor. It is generally acknowledged that in a perfect capital market, the overall strategy choices of the market investors are consistent with the Bayesian rules, so we called them Bayesian investors. However, in the capital market of China, a lot of empirical evidence (Ma, 2016; Wu et al., 2016; Lu and Zhou, 2015) show that investors would not always follow the Bayesian rule and they can be either over reactive or under reactive. Their behaviors are not decided by the information they get, but by the degree of their understanding and rationality. We called them as heuristic investors for their use of information in a gradually heuristic way. According to the research from Wang (2009), Cohen and Kudryavtsev (2012), Mamun et al. (2015) the degree of investor rationality is higher in a mature capital market than in an emerging market, and higher among institutional than individual investors. Following this principle, we investigate the age of the Chinese Mainboard market, SME board market and GEM, as well as the investor structures in these three markets. The statistical data is shown in Table 2. From Table 2 we can infer that investors in the Chinese Mainboard market are closer to Bayesian investors while the investors in GEM are closer to the heuristic investors.

<table>
<thead>
<tr>
<th>Table 2</th>
<th>Market Age and the Percentage of Institutional Investor Shareholdings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Age</td>
</tr>
<tr>
<td>Mainboard</td>
<td>27</td>
</tr>
<tr>
<td>SME board</td>
<td>13</td>
</tr>
</tbody>
</table>

Data Sources: authors collected from CSMAR database.

Also, we add the consideration of the specification levels for the social responsibility disclosure, which is used to explain the common social responsibility knowledge of the environment for both kinds of investors confronted with. In this context, we set more parameters as follows.

4) $x$ is the uncertain asset related to the social responsibility that investors hold, and estimates regardless the type that $j$, $k$, $l$ belong to. $y$ is the uncertain asset not related to the social responsibility that investors hold. And $h$ is the private information of investors about the social responsibility behavior of a certain enterprise. We hypothesize that investors have no private information, $h = 0$. $r$ is the risk tolerance of investors.

5) $n_t$ is the level of specification of $s_t$, $n_t > 0$.

6) $\bar{v}$ is the average value of $v$. $m$ is the accuracy of $\bar{v}$ and it is the investors’ common knowledge about $v$.

7) DRC is the disclosure reactions coefficient, which explains the impact of disclosure of social responsibility $s_t$ on market price.

8) $\pi$ is the percentage of heuristic investors in a capital market and $(1 - \pi)$ is the percentage of Bayesian investors, $0 < \pi < 1$.

9) $\theta$ is the investor reactions to the disclosure of information $s_t$. When $\theta = 1$, we consider an investor as Bayesian. When $\theta > 1$, we consider him as an over reactive heuristic investor. When $\theta < 1$, we consider him as an under reactive investor. We hypothesize that a heuristic investor is not a strictly Bayesian one when and only when he gets
According to the above, we build the second model:
The investor expectation of an enterprise value related to the social responsibility is
\[
E[v|s_t] = \bar{v} + \frac{n_t}{m + n_t}(s_t + \bar{v})
\]
2-1
According to the assets price model, before \( s_t \) disclosure, the asset price (related to social responsibility) is
\[
P_{T-1} = \frac{1}{m + h + (rh)^2t}\left\{m\bar{v} + [h + (rh)^2t]v - \left(\frac{1}{r} + rht\right)x\right\}
\]
2-2
where \( h_j = 0, P_{T-1} = \bar{v} - \frac{1}{r}x \)

After \( s_t \) disclosure, the asset price (related to social responsibility) is
\[
P_{t} = \frac{1}{m + n_t}\left[m\bar{v} + n_t s_t + nn_t(s_t - \bar{v})(\theta - 1) - \frac{1}{r}x\right]
\]
2-3
Thus, the change of asset price result in \( s_t \) disclosure is
\[
\Delta P = P_{t} - P_{T-1} = \frac{n_t}{m + n_t}\left[\pi(1 - \pi)(s_t - \bar{v}) + \frac{1}{r}x\right]
\]
2-4
In the equation above, \( DRC = \frac{n_t}{m + n_t}(\pi(1 - \pi)). \) The bigger \( n_t \) is the bigger DRC is

According to DRC, we find out that:
when \( \theta = 1, \) \( DRC = \frac{n_t}{m + n_t}, \) and all investors in a capital market are Bayesian investors;
when \( \theta > 1, \) it means that \( \Delta P \) will be more dependent on \( s_t \) disclosure if heuristic investors are over reactive;
when \( \theta < 1, \) it means that \( \Delta P \) will be less dependent on \( s_t \) disclosure if heuristic investors are under reactive.
On this basis, the investor demand for social responsibility assets is
\[
D = r \frac{E[v|s_t] - P_{t}}{\text{Var}[v|s_t]}
\]
2-5

Using the equilibrium condition \( \pi D_{\text{Heuristics}} + (1 - \pi)D_{\text{Bayes}} = x, \) we know that:
for Bayesian investors, \( D_{\text{Bayes}} = -rn_t(1 - \theta)(s_t - \bar{v}) + x = x; \)
for heuristic investors, \( D_{\text{Heuristics}} = -rn_t(1 - \pi)(1 - \theta)(s_t - \bar{v}) + x = x + \epsilon. \)
where \( \epsilon = -rn_t(1 - \pi)(1 - \theta)(s_t - \bar{v}) \) is an inaccurate part deviating from \( x. \)
Given a certain \( r > 0, \) if it could be proved that \( (1 - \theta) > 0, \) the coefficient of \( n_t \) is negative. Otherwise the opposite is true.

The above discussion leads to our second hypothesis: \( H2: \)
\( H2: \) If investors are under reactive, the deviation of investor reaction is negatively associated with the specification level of social responsibility disclosure. And this phenomenon is more obvious in GME than in the Mainboard market.

### 3. Empirical Design and Descriptive Statistics

#### 3.1 Measure of Key Variables and Validity Tests

\( ^1 \)According to our model, there is another parameter \( r (\text{the tolerance risk of investors}) \) in the expression of \( \epsilon. \) We investigated the tolerance risk of Chinese investors in a multi-level capital market using the sample from a large security company in Jiangsu Province. And the results showed that investors in GEM confront falling stock prices with higher tolerance risk than those in the Mainboard market. However, due to business secrets, we cannot report the specific data about this investor characteristic. The lack of this data will not affect our \( H2a. \)
3.1.1 Social Responsibility Disclosure
Most of the Chinese listed companies disclose their social responsibility performance as a part of their annual report, although a few of them choose to disclose this information during other periods like in July or August. We excluded the enterprises that disclose social responsibility information, but not along with their annual report. To do so, we try to control the impact of the annual reports on the investor reaction. In our sample, there are two groups of enterprises: one discloses its annual report including CSR information, while the other group discloses no social responsibility information in its annual report. We use a dummy variable of the social responsibility disclosure to describe these two groups.

As for the specification level of the social responsibility disclosure, we use 13 dummy variables to describe it. At first, we judge whether the annual report included the social responsibility disclosure, if not, then the specification level equals to 0. If No.1 dummy variable equals to 1, we further examine the value of dummy variables from No.2 to No. 13 (see them in appendix Table 3). When an enterprise’s social responsibility disclosure includes items in No.2 to No. 13, we value it as 1. The sum of the dummy variables divided by the total number of disclosure items 12 can measure the specification level of the social responsibility disclosure of an enterprise.

As our measurement of the specification level is new to the literature, in order to assess the objective validity of the constructed indicator, we use a manual operation process (Chen et al., 2013) to carry on the reliability analysis to our constructed indicator. We randomly select 100 firm-years, whose annual report contains social responsibility information from each of the Mainboard and SME-GEM board (we treat SME and GEM enterprises as a same group, the same below). Then, we divide the 200 firm-years into 10 groups in random. All of our authors ask 3 individuals with different occupational backgrounds plus one author, we get a 10-persons scoring team. The 10 groups of enterprises are assigned randomly to 10 individuals. These 10 individuals independently score the specification level of the social responsibility disclosure (10 points for full score). Then, we compare the relative consistency of the variable measurement results with the results of the manual scoring. The scores of 200 selected firm-years are ranked according to the samples sequence. Two random sequences are obtained from the variable calculation and manual scoring. The sequence correlation coefficient index can give the unbiased degree of the two scoring methods.

\[
\phi = \frac{\sum(X(n) - \bar{X})(Y(n) - \bar{Y})}{\left[\sum(X(n) - \bar{X})^2 \sum(Y(n) - \bar{Y})^2\right]^{1/2}}
\]

Figure 1: Correlation Coefficient in Mainboard

Figure 2: Correlation Coefficient in SME-GEM
In the model above, $X(n)$ and $Y(n)$ are respectively the manual scoring and variable calculation results. $\bar{X}$ and $\bar{Y}$ are the sample mean, and $n$ is the sample number. Figure1 and Figure2 above present the consistency of scores. CSR_L1 is the score of our measurement, and CSR_L2 is the artificial scoring result. The correlation coefficient in Mainboard is equal to 0.9480 ($P<0.01$) and 0.9381 ($P<0.01$) in SME-GEM, which means that our measurement of the specification level is quite reasonable.

### 3.1.2 Investor Reaction

As we analyzed in section 2, we observe the cumulative abnormal return to investigate the investor reaction. Specifically, following the research of Hope et al. (2016), we use the real value of cumulative abnormal return around the report date of a certain stock to see the investor altitude in a disclosure event. And, we use the absolute value of cumulative abnormal return to present the deviation of investor reaction and reflect the investors’ rationality.

By examining returns in a narrow event window, we minimize the chances of the typical “correlated omitted variables” problems. Taking into consideration the Chinese market maturity, instead of following Hope et al. (2016) using 3-day cumulative abnormal returns around the report date, the measurement of cumulative abnormal returns in this paper uses 11-day cumulative abnormal returns (Wu and Zhang, 2014). Figure3 and Figure4 show 11-day cumulative abnormal returns (CAR) variation tendency in the Mainboard and SME-GEM respectively. These figures show a unified diverging characteristic of 11-day cumulative abnormal returns, and especially an obvious divergence on the 5th day. Thus, this evidence can support our measurement of the investor reaction i.e. cumulative abnormal returns. As for the variable deviation of reaction, our figures show a basically symmetrical distribution along $CAR=0$, which could be supported by using an absolute value of 11-day cumulative abnormal returns to measure the deviation of the investor reaction.

![Figure 3: CAR-5,5 in Mainboard Sample](image1)

![Figure 4: CAR-5,5 in SME-GEM Sample](image2)

### 3.2 Empirical Design

H1 predicts that the value of cumulative abnormal returns in the Mainboard is positively associated with the disclosure of social responsibility, while in SME and GEM is negatively associated. Our research design follows the literature on the information content of risk-factor disclosures (Campbell et al., 2014, Hope et al., 2016). In the first model, we examine the market cumulative abnormal returns which are positively or negatively related to CSR disclosure. As in Brown and Tucker (2011), by adding some variables examined as possible influences in the Chinese market, we control the corporate characteristics and stock characteristics, including net profit growth rate, cash flow per stock growth rate, net asset growth rate, leverage, EPS growth rate, stock liquid, manager holdings, research report attention level, and whether the two authorities are segregated. Because the annual report reflects the
performance of an enterprise during the previous year, we use the previous period value of control variable in the models. Finally, we include the year and industry fixed effects and the individual random effects in all regressions. The measurement and symbol of each variable can be found in Appendix Table4. We make unbalanced panel fixed effect tests in different levels of a capital market. A significantly positive $\alpha_1$ in equation (3-2) regressed in the Mainboard market, and a significantly negative one in GEM it would support H1.

$$\begin{align*}
CAR_{it}^{5,5} = \alpha_0 + \alpha_1 CSR.D_{it} + \beta_1 \begin{bmatrix}
Net\text{Profit}_{G(t-1)} \\
\text{CashFlow}_{G(t-1)} \\
\text{NetAsset}_{G(t-1)} \\
\text{Lev}_{t-1}
\end{bmatrix} + \gamma_1 \begin{bmatrix}
\text{EPSG}_{t-1} \\
\text{Liquid}_{t-1} \\
\text{ManagerHold}_{t-1} \\
\text{Chair}_{CEO}\_t-1
\end{bmatrix} + \vartheta_1 \sum Ind \\
+ \vartheta_2 \sum Year + \mu_t + \nu_{it}
\end{align*}$$

To test our second hypothesis, we use the absolute value of cumulative abnormal returns to reveal the degree of deviation of investor reaction in a multi-level capital market, resulting from the investors’ irrationality. We use the specification level of the social responsibility disclosure, instead of the dummy variable of disclosed or not, in model (3-2). The control variables and group regression approach is the same as model (3-2). If $\alpha_1$ in equation (3-2) is insignificant, and in the meantime, $\alpha_1$ is significantly negative, our H2 would be preliminarily proved.

$$\begin{align*}
|CAR_{it}^{5,5}| = \alpha_0 + \alpha_1 CSR.S_{it} + \beta_1 \begin{bmatrix}
Net\text{Profit}_{G(t-1)} \\
\text{CashFlow}_{G(t-1)} \\
\text{NetAsset}_{G(t-1)} \\
\text{Lev}_{t-1}
\end{bmatrix} + \gamma_1 \begin{bmatrix}
\text{EPSG}_{t-1} \\
\text{Liquid}_{t-1} \\
\text{ManagerHold}_{t-1} \\
\text{Chair}_{CEO}\_t-1
\end{bmatrix} + \vartheta_1 \sum Ind \\
+ \vartheta_2 \sum Year + \mu_t + \nu_{it}
\end{align*}$$

3.3 Data, Sample Selection, and Descriptive Statistics

We obtain our sample in the following steps. Firstly, we download all the available CSR disclosure from 2011 to 2016 in all three levels of the capital market, and match the disclosure date with these enterprises’ annual report disclosure date, and exclude those mismatched CSR disclosed enterprises (only a few). Secondly, we find the counterpart enterprises that did not disclose CSR information. Thirdly, firms of the financial sector are excluded. Observations with missing data on key variables and controls are excluded. This yields a sample of 10002 firms-year observations for our full sample, including 5728 in Mainboard market, 2827 in SME market, and 1447 in GEM. Because GEM is very young, in the first few years of our sample period, the number of enterprises disclosed CSR information is quite small. So, we divide SME board firms and GEM firms into a single sample group (called SME-GEM). We think this process is reasonable, and can be proved in Table1 and Table2 (the investor characteristics in these two markets are much more similar). Our data comes from CSMAR Database and cninfo.com (China Securities Regulatory Commission designated information disclosure website). We use Stata 14 for statistical analysis.

Table 5-1 provides the multi-level capital market sample composition by year. The column of Mainboard sample shows that the Mainboard sample is generally distributed evenly across years. As for SME-GEM sample, there is a rising tendency year by year. Focusing on the sample firm-years that disclosed their CSR, our sample for both Mainboard and SME-GEM shows a fluctuant rising tendency. Comparing the proportion of CSR disclosed firm-years in full sample, in Mainboard the percentage is 35.5971%, and in SME-GEM is 13.2008%. These proportions in two sample groups of each year from 2010 to 2015 (refer to 2016 report) are basically same.
Table 5-2 provides the sample composition by China Securities Regulatory Commission 2012 Industry Classification Standard. To avoid our sample dominated by any certain industry, we divide the manufacturing industry into four divisions (according to industry code first two digits). Finally, we get 21 industries for our Mainboard sample, and 20 for SME-GEM sample. In Mainboard sample among all industries, transportation, mining, and construction are the top three in percentage of firm-years that disclosed CSR in their annual report. The top three industries in SME-GEM are health and social work, mining, and utilities. Considering that there are only 9 firm-years in health and social work industry, we find out that the fourth industry is construction. That is to say, mining and construction are two industries in which firms are most willing to disclose their CSR information, both in Mainboard market and in SEM-GEM. This conclusion, to some extent, supports our additional test about the moderating effect of the pollution haze on the environment because mine and construction are industries that generate vast pollutant in China.

Table 6-1 and Table 6-2 present descriptive statistics for the variables used in our empirical analyses for Mainboard panel data and SEM-GEM panel data respectively. The mean for \( CAR^{-5,5} \) is 0.0040 in Mainboard, and -0.0035 in SEM-GEM, and the mean for \( |CAR^{-5,5}| \) is 0.0589 in Mainboard, and 0.0675 in SEM-GEM. Data shows that the 11-day cumulative abnormal returns around the annual report in Mainboard is positive, but negative in SEM-GEM, and the deviation degree of cumulative abnormal returns (observed by an absolute value) is larger in SEM-GEM than in the Mainboard. The mean of \( CSR_D \) and \( CSR_L \) are 0.3560 and 0.2200 in the Mainboard sample. The counterpart of SEM-GEM is 0.1460 and 0.0987 respectively. It suggests that there are more enterprises in Mainboard that chose to disclose more specific CSR information in their annual report than in SEM-GEM. In addition, in Table 6-1 and Table 6-2 it can be found that there are some unusually large data in control variables like CashFlowPSG or EPSG. Upon a careful investigation, we confirm that they constitute the real value of those variables, and they exactly reflect the volatility of the Chinese capital market. So, we retain these data without any redundant processing.

Table 7-1 and Table 7-2 report the Pearson correlations among testing variables in the Mainboard sample and SME-GEM sample respectively. We find that the correlation between \( CAR^{-5,5} \) and \( CSR_D \) in Mainboard is 0.0131 and -0.0001 in SEM-GEM, which conforms to our H1, and investor reaction in the Mainboard is positively associated with CSR disclosure while in GEM is negatively associated with CSR disclosure. However, the results are insignificant and need to be further tested. Moreover, we can see in both Mainboard and SEM-GEM that the correlations among \( |CAR^{-5,5}| \) and \( CSR_L \) are positively significant (-0.0699, 1% and -0.0599, 1%), which partly matches with our H2 if the investors are under reactive (the correlations between \( CAR^{-5,5} \) and \( CSR_D \) are insignificant), the deviation of investor reaction is negatively associated with the specification level of social responsibility disclosure. Moreover, the correlations between other dependent and independent variables preliminarily suggest that our model has no serious multiple collinearity.

4. Empirical Results

The empirical results for H1 and H2 are reported in appendix, Table 8. We perform a multiple collinearity test before the panel analyses. The max VIF in Mainboard sample is 1.17, smaller than the upper limit VIF=10, and the mean VIF is 1.07. The max VIF in SME and GEM sample is 2.31, and the mean VIF is 1.32. We can safely conclude that our model has no serious multiple collinearity. Furthermore, we perform the Hausman test to determine if we should do fixed effect estimation or random effect estimation. The results of Hausman test deny the random effect. So, in our unbalanced panel data analysis, we use fixed effect estimation.
4.1 CSR Disclosure, Investor Preference and Reaction in Multi-Level Capital Market
We start by examining the investor preference (observed by the true value of $CAR^{5,5}$) towards the social responsibility disclosure by using the full Mainboard sample of firms. In Table 8 column (1), the coefficient on $CSR\_D$ is positive (0.0126) and significant at 10% level. This result supports H1 and the value of investor reaction in Mainboard is positively associated with the disclosure of social responsibility. The economic meaning of this result is that Mainboard investors tend to judge social responsibility as a desirable feature of their invested firms. In another world, assuming that CSR disclosure is reliable, the investors estimate that a firm who shoulders their social responsibility is more worthwhile to invest.

We also use the same method to examine SME-GEM sample of firms. In Table 8 column (2), the coefficient on $CSR\_D$ is negative (-0.0099) but insignificant. This result suggests that SME-GEM investors are under reactive to CSR disclosure. There are two reasons that may contribute to this phenomenon. On the one hand, SME-GEM investors may be premature to evaluate CSR information, that is to say they cannot determine whether shouldering social responsibility is a value-added behavior or not. On the other hand, firms in SME-GEM are younger, small scale, private-owned, and in their period, the influence of shouldering social responsibility to these firms is not clear itself.

4.2 Level of Specification of CSR Disclosure, Investor Rationality and Reaction in Multi-Level Capital Market
To verify our H2, we examine the relation between the investor rationality (observed by the value of $|CAR^{5,5}|$) and the specification level of CSR disclosure. The empirical results of Mainboard sample firms are reported in Table 8 column (3). The coefficient on $CSR\_L$ is negative (-0.0035) but insignificant. This is because in H1 we concluded that Mainboard investors react positively to social responsibility disclosure, suggesting that $\theta$ in Function (2-4) is close to 1 and $\epsilon$ is close to 0. The economic meaning here is that Mainboard investors are basically Bayesians, and they can react to the disclosure of CSR regardless of whether the information is detailed or general.

In SME-GEM sample examination, we come to a different conclusion. Table 8 column (4), reports that the coefficient on $CSR\_L$ is negative (-0.0151) and significant at 10% level. In comparison with counterpart in Mainboard sample, the absolute value and significant level are both larger. This is due to the insignificant results of H1 test in SME-GEM sample, which represents $\theta < 1$. That is to say SME-GEM investors are under reactive and heuristic. According to our theoretical analysis, unlike the over reactive and Bayesian ones, the under reactive and heuristic investors would not get more information from the specific disclosure, thus they show a more significant reaction when the disclosure of the CSR consists of less detailed information. Combining the results in Mainboard and SME-GEM samples, we can verify H2 if the investors are under reactive, the deviation of investor reaction is negatively associated with the specification level of social responsibility disclosure. And this phenomenon is more obvious in SME-GEM than in Mainboard market.

After H1 and H2 are proved, we can conclude the segmentation role of a Chinese multi-level capital market in the investor reaction to the specific disclosure of CSR. One is to segment the different preference of investors, and the other is to segment the different rationality of investors. In particular, in Mainboard, investors tend to consider shouldering social responsibility as a value-added behavior for invested firms, and they are rational enough to learn both specific and general disclosures. While in SME-GEM, investors are under reactive, they have not shown a clear evaluation of CSR behavior, and furthermore, instead of depending on specific information, they are more likely to make decisions based on general CSR disclosure.
5. Additional Analyses Related to Pollution Haze

5.1 Empirical Design
As the choking pollution haze is one of the most serious social problems in China, related to every enterprise and every individual, we try to do some additional analyses related to the pollution haze in this part. We suppose that if the provincial listed companies have more serious pollution haze problem, then the investors of those companies may consider CSR information as a signal positively related to the enterprise value. Once more, we use CLT to interpret this phenomenon. CLT tells us that the general information has greater impact on the judgements of events or objects that are psychologically distant. To some extent, although in invested enterprises the shouldering social responsibility is a psychologically close event to investors, the target audience of CSR is psychologically distant to investors. Even though investors could know the recipient of a certain donation or what employee protection an enterprise offers, this information is too specific to change the investor attitude and analysis about the value of CSR. However, the pollution haze is a much more general factor that may have moderating effect on the relation between the investor reaction and CSR disclosure due to its incomparable universality, and because the negative value judgement of pollution haze is exactly the same in all China.

To measure the pollution haze in different provinces, we hand and collect the Air Pollutant Emissions situation in the Chinese mainland provincial administrative regions to China Statistical Yearbook from 2010 to 2015 called HazeIndex. The specific information is shown in Table9. To test the moderating effect of pollution haze, we perform a group examination of models (3-2) and (3-3). The groups are divided by the mean value of pollution haze (HazeIndex) in all the matched firm-years. The control variables and group regression approach is the same as our main test. If we can get larger (for absolute value) and more significant $\alpha_1$ and $\alpha_1'$ in the group suffering more serious pollution haze, while smaller and less significant in the other group (both compared with coefficients in main test), we can conclude that the pollution haze of the environment intensifies the influence of CSR information on the investor’s strategy choice, and vice versa.

5.2 Empirical Results
First, we examine the pollution haze moderating effect on the Mainboard sample. Table10 in appendix reports the empirical results. In Table10 column (1), it is found that the coefficient on CSR_D in the group HazeIndex_D=1 is more positive with a more significant level (0.0179, 5%, the counterpart in full sample is 0.0126, 10%). In group HazeIndex_D=0, the coefficient on CSR_D is smaller (0.0049) and insignificant. Chow test shows that the group difference is significant (167.68, 1%). The results show that the pollution haze of the environment intensifies the positive judgement of social responsibility information among the Mainboard investors. However, the coefficients on CSR_L in Table9 column (3) and (4) are still insignificant, and the moderating effect is denied. We can say that the pollution haze of the environment does not change the rationality of Mainboard Bayesian investors even though it strengthens their preference.

Afterwards, we examine the pollution haze moderating effect in SME-GEM sample. Table11 reports the empirical results. Table11 column (1) and (2) show that in both groups HazeIndex_D=1 and HazeIndex_D=0, the coefficient on CSR_D is negatively insignificant, the same as in H1 test. Although we assume that in regions suffering a more serious pollution haze the investors may change their attitude to CSR behavior, the empirical results do not support our conjecture. The SME-GEM investors are with no doubt under reactive, regardless the pollution haze moderating effect. As for the moderating effect on the investors’ rationality, we found some interesting evidence. In Table11 column (3), the coefficient in group HazeIndex_D=1 on CSR_L is negative (-0.0128) but insignificant, with an
absolute value and significant level lower than in full SME-GEM sample (-0.0151, 10%). However, in Table11 column (4), the negative coefficient in group $\text{HazeIndex}_D=0$ on $\text{CSR}_L$ has a larger absolute value and higher significant level (-0.0304, 5%). Chow test shows that the group difference is significant (286.44, 1%). This may be due to a serious pollution haze group SME-GEM investors are trying to learn detailed social responsibility information, and enhance their rationality, but in a lighter pollution haze group, those investors keep making their decision depending on general disclosure.

6. Concluding Remarks

By combining the event study and panel data analyses, this paper investigates the preference segmentation and rationality segmentation roles of a Chinese multi-level capital market in investor reaction to the CSR disclosure, using data from 2010 to 2016 in the Chinese Mainboard and SME-GEM A-share companies. After a series of tests and analyses, we have come to the following conclusions.

First, in Mainboard, the value of investor reaction is positively related to the disclosure of CSR. That is to say Mainboard investors tend to consider the social responsibility as a desirable feature of their invested firms. While in SME-GEM this relation is insignificant and suggests that SME-GEM investors have an uncertain evaluation of the social responsibility disclosure. This result shows the investor preference segmentation role of a multi-level capital market.

Second, the specification level of CSR disclosure is insignificantly associated with the deviation of investor reaction (absolute value of cumulative abnormal return) in Mainboard, but significantly and negatively related in SME-GEM. In other words, the Chinese Mainboard investors are basically Bayesians and are rational enough to analyze different kinds of disclosure. But SME-GEM investors are under reactive heuristics and make decisions based on general disclosure. This result suggests the investor rationality segmentation role of a multi-level capital market.

In additional analyses, we also consider the pollution haze of the Chinese environment. Testing the moderating effect of this nature environment, we find that: (1) in Mainboard, the pollution haze of the environment intensifies the investors’ positive judgement of CSR information; (2) the pollution haze of the environment does not change the rationality of the Mainboard Bayesian investors; (3) against our expectations that pollution haze may change the investors’ attitude to CSR behavior, SME-GEM investors are under reactive, regardless the pollution haze moderating effect; (4) in a serious pollution haze group, SME-GEM investors are trying to get detailed CSR information, but in a lighter pollution haze group, they keep making their decisions based on general disclosure.

Firstly, our conclusions could offer a reference to the listed-companies in different Chinese capital markets in order to choose their CSR disclosure strategies; secondly provide some guidance to the Chinese investors in a multi-level capital market to diagnose themselves and make more rational investment decisions; thirdly provide evidence from our certain perspective to depict the characteristics of a Chinese premature multi-level capital market and compare it with a mature market and predict its development status.

References


Fannon, L. 2014. Corporate social responsibility and the environment: why a non-regulatory approach to corporate action is more likely to be successful in the environmental context than in other areas. *Srn Electronic Journal*.


Appendix

**Table 3: Measure of Social Responsibility Disclosure**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Disclosure Items</th>
<th>Disclosed or not</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dummy Variable of Social Responsibility Disclosure</td>
<td>Whether the annual report included social responsibility disclosures</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>No.1 Whether the annual report included social responsibility disclosures</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>No.2 Whether disclosed shareholder protection</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>No.3 Whether disclosed creditor protection</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>No.4 Whether disclosed employee protection</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>No.5 Whether disclosed supplier protection</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>No.6 Whether disclosed consumer protection</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>No.7 Whether disclosed environment protection and sustainable development</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>No.8 Whether disclosed public relations and social welfare undertaking</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>No.9 Whether disclosed safe production content</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>No.10 Whether disclosed shortcomings of company</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>No.11 Whether disclosed social responsibility system construction and improvement</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>No.12 Whether the disclosures are audited by third-party</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>No.13 Whether the disclosures referred to GRI Guidelines for Sustainability Reporting</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

Specification Level of Social Responsibility Disclosure

- **No.1**: Whether the annual report included social responsibility disclosures
- **No.2**: Whether disclosed shareholder protection
- **No.3**: Whether disclosed creditor protection
- **No.4**: Whether disclosed employee protection
- **No.5**: Whether disclosed supplier protection
- **No.6**: Whether disclosed consumer protection
- **No.7**: Whether disclosed environment protection and sustainable development
- **No.8**: Whether disclosed public relations and social welfare undertaking
- **No.9**: Whether disclosed safe production content
- **No.10**: Whether disclosed shortcomings of company
- **No.11**: Whether disclosed social responsibility system construction and improvement
- **No.12**: Whether the disclosures are audited by third-party
- **No.13**: Whether the disclosures referred to GRI Guidelines for Sustainability Reporting

Score calculation:

- **0 if No.1=0**: \( \sum_{No.2}^{No.13} 1 \text{ or } 0 \)
- **if No.1≠0**: \( \frac{\sum_{No.2}^{No.13} 1 \text{ or } 0}{12} \)
### Table 4: Variable Definitions

#### Dependent Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\text{CAR}^{-5,5}$</td>
<td>The difference between the 11-day returns starting one trading day before the annual report release and ending one trading day after, scaled by $[-120, 11]$ period return. The expected return is estimated by using the Fama-French three-factor model. Day 0 is defined as the annual report date.</td>
</tr>
<tr>
<td>$</td>
<td>\text{CAR}^{-5,5}</td>
</tr>
</tbody>
</table>

#### Independent Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\text{CSR}_D$</td>
<td>As the Dummy Variable of Social Responsibility Disclosure measurement in Table 3</td>
</tr>
<tr>
<td>$\text{CSR}_S$</td>
<td>As the Level of Specification of Social Responsibility Disclosure measurement in Table 3</td>
</tr>
<tr>
<td>$\text{HazeIndex}$</td>
<td>The natural logarithm of haze pollutant emissions from listed companies in registered provinces.</td>
</tr>
<tr>
<td>$\text{NetProfitG}$</td>
<td>Annual growth rate of corporate net profit</td>
</tr>
<tr>
<td>$\text{CashFlowPSG}$</td>
<td>Annual growth rate of corporate operating net cash flow per share</td>
</tr>
<tr>
<td>$\text{NetAssetG}$</td>
<td>Annual growth rate of corporate net asset</td>
</tr>
<tr>
<td>$\text{Lev}$</td>
<td>The ratio of total debt to total assets</td>
</tr>
<tr>
<td>$\text{EPSG}$</td>
<td>Annual growth rate of EPS</td>
</tr>
<tr>
<td>$\text{Liquid}$</td>
<td>Annual average daily turnover rate</td>
</tr>
<tr>
<td>$\text{ManagerHold}$</td>
<td>Daily turnover rate = daily individual stock turnover / daily individual stock circulation market value</td>
</tr>
<tr>
<td>$\text{RAtten}$</td>
<td>Volume of management holdings divided by the total capital stock</td>
</tr>
<tr>
<td>$\text{Chair,CEO}$</td>
<td>The number of copies of the research report conducted by the corporation in one year</td>
</tr>
<tr>
<td>$\text{Ind}$</td>
<td>Dummy variable values 0 if the chairman of the board is the same person as CEO, otherwise values 1</td>
</tr>
<tr>
<td>$\text{Year}$</td>
<td>Industry dummy variable using 2012 Guidance on Classification of Listed Companies published by China Securities Regulatory Commission</td>
</tr>
<tr>
<td>$\mu$</td>
<td>Year dummy variable</td>
</tr>
<tr>
<td>$\nu$</td>
<td>Individual random effects</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
</tr>
</tbody>
</table>
### Table 5.1

<table>
<thead>
<tr>
<th>Years</th>
<th>Mainboard Sample</th>
<th>Disclosed CSR Mainboard Sample (Percentage)</th>
<th>SME-GEM Sample</th>
<th>Disclosed CSR SME-GEM Sample (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>913</td>
<td>285 (31.2168%)</td>
<td>542</td>
<td>62 (11.4391%)</td>
</tr>
<tr>
<td>2011</td>
<td>983</td>
<td>338 (34.3845%)</td>
<td>769</td>
<td>91 (11.8336%)</td>
</tr>
<tr>
<td>2012</td>
<td>935</td>
<td>344 (36.7914%)</td>
<td>812</td>
<td>124 (15.2709%)</td>
</tr>
<tr>
<td>2013</td>
<td>926</td>
<td>337 (36.3931%)</td>
<td>650</td>
<td>113 (17.3846%)</td>
</tr>
<tr>
<td>2014</td>
<td>931</td>
<td>347 (37.2718%)</td>
<td>674</td>
<td>111 (16.4688%)</td>
</tr>
<tr>
<td>2015</td>
<td>1,040</td>
<td>388 (37.3077%)</td>
<td>827</td>
<td>123 (14.8730%)</td>
</tr>
<tr>
<td>Total</td>
<td>5,728</td>
<td>2,039 (35.5971%)</td>
<td>4,274</td>
<td>624 (13.2008%)</td>
</tr>
</tbody>
</table>

### Table 5.2

<table>
<thead>
<tr>
<th>Industries</th>
<th>Mainboard Sample</th>
<th>Disclosed CSR Mainboard Sample (Percentage)</th>
<th>SME-GEM Sample</th>
<th>Disclosed CSR SME-GEM Sample (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture, Forestry, Livestock Farming, Fishery</td>
<td>83</td>
<td>17 (20.4819%)</td>
<td>72</td>
<td>16 (22.2222%)</td>
</tr>
<tr>
<td>Mining</td>
<td>242</td>
<td><strong>125 (51.6529%)</strong></td>
<td>34</td>
<td><strong>10 (29.4118%)</strong></td>
</tr>
<tr>
<td>Food, Textiles, Apparel Manufacturing</td>
<td>438</td>
<td>148 (33.7900%)</td>
<td>304</td>
<td>66 (21.7105%)</td>
</tr>
<tr>
<td>Timber, Furnishings, Paper, Printing, Petrochemical, Pharmaceutical Manufacturing</td>
<td>991</td>
<td>292 (29.4652%)</td>
<td>923</td>
<td>151 (16.3597%)</td>
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<tr>
<td>Mineral and Equipment Manufacturing</td>
<td>1,723</td>
<td>660 (38.4794%)</td>
<td>1,920</td>
<td>234 (12.1875%)</td>
</tr>
<tr>
<td>Other Manufacturing</td>
<td>46</td>
<td>10 (21.7491%)</td>
<td>136</td>
<td>19 (13.9706%)</td>
</tr>
<tr>
<td>Utilities</td>
<td>328</td>
<td>140 (42.6829%)</td>
<td>23</td>
<td><strong>6 (26.0870%)</strong></td>
</tr>
<tr>
<td>Construction</td>
<td>146</td>
<td><strong>64 (43.8356%)</strong></td>
<td>102</td>
<td><strong>23 (22.5490%)</strong></td>
</tr>
<tr>
<td>Wholesale and Retail Trade</td>
<td>444</td>
<td>110 (24.7748%)</td>
<td>97</td>
<td>18 (18.5567%)</td>
</tr>
<tr>
<td>Transportation</td>
<td>320</td>
<td><strong>173 (54.0625%)</strong></td>
<td>38</td>
<td>0 (0.0000%)</td>
</tr>
<tr>
<td>Hotels and Catering Services</td>
<td>34</td>
<td>6 (17.6471%)</td>
<td>10</td>
<td>0 (0.0000%)</td>
</tr>
<tr>
<td>IT</td>
<td>135</td>
<td>47 (34.8148%)</td>
<td>401</td>
<td>51 (12.7182%)</td>
</tr>
<tr>
<td>Real Estate</td>
<td>495</td>
<td>156 (31.5152%)</td>
<td>37</td>
<td>7 (18.9189%)</td>
</tr>
<tr>
<td>Leasing and Commercial Service</td>
<td>56</td>
<td>10 (17.5871%)</td>
<td>41</td>
<td>6 (14.6342%)</td>
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<tr>
<td>Scientific Research and Technical Services</td>
<td>12</td>
<td>4 (33.33%)</td>
<td>50</td>
<td>1 (2.0000%)</td>
</tr>
<tr>
<td>Water Resources, Environment and Public Facilities Management</td>
<td>52</td>
<td>15 (28.8462%)</td>
<td>35</td>
<td>7 (20.0000%)</td>
</tr>
<tr>
<td>Residents Service, Repair and other Services</td>
<td>5</td>
<td>0 (0%)</td>
<td>8</td>
<td>0 (0.0000%)</td>
</tr>
<tr>
<td>Education</td>
<td>3</td>
<td>0 (0%)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Health and Social Work</td>
<td>5</td>
<td>2 (40%)</td>
<td>9</td>
<td><strong>5 (55.5556%)</strong></td>
</tr>
<tr>
<td>Culture, Sports and Entertainment</td>
<td>60</td>
<td>21 (35%)</td>
<td>32</td>
<td>4 (12.5000%)</td>
</tr>
<tr>
<td>Comprehensive</td>
<td>110</td>
<td>36 (32.2773%)</td>
<td>2</td>
<td>0 (0.0000%)</td>
</tr>
<tr>
<td>Total</td>
<td>5,728</td>
<td>2039 (35.5971%)</td>
<td>4,274</td>
<td>624 (13.2008%)</td>
</tr>
</tbody>
</table>
### Table 6-1  
**Descriptive Statistics (Mainboard Sample 5728 firm-years)**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Std.dev.</th>
<th>Min</th>
<th>25%</th>
<th>Median</th>
<th>75%</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>$CAR^{-5.5}$</td>
<td>0.0040</td>
<td>0.0888</td>
<td>-1.9442</td>
<td>-0.0426</td>
<td>-0.0011</td>
<td>0.0422</td>
<td>1.0296</td>
</tr>
<tr>
<td>$[CAR^{-5.5}]$</td>
<td>0.0589</td>
<td>0.0656</td>
<td>1.88e-05</td>
<td>0.0191</td>
<td>0.0423</td>
<td>0.0787</td>
<td>1.9442</td>
</tr>
<tr>
<td>CSR_D</td>
<td>0.3560</td>
<td>0.4788</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>1.0000</td>
<td>1.0000</td>
</tr>
<tr>
<td>CSR_L</td>
<td>0.2200</td>
<td>0.3041</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.5832</td>
<td>0.9167</td>
</tr>
<tr>
<td>HazelIndex</td>
<td>4.4190</td>
<td>0.9029</td>
<td>-0.2231</td>
<td>4.2022</td>
<td>4.6308</td>
<td>4.9992</td>
<td>5.6996</td>
</tr>
<tr>
<td>NetProfitG</td>
<td>-0.8878</td>
<td>18.3702</td>
<td>-1005.8760</td>
<td>-0.3215</td>
<td>0.0845</td>
<td>0.4573</td>
<td>234.9606</td>
</tr>
<tr>
<td>CashFlowPG</td>
<td>0.9517</td>
<td>28.2893</td>
<td>-557.6667</td>
<td>-0.6441</td>
<td>0.0050</td>
<td>0.9751</td>
<td>1231.6000</td>
</tr>
<tr>
<td>NetAssetG</td>
<td>2.8671</td>
<td>104.4026</td>
<td>-11.2856</td>
<td>0.01893</td>
<td>0.0729</td>
<td>0.2031</td>
<td>6362.3350</td>
</tr>
<tr>
<td>Lev</td>
<td>0.5298</td>
<td>0.3539</td>
<td>-0.1947</td>
<td>0.3678</td>
<td>0.5266</td>
<td>0.6740</td>
<td>13.7114</td>
</tr>
<tr>
<td>EPSG</td>
<td>-0.4092</td>
<td>19.0751</td>
<td>-238.2549</td>
<td>-0.3524</td>
<td>0.0508</td>
<td>0.4053</td>
<td>1191.0000</td>
</tr>
<tr>
<td>Liquid</td>
<td>0.0243</td>
<td>0.0242</td>
<td>7.92e-05</td>
<td>0.0104</td>
<td>0.0179</td>
<td>0.0301</td>
<td>0.3546</td>
</tr>
<tr>
<td>ManagerHold</td>
<td>0.0204</td>
<td>0.0835</td>
<td>0.0000</td>
<td>0.0000</td>
<td>1.85e-05</td>
<td>0.0004</td>
<td>0.8098</td>
</tr>
<tr>
<td>RAttention</td>
<td>14.8408</td>
<td>22.4979</td>
<td>0.0000</td>
<td>1.0000</td>
<td>5.0000</td>
<td>20.0000</td>
<td>219.0000</td>
</tr>
<tr>
<td>Chair_CEO</td>
<td>0.8390</td>
<td>0.3677</td>
<td>0.0000</td>
<td>1.0000</td>
<td>1.0000</td>
<td>1.0000</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

### Table 6-2  
**Descriptive Statistics (SEM-GEM Sample 4274 firm-years)**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Std.dev.</th>
<th>Min</th>
<th>25%</th>
<th>Median</th>
<th>75%</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>$CAR^{-5.5}$</td>
<td>-0.0035</td>
<td>0.0956</td>
<td>-0.8129</td>
<td>-0.05447</td>
<td>-0.0100</td>
<td>0.04148</td>
<td>0.6461</td>
</tr>
<tr>
<td>$[CAR^{-5.5}]$</td>
<td>0.0675</td>
<td>0.0677</td>
<td>8.19e-07</td>
<td>0.02210</td>
<td>0.0483</td>
<td>0.0901</td>
<td>0.8128</td>
</tr>
<tr>
<td>CSR_D</td>
<td>0.1460</td>
<td>0.3531</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>1.0000</td>
</tr>
<tr>
<td>CSR_L</td>
<td>0.0987</td>
<td>0.2438</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
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### Table 7-1: Pearson Correlations among Testing Variables (Mainboard Sample)

|                  | CAR$^{-5.5}$ | $|\text{CAR}^{-5.5}|$ | CSR_D | CSR_L | HazelIndex | NetProfitG | CashFlowPSG |
|------------------|--------------|------------------------|-------|-------|------------|------------|-------------|
| CAR$^{-5.5}$     |              |                        |       |       |            |            |             |
| $|\text{CAR}^{-5.5}|$ | 0.1833***    |                        |       |       |            |            |             |
| CSR_D            |              |                        | 0.0131** |      |            |            |             |
| CSR_L            | 0.0081       |                        | -0.0699*** | 0.9720*** |            |            |             |
| HazelIndex       | -0.0116      |                        | 0.0041 | -0.1035*** | -0.0952*** |            |             |
| NetProfitG       | 0.0059       |                        | 0.0012 | 0.0039 |            | 0.0068     |             |
| CashFlowPSG      | -0.0067      |                        | -0.0133 | -0.0147 | -0.0162 | -0.0006 | 0.0068     |
| NetAssetG        | -0.0242*     |                        | 0.0111 | -0.0175 | -0.0172 | 0.0030 | 0.0054 | 0.0348*** |
| Lev              | -0.0127      |                        | 0.0070 | 0.0068 | 0.0032 | -0.0095 | 0.2514*** | 0.0125     |
| EPSG             | -0.0049      |                        | 0.0135 | 0.0005 | 0.0047 | 0.0229* | -0.0243* | -0.0113    |
| Liquid           | -0.0533***   |                        | 0.0948*** | -0.1751*** | -0.1819*** | 0.0034 | 0.0055 |            |
| ManagerHold      | 0.0208       |                        | 0.0383*** | -0.0926*** | -0.0939*** | 0.0259** | 0.0147 | -0.0032    |
| RA ttention      | 0.0143       |                        | -0.0673*** | 0.2830*** | 0.2883*** | 0.0373*** | 0.0374*** | 0.0041     |
| Chair_CE O       | 0.0332**     |                        | -0.0407*** | 0.0819*** | 0.0785*** | -0.0212 | -0.0223* | 0.0039     |

(continued)

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*** p<0.01, ** p<0.05, * p<0.1 (two-tailed test)
Table 7-2  

Pearson Correlations among Testing Variables (SME-GEM Sample)

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Data Sources: authors collected from China Statistical Yearbook from 2009 to 2016.
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Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1
Table 11: Empirical Results in 5.2 (SME-GEM Sample)

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Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1
Developing Sustainable Small and Medium Scale Enterprises in Ghana: The Role of Computerized Accounting Information Systems

Samuel Nana Yaw Simpson1, Joseph Onumah and Hope KwakuTetteh

Department of Accounting
University of Ghana Business School
Legon

Abstract
Most businesses in developing countries, including Ghana can be classified as Small Medium Enterprises (SMEs). Moreover, they are identified as constituting an integral part of the many of the economies. Despite the vital role that they play, their survival rate, particularly in developing countries is not quite impressive due to a myriad of constraints they face which threaten their sustainability. From literature, one of the areas identified as key to the survival of Small Medium Enterprises (SMEs) is the generation and use of accurate, reliable and timely information. Moreover, CAIS is suggested in the literature as the panacea to improving the information generation for informed decision. However, many of the studies on CAIS and SMEs have focused on, among other things, the factors that influence the adoption of CAIS, extent of use of CAIS and the kinds of packages used. There are scanty studies focusing on the effectiveness of CAIS and how it ensures the sustainability of SMEs, particularly in the context of developing countries. So, this study examines the nature of the computerized accounting information systems (CAIS) used by SMEs in Ghana and the perception of users on the effectiveness of the CAIS in ensuring sustainable SMEs. To achieve these objectives data was collected using a survey strategy using questionnaires self-administered to purposively sampled SMEs located at a particular area in Accra, Ghana. Data collected were analysed descriptively. Results show that most SMEs use software installed locally within the business premises. Data storage is done on local servers for these firms. A few access their software from the web or online and store data online. Also, the grand mean of the perception score exceeded the grand mean of expectation score. This means that SMEs expect less in terms of the information quality of the computerized accounting information systems they use than they perceive that the CAIS is able to offer. These findings imply that SME only use the basic feature of CAIS and that suggest that they are not fully utilising CAIS for long term decision making, hence affecting their sustainability.

Research paper

Key Words: SMEs, CAIS, Sustainability, Ghana

1 Corresponding email address: snysimpson@ug.edu.gh or snysamuel@gmail.com
Introduction

Most businesses in developing countries, including Ghana can be classified as Small Medium Enterprises (SMEs). Despite their unique attributes and functions, they have to compete in a highly competitive market economy being controlled by large multinationals with enormous resources and power. One of the areas identified as key to the survival of SMEs is the generation and use of accurate, reliable and timely information. Zhihua (2011) for instance posits that, for SMEs to survive in rigorous environment, decisions must be based on primarily accurate, reliable and timely information.

Computerized Accounting Information Systems (CAIS) is suggested in the literature as the panacea to improving the information generation for informed decision (Amidu, Effah & Abor, 2011; Tijani & Mohammed, 2013; Zhihua, 2011). Moreover, such decisions are based on 90% of the organization’s financial information (Zhihua, 2011). This explains the earlier findings by Tavakolian (1995) indicating that one of the first major computer software packages that a company purchases is an accounting software. Proponents argue that, in order to improve accounting data processing and obtain real-time financial statements with which strategic, tactical and operational managerial decisions can be made, it is important for a business to computerize its accounting systems (Grande, Estébanez & Colomina, 2011). Furthermore, the technological advancements over the years have led to the development of more cost-effective CAIS such as cloud accounting as well as mobile-phone compatible accounting software supposedly to take advantage of the development of the internet and the increasing use of mobile phone technology.

Empirically, the extant literature confirms a growing studies on CAIS among SMEs in developed (see e.g. Breen, Sciulli & Calvert, 2003; Grande et al, 2011) and developing (Amidu, Effah & Abor, 2011; Sam, Hoshino & Tahir, 2012; Tijani & Mohammed, 2013; Gwangwava, Faitira, Mabvure & Kuadakwashe, 2012; Otieno & Oima, 2013) countries. However, many of these studies, particularly, those undertaken in the context of developing countries have focused on, among other things, the factors that influence the adoption of CAIS (Gwangwava, et al., 2012), extent of use of CAIS and the kinds of packages used (Tijani & Mohammed, 2013; Amidu et al. 2011; Sam et al., 2012) and the effect on audit-risk management (Otieno & Oima, 2013). There are also scanty studies focusing on the effectiveness of accounting information systems (AIS) from various perspectives such as Enterprise Resource Planning (ERP) systems (Alzoubi, 2011), human factors (Dehghanzade, Moradi & Raghibi, 2011), decision-making, internal control, financial reporting quality, performance measure improvement, and financial transaction process facilitation (Hayale & Khadra, 2006; Sajady, Dastgir & Nejad, 2008).

The foregoing studies show mixed results. Furthermore, little studies have been done on the underlying nature of the CAIS employed by SMEs and how they aid their survival. This is considered critical since most of SMEs do not have the necessary infrastructure and logistics to establish and effectively manage any form of formal accounting system. Therefore, the current study seeks to examine the nature of the CAIS of SMEs in Ghana and the perception of users on effectiveness of the CAIS.

Ghana is chosen for this study due to a number of reasons. First, like other developing countries, SMEs have continuously played a key role in the growth of Ghana. Abor and Quartey (2010) further posited that SMEs account for about 92% of Ghanaian businesses, which contributes about 70% to the country’s GDP. Also, SMEs contribute to 85% of manufacturing employment of Ghana compared to other developing economies such as South Africa (61%) and Malaysia (59%) (Abor & Quartey, 2010). Secondly, there is consistent increase in internet penetration in Ghana and that generally influences rapid growth of technology, especially in the
area of personal computers and mobile phone technology. For instance, from the International Telecommunications Union (2013), as at July 2013, the use of mobile phone technology in Ghana stood at a penetration of 104% as well as the increased internet penetration. Furthermore, Ghana has the highest broadband penetration rate in Africa and is ranked 49th in the world, hence, the opening of the floodgate of technological advancements in business solutions, including accounting information systems.

The remainder of the paper is organised as follows. The next section reviews the literature on the nature of CAIS in general and how they contribute to sustainable SMEs, particularly in relation to their effectiveness. This is followed by the choice and justification of research design and method for the study. The next to last section presents and discusses results from the study, and the final section presents the conclusions emerging from the study.

Overview of the Literature
This section reviews the literature on CAIS and application in SME contexts. A large section of the review is focused on the nature and effectiveness such CAIS including Flat file Systems, REA Models, Database Models and Enterprise Resource Systems (ERPs) as well as cloud accounting systems.

The Concept of Computerized Accounting Information Systems (CAIS)
CAIS is simply an accounting information systems (AIS) in a computerized environment. AIS consist of “a system that collects, records, stores and processes data to produce information for decision makers” (Romney & Steinbart, 2009:28). It has also been described as an “integrated framework within an entity (such as a business firm) that employs physical resources (i.e., materials, supplies, personnel, equipment, funds) to transform economic data into financial information for; (1) conducting the firm’s operations and activities, and (2) providing information concerning the entity to a variety of interested users” (Sori, 2009:37). Essentially, such information systems manage information that is financial and non-financial in nature (Muhrtala & Ogundeji, 2013; Gelinas, Dull & Wheeler, 2012).

The key issue in AIS is the provision of information that is useful to the user-group that needs it at a particular time. From the literature, the developments in both accounting and ICT have made it easier for companies to migrate to CAIS. For example, Ismail and King (2005) argue that advancements in IT have changed the phase of AIS, by changing task processes and providing complex decision support, which goes beyond simply increasing the speed and accuracy of traditional accounting tasks. Sam, Hoshino and Tahir (2012) add that, the internet penetration and other technologically assisted tools have facilitated the development of CAIS.

Broadly, any AIS (and for that matter, a CAIS) is made up of a generalized model which includes data collection (input), data processing, storage and information generation (output) (Hall, 2011; Romney & Steinbart, 2009). However, four main models of CAIS can be identified in the literature. Hall (2011) mentions five AIS models developed over time: The Manual Process Model, The Flat-File Model, The Database Model, The REA Model and Enterprise Resource Planning Systems. Apart from the first model, all other models are computer-based, hence the tag, CAIS. Moreover, these models could be integrated or stand-alone, and centralized or distributed or processed in real-time or in batches.

Empirically, none of the existing studies has examined the CAIS of SMEs in such a comprehensive manner. For instance, Amidu et al’s. (2011) examination of SMEs’ use of CAIS in
Ghana found that 59% use software on a network platform, 28% use standalone software whiles 13% use peer-to-peer. This study therefore focuses on the four models of CAIS as identified by Hall (2011).

**Overview of the CAIS Models**

The Flat File Model includes different applications developed with unique files for unique applications using individual data files that are unrelated (Hall, 2011). It was particularly important in the mainframe era (Stephens & Plew, 2001) when accounting applications were first developed. End users of such model own their data files rather than share them with other users; hence, are stand-alone applications rather than integrated systems (Hall, 2011). Therefore, application is very difficult in a flat-file environment since they are standalone and no predetermined relationships are established among the entities in the various flat files.

On the other hand, the database model centralizes an organisation’s data into a common database to be accessed by all users through a database management system (DBMS) (Speelpenning, Daux & Gallus, 2001; Hall, 2011). The DBMS is a special software system that is programmed to know which data elements each user is authorised to access from centrally stored data. “The user’s program sends requests for data to the DBMS, which validates and authorizes access to the database in accordance with the user’s level of authority. If the user requests data that he or she is not authorized to access, the request is denied” (Hall, 2011:27). Compared to the flat file model, this model instigates the need for organisation’s procedures for assigning user authority and data is integrated (Hall, 2011).

The REA Model is based on the premise that data can be represented with a framework that identifies the organisation’s Resources, Events, and Agents (REA) (Hall, 2011; Kašík & Huňka, 2011; Romney & Steinbart, 2009). Specifically, the model provides database by identifying which entities should be included in the AIS design and how relationships among such entities should be structured, i.e. Resources acquired and used by an organisation, Events engaged in by the organisation and Agents participating in these events. Moreover, it allows user-views to be developed and organised as accounting and non-accounting data to support all decision making. Thus, the model comprehensively captures the actual transactions with monetary value within the organisation (see also Kašík & Huňka, 2011).

The ERP System is the recent model which involves “a complex set of computer applications designed to integrate the processes and functions within the same company” (Daoud & Triki, 2013:2). It brings together all the information systems of the various information sources of an organisation (e.g. sales, purchasing, human resources, etc.) to form an integrated system usually through the use of a relational database system. In fact, ERPs encompass modules supporting functional areas such as planning, manufacturing, sales, marketing, distribution, accounting, financial, human resource management, project management, inventory management, service and maintenance, transportation and e-business (Hossain, Patrick & Rashid, 2002:16).

Compared to the other models, the key feature of ERP systems is its ability to integrate different information systems that would have otherwise been separated into one database on a unified interface that cuts across the entire organisation. Furthermore, ERP systems provide access to reliable information, prevent data and operational redundancy, reduce delivery and cycle time, reduce cost, improve scalability of systems and maintenance as well as improve global outreach, e-business and e-commerce (Hossain et al, 2002).
Despite the above merits, ERPs are costly, time-consuming to implement and the fact that the architecture of such systems should necessarily conform to the business processes, strategic goals and culture of the organisation sometimes proves difficult (Hossain et al., 2002).

**Cloud Accounting Systems**

Cloud accounting systems are relatively more contemporary and come with the tremendous developments in internet technology. Cloud accounting is under the broad development of cloud computing. With cloud technology, information is stored in servers and provided on-line as a service to clients who then pay for the service in a pay-as-you-need manner (Taylor, Young & Macaulay, 2010). Data is stored in the “cloud” or online rather than on a local server used by only the enterprise. This typically eliminates the need for people to buy and install software and makes it possible for application processing and storage to be shared in a one-to-many environment (Christauskas & Miseviciene, 2012).

The choice of any of the afore-mentioned CAIS model has never been a straight-forward task. It is a complex task that depends primarily on the developments in three broad areas: information technology, organisational culture and the organisation’s business strategy (see Romney & Steinbart, 2009). Daoud and Triki (2013) cite that organisational variable related to organisational structure, the task uncertainty, the organisational strategy and the budgetary participation and other individual characteristics influence one’s choice of AIS model. Ismail and King (2005) add cultural and environmental factors.

**SMEs and Computerized Accounting Information Systems**

SMEs cannot remain competitive if they fail to take cognisance of increased globalisation and advancements in technology (Ismail, et al., 2003). In fact, SMEs can only compete if they have not just the needed financial resources but also ensure that the relevant and cost effective technology is available and used properly (Ismail et al., 2003). To that end, relevant accounting information available to SMEs through CAIS enables SMEs operating in such dynamic and competitive environments to integrate their operational considerations within their long-term strategic plans (Mitchell, Reid & Smith 2000).

However, existing studies suggest limited use of CAIS by SMEs; particularly, those in developing countries. For instance, Ismail et al. (2003) report that SMEs tend to use computers mainly to support operational or administrative tasks; rather than for strategic decision although fully integrated softwares are available to be used for strategic and other decisions. Also, Amidu et al. (2011) found that 75% of SMEs typically use accounting software for accounts receivables and payables functions, inventory management, payroll, general ledger, fixed assets management, bank reconciliation and cash management. However, strategic information, including the accounting information are needed to help SMEs manage short-term problems and make strategic decisions in areas critical to financial aspects of the business such as costing, expenditure and cash flow, by appropriate monitoring and control and effective financial management (Fadhil & Fadhil, 2010; Ismail & Mat Zin, 2009). Scholars conclude that owners/managers of the SMEs find it difficult to obtain the above information for strategic decisions without the use of CAIS (Ismail et al., 2003).

Regarding the contribution of the use of IT-related tools by SMEs, Amidu et al. (2011) report that 79% of SMEs use computers to reduce cost, enhance clerical works and provide sufficient space to store data and process information for management decision. Moreover, 84%
of the SMEs claim they are satisfied with the performance of their accounting software. Despite the evidence that CAIS contributes immensely to the growth of SMEs, research has shown that the effective adoption of computerized systems by SMEs is “relatively low in most developing countries as compared to developed environments” (Tijani & Mohammed, 2013: 14).

**Research Design and Method**

Studies on AIS have mostly been experiments (Peffers, Tuunanen, Rothenberger & Chatterjee, 2008), field studies (Ahrens & Dent 1998), and surveys (Amidu et al., 2011). However, the decision on which research design to use, again, mostly depends on the nature of the research objectives and the questions formulated (Salkind, 2010; Saunders, Saunders, Lewis, & Thornhill 2011; Trauth, 2001; Yin, 1993).

From the literature, there are several research strategies available to achieving the objectives of this study. However, the survey strategy was employed in this study because it provides an opportunity to map out a broad view of research questions (Sunders, et al., 2011). Furthermore, it enables researchers collect data from large numbers of respondents in order to achieve a wide coverage. So, data was collected using a structured questionnaire self-administered to purposively selected SMEs. The questionnaire was divided into three major sections: the first section focused on the general backgrounds of the company, the second section elicit information on the nature of the CAIS of the SMEs, and the final section focused on the respondent’s expectations and perceptions towards effectiveness of CAIS adopted with respect to relevance, reliability, timeliness, completeness, verifiability, accessibility and understandability of the information generated. Finally, data collected was analysed descriptively.

**Research Context and Selection of SMEs**

In order to understand the context within which this study is done, it is important to understand what SMEs are and the kind of characteristics that distinguish them from other businesses. Defining SMEs has always been a challenge, so most of the definitions are regionally and country-based (Gibson & van der Vaart, 2008). Similarly in Ghana, there is also no consensus with respect to the definition of SMEs. The National Board for Small Scale Industries (NBSSI), the recognised governmental body for the promotion and development of the SME and Micro and Small Enterprises (MSE) sectors in Ghana provides some definitions. The body rather defines MSE as the enterprises that have employed 29 or fewer workers, and with fixed assets not exceeding US$100,000, excluding land and building. Gibson and van der Vaart (2008) posit that official definition of an SME in Ghana is a business with up to one hundred employees.

SMEs in Ghana are dispersed all over the country, particularly the cities. The study targeted the SMEs in the capital city of Ghana, Accra. In selecting the SMEs, the researchers took into account the ability of the SMEs to provide the relevant data to provide answers to the thesis of the study. To that end, the study focused on SMEs at an organised and well-structured location, the Accra Shopping Mall. Overall, 46 SMEs were purposively selected for the study.

**Results and Discussions**

This section presents findings from the analysis of the data collected and discusses findings in relation to the literature. The section is primarily organised along the objectives of the study, but starts with demographic information on the respondents to place their responses in right context.
Characteristics of SMEs in the Study

Analysis of the data collected as shown in Table 1 gives evidence of SMEs operating in five unique businesses; trading (39.1%), manufacturing (19.6%), legal services (10.9%), financial services (10.9%) and ICT and software development (19.6%). These SMEs are organised as sole proprietorships, partnerships and limited liability, with 6.5% of the latter being owned franchises from larger multinational companies. Majority of them have also been in business for over two years and the majority have more than 20 full time employees, confirming that the businesses in the study are SMEs (NBSS, Ghana).

Table 1: Characteristics of SMEs in the Study

<table>
<thead>
<tr>
<th>Object of Business</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trading-Wholesale/Retail</td>
<td>18</td>
<td>39.1</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>9</td>
<td>19.6</td>
</tr>
<tr>
<td>Legal Services</td>
<td>5</td>
<td>10.9</td>
</tr>
<tr>
<td>Financial Services</td>
<td>5</td>
<td>10.9</td>
</tr>
<tr>
<td>ICT and Software Development</td>
<td>9</td>
<td>19.6</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>46</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Legal Status</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sole Proprietorship</td>
<td>16</td>
<td>34.8</td>
</tr>
<tr>
<td>Partnership</td>
<td>16</td>
<td>34.8</td>
</tr>
<tr>
<td>Private Limited Liability Company</td>
<td>14</td>
<td>30.4</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>46</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Franchise</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>3</td>
<td>6.5</td>
</tr>
<tr>
<td>No</td>
<td>43</td>
<td>93.5</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>46</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of Years in Existence</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 2 years</td>
<td>11</td>
<td>23.91</td>
</tr>
<tr>
<td>2-5 years</td>
<td>17</td>
<td>36.96</td>
</tr>
<tr>
<td>5-10 years</td>
<td>14</td>
<td>30.43</td>
</tr>
<tr>
<td>More than 10 years</td>
<td>4</td>
<td>8.7</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>46</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of Full Time Employees</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1-20 Employees</td>
<td>17</td>
<td>37.0</td>
</tr>
<tr>
<td>21-50 Employees</td>
<td>16</td>
<td>34.8</td>
</tr>
<tr>
<td>50-100 Employees</td>
<td>13</td>
<td>28.2</td>
</tr>
</tbody>
</table>
Design of Accounting Information Systems (AIS)
The results are based on the kind of AIS, the accounting software installation location, the change in CAIS, reason for any change in CAIS the data storage location and the form of network used. As shown in Table 2, none of the SMEs use a completely manual AIS. Over 78% use a combination of manual and computerized AIS. In fact, 15.2% use a fully computerized AIS without links to web-based applications whiles 6.5% use a fully computerized AIS with links to web-based applications. It is seen again that 93.5% of the respondents had their accounting software installed locally while only 6.5% accessed their software from the web.

Furthermore, 28.3% of SMEs had at a point in time changed their CAIS. Of this number (i.e. 13), 3 did so because they wanted improved speed, a further 5 did so because they had expanded their operations and another 5 did so due to an increase in the amount of data processed (data management). 43.48% of the SMEs also use over-the-counter accounting software, 15.22% use a customized software while the remaining 28.26% use other acquired specialized software.

Concerning the type of processing system, the respondents were allowed to tick as many options as applied. It came up that 15 of the respondents use a distributed processing system, 31 use a centralized processing system, and all the 46 respondents use an online and real-time processing system. Out of the 46 who use the online and real-time processing system, 29 use batch processing in addition to the online system. It was also found that the respondents who use the distributed processing system do not use the centralized processing system in any of the applications and vice versa. Also, on the location of the data storage, 93.5% of the respondents store accounting data on a local server and 6.5% store data online via a cloud-based system. Finally, all the respondents use both online and offline output modes.

Table 2: Design of Accounting Information Systems (AIS)

<table>
<thead>
<tr>
<th>Nature of AIS</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual AIS</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Combination of Manual and Computerized AIS</td>
<td>36</td>
<td>78.3</td>
</tr>
<tr>
<td>Fully computerized accounting information system without links to web based applications</td>
<td>7</td>
<td>15.2</td>
</tr>
<tr>
<td>Fully computerized AIS with links to web based applications</td>
<td>3</td>
<td>6.5</td>
</tr>
<tr>
<td></td>
<td>46</td>
<td>100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Accounting Software Installation Location</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installed locally</td>
<td>43</td>
<td>93.5</td>
</tr>
<tr>
<td>Accessed from the web</td>
<td>3</td>
<td>6.5</td>
</tr>
<tr>
<td></td>
<td>46</td>
<td>100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Change in CAIS</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>13</td>
<td>28.3</td>
</tr>
<tr>
<td>No</td>
<td>33</td>
<td>71.7</td>
</tr>
<tr>
<td></td>
<td>46</td>
<td>100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reason for Change</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed</td>
<td>3</td>
<td>23.0</td>
</tr>
<tr>
<td>Expansion of operations</td>
<td>5</td>
<td>38.5</td>
</tr>
</tbody>
</table>
The results on the underlying design model of CAIS as shown in Table 3 indicate that only 2.17% of the SMEs appear to use the Flat File Model. Majority either agreed or completely agreed that their organisations use a database model as indicated by statements DM1, DM2 and DM3. Again, virtually all SMEs agreed or completely agreed that their organisations use an REA model as shown in statements REA1 to REA5 while 6.7% of the SMEs indicated that their CAIS focuses on accounts as shown in statement REA5. 100% indicated that their organisations’ underlying CAIS design model focuses on events. Finally, 41.31% of the SMEs use an ERP system while only 6.52% use a cloud accounting system as shown in statements C1, C2 and C3.

The results reflect a relatively low use of internet or online-based system within CAIS in Ghana, which is an indication that over 93% of the SMEs use locally installed software. This means that such firms incur fixed costs even in times when they do not need the software unlike the cloud-based systems which are charged on a pay-as-you-use basis.

Furthermore, the underlying design model showed that none of the respondents used any form of fully fledged flat-file system, thus, confirming the evidence that such systems were particularly important during the mainframe era (Stephens & Plew, 2001).
Table 3: Underlying Design Model of Computerized Accounting Information Systems

<table>
<thead>
<tr>
<th>Model</th>
<th>Completely Agree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Completely Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Flat File Model</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FM1 The organisation uses different applications with unique files created for unique applications.</td>
<td>20</td>
<td>43.48%</td>
<td>25</td>
<td>54.35%</td>
</tr>
<tr>
<td>FM2 Individual data files are unrelated to other files</td>
<td>24</td>
<td>52.17%</td>
<td>22</td>
<td>47.83%</td>
</tr>
<tr>
<td>FM3 Users in the information systems environment own their data files rather than share them with other users</td>
<td>26</td>
<td>56.52%</td>
<td>20</td>
<td>43.48%</td>
</tr>
<tr>
<td>FM4 Individual files (e.g. the sales file, cost of goods sold file and the accounts receivable file are kept separately and are not in any way linked to each other)</td>
<td>39</td>
<td>84.78%</td>
<td>7</td>
<td>15.22%</td>
</tr>
<tr>
<td><strong>Database Model</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DM1 There is a centralized database into which data is stored</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>DM2 Data files are linked to each other</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>DM3 Transactions are captured in a series of relational database tables</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>REA Model</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REA1 The information system in use is designed to collect data on monetary value of resources acquired and used by an organization</td>
<td>0</td>
<td>0</td>
<td>29</td>
<td>63.04%</td>
</tr>
<tr>
<td>REA2 The information system in use is designed to collect data on events/economic activities engaged in by the organization</td>
<td>0</td>
<td>0</td>
<td>30</td>
<td>65.22%</td>
</tr>
<tr>
<td>REA3 The information system in use is designed to collect data on agents/parties participating in these events/economic activities</td>
<td>0</td>
<td>0</td>
<td>33</td>
<td>71.74%</td>
</tr>
<tr>
<td>REA4</td>
<td>The system is built to focus on events/economic activities</td>
<td>0</td>
<td>0</td>
<td>35</td>
</tr>
<tr>
<td>------</td>
<td>----------------------------------------------------------</td>
<td>---</td>
<td>---</td>
<td>----</td>
</tr>
<tr>
<td>REA5</td>
<td>The system is built to focus on accounts</td>
<td>25</td>
<td>54.35%</td>
<td>17</td>
</tr>
</tbody>
</table>

**Enterprise Resource Planning System**

<table>
<thead>
<tr>
<th>ERP1</th>
<th>There is an integration of the information systems of the various information sources of an organisation (e.g. sales, purchasing, human resources, etc.)</th>
<th>10</th>
<th>21.74%</th>
<th>19</th>
<th>41.30%</th>
<th>7</th>
<th>15.22%</th>
<th>12</th>
<th>26.09%</th>
</tr>
</thead>
</table>

**Cloud Accounting**

<table>
<thead>
<tr>
<th>C1</th>
<th>Data is stored online (cloud)</th>
<th>7</th>
<th>15.22%</th>
<th>36</th>
<th>78.26%</th>
<th>0</th>
<th>0</th>
<th>3</th>
<th>6.52%</th>
</tr>
</thead>
<tbody>
<tr>
<td>C2</td>
<td>Software is accessed from an online source</td>
<td>8</td>
<td>17.39%</td>
<td>35</td>
<td>76.09%</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>6.52%</td>
</tr>
<tr>
<td>C3</td>
<td>Payment for the information systems is made on a pay-as-you-need manner</td>
<td>11</td>
<td>23.91%</td>
<td>32</td>
<td>69.57%</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>6.52%</td>
</tr>
</tbody>
</table>

Survey Results

**Effectiveness of the Computerised Accounting Information Systems**

It has been well established that the implementation of AIS causes improvement in managers’ decision-making, internal controls, the quality of the financial reports and facilitates transactions procession. In order to measure the effectiveness of CAIS, seven dimensions of accounting information quality have been provided in the literature (see Sajady et al. (2008): relevance, reliability, timeliness, completeness, verifiability, accessibility and understandability.

The results of this study as shown in Table 4 reveal that the overall perception score on the seven dimensions on the scale of 1 to 5 is 4.28 (85.6%) while the overall expectation score is 4.39 (87.8%). This implies that SMEs expect less in terms of the information quality of the CAIS they use than they perceive that the CAIS is able to offer. This is shown by the positive gap score of 0.11. This further means than the SMEs generally perceive that their expectations concerning the accounting information output of the CAIS in use have been met. The effectiveness of the systems used by the SMEs studied may be because all the respondents use an integrated system; either a database model, an REA model or an ERP as the underlying design model of their CAIS. Such integration, according to Alzoubi (2011) and Soudani (2012) must exist in order for a CAIS to be effective.

The relative importance of the various dimensions used to determine the effectiveness of the CAIS using the gap model is inherent in the expectation scores. This is because, if the SME expects more concerning a particular dimension, then that dimension is more important and vice versa.
The relevance dimension showed the highest expectation score of 4.38 (87.6%) while the verifiability dimension yielded the lowest expectation score of 4.15 (83%). This means that the SMEs place the most importance on the ability of information produced to reduce uncertainty, improve user’s ability to make decisions and confirm or correct user’s prior expectation. On the other hand, the SMEs place the least importance on the verifiability of the output. They however perceived that the verifiability of output was highest as shown by the verifiability perception score of 4.57 (91.4%), leading to a favourable gap of 0.41. They also perceived that the information output produced by the system is not as relevant as they would expect. Although this may be the case, the conglomeration of the dimensions nullify the unfavourable gap produced by this dimension. This means that a CAIS could still be considered effective even if it produces information that albeit relevant, may not be as relevant as the SMEs may expect it to be. This raises more debate concerning the best way to measure effectiveness of CAIS.

Table 4: Comparison of Overall Perception and Expectation

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Expectation</th>
<th>Perception</th>
<th>Gap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relevance</td>
<td>4.38</td>
<td>4.33</td>
<td>-0.04</td>
</tr>
<tr>
<td>Reliability</td>
<td>4.27</td>
<td>4.40</td>
<td>0.13</td>
</tr>
<tr>
<td>Timeliness</td>
<td>4.33</td>
<td>4.43</td>
<td>0.11</td>
</tr>
<tr>
<td>Completeness</td>
<td>4.24</td>
<td>4.33</td>
<td>0.09</td>
</tr>
<tr>
<td>Verifiability</td>
<td>4.15</td>
<td>4.57</td>
<td>0.41</td>
</tr>
<tr>
<td>Accessibility</td>
<td>4.35</td>
<td>4.37</td>
<td>0.02</td>
</tr>
<tr>
<td>Understandability</td>
<td>4.27</td>
<td>4.34</td>
<td>0.07</td>
</tr>
<tr>
<td><strong>Grand Mean</strong></td>
<td><strong>4.28</strong></td>
<td><strong>4.39</strong></td>
<td><strong>0.11</strong></td>
</tr>
</tbody>
</table>

Survey Results

Hoitash, Hoitash and Bedard (2009) also argued from the perspective of internal control. They posited that, if computerised techniques of internal control are adjusted by organisations according to AIS, then the reliability of financial information processing can be assured. This study yielded a high positive reliability gap of 0.13, thus indicating that the SMEs studied have computerised techniques of internal control which they adjust according to their AIS, hence leading to a more reliable information output. CAIS of organisations have an internal control mechanism, particularly by leaving audit trails. However, an effective internal control mechanism may not guarantee relevance, timeliness, accessibility and understandability, though it may guarantee reliability, completeness and verifiability. All these dimensions are important in determining the effectiveness of CAIS as was argued by Romney and Steinbart (2009).
The assertion that if the AIS output satisfies the needs of the users, then it can be considered effective (see Sajady et al., 2008) has been proven in this study. The mean response on whether the SMEs consider their CAIS to meet their needs means that the respondents either agree or completely agree that the CAIS meets the SMEs’ needs. By comparing it with the gap model measure of effectiveness of CAIS as determined in this study which showed that actual perceived output quality of the CAIS exceeded the organisations’ expectations by a mean of 0.11, their CAIS were found to be effective.

Conclusions and Implications
The study examined the nature and the perception of the effectiveness of CAIS among SMEs. From the findings, it can be concluded that majority of SMEs use software installed locally within the business premises. Moreover, data storage is done on local servers for these firms. This situation implies that such firms incur fixed costs even in times when they do not need the software; unlike the cloud-based systems which are charged on a pay-as-you-use basis. In fact, very few SMEs access their software from the web or online and store data online.

On the effectiveness of the CAIS, it can be concluded that SMEs expect less in terms of the information quality of the CAIS, hence they agree that the existing system is effective. However, since the relevance dimension yielded a negative gap score, the CAIS of SMEs should be designed to be as flexible as possible to ensure that they can have a query system that allows them to produce output that can improve users’ ability to make decisions. Such systems should be designed to be as clear as possible by factoring in accounting standards to reduce discrepancies between what the system generates and what other users such as tax authorities and auditors generate, thus reducing uncertainty.

Finally, to make SMEs more sustainable, small businesses should consider shifting more towards the use of cloud accounting systems which allow them to use all the features available in a fully developed AIS at a cheaper rate. This is because, for cloud accounting systems, businesses are charged on a pay-as-you-use basis and can easily shift to another system if the current system does not meet their needs, unlike the use of locally installed systems.

Reference


Examine The Accounting For Heritage Assets: Is It Necessary to Put Heritage Asset in Financial Statement?

Padwin Leinardo, Raden Cahyo Dibyo Wibhowo

Abstract

Accounting for heritage assets has been a longstanding debate over last decade. As the growth of information demands, it seems that both monetary and non-monetary accountability are essentially considered to enhance development. Thus, adoption of accrual accounting is seen as one of solution. However, implementation of accrual accounting for heritage assets still remains problematic. On the one hand, many scholars contend that the value of this type of assets is not necessary to be measured economically as heritage assets provide more social benefit than economic benefit. On the other hand, it is argued that presenting heritage assets in financial statement would necessarily improve accountability in public sector. Indonesia is currently walking towards to full adoption of accrual accounting for its public sector. Having many abundant historical and heritage properties, the government is essentially required an appropriate accounting system to hold accountability on them. This study tends to critically discuss the issue surrounding the accounting for heritage asset in international context and using accounting practice for heritage assets in Indonesia’s public sector at national level to draw conclusion.

Keywords: Heritage assets, accrual accounting, Indonesia’s public sector

The conclusions, opinions and views of the authors in this paper are those of the authors alone and do not constitute the official conclusions, opinions, and views of Indonesian Financial Services Authority.

1Internal Auditors at Internal Audit Department, Indonesian Financial Services Authority. The views expressed on this paper are those of the authors and do not necessarily represent the views of DPAI or Indonesian Financial Services Authority. E-mail: padwin.leinardo@ojk.go.id and cahyo.dibyo@ojk.go.id.
1. Introduction

Accounting for heritage assets has been a longstanding debate over last decade. Generally, this type of asset exists in non-profit organization’s financial statement. In conventional ways, accounting had been perceived as quantitative discipline, which emphasizes merely on value of money (Carnegie and West, 2005). However, it has been changed since both monetary and non-monetary accountability is essentially considered to enhance development. Accrual accounting adoption in public sector has raised several questions pondered by, not only public sector’s interested parties, yet also many scholars around the world. They continuously questioned whether this technique could provide true view of heritage assets’ value and help stakeholder to understand the real value embodied in them. Beside the valuation of heritage assets, some of scholars started an initial debate regarding the ambiguity of classifying this asset as an ‘Asset’.

Given the characteristics of heritage assets, some argues that not all of heritage asset can be classified as an asset (Mautz, 1988; Pallot, 1990; Barton, 2000). In general definition, heritage assets possess cultural, historical, and educational value, which used by public. Barton (2005) comes with more specific definition claiming that heritage assets, to some extent, could be defined as public heritage facilities, in which has cultural, historic, recreational, and environmental importance. As a consequence, rather than exploiting this type of asset to generate income, heritage assets holder might be responsible to preserve them as public interests.

This study tends to examine recent debates surrounding heritage assets in international scope and critically discusses accounting treatment for heritage assets at national level of government, in this case is Indonesia. In light of international accounting standard convergence, Indonesia seeks to harmonize its accounting standard based on accrual basis accounting, which have been widely adopted in many countries. This issue, however, has not reached satisfied solution to meet international concerns (Sayce et al, 2009).
This study is outlined into few sections. In the next section, prior studies would be reviewed to regain basic understanding of this issue. The research method and research questions are described in the following section. As an explanatory study, the discussion would be drawn based on several documents and case study provided in this research. The final section of this study summarizes and concludes the extent of accounting treatment for heritage assets.

2. Literature Review

2.1 Definition of Heritage Assets

Many debatable arguments have been raised to come up with definition of heritage assets. However, currently, there is no single definition could clearly illuminate the characteristics of heritage assets. IPSAS 17 does not explicitly come up with lucid definition. It states that heritage assets as assets, which possess cultural, historical, and environmental significance (p. 512). In a more specific notion, FRED 42 defines:

A heritage asset as an asset with historic, artistic, scientific, technological, geophysical or environmental qualities that is held and maintained principally for its contribution to knowledge and culture (p. 8).

Both of those two definitions implicitly confine the heritage assets into asset’s definition. This perspective seems to be unclear to resolve controversial arguments from many scholars (Mautz, 1988; Pallot, 1990; Barker, 2006; Barton, 2005).

Before further discussion about the heritage asset, it is necessary to walk in the same line and understand the role of definition, which would satisfy the characteristic of it. The starting point might be derived from asset definition, especially in light of public sector environment. Pallot (1992) argued that it is necessary to examine the asset in public sector as there are many non-quantified values embedded in it. In that case, it is possible that asset would carry out different nature than it has been generally used by society.
The word of ‘Heritage’ itself may contain several qualitative values. It, traditionally, was recognized as tangible inherit material aspect Lately, this view has been changed gradually to broader concept and adopts integral approach in seeing the context of material along with the physical appearance (Vecco, 2010).

According to IASB (par. 49a), ‘assets are resources controlled by the enterprise as a result of past events and from which future economic benefits are expected to flow to the entity’. Carnegie and Wolnizer (1999) argue that this definition seems to be more suitable for profit oriented entity. In a similar vein, Barton (1999) contends that unlike private market goods, the public goods, such as heritage facilities, would provide social benefit that can be shared among people. In this sense, the concept of externalities might occur and lead the potential benefit is delivered more to the public as the user, than to entity, which manages the assets.

In 2001, IPSAS enlarged the IASB’s definition by adding the term ‘service potential’ and replacing ‘enterprise’ with ‘entity’.

Assets are resources controlled by entity as a result of past events and from which future economic benefits or service potential are expected to flow to the entity.

It has been stated that asset is a resource which entity has control on it. Pallot (1990) exclusively relate the control to the ownership rights. Further, she classified the asset ownership rights into 3 namely, right to manage, right to benefit, and right to dispose. For the first right, it is clearly held by the government to retain and preservation purposes. However, the second and the third rights are still left to be questioned.

Given the non-saleable characteristic of heritage asset, normally, this type of asset provides the cultural and historic value to the society. It, therefore, contributes more in increasing non-economic value and knowledge
development. Moreover, this type of benefit might be difficult to measure in the same fashion of economic benefit. Hawrylyshyn (1977) argued that it, however, still could be measured and valued.

Aside of many controversial debate surrounding asset definition in the context of heritage, it is essential to review back what the heritage refers to. Given definition of heritage from Oxford Dictionary simply states that it is a property is or may be inherited. From this perspective, it clearly shapes the meaning of heritage merely as an object. Nevertheless, this simple definition has not reached uniformity. In the concept of heritage, Vecco (2010) specified that it has vertical time relationship, which has been inherited from past experience. Additionally, he points out that there is social meaning embedded within.

In the light of recent debate, Vecco (2010) coined a broad and comprehensive term to describe a heritage attribute. She noted that initially, the heritage only consists of historic and artistic value. In addition, this heritage attribute plays important role in enhancing and preserving culture, national environmental, even recreational facilities of a country (Barton, 2005).

2.2 Presentation of Heritage Assets In Financial Statement

2.2.1 On or Off Balance Sheet

The main purpose of balance sheet is considered to display entity’s financial position of an entity at balance date. Encapsulated by this point of view, the question arises when it comes to non-financial resources. Should it be disclosed in balance sheet or not? Theoretically, according to matching principles concept, every cost assigned and might generate future economic benefit could be classified as asset and appears in financial position. To this extent, it should not always have physical existence. Barton (2000: 214) described financial position in two elements attached on it, namely investment in asset or available resources for its future operation and the extent of funding from owner, external creditors, and
accumulated surpluses. In the business term, financial position would derive information related to debt repayment, short run liquidity, etc. This information helps stakeholders to understand and measure entity’s performance. Therefore, a proper balance sheet is substantially constructed by representational figures of asset, liabilities and equity (Barton, 2000).

The validity of balance sheet depends upon the faithfulness of all figures presented. Criticism towards the representativeness of heritage assets’ value is rooted by the nature of government’s balance sheet. It is driven by two major propositions. Hooper et al (2005) contend that the value in financial statement generally reflects the market’s view, once it is resulted from current market value. In the case of heritage asset, lack of active market for this type of asset, might reasonably yield a value of nothing. Secondly, Barton (2000) argues that for a heritage asset, which used by government as public goods, do not represent expenditure, either from external creditors or owner’s capital. In that respect, it is argued that the existence of heritage asset in balance sheet does not show necessary financial position figures and cannot serve the purpose of balance sheet (Stanton and Stanton, 1997).

In contrast, from different perspective, Nasi et al (2001: 9) concluded that ‘heritage assets also possess characteristics for balance sheet recognition’. They believe that this type of asset would, indirectly, generate future cash flows to the government. The value of those types of heritage assets might be derived from passive market, even though is only small market.

As a consequence, entity, which manages heritage assets as the public goods, accounts its collections in two fundamentally different ways. They might be allowed to simply not state their collections in balance sheet or, alternatively capitalize it as an asset (Glazer and Jaenicke, 1991).
2.2.2 Heritage Asset Valuation

In relation to concept of measurability, heritage asset valuation has raised elusive concerns. Many debates stressed on whether historical cost accounting (HCA) could result true view of heritage assets or; otherwise the external market value is still valid Micallef and Peirson (1997) support the recognition of heritage asset in financial statement; however, they admit that the valuation approach for this type of asset would remain arguable.

Some prior research argued that heritage asset could be valued in financial term using acquisition cost (Nasi et al, 2009). Three years later, Raharjo and Gravitani (2012) tested the application of travel cost method in measuring the economic value of Sangiran museum in Indonesia after initial recognition. They argue that the tourist’s travel cost is likely to represent their willingness to visit a museum; furthermore, it might reflect how valuable a museum from tourist perspective. In a similar vein, Anne et al (1995) support that in attempt to recognise the value, related cost could be one most important factor. Their research was based on the positive theory and relate to agency cost in non-profit organization, such as information production cost, monitoring incentives, political cost, and management’s perquisite consumptions. The result indicated that information production cost is the most salient feature to determine the value of heritage assets.

However, some arguments also oppose the use of HCA to determine heritage asset’s value. Glazer and Jaenicke (1991) questioned the relevance of using HCA to measure such value. Mixture of costs occurred to acquire heritage asset might lead to different valuation and bear little relation to fair value on the date of acquisition. For some heritage assets, which gathered without non-monetary exchange transaction, application of HCA would seem more
problematic. The absence of initial acquisition cost might consequently reduce the reliability of value determined.

The use of market value to measure the current value of heritage asset seems more impracticable. Sayce et al (2009) argue that the issue of inalienability and heterogeneity would affect the reliability of measurement. Some of heritage assets are held in guardianship arrangements, hence it may result inability to undertake valuation based on market value. Barker (2006), on behalf of ASB, assumes that fair financial value is the most appropriate method to measure the value of heritage assets. The question arises whether that value would be reliably established since there is no absolute benchmark and future cash flow expected from this type of assets. Mautz (1988) even claimed that a heritage asset, such as monument, resulting negative cash flow as the cost to maintain the asset generally exceeds the revenue generated from admissions. In that sense, discounted cash flow method is doubtful to use. Moreover, putting a price on priceless property would indicate that individual person might own it, and by doing so, it violates existing concept of national treasure.

2.2.3 Disclosure of Heritage Assets

Apart from the recognition and inclusion issue, many scholars argue that, rather than quantitative value, this type of asset might be more useful if presented in qualitative information (Glazer and Jaenicke, 1991; Barton, 2000; Carnegie, 2005). A clear separated qualitative disclosure of heritage assets would provide essential information to stakeholders. It, furthermore, might clearly show the importance of heritage assets (Pallot, 1990).

Depending on the nature of accountability, non-profit organization might apply different informative requirements. Rentschler and Potter (1996) suggest that the accountability in public sector should not ignore the qualitative information to assess organization’s ability
in educating and enriching public’s knowledge. Apart from financial information, performance measurement should be derived from efficiency and effectiveness of organization in managing budget provided to maximize the quality of service. Gomez and Casal (2008) also hold the similar argument based on the usefulness of information in public sector’s decision making. The information, which related to operation carried out by the organization, such as description of assets, explanation regarding asset valuation, allocated budget on maintenance of asset, conservation, and financing methods, must be disclosed to enable stakeholders measuring organization’s performance. Additionally, comprehensive qualitative disclosure would enable policy maker and central government to allocate budget efficiently.

2.3 Implementation of Accounting Treatment for Heritage Assets: US and UK’s practice

In the light of public sector’s accounting reforms, the UK has been adopting accrual accounting in public sector’s financial statement to enhance accountability and stewardship. However, the central government did not provide detailed requirement to report and present the accounting information in financial statement. Consequently, UK’s professional accounting bodies made recommendations of the detailed measurement and disclosure criteria, called Statement of Recommended Practice (SORP).

According to Financial Reporting Standard (FRS) 15, all the tangible fixed assets, which held by entity, need to be capitalized in balance sheet and initially be measured at its cost (ASB, 1999, p. 6). That standard, implicitly, includes the capitalization process of tangible fixed assets, which possess historic and artistic value, such as heritage assets. In the more detailed justification, SORP (2005) emphasizes the issue of heritage asset valuation. Although FRS 15 already provided some appropriate valuation base, SORP admits that the uniqueness of this type of asset would result varying judgment to measure the value. Each type of heritage asset may possess
irreplaceable characteristics, then further; lead to different service potential provided. In that sense, there is no single valuation method could be applied to capture the true value of these assets. Therefore, SORP (2005) clarified that entities will not necessarily capitalize heritage assets in balance sheet, yet if they could be reliably measured, entities need to include them separately in balance sheet and further analyze in the notes of financial statement. In regards with the disclosure requirements, SORP (2005: 294) clearly states,

Information on heritage assets (whether or not they have been capitalized) should be given in the notes to the account.

Furthermore, it is explained that the given information should contain narrative description, which enables stakeholder to appreciate and analyse the importance of heritage assets. Also, the entity is required to disclose the changes of cost on assets and accounting policy attached on them.

Conceptually, accounting practice for heritage asset in the UK is covered by FRS 30, in which also refers to FRS 15 in term of recognition and measurement.

The Museum accounts for the objects in its collection as heritage assets, in accordance with FRS 30 (British Museum, 2012: par.1d).

FRS 30 strongly recommends that all the heritage assets should be capitalized in balance sheet in attempt to avoid incomplete entity’s financial position and provide the best financial statement (ASB, 2009: par. 14-15). Theoretically, FRS 30 also classifies a heritage asset is an asset; it therefore requires the comprehensive related information, such as acquisition, preservation, management, disposal of heritage assets, and description of maintenance (par. 7). Where the value of heritage assets is unreliably measured, an entity is required to explain the reason why the heritage assets are excluded from balance sheet, in notes to account.
In practice, the implementation of this standard seems have met appropriate level at compliance. For instance, National Audit Office (NAO) had stated that British Museum’s (BM) financial statements 2011/2012 give true view and properly prepared in accordance with the Museums and Galleries act 1992 and Secretary of state directions (British Museum, 2012: 32). In order to value the heritage asset they hold, BM used historical cost method for purchased assets and valuation at the time of acquisition for donated assets. However, BM did not include all heritage assets in the balance sheet. As it is further disclosed in the notes of financial statement (par. 8c):

As detailed in the accounting policy, heritage assets acquired before 1 April 2001 are not included on the balance sheet because information on value is not readily available and cannot be obtained at a cost commensurate with the benefits to users of the financial statements.

Additionally, although BM has stated that valuation method has been used to measure the value of donated assets, they fail to disclose who is the entity did the valuation or which valuation benchmark has been involved in measurement.

Another example can be drawn from National Gallery (NG) in London. Known as a house of the finest collections of Western European paintings, NG is committed to preserve and enhance the quality of its collection for both current and future generations. Compared to BM’s financial report, it can be noted that NG is able to comply with FRS 30 more properly. As the BM did, NG also provided brief description regarding the characteristics of heritage assets they possessed and 5 years financial summary of acquisition. To complete that summary, it is equipped by significant addition of collection during 2011. NG measured the value of heritage assets using historic cost and market data at the time of acquisition. In the case of donated assets, the management further explained that Gallery’s curator would perform valuation.
However, out of 2.314 total number of collections held by the gallery, only 26 have been capitalized on the balance sheet (p. 37). In other words, NG is only able to cover 1% valuation out of total collections as it is further disclosed in the notes to account:

There is an inherent limitation to valuation of works acquired by the National Gallery, simply because by their nature they are usually unique and iconic works of art for which little or no comparable market data exists (p. 37).

Unlike the UK, it appears that US federal (central) government is more able to provide detail accounting standard than local government. However, government accounting standard in the state and local government is relatively consistent with Federal government (Christiaens et al, 2012). Government Accounting Standard Board (GASB), which covers state and local government agencies, does not particularly point out accounting treatment for heritage asset. Rather, using the term of capital asset, it generally states that the capital asset is reported at historical cost, and most of it is depreciated (GASB 34, 1999). It is added that the entity should capitalize the donated assets at their fair value at the date of donation. Further, capital asset is defined as:

“land, improvements to land, easements, building improvements, vehicles, machinery, equipment, works of art and historical treasures, infrastructure, and all other tangible or intangible assets that are used in operations and that have initial useful lives extending beyond a single reporting period” (GASB 34, 1999: 11).

Regarding the reporting nature in public sector accounting, GASB is concerned with both quantitative and qualitative information. It is reflected from the requirements to present all assets in Government-wide financial statement, apart from their appearance in Balance sheet (Christiaens et al, 2012). By this means, it encourages government agency to fully demonstrate its accountability towards stewardship assets. Additionally,
the efficiency of economic resources flows would be focused in Government-wide statement of activities by further detailing the budget has been expensed on them (Patton and Bean, 2001).

Another guidance was produced by federal government (FASAB) as an attempt to complement this standard, called SFFAS 29. This standard specifically regulates heritage assets and stewardship land, in which consistent with GASB concept. This FASAB’s standard directly addresses accounting treatment for collections and national treasures managed by government. SFFAS 29 implicitly defines heritage assets as a unique asset, which consist of collection and non-collection type heritage assets.

Heritage assets are PPE that are unique... Heritage assets consist of (1) collection type heritage assets such as objects gathered and maintained for exhibition... (2) non-collection-type heritage assets, such as parks, memorials, monuments, and buildings (SFFAS 29, par. 15)

Consistent with GASB, FASAB also requires comprehensive disclosure related to heritage assets. In the case that heritage asset’ costs are recognized, entity is encouraged to provide them in statement of net cost at the period in which costs are incurred (par. 19). Both of those boards seem to hold similar perspective in improving accountability on stewardship asset.

For instance, The Field Museum of Natural History in Chicago recognized its collection in financial position and put them as Museum Property. On the other hand, other museums displayed their heritage assets differently in financial statement. Derived from the entities’ financial statements published in 2012, both San Diego Museum of Art and Whitney Museum of American Art included Art collection in balance sheet without stated monetary value. This accounting treatment, to some extent, meets criteria required by both GASB and FASAB, as it was confirmed by entities’ external auditor.
In regards with supplemental related information about this asset, they may have slightly different practices to account. SDMA, for example, provided an amount of budget expensed on purchasing art collections in Statement of Functional Expenses and excluded it from Operating cash flow. Conversely, WMAA did include expense on purchasing art collections in Statement of cash flows. However, in the notes of financial statement, both of these museums, only simply elucidate accounting policy applied for their collections without further explanation regarding physical condition and unique characteristics embedded on them.

3. Research Method and Research Questions Development

This study aims to examine theoretical arguments surrounding heritage assets valuation and presentation in financial statements. We, further, also use Indonesia’s current standard implication as distinctive case study, which would offer comprehensive discussion related to this topic. Evidence would be derived from related documents as rich sources in qualitative research (Smith, 2011). Documentary analysis derived from related accounting standards, entity’s financial statements, comment letters, annual reports, and previous discussions would provide vivid intention of institution and ground investigation. More importantly, the objectives of public sector institution, which would be used as salient indicator to address the research questions, generally extended into qualitative data, hence examines the documents is essentially required.
All the required data are mostly collected from entity’s website. Some entities, especially museums in Indonesia, did not publish their annual report on official website. Consequently, the author directly contacted heads of the museum in order to access required information, such as financial statements and annual report. The financial statements and annual reports used in this research were published either in 2011 or 2012. The purpose of gathering the most recent data is to avoid outdated information and more focus on resulting plausible justification regarding the recent unresolved debates.

The case study used in this study would contribute in several aspects. Firstly, it might offer distinctive case study settings and provide wider views of heritage assets accounting practices. Secondly, it would identify some issues regarding heritage assets recording and disclosure in financial statement; then furthermore, helps to develop robust conclusion. Lastly, the case study would facilitate further research to aim for specific conclusion in attempt to explore this issue in international scope.

Research questions of this study are:
1. Why should heritage assets be included in financial statement?
2. How (should) do accountants put heritage assets in financial statement? (At national level of government)

4. Case study

4.1 Accounting for Heritage Assets in Indonesia

In light of current public sector reforms in Indonesia, government has been establishing public sector accounting standards and gradually shifts it into accrual basis. This establishment leads to the application of accrual basis within Government Accounting Standard (SAP/PSAP). National law in Indonesia officially encourages the use of this accounting standard at any governmental agencies and public sector organizations, to which national budget has been allocated, by releasing UU no. 17 in 2003 (Simanjuntak, 2005).
Asset, in SAP/PSAP, is divided into two, namely current and non-current assets. SAP defines asset as:

Economic resources that possessed and/or owned by government as a result of past transactions where future economic or social benefit is expected to flow into, either government or public, and also could be measured in monetary unit, including non-financial resource which is needed to deliver services to public, and resources which have preservation purposes due to their historic and cultural aspects – emphasis added (par. 65a).

This definition expresses similar idea with IPSAS’s definition. As an addition, SAP explicitly included non-financial resource, which has qualitative aspects, into asset category. It also emphasizes the capability to measure those resources in monetary value. Along with this term of measurability, in par. 90, it is further explained that ‘asset would be recognized at the time when future potential benefit obtained by entity and possess a value or cost which can be reliably measured’. Heritage asset, under this standard, is further classified into non-current assets and the accounting practice for this type of asset is ruled under PSAP no. 7 (Fixed asset).

PSAP 7 holds the same definition of asset as it is described previously in SAP. Furthermore, it extends the definition of fixed asset by simply stating that fixed asset is a tangible asset which has useful life more than 12 months and can be used by government or public (par. 5). Generally, fixed assets consist of land, building, infrastructure, equipment, and fixed asset in construction progress. However, in public sector, there are specific assets, which theoretically considered as government assets due to the nature of the assets, namely heritage assets and military assets. Accounting standard for both of those assets would be specifically explained in PSAP 7.

Heritage asset is not clearly defined under this current standard. PSAP 7 simply states that:

…it is described as heritage assets because some historic, environment, or cultural matters (par. 65).
In regards with heritage asset presentation in financial statement, PSAP 7 allows the entity to not including this type of asset in balance sheet; however, it is subject to account in notes to financial statement. It is further explained that:

Heritage asset must be disclosed in physical unit, such as number of collection, in notes to financial statement without value (par. 68).

4.2 Implementation of Accounting For Heritage Asset In Indonesia

Three museums examined, to represent implementation of accounting practice at national level, are:

- National Museum of Indonesia (Museum Nasional), is popularly known as Elephant Building, in which Indonesia’s history for about two centuries has been preserved. It was initiated by Dutch government in 1862 and then officially opened in 1868; this museum has currently more than 66,000 collections, which consist of about 61,000 anthropological artifacts and 5,000 archeological artifacts.

- Youth Pledge Museum (Museum SumpahPemuda), was built in 1972 and is endeavored to preserve and display any aspects related to The Youth Pledge moment in 1928. This museum holds more than 2,000 collections including the main building, where The Youth Pledge was originally formulated and declared.

- Museum of Declaration of Independence (Museum Perumusan Naskah Proklamasi), the building itself was originally built in 1920. Considering the significant role of this building in Indonesia’s history, the government officially inaugurated this building as the museum in 1992. As the place where independence proclamation text was formulated, the museum displays many wax sculptures of important figures as well as photos and documents, which related to the formulation moment.

Those three museums above are funded and regulated under the Indonesian government, in this case, Ministry of Education and Culture and Ministry of Tourism and Creative Economy (current); hence, their accountability report
should be prepared in accordance with government accounting standard (SAP/PSAP).

Table 2 gives an insight how the museums treat heritage assets for accounting purposes. It clearly indicates that none of those samples present their heritage assets either on balance sheet or notes to financial statement.

<table>
<thead>
<tr>
<th>Entity</th>
<th>Balance Sheet Included</th>
<th>Notes to financial statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Museum of Indonesia (NMI)</td>
<td>Not included</td>
<td>No disclosure</td>
</tr>
<tr>
<td>Youth Pledge Museum (YPM)</td>
<td>Not included</td>
<td>No disclosure</td>
</tr>
<tr>
<td>Museum of Declaration of Independence (MDI)</td>
<td>Not included</td>
<td>No disclosure</td>
</tr>
</tbody>
</table>

Financial statement, under the national law, should at least consists of 3 main elements, namely Budget Realization Report, Balance sheet, and Notes to financial statements (Pamungkas et al, 2011). In preparing the financial statements, it is stated in Notes that NMI had complied with SAP as it has been regulated

This financial statement has been prepared and presented in accordance with SAP... Presentation of asset, liability, and equity in balance sheet is based on accrual basis... (NMI, 2012: IVa)

In NMI’s balance sheet, asset is classified into 3, namely current asset, non-current asset, and other asset. However, none of those categories include the term of heritage assets. In this case, the management simply ignores the existence of heritage assets in financial statement by not even disclosing number of units of heritage assets that the museum holds.

Based on investigation from The Audit Board of The Republic of Indonesia, NMI still possesses weaknesses in internal control and reporting system. They
also particularly point out the incomplete heritage asset data in reporting as it is
stated in Other Important Disclosure section.

There is inaccurate BMN (Government Asset) management, insufficient
technical coordination, and incomplete input data for heritage assets (NMI, 2012: D1).

The same practice in treating heritage assets can be seen in YPM and MDI
financial report. YPM did not include the heritage asset held by museum in
balance sheet as it is shown by Table 3 below.

Table 3

<table>
<thead>
<tr>
<th>Current asset</th>
<th>(in IDR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash</td>
<td>35,000,000</td>
</tr>
<tr>
<td>Inventory</td>
<td>67,106,250</td>
</tr>
<tr>
<td>Fixed asset</td>
<td></td>
</tr>
<tr>
<td>Land</td>
<td>10,697,127,000</td>
</tr>
<tr>
<td>Equipment</td>
<td>859,411,212</td>
</tr>
<tr>
<td>Building</td>
<td>1,044,620,828</td>
</tr>
<tr>
<td>Total asset</td>
<td>12,703,265,290</td>
</tr>
</tbody>
</table>

(source: YPM balance sheet - partial, 2011)

In term of balance sheet presentation, MDI also adopts the same fashion by
excluding the heritage assets from it. Additionally, there is no further
information, explaining about heritage assets, provided in Notes to financial
statement. This absence of related information indicates that the entities have
paid less concern about heritage assets presentation for accounting purposes;
then furthermore, might affect public accountability.

However, those two entities separately attach some information regarding their
heritage assets. For instance, YPM provides separated document called
Operational Instruction in which any activity relates to collections preservation
is detailed. Table 4 below illustrates the structure of Operational Instruction
document.
Cash outflow provided may enable the stakeholder to evaluate the museum’s performance by comparing to the data from previous period. MDI also provides similar document under the title of Unit Expenditure Report. This type of document gives exactly the same information as YPM’s Operational Instructions do. In addition, MDI attaches additional document on it in which the entire museum’s collections have been listed in physical unit.

Table 4

<table>
<thead>
<tr>
<th>Code</th>
<th>Activity</th>
<th>Volume</th>
<th>Price/Unit</th>
<th>Total cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>011</td>
<td>Collection acquisition</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cultural property acquisition</td>
<td>1</td>
<td>50,000,000</td>
<td>50,000,000</td>
</tr>
<tr>
<td>012</td>
<td>Collection conservation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>Maintenance of Relief</td>
<td>1</td>
<td>4,250,000</td>
<td>4,250,000</td>
</tr>
<tr>
<td>B</td>
<td>Maintenance of furniture</td>
<td>1</td>
<td>4,250,000</td>
<td>4,250,000</td>
</tr>
<tr>
<td>C</td>
<td>Maintenance of Sculpture</td>
<td>1</td>
<td>4,250,000</td>
<td>4,250,000</td>
</tr>
<tr>
<td>013</td>
<td>Collection restoration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>Photographs restoration</td>
<td>1</td>
<td>4,250,000</td>
<td>4,250,000</td>
</tr>
<tr>
<td>B</td>
<td>Text restoration</td>
<td>1</td>
<td>4,250,000</td>
<td>4,250,000</td>
</tr>
<tr>
<td>C</td>
<td>Relief restoration</td>
<td>1</td>
<td>4,250,000</td>
<td>4,250,000</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(source: YPM Operational Instructions 2013 - partial)

As it is shown above in Table 5, the museum comprehensively listed all the museum’s collections in physical number of unit. In this sense, it might be considered that MDI conducts better disclosure of heritage assets compared to YPM.
In summary, from the data collected from three different entities, it is noted that each of them has slightly different approach to achieve accountability in heritage asset reporting. This practice could be considered in accordance with applicable standards; however, the lack of information provided in Notes indicates that the entities simply neglected the requirement.

5. Discussion

5.1 The Importance of Heritage Assets Presentation

In public sector, heritage assets presentation might be more required to guarantee their preservation rather than the value competitiveness in open market. The heritage assets, which represent national treasure, should be more concerned with qualitative information instead of monetary valuation matters. Micallef and Peirson (1997) contend that information related to heritage assets is necessary and beneficial considering government scarce resources normally fund most of the collections. Thus, the information could inform how scarce budget has been devoted and help the government to make a budget decision making in the future. Carnegie and Wolnizer, (1996) also recommend the presentation of heritage assets in financial statement as one method to enable accountability of non-profit entity, such as museum.

To conclude, the inclusion of heritage assets in entities’ financial statement, as part of their accountability report, is necessary for several reasons. Firstly, by defining assets in broader conceptual thinking, all the heritage assets could satisfy the criteria to be considered as an asset in respect of public sector environment. In that sense, it legally becomes part of financial report. Secondly, it would further explain the condition of heritage assets, on which budget has been expensed. Thirdly, their presentation could help the entity to evaluate its performance as it is endeavored to preserve the heritage asset in trust of public. Furthermore, it might signal and promote more accountability in attempt to achieve entity’s main objectives.

5.2 Accounting for Heritage Assets: Recommendation

Classification of heritage assets
Based on previous debates regarding the definition of heritage, it might be concluded that heritage embeds broad meaning. The qualitative criteria attached on this word would lead to many elements or properties to be considered as heritage property. Thus, it might be necessary to specifically classify the heritage asset in term of accounting information presentation (such as Artistic asset and National treasure). Most likely for the national treasure, they possess historical, culture, and nation’s ideology. On the other hand, the artistic asset might have both of art and historic/culture value. In the case of national treasure, it is most likely non-saleable property as it embodies national history, which identifies the identity of one country. Thus, if individual person owned it, it would have failed to represent all citizens who live within anymore.

In regards with some heritage assets that considered as community assets (public facilities), this argument might be examined further. Such public facilities, namely park and square, their function could be closely attached on public’s interests. However, there is some condition which prevents those facilities can be categorized as heritage assets. For those that have historic value, it could be subject to account in notes; otherwise, it might be valued in the same fashion with other fixed assets, such as land. It might be true that when a park has historical value, it still directly attached on the land. Furthermore, it can be questioned whether or not the market value of the land would be included in financial statement. In attempt to answer this question, we could start with the concept of stewardship and entity’s objective. The government as the entity, which holds this resource in trust, has limited right to dispose. Additionally, government is obliged to use this type of asset to maximize public’s interests. Therefore, it is clear that the entity also has limited right in land exploration and utilization. However, in the case that, the park had been rebuilt into commercial site or private building, the common valuation method would be applied.
Exclusion of some heritage assets from balance sheet

Having broad definition of heritage itself, it may propose some exclusion of heritage assets from balance sheet. In the public sector, generally this kind of asset is acquired to be preserved or transfer the knowledge inter-generation. Given these characteristics, including some heritage assets in financial position might fail to present necessary information. Pallot (1990) in response to Mautz (1988) contend that putting up a value for some heritage asset in financial position would lead to misleading financial judgment. The purpose of the entity is to maintain and preserve the national treasure, thus once it is monetarily valued, it might affect performance measurement, especially in financial indicator. Non-profit organization, as an example, may have different indicators to achieve its success, compared to profit oriented organization. The higher income they generate from asset utilizations does not necessarily indicate that it has good management activity. To some extent, the success indicator may heavily focus on the number of collections obtained or how well the knowledge can be transferred through museum service. Mautz (1988) added that the
maintenance cost could not be compared to the income generated from the assets. As a result, it generally yields negative cash flow. In other words, valuing this type of heritage assets would be unreliable.

Considering that all the samples hold the heritage assets, which represent nation’s history and ideology, they could be classified as national treasure. There is no specific reason has been stated by entity in Notes regarding the incapability to measure the monetary value of the asset; however, SAP has specifically mentioned the difficulty to measure monetary value of heritage assets.

Cultural, environmental, educational, and historical values of heritage assets are impossible to be fully reflected by monetary value, which based on market price (SAP, 2005: par.65a)

In this sense, the government has reckoned that setting a price on heritage assets and presenting them on balance sheet might not have significant usefulness in attempt to enhance quality of entity’s financial position reporting.

**Picture 2**

Proposed heritage assets presentation on balance sheet

Picture 2 above summarizes the theoretical recommendation on how entity treats its heritage assets on balance sheet. The National Treasure is not necessary to appear on balance sheet due to its special characteristics and the
main objective to hold this type of assets. In the case of artistic assets, they might be included or excluded from balance sheet depends on their inalienability and entity’s right to dispose these assets.

Valuation and Disclosure

In his book published in 1983, Whittington defined a valuation as a process of translating assets into monetary units. Driven by this simple definition, many valuation techniques have been developed to help accountants in asset valuation matters. As the issue of heritage assets arises, variety of method to measure the value of heritage asset has been offered by several previous studies. One method suggested is the historical cost method. This method may result reliable and relevance value at the point when the transaction of the asset occurs. However, it is argued that the valuation after initial recognition would not reflect the current value of asset under historical cost method. Considering the special characteristic of heritage asset, this type of asset might not be subject to depreciation. In some cases, although the physical condition has been deteriorated, it is possible that the value would remain stable or even increased. The needs of expected useful life in determining the amount to be depreciated should also be concerned. Some heritage assets may have infinite useful life as it is expected would be preserved as long as possible. Another problem using historical cost method might arise when the heritage asset was inherently obtained or donated by another group. The inability of entity in tracing the transaction cost or financial evidence to determine the initial cost of asset acquisition would further affect reliability of measurement. Therefore, the use of historical cost in valuing heritage assets still arguably possesses many flaws.

Fair value method is another option could be taken into consideration. It is generally argued that this method might fail to provide the true view as it focuses mainly on monetary value. Some scholars also held the same view that the lack of open market for some heritage asset would lead to irrelevance value of heritage asset. An alternative technique, such Net Present Value (NPV), is possible to generate unreliable value, as it requires expected cash flow. Thus, this view might distort the entity’s main objectives in holding this kind of asset. However, fair value method seems could be applied to some heritage assets.
which have market value. Paints collection or sculptures displayed in the museums may have market value as they can be sold to individual. In that case, fair value method appears could be reliable measurement. Furthermore, the value appears on the balance sheet might reflect the true value of the paintings and give the essence of asset valuation in entity’s financial position.

Regarding the group of heritage asset, which can be considered as national treasure or public facilities, it seems than monetary valuation is meaningless. This type of heritage assets provides more social benefit than economic benefit to the society. Thus, it might not have value-in- exchange; otherwise it has value-in-use. Those values are contained in the assets held by the entity, but it is measured in different fashion. It is easier to reliably measure the value-in-exchange since there is an active market exists. On the other hand, the value-in-use is more difficult to measure. It is possible to use opportunity cost; however, in this case the use of opportunity cost has been argued may fail to reflect the true value of heritage assets. Besides that, the concept of inalienability and ‘held in trust’ are closely associated with this type of heritage assets. Government may hold the assets in trust and is obliged to keep them. This inability to dispose or sell them might encounter the purpose of valuing the national treasure in financial position.

**Promoting accountability**

The concept of accountability could be explicable in term of professional or community’s point of view. Institutional rationality might hold different perspective to aim for greater accountability. The community would concern about the preservation and physical condition of the asset. In other words, they see this type of asset from aesthetic and social value rather than economy value. On the other hand, the professional judgment might heavily focus on accounting regulation compliance and monetary value. Having two quite contrary views, it seems that enhancing accountability for heritage assets is problematic and unlikely to be achieved by merely crude accounting measures.
6. Conclusion and Research Limitation

To conclude, the accounting practice for heritage assets, primarily in public sector, has not reached uniformity yet. However, to some extent, the inclusion of heritage assets in financial statement is necessary, aligns with entity’s main objective and their characteristics, which meet asset’s classification. Derived from the entities used as samples in this study, none of them has successfully comply with current government accounting standard in regard with heritage assets presentation in Notes. Interestingly, each of entity produced slightly different additional document to account for heritage assets. In the developed countries, such as the UK and US, they seem adopt different accounting practice as well.

The various implementation of accounting for heritage assets might be driven by plurality of heritage asset’s concept itself. The unclear definition, would impede the classification; furthermore, lead to fierce debate on how measuring the value of it. Considering the unique characteristics of this asset, it is important to concern about qualitative disclosure in enhancing accountability. Therefore, comprehensive disclosure requirement is necessary to mainly account for this type of asset in financial statement.

It is likely that issues regarding heritage assets accounting identified in this study could be resolved by adopting broader notion of accountability and asset definition in public sector. A broad definition, as a fundamental aspect, might be able to derive lucid classification; and furthermore, determining proper valuation approach or accounting treatment for this type of asset. The heritage assets may consist of a few types of assets; therefore, it is essential to specify the characteristics of each asset before determining the accounting treatment to be applied. This study supports greater point of view in developing accountability and transparency in public sector reporting, yet still concern about balance between accounting and community’s perspectives. An approach to enable accountability has been explored based on presented case study and previous research. It might be expected to generate better understanding and could illuminate the recent debates surrounding accounting for heritage assets.
However, this study may contain several flaws. The limited samples used in this study might affect the representativeness and restrict the justification of the result. Considering the different characteristics and condition of every country, this could influence the establishment of accounting standard and its implementation. Although qualitative information could be derived, lack of statistical data may lead to weak quantitative interpretation. A quantitative research is essentially required to complement the result obtained from this study. Further research may need to aim for the usefulness of disclosure information to stakeholder, in attempt to test proposed result.
Reference list


British Museum (2012), *Annual Report 2011-2012*


Federal Accounting Standards Advisory Board (2005), *SFFAS 29: Heritage assets and stewardship land*, Washington DC

Field Museum of Natural History (2011), *Annual report 2010-2011*


Gomez, E and Casal, R (2008*), ‘Are the IPSASB and ASB proposals adequate for public heritage assets?’, Research project


Mautz, R (1988), ‘Monument, Mistakes, and Opportunities’, Accounting Horizon, pp. 123-128


kaitannyadalamencatatannilai asset tetap pemerintah’, 
*Jurnal Ilmiah Ranggagading*, Vol. 11, No. 2, pp. 82-91


StandarAkuntansipemerintahannomor 7 (2005), AkuntansiAsetTetap (Accounting for Fixed Assets), Jakarta


Statement of Recommended Practice (2005), *Accounting and Reporting by Charities*, Essex


Nasi, S., Hansen, K. and Hefzi, H (2009), ‘Off balance sheet assets in central governments: Are they unique or are they really assets?’, Research paper


1. Introduction

In defense procurement, owing to the restriction of technologies, laws, and patents, most items do not have market prices. Therefore, they have to be priced based on an accumulation of appropriate costs. In this pricing structure, because any cost reduction reduces the contract price, the government can benefit from the contract firm’s cost reduction efforts. However, these efforts are ordinarily neither observable nor verifiable because the contract firm is often lethargic in exerting such efforts. Thus, in defense procurement, there are serious incentive problems because there is no choice apart from using a cost–based pricing structure. Typically, the government can choose between a fixed–price contract (FP) and a cost–plus–incentive fee contract (CPIF) as the cost–based pricing structure. However, the question remains regarding what type of contract is desirable. In this paper, we present an optimal choice for a contract structure that would encourage the contract firm to exert cost reduction efforts when a moral hazard problem exists.
As the background of this research, defense procurement had changed substantially on a global scale. After the end of the Cold War, there were substantial reductions in the defense budgets of most countries. Consequently, many governments have been emphasizing the need to implement government procurement, especially defense procurement, as efficiently and effectively as possible. For example, the U.S. in response to the changing international environment that threatened its interests, changed its national security and military strategies (Larson and Orlestky 2001); while the UK implemented long-term restructuring of its defense industry (Boyce 2000).

To achieve this efficiency and effectiveness, governments have taken numerous initiatives, such as organizational reforms (Boyce 2000; McDonough 2005). However, procurements cannot be executed solely by governments because, generally, they lack sufficient manufacturing capacity. Hence, they must purchase goods and services from external sources to fulfill their missions.

Defense procurements have several specific features not shared by typical commercial procurement contracts. First, the number of firms that can produce defense procurement items is strictly limited because of technological, legal, and patent difficulties. Generally, only one firm is allowed to produce such items. This situation, the so-called sole-source condition, makes it impossible to derive the price from the market or through competitive bidding. Therefore, as mentioned above, the pricing structure of such items has to be based on the accumulation of appropriate costs.

Second, there is a conflict of interest between the government and the contract firm. While the government attempts to execute procurement effectively and efficiently, the contract firm...
attempts to maximize its profit from the transaction. Therefore, the contract firm often exhibits opportunistic behaviors, which erode the government’s utility. Although the government wants the contract firm to exert cost reduction efforts, post–contract efforts are ordinarily hidden from the government. Subsequently, an underprovision of cost reduction efforts could occur. To induce a sufficient level of cost reduction efforts from the contract firm, the government must elaborate on a structure for procurement contracts.

Typical procurement contract structures that the government employs under the sole–source condition are the FP and cost–plus contract (CP). FP’s contract structure determines a fixed delivery price at the pre–contract stage and does not reimburse the actual cost at the post–contract stage.² Accordingly, the contract firm can gain profit by keeping the actual cost below the fixed contract price. Thus, an FP provides the contract firm with incentives for cost reduction, but is not attractive from a risk–sharing perspective. This is because the contract firm must bear all actual costs, even if the ex–post actual cost exceeds the ex–ante fixed contract price. That is, all the risk of cost fluctuations is faced by the contract firm. Therefore, the FP tends to be used when there are relatively few technological and economic uncertainties.³

² Although FP does not reimburse actual costs, the pre–contract cost estimation is an important factor for pricing. Therefore, in the background, the pricing structure of FP is also partly based on the accumulation of costs.

³ Additionally, FP has another problem. When there are the serious information asymmetries (e.g., regarding input and resources required for producing the procurement item) between the government and contract firms, the
On the other hand, CP contracts tend to be used to mitigate the negative effects of FP. In CP, procurement items have to be priced based on an accumulation of appropriate costs plus the profit of the contract firm. These profits are calculated as the product of the actual cost and the profit rate. That is, the government reimburses all actual costs. Consequently, such a pricing structure provides little incentive for firms to reduce costs, and it is often estimated that CPs can cause a cost overrun problem (Wang and San Miguel 2013).

To generate positive incentives to reduce cost under the CP structure, CPIF is used, for instance, in U.S. defense procurements for instance (Federal Government of the United States 2012, 16. 304). Under CPIF, the government imposes a cost target on the contract firm at the outset of the procurement project, and the incentive fee represents the difference between the cost target and actual cost. Therefore, the contract firm has positive incentives towards cost reduction under CPIF.

Previous literature on defense procurement contracts discussed which type of contract, FP or CPIF (CP), is superior. For instance, Reichelstein (1992) indicated the merit of CPIF and government has serious difficulties in disputing the firm’s ex–ante cost calculation. Consequently, the firm will extract a higher price than in the actual situation.

4 Another issue that prior studies on defense procurement contracts addressed is the serious information asymmetry between the government and the contract firm. Normally, the government is unaware of the details of the contract firm’s costing system. Therefore, the contract firm can opportunistically shift costs from nondefense to defense businesses (Rogerson 1992; Thomas and Tung 1992; Lichtenberg 1992; McGowan and Vendrzyk 2002).
recommended budget–based schemes. Wang and San Miguel (2013) suggested that, although
the Department of Defense’s (DoD) policy–makers have strongly preferred FP to CP recently,
their belief that FP induces more cost efficiency compared to CP is debatable and potentially
counterproductive.

These studies on the choice of contract structures mainly applied the adverse selection model in
their analyses, assuming that the actual cost is given and exogeneous, and only focused on the
amount of payment from the government to the contract firm. That is, most previous studies
focused not on cost reduction, but rather only on the amount of payments. However, the cost
reduction achieved under specific forms of procurement contracts is also an important issue,
because achieving cost reduction leads to more efficient procurement and raises social welfare.
In fact, many governments have elaborated incentive structures to induce contract firms’ efforts
for cost reduction. Nevertheless, there is limited research on optimal contract design, as to

5 Budget–based scheme is explained as a refinement of CPIF. In addition to the actual cost, the incentive fee
depends on the cost estimate submitted by the firm at the start of the project. The firm selects a budget (target cost)
and the incentive profit is proportional to the budget variance (Reichelstein 1992).

6 Furthermore, Wang and San Miguel (2013) showed that previous studies typically set the following assumptions:
(1) A benevolent dictator, that is the government, seeks to maximize social welfare; (2) The government is risk
neutral and the contractor is risk averse; (3) The government designs the contract; (4) The defense contractor can
refuse to participate; that is, the firm’s reservation utility level has to be either achieved or exceeded; (5) Some
incurred costs are verifiable with the existence of auditors, but the minimum achievable cost is not observable or at
least not verifiable; (6) Although the government can face either a competitive or a sole—source condition, the
latter is more common in DoD practice.
encourage the contract firm to exert cost reduction efforts. Therefore, we address this issue using a standard moral hazard model.

The remainder of this paper is organized as follows. Section 2 presents the setup of our model. Section 3 analyzes the model and compares FP and CPIF. Section 4 discusses the results and concludes the paper.

2. The Model

The purpose of our model is to identify which type of discretionary procurement contract is desirable from the viewpoint of cost reduction. Consequently, we consider a simple principal agent model, in which a risk–neutral principal (e.g., the government) procures a good from a risk–averse agent (e.g., a firm). We assume that the agent is the only supplier who produces the good that the principal wants to procure. Therefore, the principal cannot employ competitive bidding, and therefore, must use a discretionary contract. The timing is as follows.

1. Both the principal and the agent observe the potential production cost $\bar{C}$ and the agent’s productivity $m$.

2. The principal chooses the contract type from \{CPIF, FP\} and makes the take–it–or–leave–it offer to the agent. The contract menu is as follows:

$$ z = \begin{cases} (a, b, T), & \text{if the contract type is CPIF,} \\ (P), & \text{if the contract type is FP.} \end{cases} $$

3. The agent decides to accept or reject the offer. If the agent rejects it, the game ends.

4. The agent exerts the cost reduction effort $e$. 

5. The actual production cost $c$ realizes.

6. The payment from the principal to the agent executes.

### 2-1 Procurement Contract Type

Assume that the principal’s utility is as follows:

$$V = S - p$$  \hspace{1cm} (1)

where $S \geq 0$ denotes the social value realized by procuring the good, and $p$ is the contract price. Moreover, we assume that the social value $S$ is exogenous and constant. Thus, the principal must minimize the contract price $p$ to maximize utility. The principal has two choices to decide on the contract price: CPIF and FP. The question is which type of contract is desirable in this case.

The contract price is decided as follows:

$$p = c + H(c)$$  \hspace{1cm} (2)

where $c \geq 0$ denotes the actual cost and $H(c)$ is the incentive fee. The incentive fee takes the following form: $H(c) = (T - c)b + a$, and increases in response to the bonus rate $b \in [0,1]$ and the difference between the target cost $T \geq 0$ and the actual cost $c$. The second term, $a \geq 0$, is the fixed component of the incentive fee. The bonus rate, $b$, is the principal’s choice variable. We can identify three types of contract menu, $z$.

$$z = \begin{cases} (a) & \text{if } b = 0, \\ (a, b, T) & \text{if } 0 < b < 1, \\ (a, T) & \text{if } b = 1. \end{cases}$$  \hspace{1cm} (3)
Cost–Plus contract: When the principal chooses \( b = 0 \), the contract price is the sum of the actual cost and the fixed fee (i.e., \( p = c + a \)). This pricing structure is called CP. In this pricing structure, the actual cost is invariably paid to the agent. Because all the risk of cost fluctuation is borne by the principal, CP is considered desirable in terms of risk sharing. However, CP is often criticized for the absence of the incentive to reduce cost.

Cost–Plus–Incentive–Fee contract: When the principal chooses \( b \in (0,1) \), the contract price is determined by \( p = c + (T - c)b + a \). In this pricing structure, called CPIF, the agent can be compensated for the actual cost in common with CP. At the same time, by lessening the actual cost than the target cost, the agent can enjoy the incentive fee. That is, in CPIF, the principal provides the incentive of cost reduction to the agent instead of bearing a part of the cost–fluctuation risk.

Fixed–Price contract: When the principal chooses \( b = 1 \), the contract price is the sum of the target cost and the fixed fee (i.e., \( p = T + a \)). This pricing structure is called FP. In this structure, the price is determined with no relation to the actual cost. The agent suffers a loss unless the actual cost becomes less than the fixed price \( (T + a) \). Thus, FP provides a powerful incentive to reduce cost to the agent. Meanwhile, FP is said to be undesirable in terms of risk sharing because it imposes all the risk of cost fluctuation on the agent.

2-2 Actual Cost

We assume that the actual cost is determined by the potential cost, the agent’s cost reduction effort, and a noise. Specifically, this is presented as follows:
where $c > 0$ is the potential cost, $e \geq 0$ represents the agent’s cost reduction effort that entails private cost $k(e) = (1/2)e^2$, $m \geq 0$ the agent’s productivity, and $\varepsilon \sim \mathcal{N}(0, \sigma^2)$ is the uncontrollable factor that affects the actual cost.

In the above formulation, we assume (1) observability of the potential cost and the agent’s productivity, and (2) verifiability of the actual cost and non–verifiability of the cost reduction effort. First, we assume that both the principal and the agent can observe the potential cost at the beginning of the game, that is, there is no adverse selection. Second, agents reduce the actual cost from their potential level by exerting post–contract effort. However, this effort can neither be observed by the principal nor be verified by a third party. On the other hand, the actual cost is observable and verifiable. Therefore, we can say that a moral hazard problem exists.

2-3 Agent’s Utility and Principal’s Utility

As in the standard moral hazard model, the agent’s satisfaction stems from monetary income and work effort. Moreover, assume that the agent’s utility function has a negative exponential and multiplicatively separable form, as follows:

---

7 This potential cost can be interpreted as the agent’s pre–contract cost estimation. For discretionary contracts, the agent’s cost estimation is ordinally reported to the principal before the contract. Indeed, in this situation, agents may use the over– or under–reporting strategy to maximize their profit. However, Reichelstein (1992) and Wang and San Miguel (2013) showed that the agent’s over– and under–reporting strategies are dominated by telling the truth. Therefore, our model assumes that the agent reports truthfully its estimation of the cost to the principal and that there is no information asymmetry before the contract.
where $\eta > 0$ is the agent’s coefficient of absolute risk aversion.

Under this condition, the agent’s certainty equivalent payoff is given by the following:

$$CE = \{T - (\bar{c} - me)\}b + a - \frac{1}{2}e^2 - \frac{1}{2}\eta b^2 \sigma^2$$  \hspace{1cm} (5)

Similarly, the principal’s utility can be rewritten as follows:

$$V = S - (c + H(c))$$  \hspace{1cm} (6)

3. Optimal Procurement Contract

This section describes the optimal procurement contract type that induces the agent to exert cost reduction efforts.

3-1 Benchmark: The First Best Case

We first study the benchmark case, in which the agent’s cost reduction effort is observable and verifiable. In this case, the principal does not have to consider the incentive compatibility constraint, because the choice if the agent’s effort is enforceable. Therefore, the principal’s optimization problem is as follows:

$$\max_{a,b,T,e} E[S - (c + H(c))]$$  \hspace{1cm} (7)
which is subject to the agent’s participation constraint as follows:  

\[ \{T - (\bar{c} - me)\}b + a - \frac{1}{2}e^2 - \frac{1}{2}\eta b^2\sigma^2 \geq 0 \]  

(8)

where \( E[\cdot] \) is the expectation operator.

The first–best level of the agent’s cost reduction effort and the principal’s expected payment are described by Lemma 1.

Lemma 1. In the first–best case, the following statements are true:

1. The agent’s cost reduction effort equals the productivity (i.e., \( e^* = m \)).
2. The optimal bonus rate equals 0 (i.e., \( b^* = 0 \)).
3. The fixed component of the incentive fee equals the private cost (i.e., \( a^* = k(e) \)).
4. The expected cost equals the difference between the potential cost and the square of the agent’s productivity (i.e., \( E[c^*] = \bar{c} - m^2 \)).
5. The expected price equals the sum of the actual cost and the private cost (i.e., \( E[p^*] = c + k(e) \)).

The proof is given in the Appendix.

---

8 The participation constraint considers the reservation utility of the agent. Generally, the reservation utility is represented by \( \bar{U} \). However, for simplicity, we set the reservation utility equal to 0 without loss of generality (Bolton and Dewatripont 2005).
The first–best outcome offers some intuitive properties. First, the principal always offers CP \((b = 0)\) to the agent. In the first–best situation, because the principal can compel the agent to the first–best level of effort, she can get desirable outcome without giving the agent an incentive for cost reduction. Second, the level of effort that the principal commands the agent to exert is proportional to the agent’s productivity.

### 3-2 The Agent’s Optimal Action and Principal’s Expected Payment

Next, let us consider the case where the agent’s cost reduction effort is neither observable nor verifiable. Because the principal cannot enforce a particular level of effort on the agent, she has to consider the incentive compatibility constraint. Therefore, the principal’s problem is

\[
\max_{a,b,T,e} E\left[S - (c + H(c))\right]
\]

subject to

\[
(T - \bar{c} + me)b + a - \frac{1}{2}e^2 - \frac{1}{2}\eta b^2\sigma^2 \geq 0
\]

\[
e \in \arg\max_e (T - \bar{c} + me)b + a - \frac{1}{2}e^2 - \frac{1}{2}\eta b^2\sigma^2
\]

The second–best level of the agent’s effort, the optimal bonus rate, the expected cost, and the principal’s expected payment are characterized by Lemma 2.

**Lemma 2.** If the agent’s cost reduction effort is not observable, the agent’s effort choice, \(e^\dagger\); the optimal incentive rate, \(b^\dagger\); the expected cost, \(E[e^\dagger]\); and the principal’s expected payment, \(E[p^\dagger]\) are characterized by the following:
\[ e^+ = mb \]  

\[ b^+ = \frac{m^2}{m^2 + \eta \sigma^2} \]  

\[ E[c^+] = \bar{c} - m^2 b^+ \]  

\[ E[p^+] = \bar{c} - \frac{1}{2} m^2 b^+ \]

The most important point to be understood from this analysis pertains to the contract type that is offered from the principal to the agent. The optimal level of bonus rate \( b^+ \) is decreasing with the agent’s risk aversion (i.e., \( \frac{\partial b^+}{\partial \eta} < 0 \)), and increasing with the agent’s productivity (i.e., \( \frac{\partial b^+}{\partial \sigma} > 0 \)). This relationship is described in Figure 1. Although the principal offers a powerful cost reduction incentive for the agent with lower risk avoidance and higher productivity, the principal never offers FP, which provides the most powerful incentive to the agent, as long as the agent is risk averse. Thus, the principal offers CPIF to the agent if the agent’s productivity is positive, and offers CP if \( m = 0 \).
Proposition 1. If the agent’s cost reduction effort is not observable, the bonus rate $b^*$ is

1. decreasing with the agent’s risk avoidance $\eta$.

2. increasing with the agent’s productivity $m$.

Corollary 1. If the agent’s cost reduction effort is not observable, the principal never offers FP to the agent.

---

$^9$ We set $\sigma^2=10$. The upper (green) curve is $\eta = 0.1$, the middle (red) curve is $\eta = 0.3$, and the bottom (blue) curve is $\eta = 0.5$. 
The agent’s cost reduction effort is increasing with the bonus rate $b$ (i.e., $\partial e^+/\partial b^+ \geq 0$). The principal can extract the first–best level of effort from the agent by offering FP. However, from Corollary 1, we already know that the principal always offers CPIF or CP to the agent when the agent is risk averse. Thus, the optimal level of effort is reduced by the bonus rate compared to the first–best level.

**Proposition 2.** If the agent’s cost reduction effort is not observable, the level of this effort increases with the agent’s productivity $m$ and the bonus rate $b^+$. However, this level of effort is lower than the first–best level as long as the agent is risk averse.

The expected cost is increasing with the agent’s risk avoidance (i.e., $\partial E[c^+] / \partial \eta \geq 0$). This is because the optimal bonus rate drops and the agent’s cost reduction effort decreases in proportion to the agent’s risk aversion. At the same time, the expected cost is decreasing with the agent’s productivity (i.e., $\partial E[c^+] / \partial m \leq 0$). This is because (1) the optimal bonus rate and the agent’s cost reduction effort increase in proportion to the agent’s productivity, and (2) the cost reduction effort is largely reflected in the actual cost when the agent’s productivity is high.

**Proposition 3.** If the agent’s cost reduction effort is not observable, the expected cost is

1. increasing with the agent’s risk avoidance $\eta$.
2. decreasing with the agent’s productivity $m$. 
Similarly, the expected contract price is increasing with the agent’s risk avoidance (i.e., $\partial E[p^\dagger]/\partial \eta \geq 0$), and decreasing with the agent’s productivity (i.e., $\partial E[p^\dagger]/\partial m \leq 0$).

**Corollary 2.** If the agent’s cost reduction effort is not observable, the expected contract price is

1. increasing with the agent’s risk avoidance $\eta$.
2. decreasing with the agent’s productivity $m$.

Both the expected cost and expect contract price are decreasing with the bonus rate (i.e.,

\[ \partial E[c^\dagger]/\partial b^\dagger \leq 0 \quad \text{and} \quad \partial E[p^\dagger]/\partial b^\dagger \leq 0. \]

Thus, the principal can realize the minimum level of the expected cost and expected contract price by offering FP. However, the principal never offers FP as long as the agent is risk averse. This is because FP incurs excessive risks of cost fluctuations to the risk averse agent. Thus, in the second–best situations, the levels of expected cost and expected contract price are higher than the levels in the first–best situation.

**Proposition 4.** If the agent’s cost reduction effort is not observable, both the expected cost and expected contract price are decreasing with the agent’s productivity $m$ and the bonus rate $b^\dagger$. However, the levels of expected cost and expected contract price are always higher than the level of first–best as long as the agent is risk averse.
The principal’s utility increases as the expected contract price decreases. Thus, the principal’s utility is decreasing with the agent’s risk avoidance, increasing with the agent’s productivity, and increasing with the level of bonus rate.

**Corollary 3.** If the agent’s cost reduction effort is not observable, the principal’s expected utility is:

1. *decreasing with the agent's risk avoidance* $\eta$.
2. *increasing with the agent’s productivity* $m$.
3. *increasing with the bonus rate* $b^\dagger$.

The principal wishes to contract that gives stronger incentives to reduce cost with the agent who is more risk tolerant and more productive.

**4. Discussion and Conclusion**

Our analysis results conclude that the principal (the government) can take more benefit with a contract including strong incentives, if the agent (the firm) is more risk tolerant and efficient. However, a contract that has the strongest incentive, that is FP, is never chosen as long as the agent is risk averse. This is consistent with the conclusions of previous studies (Reichelstein 1992; Wang and San Miguel 2013).
Previous studies imply that the serious information asymmetries induce high information rents; and consequently, the contract price increases significantly. Therefore, FP is never selected. Conversely, in our model, under FP, the principal brings the agent all the risks about cost. Thus, we can interpret that the risk averse agent cannot accept FP.

However, in fact, FP is often adopted by many governments because the level of cost–reduction effort under FP is larger than under CPIF and CP. Assuming a one–shot contract because the payment is smaller, we concluded that CPIF is superior. However, because FP can induce a higher level of effort, the expected value of actual costs decreases. Therefore, considering future contracts, the accumulation of lower costs may lead to lower cost in future contracts. As such, if the costs are different, even if the amount of payments is the same, there may be differences in the prices of future contract.

**APPENDIX: Proofs**

**Proof of Lemma 1**

Setting (8) equals to zero and solving for $\alpha$ yields:

$$a = \frac{1}{2}e^2 + \frac{1}{2}\eta b^2 \sigma^2 - (T - \bar{c} + me)b$$  \hspace{1cm} (A1)

Substituting (A1) into (7), we obtain the following:

$$S - \bar{c} + me - \frac{1}{2}e^2 - \frac{1}{2}\eta b^2 \sigma^2$$ \hspace{1cm} (A2)

From (A2), the first–order condition with respect to $e$ equals $m - e = 0$. Thus, we can get
In the first–best setting, the principal chooses the level of $\bar{b}$ that maximizes (A2). Therefore,

$$b^* = 0$$  \hspace{1cm} (A4)

Substituting (A4) into (A1),

$$a^* = \frac{1}{2} e^2 = k(e)$$  \hspace{1cm} (A5)

Substituting (4) into (A3) and taking expected value,

$$E[c^*] = \bar{c} - m^2$$  \hspace{1cm} (A6)

Substituting (A3), (A4) and (A5) into (2) and taking expected value,

$$E[p^*] = \bar{c} - \frac{1}{2} m^2$$  \hspace{1cm} (A7)

**Proof of Lemma 2**

From (11), the first order condition with respect to $e$ equals to $m b - e = 0$. Solving this yields:

$$e^+ = m b$$  \hspace{1cm} (A8)

Substituting (A1) and (A8) into (8), we obtain the following objective function.

$$S - \bar{c} + m^2 b - \frac{1}{2} m^2 b^2 - \frac{1}{2} \eta \sigma^2 b^2$$  \hspace{1cm} (A9)

From (A9), the first order condition with respect to $b$ is $m^2 - m^2 b - \eta \sigma^2 b = 0$. Thus,
Substitution (A8) into (6), the expected cost is as follows:

\[ E[c^+] = \bar{c} - m^2 b^+ \quad (A11) \]

Using (A1), (A8), (A10) and (2), the expected contract price is as follows:

\[
E[p^+] = \bar{c} - me + \frac{1}{2} e^2 + \frac{1}{2} \eta \sigma^2 b^2 \\
= \bar{c} - m^2 b + \frac{1}{2} m^2 b^2 + \frac{1}{2} \eta \sigma^2 b^2 \\
= \bar{c} - m^2 b + \frac{1}{2} (m^2 + \eta \sigma^2) \frac{m^4}{(m^2 + \eta \sigma^2)^2} \\
= \bar{c} - m^2 b + \frac{1}{2} m^2 b \\
= \bar{c} - \frac{1}{2} m^2 b^+ 
\]

(A12)

**Proof of Proposition 1**

Differenciating \( b^+ \) with \( \eta \),

\[
\frac{\partial b^+}{\partial \eta} = - \frac{m^2 \sigma^2}{(m^2 + \eta \sigma^2)^2} 
\]

(A13)

Because \( m \geq 0, \eta > 0 \) and \( \sigma^2 > 0 \), this is smaller than 0.

Differenciating \( b^+ \) with \( m \),
Because $m \geq 0$, $\eta > 0$ and $\sigma^2 > 0$, this is larger than 0.

**Proof of Proposition 2**

Differenciating $e^+$ by $m$ and $b^+$,

\[
\frac{\partial e^+}{\partial m} = b^+ \geq 0
\]  

(A15)

\[
\frac{\partial e^+}{\partial b^+} = m \geq 0
\]  

(A16)

From corollary 1, the bonus rate takes a value $b^+ \in [0,1)$. Because the first best level of effort is $e^* = m$, we can say that $e^* > e^+$. 

**Proof of Proposition 3**

Differenciating $E[c^+]$ by $\eta$,

\[
\frac{\partial E[c^+]}{\partial \eta} = \frac{m^4 \sigma^2}{(m^2 + \eta \sigma^2)^2}
\]  

(A17)
Because \( m \geq 0, \eta > 0 \) and \( \sigma^2 > 0 \), this is larger than 0.

Differenciating \( E[c^\dagger] \) by \( m \),

\[
\frac{\partial E[c^\dagger]}{\partial m} = -\frac{4m^3}{m^2 + \eta \sigma^2} + \frac{2m^5}{(m^2 + \eta \sigma^2)^2}
\]

\[
= -\frac{4m^3(m^2 + \eta \sigma^2) + 2m^5}{(m^2 + \eta \sigma^2)^2}
\]

\[
= \frac{-2m^5 + 4m^3 \eta \sigma^2}{(m^2 + \eta \sigma^2)^2}
\]

(A18)

Because \( m \geq 0, \eta > 0 \) and \( \sigma^2 > 0 \), this is smaller than 0.

**Proof of Proposition 4**

Compare the level of expected cost in the situation of first–best and that in the situation of second–best.

\[
E[c^\ast] - E[c^\dagger] = (\bar{c} - m^2) - (\bar{c} - m^2 b^\dagger)
\]

\[
= -m^2 + m^2 b^\dagger
\]

(A19)

Because \( b^\dagger \in [0,1) \), this is smaller than 0. Thus, we can say that \( E[c^\ast] < E[c^\dagger] \).

Similarly,

\[
E[p^\ast] - E[p^\dagger] = \left(\bar{c} - \frac{1}{2} m^2\right) - \left(\bar{c} - \frac{1}{2} m^2 b^\dagger\right)
\]

\[
= -m^2 + m^2 b^\dagger
\]

(A20)

Because \( b^\dagger \in [0,1) \), this is smaller than 0. Thus, we can say that \( E[p^\ast] < E[p^\dagger] \).
REFERENCE


CORPORATE TAX AVOIDANCE, DEBT RATIO, AND CORPORATE GOVERNANCE: EVIDENCE FROM JAPAN

Hiroshi Ohnuma
Tokyo University of Science
Keikichi Kato
Hirosaki University

Abstract:
This study examines whether tax avoidance is associated with corporate debt policy. Specifically, this study investigates the influence of bond investors and financial institutions such as the banks, which are long-term loan owners, on corporate governance (CG) to determine comprehensively the relationship between tax avoidance and debt ratio. Note that, the financial institutions in Japan have a larger role in indirect finance policies, relative to in the European and U.S. financial markets, and that the financial institutions of the other Asian nations seem to take on the same level of responsibility as those of Japan.

This study firstly investigates the association between debt ratio and corporate tax avoidance. Secondly, we examine the influence of effectiveness of debt governance on debt ratio and CG. Thirdly, we focus on the representative tools, such as outside directors and auditors for CG and corporate tax avoidance. Finally, we test the influence of the main banks on this effect because, in addition to their monitoring role, main banks also play a significant advisory role and are thus likely to be in a better position to make superior decisions about a firm's optimal debt and capital structure mix.

According to the main result of this study, it seems that the debt enhancement effect is more dominant than the debt substitution effect in Japanese firms. When tax avoidance increases, firms’ profitability rise. Thus, considering the ability to afford a loan from a financial institution, the firms can borrow more. With regard to interactive effects among CG, debt policy, and tax avoidance, we find the CG of firms strengthens when they carry out tax avoidance. If the outside director ratio increases, then the monitoring function of the debtholders improves due to the enhancement of CG functions, and our result suggests that the financial institutions in Japan achieve an effective monitoring function.

Keyword: debt ratio, tax avoidance, debt substitution effect, debt enhancement effect, outside directors’ ratio, corporate governance
1 Introduction

Using a sample of 44 tax shelter firms, Graham and Tucker (2006) find that, on average, tax shelter firms use less debt than matched control firms, thereby suggesting a substitution effect between tax avoidance activities and leverage. Despite this thoughtful result, the conclusion of that study is considered somewhat deficient due to the small number of firms sampled. In contrast, this study examines a broad sampling of firms located in Japan based on the idea that understanding the relationship between tax avoidance and debt policy is important for at least two reasons. First, DeAngelo and Masulis (1980) argue that the tax shield benefit of debt, which is a central aspect of the Modigliani and Miller (1963) model, may be mitigated by the presence of non-debt tax shields (NDTS). Meanwhile, according to Ohnuma (2015), corporate tax avoidance does not necessarily refer to illegal tax evasion, but also properly includes legal acts to reduce tax payment by taking advantage of the tax structure and laws to reduce taxable income. In addition, actions aimed at decreasing tax payment amounts within the structure which do not intentionally result in tax requisitions should be included in tax burden reduction actions.

However, since tax avoidance increases free cash flow (FCF) for enterprises, such opportunistic management behavior can lead to the creation of the corporate value, providing the managers use the FCF well. Desai and Dharmapala (2006) pointed out that the element which decides these points is corporate governance (CG). They said that managers should examine profit maximization after taxes using tax shelters, and stated that, in terms of the monitoring function for such manager actions, the expectation for the role of debtholders, including financial institutions, is high. In other words, tax avoidance, debt ratio, and CG are mutually related.

With these points in mind, this study explores the influence of bond investors and financial institutions such as the banks, which are long-term loan owners, on CG, in order to gain a comprehensive understanding of the relationship between tax avoidance and debt ratio. The role of Japan is important in this context because it is often said that, in the Japanese financial market, financial institutions have a somewhat larger role in guiding indirect finance policies than European and U.S. financial markets, and that the financial institutions of other Asian nations seem to follow Japan’s example in that regard.

In this sense, the contribution of this paper is that we provide the evidence to compare whether this situation matches other Asian countries. As for the “debt governance” issues that debt providers use to monitor enterprise management, the following indication is seen in the "Nihon Keizai Shimbun", which is Japan’s most authoritative business newspaper, and is datelined May 28, 2016.

*Enforcing discipline on the financial and capital markets is an important issue. However, the*
need to force companies to endure pain seems to have been avoided. It may be said that ethics advanced earlier for the listed companies in Japan, and a strong consensus emerged that we should obey Japan’s Corporate Governance Code, which was issued last year. On the other hand, since most medium- and small-sized unlisted companies, which account for most of Japan firms, depend primarily on indirect finance sources such as bank borrowing instead of market capital, establishing lender monitoring management functions, which we call "debt governance", has not yet been addressed. Now is a perfect time for the government and private sector to work together and strengthen "debt governance".

This study begins by investigating the relationship between debt ratio and corporate tax avoidance. We then examine the influence and effectiveness of debt governance on the debt ratio and CG. Next, we focus on the representative tools, such as outside directors and auditors, and examine their roles in CG and corporate tax avoidance. Finally, we test the influence of the main banks on this effect because, in addition to their monitoring role, banks also play significant advisory roles and are thus likely to be in a better position to make superior decisions about a firm's optimal debt and capital structure mix.

Based on empirical analyses, we have found that complimentary relationships increase the debt ratio when a company aggressively moves to avoid taxes, and the debt enhancement effect appears to be more dominant than the debt substitution effect in Japanese firms. Additionally, we find that the CG of firms strengthens when they rigorously pursue tax avoidance. When the outside director ratio increases, it appears that debtholder monitoring improves due to the enhancement of CG functions. This result, in turn, suggests that the financial institutions in Japan have achieved a robust monitoring function.

The remainder of this paper is organized as follows. Section 2 provides a literature review and discusses hypotheses development. Section 3 formulates the research design and sample data. Section 4 provides empirical results. The last section provides our conclusions.

2 Literature review and hypotheses development

Discussions around optimal capital structure have long been an important topic in the finance academic community. In their authoritative work on the subject, DeAngelo and Masulis (1980) suggest that, in general, every firm has an optimal amount of total deductions. For example, if a firm uses additional non-debt tax shields, it will also use fewer debt deductions (the debt-substitution effect). Thus, they point out that non-debt tax shields (e.g., depreciation deductions and investment tax credits) serve as substitutes for debt (interest) deductions.

Mackie-Mason (1990) suggests that a significant correlation exists between tax shields and the
marginal tax rate, and shows that the latter does influence financing decisions. Particularly notable is the study’s identification of interactions between non-debt tax shields and variables for identifying firms that are close to tax exhaustion, at which point the substitution between non-debt and debt tax shields becomes prominent.

Graham and Tucker (2006) investigate the correlation between non-debt tax shields and debt tax-aggressive firms and find that, on average, the tax-aggressive firms made less use of debt than the non-tax-aggressive firms. Additionally, they find that the debt-to-asset ratios of the tax-aggressive firms were lower than those of their non-tax-aggressive counterparts. Overall, these results are consistent with the idea that tax-aggressive firms use non-debt tax shield deductions as a substitute for debt-related interest deductions.

Based on these prior studies, we test the hypothesis that companies use tax shelters in substitution for debt-related interest deductions, and that tax payments and agency costs are to be regarded as important elements in deciding the optimal capital structure of firms.

Therefore, it is thought that corporate tax aggressiveness and CG are strongly associated with debt ratio. The abovementioned Graham and Tucker (2006) study indicating that the debt-to-asset ratios of the tax-aggressive firms (that adopt tax shields) were lower than those of their non-tax-aggressive counterparts\(^1\) examined just 44 tax-aggressive firms that had been identified by the U.S. Internal Revenue Service (IRS) in the period of 1985 to 2005. In contrast, our study builds on their results by examining the influence of the substitution effect between tax aggressiveness and debt policy in a broad-based sample of Japanese firms.

\[ \text{H1-1. All else being equal, corporate tax aggressiveness is negatively correlated with corporate debt.} \]

On the other hand, the ability of tax avoidance to increase a company’s FCF depends on whether the company can connect tax avoidance practices with the creation of the corporate value through CG functions. Moreover, it has been pointed out that, conventionally speaking, creditors exert CG influence over typical Japanese companies. Desai and Dharmapala (2006, 2009) argue that tax avoidance relates to director reward levels. Standing on the side of debtholders, free cash flow is definitely expected to be allotted to the debt repayment.

\(^1\) Graham and Tucker (2006) show concretely that the average debt ratio of a company which did not use a tax shelter was approximately 27.4%, whereas the average debt ratio of a company which used a tax shelter was approximately 19%. 

4
Rego and Wilson (2012) point out that because net present value (NPV) is high when holding high-risk projects, tax avoidance is more likely to be opposed by debtholders. However, while high-risk projects increase the risk of damaging corporate value, it is hard to believe that debtors are not engaged in actions aimed at raising corporate value. Since debtholders are strongly motivated to increase corporate value, they are particularly unlikely to contribute to projects that are opposed to their own interests. In other words, we conjecture the possible existence of a debt enhancement effect which increases debt by pushing forward a tax avoidance scheme. Accordingly, we test the following hypothesis as the alternative hypothesis for H1-1.

**H1-2. All else being equal, corporate tax aggressiveness is positively correlated with corporate debt.**

After World War II, the main supplier of funds for industry in Japan was financial institutions such as commercial banks. Nowadays, institutional investors such as foreign investors, private equity, hedge funds, and pension funds are among the main capital suppliers. Therefore, examining the financial influence these investors exert on CG has become a mainstream research topic. In his 2015 study, Ohnuma also analyzes the primary relationship between investors (e.g., stockholders) and the CG.

Outside directors are often likely to be in a better position than insiders to make superior corporate decisions, including decisions about the firm's optimal debt and capital structure mix. In addition to their important role as monitors dedicated to protecting shareholder interests, outside directors can improve the quality of corporate decisions by providing independent and unbiased expert advice and counsel to the board².

In contrast, even though their financial institutions have taken major CG roles, this study does not consider the European or American situation. On the other hand, from main bank system studies, it is considered likely that debtor CG plays a consistent role in Japan. Based on the stock market activation and the enforcement of Japan’s Corporate Governance Code in 2015, arguments seem to be more inclined to stockholder-based CG. However, in the fields of corporate finance, since the optimal capital structure includes debt ratio, the idea of CG based on agency cost has received more consistent support

² With regard to ownership and corporate governance, Chan et al. (2013) examine how government and CG affect a firm’s tax aggressiveness. Using Chinese listed companies, during 2003-2009, they find that compared with government-controlled firms, non-government-controlled firms pursue a more aggressive tax strategy. In particular, non-government-controlled firms with a higher percentage of the board shareholdings and with a CEO who also serves as the board chairman are more tax aggressive. For government-controlled firms, they find that board shareholding has an influence on tax aggressiveness and this influence does not differ between local and central government-controlled firms. However, local government-controlled firms in less developed regions where the implementation of CG measures is generally less effective are more tax aggressive than those in other regions.
(Harris and Raviv, 1988; Stulz, 1988). Therefore, we should more thoroughly examine the role of the debt governance.

One line of inquiry involves managerial incentives, especially those arising from stock options or equity-related stocks. Rego and Wilson (2012) and Armstrong, Blouin, Jagolinzer and Larcker (2013) document a positive relationship between managerial equity (risk) incentives and tax avoidance, thereby providing evidence that top management needs to be encouraged to pursue an aggressive tax position because of the risks involved. However, Desai and Dharmapala (2006) find that increases in equity incentives for a firm’s five highest paid executives lead to lower levels of tax sheltering. They attribute their findings to the agency costs of tax avoidance and suggest that managers whose interests are aligned with their shareholders tend to be less aggressive in tax strategies.

Although this line of research improves our understanding of the impact that managerial compensation has on tax avoidance, it primarily focuses on the equity component of executive compensation. Meanwhile, another large and important component, debt-like compensation, has not received much attention in the literature. In terms with the CG perspective, Desai and Dharmapala (2006) assert that the main driver of tax avoidance is CG function strength, more precisely, the influence CG exerts on firm debtors. For example, by using a restrictive financial covenant and prepayment plan, bondholders exert monitoring influence over a firm manager. If the debt ratio is proportional to the degree of CG monitoring influence, it can be expected to correlate significantly with the other CG variables.

Richardson et al. (2014) show that the proportion of outside directors on a firm's board influences debt levels. This influence is not based solely on information exchange, but also on the relationships between Japanese firms and the financial institutions that provide various services, ensuring that their relationships are maintained. Such financial institutions have the potential to require prepayment of financing, readjust return periods, and provide management plans to borrowers.

When considering the use of CG by assuming creditor actions will be aimed at borrower management improvements, it can be thought that a complementary relationship is created by the outside director ratio, thereby eliminating the need for a debt monitoring function.

Accordingly, we test the following hypothesis.

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3 Regarding monitoring for management, Huseynov et al. (2017) examine corporate tax avoidance of firms around addition to the S&P 500 index. They find that corporate tax avoidance for firms at high levels of tax avoidance decreases after index addition, whereas tax avoidance for firms at low levels of tax avoidance increases after index addition. Based on these findings, they disentangle the impact of changing governance practices from that of declining investment opportunities. Their findings indicate that the changes in tax avoidance can be attributed to improving governance practices, specifically higher institutional ownership and executive compensations, and this impact is above and beyond the changes in growth opportunities of index firms.
H2-1. All else being equal, the outside directors’ ratio is negatively correlated with corporate debt rate.

On the other hand, Bathala et al. (1994) point out that complimentary relations also exist between debt and CG from the viewpoints of institutional investors, and that when financial institute monitoring is indicated, the dispatching of executives from the financial institution is preferred. If the CG provided by such a financial institution includes outside director dispatch, complimentary relations may also result between the debt and outside director’s ratio.

Accordingly, we test the following as the alternative hypothesis for H2-1.

H2-2. All else being equal, the outside director’s ratio is positively correlated with corporate debt rate.

In Japan, it has been said that financial institutions, led by the main banks, have important CG roles (Hirota and Miyajima, 2001). For example, when Japanese firms faced financial crises in the past, intervention by main banks was routine and those banks could be expected to assist in extensive restructuring to help revive firm performance levels. Even now, although not so much as in the past, the provision of information and instructions from main banks is relatively commonplace. In this sense, it is supposed that the degree of tax avoidance will include differences depending on whether the main bank is one of the nation’s four megabanks (Bank of Tokyo-Mitsubishi UFJ, Sumitomo Mitsui Banking, Mizuho Bank, or Resona Bank) in Japan. If it is not, such advice is normally provided by audit firms.

Sheard (1989) asserts that what makes the main bank system particularly interesting is the fact that they provide informational ‘services’ as part of a quasi-internal economic organization. On this point, McGuire et al. (2012) examine whether the tax-specific expertise of external audit firms influence their clients’ levels of tax avoidance. More specifically, using a large sample of clients that purchase tax services from audit firms, they regress their tax avoidance measures based on both their tax expertise and overall expertise separately, after controlling for their clients’ decision whether to purchase tax services from their external audit firm, as well as other factors that prior research suggests are associated with tax avoidance. They demonstrate that clients who purchase tax services from external audit firms engage in higher levels of tax avoidance when the external audit firm is a tax expert compared to clients whose external audit firm is not. More specifically, tax expert clients report significantly lower book effective tax rates (ETRs), lower cash ETRs, larger book-tax differences (BTDs), and greater
discretionary permanent BTDs than clients whose audit firms are not tax experts.

They also find that the clients of audit firms that are overall experts have significantly lower book ETRs and lower cash ETRs than clients of external audit firms that are not overall experts. These results highlight the role that financial expertise plays in the effectiveness of enterprise tax avoidance strategies. Furthermore, their results suggest that, even within public accounting firms’ role as the external auditor, there are still avenues for greater tax avoidance.

Megabanks have vast amounts of information and know-how in comparison with other banks. In this sense, a megabank can be considered equivalent to a major audit firm. Thus, if firms adopt megabanks as their main bank, then they can expect to receive substantial services (e.g., credit remits) and various information about tax avoidance. Therefore, it can be presumed that a range in the tax burden ratio exists that depends on whether the firm adopts a megabank as a main bank. Accordingly, we test the following hypothesis.

H3: We expect a firm adopting one of the four megabanks as its main bank will result in a meaningful difference in the degree of the tax burden faced in comparison with firms which do not adopt megabanks.

3 Data and methodology

3.1 Data

In terms of financial data, we collect consolidated financial statements data from the Nikkei Economic Electronic Database System (NEEDS) Financial Quest (FQ) 2.0 and Nikkei NEEDS C-ges. Here it should be noted that a number of firms were excluded due to data unavailability. As a result, in this analysis, we scrutinized 13,461 of 13,492 listed firms. Information that is not available is handled as missing data.

Furthermore, when building the research question, we utilize consolidated financial statements data covering the six-year period from 2009 to 2014 in order to consider corporation tax reform in Japan, the influence on financial institution of data availability, and the Lehman Brothers bankruptcy shock of 2008.

In consideration of data heteroscedasticity, variables are scaled by the end of the previous fiscal year total assets or net sales. Ohnuma (2015) points out that the generally accepted accounting provisions (GAAP) ETR and Current ETR can be assumed to provide a representative index of level of
the tax burden ratio and the degree of tax avoidance. However, interest expenses are used to decide whether debt ratios are high or low. Because the numerator in the ratio is net income before taxes and other adjustments, the ETR and Current ETR of the representative measure of the tax burden ratio are linked to the debt ratio. This means that it is difficult to use ETR and Current ETR as a standard for measuring the degree of the tax avoidance. Therefore, in this analysis, based on the process set forth in Richardson et al. (2014), we use the BTD, permanent differences (Permdiff), the approach outlined in Desai and Dharmapala (2006), hereafter referred to as the DD model, and discretionary permanent differences as outlined in Frank et al. (2009), hereafter referred to as DTAX, to create a tax avoidance standard.

First, we use BTD as a tax avoidance measure. BTD is defined as the profit before tax adjustment and the balance of the taxable income, and is considered the representative index of tax avoidance. BTD is calculated as follows:

\[
BTD = BI - TI \\
= BI - \frac{CTE}{TR} \quad \text{(1)}
\]

\(BI = \) book income before tax adjustment \\
\(TI = \) taxable income \\
\(CTE = \) corporate, inhabitant, and enterprise taxes \\
\(TR = \) ETR

In other words, BTD is the difference between book income and taxable income. If account profits are constant, BTD can be expected to grow so that the degree of the tax avoidance rises. In this test, we use a legal ETR to produce an estimated taxable income calculation. Although Ohnuma (2015) used a legal ETR from an inter-period tax allocation accounting to estimate taxable income, it should be noted that resident tax rates will differ from place to place. In addition, when considering corporation business tax, the process information calculation has been uncertain since a size-based taxation system was introduced in 2004 in Japan. Therefore, in our tests, we use a legal ETR as TR.

Second, when deriving our measure of tax sheltering activity, we constructed a measure of total accruals for each of the firms in our sample, for each year over this period, using the DD model (Eq. (2)). More specifically, we obtain the values of total accruals TACC, for each firm i in each year t. To

\[4\] Consistent with Ohnuma (2015), we calculate ETR and Current ETR as follows:

\[
ETR = \frac{\text{total of corporate tax, resident tax, and business tax}}{\text{net income before taxes and other adjustments}}
\]

\[
\text{Current ETR} = \frac{\text{total of corporate tax, resident tax, and business tax + income taxes-deferred}}{\text{net income before taxes and other adjustments}}
\]
account for the book-tax gap component that is attributable to earnings management, we then run the following ordinary least squares (OLS) regression:

\[ BTD_{i,t} = BTD_{s} for firm i in year t, \]
\[ TACC_{i,t} = total accruals = EBEI - CFO \]
\[ EBEI = earnings before extraordinary items, CFO = operating cash flow \]
\[ \varepsilon_{i,t} = the deviation in year t from firm i’s average residual \mu_{i} \]

The residual from this regression (the component of BT_{i,t} that cannot be explained by variations in total accruals, and hence by earnings management) can be interpreted as a measure of tax sheltering activity. We denote this measure by TS_{i,t}, where \( TS_{i,t} = \mu_{i} + \varepsilon_{i,t} \)

We interpret these residual BTDs as a more precise measure of tax sheltering activity.

\[ BTD_{it} = \beta_{0} + \beta_{1}TACC_{it} + \varepsilon_{it} \] (2)

Third, we use Permdiff and DTAX as a tax avoidance measure. Applying the methodology developed by Frank et al. (2009), we compute the BTD residual according to the following OLS regression:

\[ Permdiff_{it} = \delta_{0} + \delta_{1}INTANG_{it} + \delta_{2}UNCON1_{it} + \delta_{3}UNCON2_{it} + \delta_{4}MI_{it} + \delta_{5}TTE_{it} + \delta_{6}\Delta NOL_{it} + \delta_{7}FR_{it} + \mu_{it} \] (3)

\[ BI = profit before tax adjustment for firm i in year t; \]
\[ CTE = current corporate, inhabitant, and enterprise taxes \]
\[ DTE = income taxes adjustment, TR = ETR \]
\[ INTANG = goodwill and other intangibles \]
\[ UNCON1 = loss reported under the equity method \]
\[ UNCON2 = income reported under the equity method \]
\[ MI = income (or loss) attributable to minority interest \]
\[ TTE = total corporate, inhabitant, and enterprise taxes \]
\[ FR = foreign sales \]
\[ \Delta NOL = change in net operating loss carryforwards \]
\[ \mu = one-year lagged Permdiff for firm i i=tax avoidance variable = DTAX \]

The residual value of Permdiff is considered to reflect tax aggressiveness (DTAX):

\[ DTAX_{it} = \varepsilon_{it} \]
Next, in deriving our measure of tax sheltering activity, we construct a measure to estimate Permdiff\(^5\) using DTAX and the approach outlined in Frank et al. (2009). Permdiff is the difference that is not coordinated with accounts profit or the balance of the taxable income accrued institutionally over passage of time. The estimate is performed at the manager’s discretion, and may be said to reflect a measure of discretionary tax avoidance.

When calculating DTAX, we think the model outlined in Frank et al. (2009) is most reliable in terms of calculation stringency, but it cannot be used to statistically control a firm’s overseas sales variables by step over a particular period, and thus avoid integrating over time. Therefore, in this analysis, we test a modified model in which we added a variable to control overseas sales. All variables are scaled by the end of the previous fiscal year total assets.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Variable definitions (inserted here)</th>
</tr>
</thead>
</table>

### 3.2 Methodology

To test our corporate tax avoidance and debt rate substitution hypotheses H1, we estimate the following fixed-effects model (FEM) (Eq. (4)) based on Richardson et al. (2014), which controls for firm- and time-specific effects.

\[
DEBT_{it} = \beta_0 + \beta_1 TAX_{it} + \beta_2 OI_{it} + \beta_3 LnMV_{it} + \beta_4 ROD_{it} + \beta_5 FA_{it} + \beta_6 PBR_{it} + \\
\beta_7 RDS_{it} + \beta_8 dPS_{it} + \beta_9 DTE_{it} + \epsilon_{i,t} \quad \bullet \cdot \cdot (4)
\]

DEBT sets bdebt and mdebt as dependent variables, according to Richardson et al. (2014). In addition, for the TAX variable, we use BTD and Permdiff as a tax avoidance measure (3.1) and adopt OI, LnMV, ROD, FA, RDS, DTE, and PBR as control variables\(^6\).

In this paper, we restricted our sample to firms which have earned income during our analytical period. Moreover, depending on the research question, we use consolidated financial statements from Japan. However, before we begin it is necessary for us to remember that there are significant differences between the real tax burden ratio and its estimation because overseas sales are included. The data which

---

\(^5\) As Rego and Wilson (2012) show, temporary difference reflects the timing between financial accounting and tax accounting. Given that fact, we judge that a more appropriate measure for revealing the tax avoidance by management would be some indicator which is a deducted temporary difference from BTD. Therefore, we examine the possibility of adoption of permanent difference as a better measure for reflecting tax aggressiveness.

\(^6\) Model (4) includes OI to control firm profitability, LnMV to control the scale of firms, and ROD, FA, RDS, and DTE to control other tax shield effects. Moreover, we include PBR to control growth. Detailed information on these variables is provided in Table 1 panel A.
we used for our analysis were collected from 13,461-13,492 companies/year, but the actual number of
data is slightly less.

To test the H1 and H2 hypotheses we estimated the following FEM (Eq. (5) and Eq. (6).

\[ DEBT_{lt} = \beta_0 + \beta_1 TAX_{lt} + \beta_2 Idroto_{lt} + \beta_3 TAP \cdot 1drtol_{lt} + \beta_k \sum Control_k + \varepsilon_{lt} \quad \cdots (5) \]

\[ DEBT_{lt} = \beta_0 + \beta_1 TAX_{lt} + \beta_2 megabnk_{lt} + \beta_3 TAP \cdot megabnk_{lt} + \beta_k \sum Control_k + \varepsilon_{lt} \quad \cdots (6) \]

Descriptive statistics of data are listed in Table 2. With regard to Permdiff, the average value is
negative, but BTD is positive. In other words, profit is bigger than taxable income in the
company/year used for this analysis.

Table 2  Descriptive statistics (inserted here)

Table 3 lists correlations among variables. The bottom half gives the Pearson correlation coefficients
and the top half gives the Spearman correlation coefficients.

As shown in the table, we can find strong correlations among bdebt and mdebt, but it is not
necessary to pay attention to the others. As for the measurement of tax avoidance variables, since a high
coefficient of correlation is mutually expected, we insert the variables into the analysis individually and
then test it. As expected, the correlation between Permdiff and BTD is very high and they are
approximately equivalent. On the other hand, the DD model and DTAX are both recognizable as
discretionary tax avoidance action measurements, but it cannot be said that their correlation is high.

Table 3  Correlation Matrix (inserted here)

4  Result

4.1  Test for Debt-substitution effect and debt enhancement effect

First of all, we test H1-1 and H1-2 to reveal a debt substitution effect or a debt enhancement effect,
respectively. Table 4 shows our research results. With regard to a tax avoidance measure, the predictive
sign, as given by Richardson et al. (2014), is used in order to test a debt substitution effect, and is
expected to be negative based on H1. The coefficients of Models 1d, 2a, 2b, and 2d are not significantly
negative. Thus, it is thought that the debt enhancement effect is more dominant than the debt substitution
effect in Japanese firms. When a tax avoidance measure increases, firm profitability rises. Therefore,
considering the ability to afford a loan from the financial institution, they can borrow more. However, from Model 1d where Permdiff is involved, the results suggest that the debt substitution effect exists. In addition, almost all of the results show that the estimated signs are statistically significant.

Table 4  Multivariate regression analysis of corporate tax aggressiveness and the debt-substitution effect (H1-1) and debt enhancement effect (H1-2)

4.2 Outside directors and corporate debt and the debt-substitution effect

Next, we test H2-1 and H2-2. In Table 5, we inquire whether the debt substitution effect is triggered. With respect to a tax avoidance measure, Models 5C and 5d show a statistically significant and an expected sign. In other words, by building the ratio of outside directors into a model, the debt substitution effect became clear.

With respect to the outside directors’ ratio, Model 4 is significantly negative, but Model 5 shows a contrary effect. It is thought that the change in the relationship of the outside director ratio occurred because we changed the dependent variables. As a result of this analysis, we determine that either H2-1 or H2-2 can be appropriate for judgement. Hence, we observe that the interaction terms between a tax avoidance measure and outside directors’ ratio is generally significantly positive. We also find that firm CGs strengthen when the firms carry out tax avoidance. When considering that increasing the outside director ratio as a debtholder monitoring function results in improvements due to CG function enhancements, this result suggests that Japan’s financial institutions provide an effective monitoring function. This result, which stands in contrast to the analysis provided in Richardson et al. (2014), can be regarded as reflecting a particular characteristic of Japan’s financial market, and it is thought that debt governance works sufficiently well in Japan.

Table 5  Result for test of H2-1 and H2-2

4.3 Relations of a megabank and the debt ratio

The result of our H3 analysis is shown in Table 6. The megabank variable (megabank) indicates whether the main bank is a megabank. If the firm’s main bank is a megabank, the intersection of the megabank variable and a tax avoidance measure indicates whether the debt substitution effect functions. In Table 6, the megabank variable is mostly significantly negative, except for a single part. At this notable point, interaction terms with a tax avoidance measure are significantly positive except for a single part.
When a main bank is one of the four major megabanks, reporting provided by the strong network megabank holds and management receives both instructions and advice. In such circumstances, the manager can push forward tax avoidance actions. As a result, the firm’s excess cash increases and profitability improves. This relationship becomes the determining factor, and financing from financial institutions increase. This in turn leads to debt increases as an effect of debt governance monitoring. From this result, it is suggested that when tax avoidance and CG are mutually related, firms can experience increasing debt.

Table 6  Result for test of H3(inserted here)

5  Additional analyses

5.1  Test for relations of the outside director from bank and debt ratio

In Section 4, we examine the relationship between outside directors and debt ratio. This study pays particular attention to whether the proportion of outside directors on the board magnifies the debt-substitution effect. Accordingly, we specifically test the influence of outside directors on this effect because, in addition to their monitoring role, outside directors also play significant advisory roles and are thus likely to be in a better position to make superior decisions about the firm's optimal debt and capital structure mix.

However, even if outside directors are dispatched from the megabanks, there is a question as to whether the CG influence will change. The main bank system in Japan is commonly believed to be one of the reasons for Japan’s rapid economic growth and success during most of the postwar period because of the way main banks can mitigate investment inefficiencies resulting from market imperfections (see Kang and Shivdasani, 1997). Japanese firms have been said to obtain their required funds based on the most favorable conditions, as well as obtain timely and useful information, by using the main bank system.

Next, we test earlier firms, which raised funds from main banks and accepted the presence of outside directors, to determine whether corporate activity was promoted or restrained. However, to ascertain whether the outside director affects the result even if he or she was dispatched from a main bank, the debt substitution effect shown in Section 4 was examined. The result of that analysis is shown in Table 7. With respect to a tax avoidance measure, only for the analysis with bdebt as a dependent variable is it found to be relatively significant.

Next, we adopt the outside director ratio (Idbrto) from banks as an independent variable and observed the resulting interactions with a tax avoidance measure. When the DTAX interaction terms are
removed, bdet is assumed as a dependent variable, and the result becomes significantly negative. From this result, we can conclude that in cases where the outside director originated from a bank, the debt substitution effect becomes stronger\textsuperscript{7}. This result shows that the background influence of outside directors on tax avoidance cannot be underestimated.

Table 7  Result for additional test of H2(inserted here)

5.2 Relations of the outside auditor ratio and debt ratio

Given the unique system setting, a board of auditors and board of auditors are required for any organization that incorporates a director and representative director in Japan. However, in the past, it was also common to fill the auditor position with an alumnus of the company. In such cases, the auditor’s connection with the board of directors was too strong, the position of the representative director (and others) was too weak, and many problems occurred as a result. However, with the commercial law revision of 1993 in Japan, the function of the auditor is reinforced. Furthermore, major companies are directed to set up independent boards of auditors, and the roles of those auditors are strengthened.

In addition, major companies are directed to elect at least one person as an "outside auditor" to a seat on their board of auditors. Such outside auditors must be persons who have not served as a director of any of the parent company’s affiliated companies or subsidiaries, and cannot be a person who had been employed by the major company within the previous five years. The presence of outside auditors is set in place to ensure that the audit is independent of the company. Therefore, persons having technical knowledge of the overall accounting, such as certified public accountants (CPA), often become outside auditors.

Accordingly, we perform an additional analysis to determine the influences that outside directors and outside auditors have on CG. Like an outside director, an outside auditor is expected to provide a monitoring function for the firm managers. On the other hand, the expectations for the role of outside auditors are significantly lower than those for outside directors.

We also perform an additional analysis to ascertain the robustness of (H2), the results of which are shown in Table 8.

\textsuperscript{7} Additionally, Idbrro always shows a statistically significant result when mdebt is set as a dependent variable. However, when bdebt is set as a dependent variable, a contrasting result is observed. This means that it might be necessary to consider the differences imposed by the deflators.
Table 8  Result (2) for additional test of H2 (inserted here)

Since the interaction terms between a tax avoidance measure and the outside auditors’ ratio are generally significantly positive, it is thought that the debt enhancement effect is more dominant than the debt substitution effect. This suggests that when the outside auditor ratio in the board of directors’ increases, tax avoidance is promoted and, as a result, the debt ratio increases. Generally speaking, as described above, CPAs most often become outside auditors in Japanese firms. Therefore, outside auditors show their influence in financial statement audits, internal control audits, and internal audits. Furthermore, since they have abundant tax accounting knowledge, they often have a positive influence on tax avoidance. As a result, an increase in the ratio of outside auditors is significantly positive because it results in an accumulation of technical knowledge about tax avoidance7. This interaction will enhance the debt enhancement effect9.

5.3 Diversity of megabank and debt ratio

In Section 4.3, we investigate the effects of main banks, such as their advisory function, the provision of additional financing services, and other factors, on tax avoidance. We pay particular attention to cases in which one of Japan’s four megabanks, the Bank of Tokyo-Mitsubishi UFJ, Sumitomo Mitsui Banking, Mizuho Bank, or Resona Bank, assumes the role of the main bank. In spite of this previous result, strong criticism can be leveled that the Resona Bank is not always considered to be a megabank because it is far smaller in scale than the others. Therefore, we set another variable megabnks2 in addition to the megabank variable used in Section 4.3 and examine another aspect of the main bank function as a robustness check. For presentational brevity, we will refrain from a detailed presentation of most of the calculations and simply show the overall result in Table 9.

8 Nevertheless, since we cannot draw this result based on a model whose dependent variable is mdebt, it is also necessary to address another concern related to which deflators should be used for scale control. When we used the total book value of assets as the sole deflator, we could observe the debt substitution effect and debt enhancement effect. Therefore, it may be said that further attention is necessary.

9 As an additional examination, we tested idatabratio (defined as outside auditors who used to work in banks divided by total number of auditors) and idadmbratio (defined as outside auditors who used to work in main banks divided by the total number of auditors) as a corporate governance variable. We have been particularly focused on the interaction term between idatabratio and tax avoidance measures. It should be noted that, in this research, the sign of the interaction term between idadb ratio and tax avoidance measures is the reverse that of idatabratio. When Table 8 is examined, it can be seen that the sign of the tax avoidance measure is, in itself, almost negative, while the signs of interaction terms with the outside auditor ratio become positive. In other words, the enhancement effect of the debt is positive. In contrast, interaction terms regarding the ratio of outside auditors who worked in banks in the past and who are now on the board of auditors are negative for the tax avoidance measure. As far as interaction terms are concerned, the debt substitution effect that both Graham and Tucker (2006) and Richardson et al. (2014) point out appears in this research setting. In addition, the same result occurs even if we use bdebt and mdebt as dependent variables. Since there are a number of outside auditor types, an effect exists that changes the debt of a tax avoidance measure from an enhancement effect to a substitution effect. Since this result is in contrast to that of Richardson et al. (2014), we consider it likely that both the debt increasing and debt substitution effects are under the influence of CG in Japanese firms.
Table 9  Result for additional test of H3(inserted here)

When attention is paid to the bdebt result as a dependent variable, there are few clear differences between Tables 6 and 9, and it seems that the essential main bank function remains unchanged even if Resona Bank is not included in the megabank category. We find that the main bank function for corporations remains unchanged through a time shift, regardless of which banks are included in this category. In this respect, we can conclude that the advisory function of the main bank clearly remains strong on a continuing basis.

5.4 Endogeneity

It is assumed that the debt interest derived from a debt has an effect on a tax avoidance measure. In other words, in the analytical model of this study, there is a possibility that an independent variable has been reversed into a dependent variable. Debt ratio increases (or decreases) not only because tax avoidance increases but also because it is necessary to consider the endogenous influence that a change of the debt ratio gives to a tax avoidance measure.

Accordingly, with reference to Dhole et al. (2016), we reexamine the following models to determine what might cause analytical Model (4) to reverse, and then analyze whether this analysis can be established in the reverse.

Parameter estimates from OLS will be biased when the regressors are endogenously determined along with the dependent variable. In our setting, endogeneity can arise from reverse causality or omitted correlated variables. In the first-stage estimation, in order to cope with potential endogeneity problems, we need to control the debt ratio using an instrument variable.

To address this potential endogeneity issue, we first use lagged values of debt ratio measures and obtain similar results to those shown in Tables 4, 5, and 6. To further mitigate the likelihood that our results would be spurious and to isolate the effects of debt ratio on tax aggressiveness, we estimate our models under a two-stage least squares (2SLS) framework as follows:

\[ First \ Stage: Tax_i = f(IV, Controls) \]

\[ Second \ Stage: DEBT_{i,t} = g(predicted \ Tax \ variable, Controls) \]

The result that we obtained from the Model (4) analysis, in which we use instrumental variables method, is shown in Table 10. Regarding operation variables, we use one year prior debt ratio and the interest-bearing debt ratio. In this setting, we use a fixed effect panel data model and narrowed down the dependent variables to Permdiff and BTD, while using both the debt ratios of bdebt and mdebt as
independent variables. For brevity, we use the same sample data as in the previous analysis to analyze debt ratio endogeneity.10

As in the previous analysis with respect to Models (1) and (2), when we assumed that bdebt using the shareholders’ equity book value as an independent variable, the deflator is significantly positive. On the other hand, for Models (3) and (4), in which mdebt is assumed using market capitalization as an independent variable, the deflator is not significantly negative.

From this result, as is suggested by Graham and Tucker (2006) and pointed out by Richardson et al. (2014), the debt enhancement effect is more dominant than the debt substitution effect in this analysis.

Although the cause and effect relationship is reversed before the analysis was conducted, it is thought that tax avoidance action increases due to increases in the debt ratio.

6 Suggestions and future research

This paper explores the influences of financial institutions including debtholders, long-term lenders, and commercial banks on CG in our sample firms through an examination of the associations between tax avoidance and debt ratio. The results show that the debt enhancement effect exceeds the debt substitution effect. This demonstration also works for the firms with outside directors and main banks which are classified as megabanks. In short, we conclude that, even if firms conduct tax avoidance activities and create tax shields as a means to reduce tax liabilities, Japanese firms generally prefer debt enhancement in order to gain advice from their main bank rather than rely on debt substitution to maintain a tax shield.

This result stands in contrast with the results of Richardson et al. (2014), and we can draw some inference of the strong reliance Japanese firms have on the main bank system. In their study, Desai and Dharmapala (2006) indicate a negative relationship between incentive compensation and tax avoidance measures. This negative relationship contradicts the straightforward view of corporate tax avoidance as simply a means of reducing tax obligations, but is consistent with managerial opportunism being an important consideration, and with the existence of complementarities between tax avoidance and managerial opportunism.

In addition, with a view of debtholders, we certainly expect that management will allocate free cash

10 Standard errors are corrected based on one-way clustering by firm, as per Petersen (2009), for all of the logistic regression models estimated in this section of the paper.
flow for refunds and repayment of debt in order to avoid undertaking investments with high risk profiles. However, management could also face a conflict of interest with debtholders, since aggressive tax avoidance has a high net present value, but is inherently risky (Desai and Dharmapala, 2009). On the other hand, since tax avoidance can trigger the destruction of corporate value due to its risk, it is firmly presumed that debtholders, as one of the stakeholders, will also need to concur on whether to undertake such actions. That is, even debtholders must positively accept such risky projects as tax avoidance activities.

With regard to above explanation, we conclude that our results support debt enhancement effects more than the debt substitution effect suggested by Richardson et al. (2012), which is based on a sample of U.S. firms, primarily because Japanese firms rely more on the information and advice obtained from financial institutions such as megabanks. Regarding this aspect, since we do not make a detailed examination of the relationship between main bank functions and tax avoidance, we will assume this area remains unexplored.
Reference


### Table 1 Panel A variable definitions

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>bdebt</td>
<td>total debt (short-term debt plus long-term debt) scaled by total assets</td>
</tr>
<tr>
<td>mdebt</td>
<td>total debt scaled by the sum of the market value of equity</td>
</tr>
<tr>
<td>Permdiff</td>
<td>Estimated permanent differences</td>
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<tr>
<td>BTD</td>
<td>Pre-tax accounting income less taxable income scaled by lagged total assets using the method developed by Manzon and Plesko (2002).</td>
</tr>
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<td>DD</td>
<td>Book-tax gap residual calculated employing the method developed by Desai and Dharmapala (2006).</td>
</tr>
<tr>
<td>DTAX</td>
<td>Book-tax gap residual computed using the method developed by Frank et al. (2009).</td>
</tr>
<tr>
<td>idrto</td>
<td>The proportion of board members who are non-employee directors.</td>
</tr>
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<td>idmbrto</td>
<td>The proportion of board members to outside directors who come from mainbank(%)</td>
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<tr>
<td>iadrto</td>
<td>The proportion of auditors members to outside auditors(%)</td>
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<tr>
<td>iadbrto</td>
<td>The proportion of auditors members to outside auditors who come from bank(%)</td>
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<td>megabnk</td>
<td>Dummy variable, coded as 1 for firms whose mainbank is megabank, and 0 otherwise</td>
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<tr>
<td>megabnk2</td>
<td>Dummy variable, coded as 1 for firms whose mainbank except Resona HD is megabank, and 0 otherwise</td>
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</tbody>
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### Table 1 Panel B control variables

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<tr>
<td>OI</td>
<td>Operating income scaled by total assets</td>
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<td>LnMV</td>
<td>Log of total assets</td>
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<td>ROD</td>
<td>Depreciation and amortization scaled by total sales</td>
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<td>FA</td>
<td>Fixed assets scaled by total assets</td>
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Table 3 Correlation matrix

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Table 4 Multivariate regression analysis of corporate tax aggressiveness and the debt-substitution effect (H1-1) and debt enhancement effect (H1-2)

This table shows the regression results between tax aggressiveness and debt-substitution. The dependent variable is total debt (short-term debt plus long-term debt) scaled by total assets (BDEBT) or the total debt scaled by the sum of the market value of equity and total debt (MDEBT). The independent variable is tax aggressiveness (TAG), which is measured as pre-tax accounting income less taxable income (where taxable income is computed as income tax expense divided by the statutory maximum corporate tax rate of 35%) scaled by lagged total assets using the method developed by Manzoni and Plesko (2002) (BTD). The book-tax gap residual is calculated using the method developed by Desai and Dharmapala (2006), in which DD and the book-tax gap residual is computed using the method developed by Frank et al. (2009) (Permdiff and DTAX). Other variables are defined in Table 2. Coefficient estimates with their t-statistics are reported in parentheses. The t-statistics are computed using the fixed-effects model, controlling for firm-specific and time-specific effects, and standard errors are corrected based on one-way clustering by firm (e.g., Petersen, 2009). The statistical significance of the estimates is denoted with asterisks: ***, **, and * correspond to 1%, 5%, and 10% levels of significance, respectively. The p-values are one-tailed for directional hypotheses and two-tailed otherwise.
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Table 5 Result for test of H2-1 and H2-2
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**Notes:**
- ***: p < 0.001
- **: p < 0.01
- *: p < 0.05

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* p<0.1, ** p<0.05, *** p<0.01

Table 6 Result for H3 test
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**Note:** The values in the table represent statistical data, with significant figures indicated by superscript symbols: **p < 0.05**, ***p < 0.001**.
Table 7 Result for additional H2 test

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Table 10 Robustness check for additional analysis

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A PRELIMINARY STUDY OF THE EFFECTS OF TRANSITIONING TO A PURE HOLDING COMPANY

Chieko MATSUDA

Professor, Ph.D. of Management
Tokyo Metropolitan University

cmatsuda@tmu.ac.jp
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ABSTRACT

This study analyzes the delisting of companies in Japan—particularly, delisting by being made a pure holding company, which has increased in recent years. Pure holding companies do not engage in business activity themselves, but are rather formed with the goal of controlling the business activities of commercial enterprises through stock ownership. Many of these companies positively announced that the transition to pure holding companies would lead to accelerate decision-making related to business portfolio management. However, there is a possibility that the transition may cause the group management problem of “whether pure holding companies can demonstrate healthy governance practices for the companies under their umbrella”. As the real condition of the commercial enterprises is difficult to grasp from the capital markets, which should demonstrate the functionality of corporate governance, there are fears that the rights of shareholders and the transparency of information disclosure are inhibited by transitioning to a pure holding company. This study analyses these negative impacts and empirically reveals the reaction of shareholders and the influence on corporate value, by transitioning to a pure holding company. It also clarifies that the factors leading to decisions of the transition.

Keywords: holding company, delisting, event study, governance, capital market

1. Introduction

Pure holding companies do not engage in business activity themselves, but are rather formed with the goal of controlling the business activities of commercial
enterprises through stock ownership. In 1997, the Act on Prohibition of Private Monopolization and Maintenance of Fair Trade (hereafter, Monopoly Prohibition Act) lifted the ban on “holding companies” and, with the introduction of the consolidated tax system in 2002, the number of “pure holding companies” increased as shown as Figure 1.

(Figure 1)

Many of these companies hold a number of businesses under their umbrella and seek to accelerate decision-making related to business portfolio management. However, when pure holding companies own stock in commercial enterprises operating under their umbrella or perform hierarchical governance for these companies as shown as Figure 2, the group management problem of “whether pure holding companies can demonstrate healthy governance practices for the companies under their umbrella” arises. As the real condition of the commercial enterprises is difficult to grasp from the capital markets, which should demonstrate the functionality of corporate governance, there are fears that the rights of shareholders and the transparency of information disclosure are inhibited by transitioning to a pure holding company. In response to the recent trend towards strengthening corporate governance, when dealing with pure holding companies, there are numerous areas of significant interest for all stakeholders, beginning with management and shareholders. These include not only the clarification of actual conditions within a company, but also other decisive transition factors, as well as the effects of such a transition on capital markets and corporate value.

(Figure 2)

Although some enterprises that take the form of pure holding companies operate numerous businesses under their umbrella, there are also enterprises that hold as little as a single business. Additionally, there have been cases where the company that manages this single business is intentionally delisted, and the enterprise becomes a pure holding company with only one subsidiary. As the number of businesses held by the company is insufficient to perform business portfolio management, there is reason to doubt the necessity of the holding company structure.

This study, as part of the literature related to pure holding companies, focuses on examples where such single business enterprises have become pure holding companies through delisting, and attempts an initial investigation into which companies choose this path and whether the enterprise value increases as a result of this choice.
2. Previous Research

As a precondition to the discussion concerning pure holding companies, we first review empirical research related to either business reorganization or the effects of diversification.

Business reorganization literature has developed in the West since the 1970s, when companies in multidivisional form began to prosper. A study of multidivisional form by Gabele (1981) is an example of such pioneering research.

Concerning diversification, Jensen (1986) asserts that problems with overinvestment arise easily in diversified enterprises. He also points out that, as the amount of resources managed increases with the scale expansion caused by investment, the authority of management increases, which may, in turn, create increased profits for management. Harris and Raviv (1996) show that there is a tendency for managers to express preferences for inefficient scale expansions following the separation of ownership and management in large enterprises.

While there is significant research related to corporate reorganization and diversification, as the form of pure holding companies itself extremely diversified outside of Japan, there is limited research on these. For example, in the US, companies take a multidivisional form in most cases. Holding companies are sometimes established within these organizations, but commercial enterprises that place pure holding companies at the top of their organization are almost non-existent. Such cases rely only on this structure because they are regulatory businesses that need to perform operations such as banking across state lines.

The situation is similar in Europe. In the “Factual Investigation of Holding Companies in Europe and America (1997),” published by the Japan Fair Trade Commission, information was solicited from enterprises and supervisory authorities in the UK, France, and Germany regarding the conditions of pure holding companies. A summary of these responses is that “although there are many examples of companies that have become operating holding companies and have set up subsidiaries in many countries in Europe that conform to the various systems in each of these countries (that is, non-domestic holding companies), ‘as it is possible to use a holding company to do the main work of a stable stockholder, management teams are able to protect the company from pursuit and hostile takeover by shareholders,’ and also ‘pure holding companies tend to block shareholder inquiries regarding the management status of
subsidiary companies.” Such responses aggregate concerns about the use of pure holding companies to adopt a negative stance towards shareholders.

However, in Japan, such concerns are rare and many enterprises have transitioned to pure holding companies. For instance, Otsubo (2003) provided a positive assessment of pure holding companies, arguing that, as pure parent holding companies that do not directly conduct operations, the ability of management in a pure holding company to directly manage resources is significantly limited, and the resulting profit is similarly limited. Consequently, choosing a pure holding company has the “information effect” of communicating to the market that “overinvestment is not occurring.”

Komoto (2005) quantitatively analyzed the factors used to determine whether a company will transition to a pure holding company using Cox regression analysis. The results showed that return on assets (ROA), sales growth rate, ratio of consolidated to non-consolidated profit, and mergers and acquisitions (M&A) activity had significant effects. Furthermore, transitioning to a pure holding company occurred proportionally with a lower ROA or high sales growth, and tended to be implemented when some sort of change was imminent to the organization, such as a downturn or a scale expansion.

Asaba (2012) analyzed when the behavior of enterprises that had transitioned to pure holding companies differed from that of enterprises that had not done so. The findings included that the parent company, or the number of businesses at the enterprise group level and the degree of business concentration, had no effect on whether a pure holding company was established; the sales ratio of a parent company that made up the entire corporate group was negatively correlated with the establishment of pure holding companies; and a parent company or main business with only minor influence stimulated the transition. Additionally, it was indicated that, if other companies in the same industry had transitioned to pure holding companies in the past, a mimetic pattern occurred, with the relevant company more likely to transition.

Matsuzaki (2013), in relation to the management of groups by pure holding companies in the retail sector, showed that there are two types of management: “centripetal management,” which implements group optimization through the use of powerful incentives set up by the main holding company, and “centrifugal management,” in which the main holding company is loosely linked to its subsidiaries. The main holding company also largely supports and delegates authority and responsibility to the business departments and commercial enterprises in this group. The usefulness of pure holding companies in the retail sector is subsequently discussed based on management strategy differences. Overall, a positive significance was discovered for transitioning to a pure holding company.
Ueno (2001) performed a questionnaire survey dealing with questions both on whether the pure holding company excels as an organizational structure peculiar to Japan and on how the pure holding company contributes to the international competitiveness of Japanese enterprises. The results shed light on the actual conditions of organizational structures in Japanese enterprises, and argue that lifting the ban on pure holding companies in Japan, while increasing the degree of freedom with which enterprises can choose their organizational structure, has not had a positive effect on operational results. Furthermore, Yori (2009), on the basis of interviews and literature review, pointed out that the existence of Japanese-style pure holding companies cannot be explained using Western management styles and noted that the use of a pure holding company structure does not necessarily guarantee that shareholder value is maximized.

Urano (2014) considers that decision-making for enterprises is influenced both by expanding corporate governance reforms and by the relationship between managers and shareholders of individual enterprises, with reference to the relationship between the motives for transitioning to a pure holding company and corporate governance reforms based on Japanese shareholder sovereignty theory. The results are close to a Western perspective on the promotion of the pure holding company structure in Japanese enterprises. They indicate the possibility that Japanese firms choose to transition to pure holding companies not because they represent an appropriate company structure for corporate governance reform, but rather offers defensive measures and a form of self-protection unique to Japanese enterprises against corporate governance reforms that aim to strengthen shareholder rights.

However, all research is merely qualitative, and there are few examples that demonstrate whether the transition to a pure holding company influences company value. Currently, pure holding companies have not been fully understood from a statistical perspective and, although a survey by the Ministry of Economy, Trade and Industry started in fiscal year 2013, the actual conditions of these companies are still in the process of being understood.

Additionally, we do not have a firm grasp of the differences between the attributes of the various enterprises that have finished their transition to pure holding companies. Accordingly, in this paper, several distinctions are made based on the attributes of such enterprises. We select certain companies using these distinctions and clarify how enterprises that might first appear to lack the necessary attributes to set up a pure holding company have managed to do so, and whether they have actually succeeded.
3. Motives for Transitioning to a Pure Holding Company

The determinants of transitioning to a pure holding company are organized below with reference to Adachi, Yamazaki, and Ugaki (2010).

(1) Integrating Operations
A pure holding company may be used to integrate various corporate groups, because such integration proceeds more smoothly than a traditional merger. There are several reasons for this: a holding company can be quickly set up, the use of a pure holding company can secure the time until an authentic integration can occur between parties who are unfamiliar with one another, etc. Furthermore, an equality between companies is values when a merger occurs in Japan, and a pure holding company assures that neither company will be entirely eliminated.

(2) Growing through M&A
Transitions to a pure holding company system are sometimes attempted to accelerate M&A processes. Performing M&A is essentially a matter of reviewing fields of operation with the goal of attempting to rearrange the distribution of operational resources. As such, there are a variety of promotional factors that encourage the adoption of a pure holding company structure. For example, if a pure holding company structure has been adopted, enterprises that have been acquired can be positioned under the umbrella of the larger corporate group without undergoing the complicated post-acquisition process of incorporating the new enterprise into the existing business. The acquired business also avoids being eliminated or absorbed and, depending on the situation, may even be able to preserve its name, while also being affiliated with a more powerful corporate group. Consequently, the acquired business is less resistant to the acquisition. From an external standpoint, since M&A activity is viewed positively, an enterprise can send the positive message that it is highly conscious of the composition of its portfolio by engaging in M&A activity.

(3) Increasing Autonomy in a Diversified Business
When a multidivisional company or one with an in-house company system transitions to a holding company, the businesses that make up the company or company system are partitioned, and “the implementation of independent, autonomous management” is often cited as a goal. A pure holding company structure is therefore introduced so that more realistic management is performed with regard to operational
profits. Essentially, this should also be possible in multidivisional companies and company systems. However, incomplete management of balance sheets and cash flow for separate businesses is characteristic to diversified enterprises in Japan. The use of a pure holding company structure improves the management of these companies through their partition, which accompanies the transition.

(4) Reviewing Fields of Operation
When a main business is reaching maturity and there is a need to divert resources to another field of operations, transitioning to a pure holding company occurs to diversity the main business, stimulate both existing and growth operations, and simplify the transfer of operational resources from existing to growth operations.

(5) Managing in Response to Business Characteristics
While it is possible for operations within the same company to have different personnel systems, it is easier for different companies to set up different structures in response to their industry or business conditions. This is one of the reasons for transitioning to a pure holding company.

(6) Increasing the Pace of Operations
Another motive for transitioning to a pure holding company is increasing the pace of decision-making by delegating authority to those closer to where business is being conducted. Transitioning to a pure holding company allows responsibility and authority to be appropriately shared between the holding company and its businesses, therefore preventing redundant or unnecessary actions that might diminish the pace of operations.

(7) Reinforcing the Function of the Head Office of a Corporate Group
When overseas expansion occurs, there is an increasing need to redefine the function of the head office in relation to the overall corporate group, including overseas operations. In such a scenario, transitioning to a pure holding company is useful in clarifying the role of the head office in contrast to operations company functions.

(8) Motivational Tactic in Promoting Talent
In the personnel structure of an enterprise, there may be higher concentrations of personnel at specific levels and ages. When there is no choice but to forbid promotion to preserve the organizational structure balance, posts may be allotted in the
process of transitioning to a holding company as a motivational tactic. This is an appropriate measure to increasing the motivation and rewards for mid-level executives. Additionally, if there is a large number of companies within the corporate group, management training can be conducted by entrusting affairs to the management teams of these individual companies.

(9) Transitioning to Organizational Management
When transitioning from a top-down style of owner management to the next management generation, if a more organizational management system in which decision-making occurs through a holding company system is required, it is necessary to reorganize the decision-making process to make judgments and decisions related to other corporations. Reorganization with the goal of diffusing supervision and execution within the group structure can also be achieved by transitioning to a pure holding company.

(10) Facilitating Succession
For enterprises with an owner-operator, a pure holding company structure may be chosen because, if the current top position is at the head of the holding company, which has control over the entire group, candidates at the business ownership succession can be installed as heads of subsidiary companies, therefore accruing management experience.

(11) Organizing Complex Capital Ties
When enterprises with strong ownership interests are reorganized or inherited, there may be a pressing need for the organization of complex capital ties within the group. By temporarily making every company within the group a subsidiary of a holding company, capital ties can be clarified, thus providing the basis for further business development.

(12) Preparing for a Hostile Takeover
When a listed enterprise that contains a business based on a strong brand has become the target of a hostile takeover by partitioning, the enterprise alone can restrain the buyer by offering the possibility of an external capital alliance. As spinning off a single business may be overly suggestive, spinning off several businesses simultaneously while transitioning to a holding company that provides “cover” may be appropriate.
In cases of (1) and (2), it is assumed that there is a discontinuous change occurred in the same time as the transition to a pure holding company. (3)–(5) are designed for companies with numerous operations. However, in (6)–(12), the existence of a large number of operations is not a precondition for effectiveness. The objectives of the subjects of this research, “enterprises that have transitioned to a pure holding company despite having only one business,” may therefore be from points (6)–(12). Of these motives, (6)–(8) may lead to an increase in corporate value through speeding up decision making and strengthening functions, etc. by transition into a pure holding company. Additionally, enterprises with motives (9)–(11) are primarily owner-operated and unlisted enterprises, nevertheless choosing to transition a pure holding company. Even if such companies are listed, we can assume they are relatively small.

Furthermore, if the motivation for transition is (12), then there will undoubtedly be questions as to whether such an action fulfills the mandate of a publicly listed enterprise to increase the value of its stock for shareholders. Accordingly, if public listing continues even after transitioning to a pure holding company, the value of the company’s stock may decrease. However, if (12) is the chosen motivation for the transition, by fostering motivation and a proactive promotion system, company performance will likely increase, causing a corresponding increase in stock price.

We thus examine whether the act of transitioning to a pure holding company has a positive effect on Japanese capital markets, while considering the scale of the company at the point in time when transitioning to a pure holding company and the increase in stock price after the transition.

4. Hypotheses Specification

Considering the transitions by publicly listed companies to pure holding companies in Japan over the 15 years between 2002 and 2017, the subjects of this research are “enterprises that have transitioned to a pure holding company despite having only a single business, have temporarily stopped being publicly listed as a commercial enterprise, and have then relisted as a pure holding company” (hereinafter referred to as “enterprises that have transitioned to a single business holding company”). For publicly listed companies, those in the First and Second Sections of the Tokyo Stock Exchange and in emerging markets are included. We have analyzed 23 transitions. Although this is a small number, we have concentrated on these companies because we have aimed to
focus why they carry out transition of a pure holding company with a great burden such as delisting and relisting, despite the fact that they own only a single business and do not face to a discontinuous change. We have also focused on whether or not these transitions improve corporate value. We thus consider the following hypotheses to be applicable:

H1: The company value of enterprises that have transitioned to a single business holding company do not increase after the transition.

H2: Shareholders do not react positively when companies announce the transition to a single business holding company.

H3: Enterprises that have transitioned to a single business holding company are small in scale in comparison to listed companies.

H4: A larger percentages of the shares of an enterprise that has transitioned to a single business holding company are held by an individual owner or owners.

If Hypothesis 1 is supported, there is a possibility that motives (9)–(12) from the previous section will be justified. In this case, Hypothesis 2 will be also supported, because of no increase of corporate value. Conversely, if Hypothesis 1 and 2 are not supported, there is a possibility that the transition will lead to an increase in corporate value through speeding up decision-making process and realizing effective organization, etc. Hypothesis 3 and 4 apply to situations described by motives (9)–(11) from the previous section.

Each of these hypotheses was examined using an event study of changes in stock value over both the short and long term and a performance study. Regarding company value, taking the day on which the transition to a pure holding company was publicized as the event day (t = 0), the market model below is constructed with reference to Campbell et al. (1996). The estimation window is taken as the 150 days from 180 days before the publication date (t = -180) to 31 days before publication (t = -31), and αi and βi have been estimated:

\[ R_{it} = \alpha_i + \beta_i * R_{mt} + \epsilon_{it}, \]  

where \( R_{it} \) is the daily stock return of subject enterprise i on day t, \( R_{mt} \) the daily return of TOPIX on day t, and \( \epsilon_{it} \) the error term.

The event window used for the short-term event study is the three days before and after the event (t = -1, 0, +1). The normal return (the expected return if the event had
The abnormal return (AR) produced by the event is estimated by comparing the normal to the real return. Over the short term, the abnormal return over these three days totals to the cumulative AR (CAR). Initially, the null hypothesis is that both the AR for the three days before and after the publication date and the average value of the CAR are 0, and a t-test is performed. To examine robustness, a Wilcoxon signed-rank test has been performed on median values.

Regarding the long-term event study, the estimation window is similar to the one used for the short-term study, except that time periods of 12, 24, and 36 months after the publication date ($t = +12, +24, +36$) are used as long-term one-, two-, and three-year event windows, respectively. Using these windows, the long-term CAR is calculated and analyzed in the same manner as the short-term one.

Regarding scale, amount of sales and total assets size have been used as representative variables. Individual shareholders ratio and concentration to a top-tier shareholder ratio have been used as representative variables for examining Hypothesis 4. We have analyzed 19 transitions for the performance study.

Regarding the data, the “Recof M&A Database” is used to identify relevant enterprises, and the “Nikkei NEEDS Financial QUEST” to obtain financial indicators and stock prices.

5. Analysis Results

5-1. Event Study (Short-term)

We conducted an event study of changes in stock value at the point in time that the transition to a pure holding company was publicized. The descriptive statistics are exhibited in Table 1, and the results are presented in Table 2.

| (Table 1) |
| (Table 2) |

Here, regarding the share prices for the 23 transitions that constitute the overall sample, a t-test was performed on the null hypothesis that both the AR and the average value of the CAR for the three days before and after the publication of the transition would be zero. A Wilcoxon signed-rank test was also performed on median values. In the results of this short-term event study, a significant positive abnormal return was not seen in either the AR or the CAR for the three days before and after the publication date. These results support Hypothesis 2.
5-2. Event Study (Long-term)
We conducted an event study of changes in stock value 12, 24, and 36 months after the point in time when the transition to a pure holding company was announced. The descriptive statistics are exhibited in Table 3, and the results of this study are shown in Table 4.

(Table 3)
(Table 4)

In the long-term event study as well, a significant positive abnormal return was not seen in the AR or the CAR in the three periods after the announcement date. On the contrary, the results showed a negative trend. This trend is not statistically significant; however, in addition to supporting Hypothesis 1, it suggests that the transition to a single business holding company tends to damage the company’s value in the long term.

5-3. Performance Study (Scale Analysis)
An analysis was also performed regarding scale in the year in which the transition to a pure holding company was publicized, specifically concerning the amount of sales and the size of assets. In this analysis, using a Wilcoxon rank-sum test, the figures from the financial statement filed directly before a business corporation that had been publicly listed was delisted in order to transition to a pure holding company were compared to the median values of all listed companies in the year in which the enterprise was delisted. Descriptive statistics are shown in Table 5. The results are shown in Table 6.

(Table 5)
(Table 6)

No significant difference was observed regarding either the amount of sales or the size of assets. This result does not support Hypothesis 3 in that enterprises that choose to transition to single business holding companies are of a small scale.

5-4. Performance Study (Ownership Ratio Analysis)
The degree of ownership concentrated in the primary shareholder and the ratio of individual stock ownership in the year in which the transition of the enterprise to a pure
holding company was publicized were compared using a Wilcoxon rank-sum test, as in the scale analysis. Descriptive statistics are shown in Table 7. The results are shown in Table 8.

(Table 7)

(Table 8)

A significant difference was seen for both elements. These results support Hypothesis 4. A high ratio of individual stock ownership does not necessarily mean that the ratio of stock ownership for the owner is high, but the results clarify that there are characteristic trends related to stock ownership in enterprises that choose to transition to a single business holding company, in which the degree of stock ownership concentrated in the primary shareholder and the ratio of individual stock ownership are relatively high.

6. Discussion

This research deals with the establishment of pure holding companies, which are characteristic of Japanese enterprises. A preliminary examination has been performed to evaluate the motivations for the establishment of these companies and their effects on company value. Specifically, selecting single business holding companies, the actual conditions of which are not thought to have changed after the establishment of or the transition to a pure holding company, we used event studies to examine both shareholder reactions at the point in time when the transition to a pure holding company occurred and the long-term effects of these transitions on improving share prices. We also conducted an analysis related to the effects of scale and the characteristics of different ownership conditions. We define a single business holding company as an enterprise that, despite having only a single business, transitions to a pure holding company. In doing so, it temporarily stops being listed as a business corporation, and is then relisted as a pure holding company. In addition, to be a single business holding company, judging from external information, it must be a company that has not transferred capital or migrated organizations or operations within a year of its transition. If the transition of such an enterprise to a pure holding company is viewed positively by capital markets and company value increases in the long term, then it implies that the transition to a pure holding company is not only effective in the normal circumstances under which it is widely used (i.e., as a means for post-merger integration and M&A or as a way to perform portfolio management for a number of businesses),
but also has effects on purely corporate functions, such as accelerating the delegation of authority or decision-making and the reinforcement of the functions of a head office. It is also possible that, when small-scale enterprises make such a transition, they are listed companies that are almost owner-operated enterprises, and choose to do so to put their organizational structure in order. In such cases, it is thought that certain characteristics, such as patterns of stock ownership, may be exhibited.

The results of the analysis have clarified the following points. First, shareholders do not react positively when a single business holding company chooses to transition to a pure holding company. On the company’s side, in the published content related to the transition to a holding company, an increase in company value through such means as the acceleration of the delegation of authority and decision-making and the reinforcement of the function of the head office is often extolled. It is clear, however, that shareholders may not react to these changes in a positive manner. Next, no contribution to an increase in company value was actually found from the transition to a pure holding company after any fixed period of time had elapsed. Although the transition to a pure holding company went as far as the delisting of the business corporation, the publicized effect never appeared, and the real motives for the transition to a holding company may therefore differ from the alleged goals. That is, it is possible that an owner-operated enterprise without the organizational structure of a listed company may use such a transition as part of a plan to transfer to an organizational management style, or that such a transition may be for a negative purpose, such as to defend the enterprise against a hostile takeover. Regarding such possibilities, no characteristics were identified concerning scale, but it was determined that enterprises with high concentrations of stock ownership by primary shareholders and high rates of individual stock ownership have a tendency to choose to transition to a pure holding company. A high rate of individual stock ownership is not the same as a high ratio of stock being held by an owner, but in cases in which the primary stockholder is the owner, capital strategies and organizational structures may change significantly on account of such a tendency. Moreover, in cases in which owner shareholders choose to make the burdensome transition to a single business holding company, the intention may be to keep a core business corporation responsible for actual operations at a distance as defense against a hostile takeover. Without going this far, a decrease in the amount of information disclosed that is related to the contents of the business is not preferable for shareholders apart from the owner. By transitioning to a pure holding company, the possibility is indicated that the rights of minority shareholders may be hindered.
7. Conclusion

In this research, an initial examination is attempted regarding what kind of enterprises choose to transition to a pure holding company, a form of company seen as characteristic to Japan, and what kind of effect this transition has on company value. A transition to a pure holding company is part of the process of becoming a single business holding company. Although the sample size is limited, the results of an analysis dealing with the easily comparable period before and after this transition clarified that, for enterprises that own a single business and transition to a pure holding company through delisting, there is a tendency for stock ownership to be concentrated in the upper ranks of management and for there to be a high rate of individual stock ownership. Further, the transition to a pure holding company may not contribute to an increase in company value. If an increase in company value is not seen, then, from the perspective of shareholders, because the disclosure of information related to companies primarily involved in operations is unnecessary for a pure holding company, an information asymmetry between shareholders and management is strengthened when a transition to a pure holding company occurs. This has a significant negative effect on the visibility of the actual conditions of the company, and is therefore apt to be disadvantageous to shareholders, particularly if they are small in number. A more thorough examination of these points in the future would be valuable.

The limitations of this research include the small sample size of cases in which conditions before and after the transition to a pure holding company can be easily compared. In addition to a statistical treatment, an analysis that includes a more thorough qualitative investigation of each case may be necessary. In addition, although certain stock ownership ratios have been indicated as characteristic of enterprises that transition to pure holding companies, the elements examined in this research are limited to the ownership ratio of the primary shareholder and the ratio of individual stock ownership; therefore, there are many features that the analysis does not include. This may also be considered an important point from the perspective of corporate governance. Hence, it is desirable that more research be conducted on this topic in the future.
Figure 1: Number of pure holding companies in Japan

(Source: Summary of the Report on the 2015 Survey of Pure Holding Companies Enterprise, Statistics Office, Research and Statistics Department, Ministry of Economy, Trade and Industry as of March 10, 2016 (the newest version))
Figure 2: Capital market, a pure holding company and its business entity

Table 1: Descriptive statistics of the event study (short-term)

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Table 2: Results of the event study (short-term)

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Table 3: Descriptive statistics of the event study (long-term)
Table 4: Results of the event study (long-term)

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Table 5: Descriptive statistics of the performance study (Scale analysis)

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<th>Mean</th>
<th>Median</th>
<th>3rd Qu.</th>
<th>Max</th>
<th>Std Dev.</th>
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<td>-1.300</td>
<td>-0.800</td>
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<td>0.400</td>
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<tr>
<td>Total Assets</td>
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Table 6: Results of the performance study (Scale analysis)

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<td>Total Assets</td>
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Table 7: Descriptive statistics of the performance study (Ownership ratio analysis)

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<td>30.600</td>
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<td>50.900</td>
<td>63.200</td>
<td>74.500</td>
<td>16.000</td>
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<tr>
<td>% Individual Shareholding</td>
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<td>9.600</td>
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<td>27.600</td>
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Table 8: Results of the performance study (Ownership ratio analysis)
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<td>% Top Shareholding</td>
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<td>*</td>
</tr>
<tr>
<td>% Individual Shareholding</td>
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**REFERENCES**


**ACKNOWLEDGEMENTS**

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READABILITY OF MD&A EXTRACTED FROM IXBRL:
COMPUTATIONAL LINGUISTIC APPROACH

Yoshitaka Hirose
Takasaki University of Commerce Junior College

Hirohisa Hirai
Kanagawa University

Kohei Arai
Gunma University

ABSTRACT

This paper clarifies determinants of the readability of Management and Discussion & Analysis (MD&A) section from annual reports of Japanese companies extracted from Inline Extensible Business Reporting Language (iXBRL). Previous studies have focused on English-language information, with no studies discussing the characteristics of Japanese MD&A using large-sample data. Thus, we extracted the character information Japanese companies from iXBRL and analyzed the readability using text mining. We found that 1) companies with large market value at the end of the term and companies with a high age have low readability, 2) companies with a large market value at the end of the term and companies with many foreign segments have many characters, and 3) companies with high age have fewer characters. Further, MD&A in Japan had greater readability than comparable United States documents. Our results suggest that firms with asymmetric information use simpler words for shareholders and, further, are conscious of shareholders who have poor Japanese. The academic contribution of this paper is to show the usefulness of iXBRL as well as the readability of Japanese MD&A using large-sample data through a computational linguistic approach. In addition, this research compares the results of Li (2008), which targeted the United States, with the results for Japan.

Keywords: iXBRL, MD&A, readability, textual analysis
1. Introduction

This paper aims to clarify the character information of MD&A (Management and Discussion & Analysis) section in Japanese annual reports. The MD&A disclosed in the "Management Discussion and Analysis on Financial Condition and Results of Operations" sections in annual reports. The choice and coverage of content is at the discretion of management, and some reports include future projections or plans. Although disclosure was institutionalised in 2003, there is limited research on its contents. Li (2008) conducted a typical empirical study of MD&A, which revealed that the readability of the MD&A section of the annual report can be used to predict future performance. According to Li (2008), the readability components are difficulty and length. Specifically, the article analysed the Fog Index to measure the difficulty level and the length of sentences. The paper found that 1) companies with low profit margins are preparing highly readable annual reports, and 2) low readability is positively correlated with future performance. Since Li (2008), readability continues to be used to assess the qualitative disclosure quality of financial statements (Lang, Stice-Lawrence, 2015; Lee, 2010; Lawrence, 2011 etc.). Previous studies have targeted English-language information, with no studies yet discussing the characteristics of Japanese MD&A using large-sample data. Recently, Shibasaki and Tamaoka (2010) developed a judgment model of Japanese difficulty (grade), which supports similar investigation of large samples of MD&A from Japanese companies. Thus, with reference to Li (2008), this paper conducts replication tests on Japanese MD&A. The academic contribution of this paper is to show the usefulness of Inline Extensible Business Reporting Language (iXBRL), as well as assessing the readability of Japanese MD&A using large-sample data via a computational linguistic approach. In addition, we compare the results of Li (2008), which targeted the United States (US), with the results for Japan.

The remainder of this paper is organised as follows. Section 2 sets up hypotheses to be verified in this paper on the readability of Japanese MD&A. We also present the empirical model used to verify the hypotheses. Section 3 describes the research design. Section 4 explains the data and sample selection used in this paper and presents the descriptive statistics. Section 5 verifies the readability features of Japanese MD&A according to Li (2008). Finally, section 6 summarises and discusses future directions.

2. Previous research

Disclosure of MD&A was introduced in 1968 in the US, with disclosure items specified in
Regulation S – K, and further specified in Item 303 in 1980 Form 10 - K in 1982. According to the SOX Act established in 2002, the disclosure items of MD&A were added, and this form reaches the present. In contrast, disclosure of MD&A in Japan has a shorter history, with its institutionalisation occurring when regulations were revised in 2003. Bryan (1997), a pioneering study on MD&A used samples from 250 USA companies in 1990, and found the following three outcomes: 1) MD&A is significantly correlated with short-term future performance, 2) MD&A is significantly related to analysts' performance forecast modifications, and 3) capital expenditure predictions are significantly related to current and future stock returns.

Studies on MD&A since Bryan (1997) include Cole and Jones (2004) and Sun (2010). Cole and Jones (2004) analysed the MD&A of retailers during the three years from 1996 to 1999. The information showed the utility of the reasoning given for the change in revenue (growth of sales at existing stores etc.) and information on future capital plans (opening / closing plan etc.). These variables were shown to be related to future revenues, future profits, and stock returns. Sun (2010) analysed MD&A on 568 manufacturing industry inventories, and found that the explanation for excessive increases in inventory is positively related to profitability. These studies generally analysed specific industries and a small number of samples. In contrast, Li (2008) conducted a typical empirical study of MD&A on a large sample, and discovered that the readability of the MD&A section of the annual report could be used to predict future performance. Li (2008) considered two components of readability: difficulty and length. Specifically, the article analysed the Fog Index to measure the difficulty level and the length of sentences. The study found that 1) companies with low profit margins are preparing low readability annual reports, 2) companies that disclose easy-to-read annual reports are earning persistence. The result supports the hypothesis that managers create complicated annual reports to hide current low performance. In other words, it suggests that managers fogging information that is disadvantageous to investors and create opportunistic annual reports. Li (2008) contributed the following three things. First, the study expanded strategic disclosure research by analysing large-sample data on readability and showed that it can be valuable in verifying whether readability is related to profit and profit sustainability. Second, more complicated annual reports have low-quality disclosure that increases investor information processing costs. Third, the quality of disclosure as character information is related to the sustainability of profits. Since Li (2008), readability continues to be used to assess qualitative disclosure quality in financial statements (Lang, Stice-Lawrence, 2015; Lee, 2010; Lawrence, 2011 etc.). However, these previous studies have obtained text data from databases such as Compustat and Osiris. In contrast, our research, text data was obtained from iXBRL.
3. Research design

In this section, we present a hypothesis following Li (2008) regarding the readability of MD&A. For that purpose, we first reviewed previous studies on the readability components: difficulty and length, and describe several resulting hypotheses.

3.1. Readability: Difficulty and Length

In this paper, the difficulty levels of MD&A included in annual reports of Japanese companies were measured by a grade judgment formula used in computational linguistics. In English, a grade judgment formula called the Fog index, as used in Li (2008), is a common tool for measuring the difficulty of a sentence. Since our focus is Japanese companies, we looked to Shibasaki and Tamaoka (2010), who developed a grade determination formula based on Japanese language textbooks. Specifically, the authors conducted a multiple regression analysis with various predicted factors was performed with Japanese difficulty as the independent variable and the subject grade of the textbook as the dependent variable. Then, after executing variable selection using a step-wise method, the authors argued that the two variables proportion of hiragana in the whole text and average predicate number for one sentence, which we will discuss in more detail below, are effective as independent variables. Equation (1) below is the grade determination formula calculated as a regression equation. In the formula, Grade represents the grade or difficulty, which correlates to a school reading level. For example, if the grade level is 1, the degree of difficulty is at the first grade level of the elementary school, and if it is 9, it is at the difficulty degree of the 3rd grade level of the junior high school. X1 represents the proportion of hiragana characters in the whole text (unit is %) and X2 represents average predicate number of one sentence:

\[
Grade = -0.145X_1 + 0.587X_2 + 14.016
\]  
(1)

Regarding X1, the linguistic features of Japanese characters include the four character types: kanji, hiragana, katakana, and romaji. According to Shibasaki and Tamaka (2010), the presence of four kinds of characters in one language is a feature not found in other languages. Therefore, they assumed that the proportion of character types is one of the variables that determines the difficulty level. Their analysis of 205 major texts compared with a standard textbook of Japanese language indicated that hiragana decreases and kanji increases as the grade increases. The former is included in the grade determination formula. That is, these variables are effective for measuring the difficulty level.
Regarding X2, Shibasaki and Tamaoka (2010) also focused on the complexity of the grammatical structure. Specifically, sentences are more difficult when they contain more than one predicate. In other words, the number of predicates per sentence is an indication of the complexity of the grammatical structure.

Next, we consider the readability component of length by measuring the total number of characters of MD&A. A document with a large total number of characters is considered difficult to read because the reader's information processing cost is high. In this paper, similar to Li (2008), the total number of characters of MD&A in the annual report is defined as:

$$ Length = \log(NCharacters) $$

(2)

Similar to Li (2008), because there is distortion in the distribution of the number of characters, we use logarithmically transformed values for analysis. In contrast to Li (2008) we consider the number of characters rather than words, as this better accounts for Japanese language characteristics.

3.2. Set hypothesis: Determining factors of readability

To support comparison, we use a similar hypothesis to Li (2008), as follows: the determinant of readability is a non-strategic disclosure, and managers are not manipulating it strategically. Next, in accordance with Li (2008), we set up hypotheses about the following variables that are considered determinants of readability. The variables are year-end market value after logarithmic transformation ($SIZE$), market to book value ratio ($MTB$), years since listing ($AGE$), special item profit / total asset ($SI_P$), special item loss / total assets ($SI_N$), number of business segments ($NBSEG$), number of geographical segments ($NGSEG$), number of foreign sales segments ($NFSEG$), earnings volatility ($EARN_VOL$), and financial complexity ($NITEMS$). The company size can be thought of as a proxy variable for many aspects of business activities and the business environment of a company. For example, in Watts and Zimmerman (1986), a variable called company size was used as a proxy variable for the political cost of a company. Management will disclose more information in the annual report if the scale of the company grows. Therefore, hypothesis 1 is set using $SIZE$ as a determinant of readability of the annual report; $SIZE$ is the logarithm of the year-end market value:
Hypothesis 1: The size of a company is inversely correlated with readability. That is, larger companies have lower readability of MD&A than smaller companies.

Companies with high MTB are different to those with low MTB in many ways (e.g. investment opportunities and growth potential). Growing companies with high MTB have a more complex and uncertain business model, leading to hypothesis 2 where MTB is (market price of net assets + book value of liabilities) / (total book value of assets):

Hypothesis 2: MTB is inversely correlated with readability. That is, companies with a high market to book value ratio have lower readability of MD&A than companies with low market to book value ratio.

Established companies with high AGE have implemented disclosure in the stock market over a long period. Therefore, the company has low information asymmetry and uncertainty of information, and readability of annual reports is expected to be good. If the investor has the correct information on the business model of the long-living company after listing, the company may disclose a simple and readable annual report. Therefore, hypothesis 3 is set:

Hypothesis 3: Age is correlated with readability. That is, companies with a high age have more readable MD&A than companies with lower age.

Companies with large special extraordinary profit / loss items such as SI_P and SI_N experience more abnormal events. Therefore, such companies have complicated information to disclose in their annual reports, leading to hypothesis 4:

Hypothesis 4: Extraordinary profits and loss are inversely correlated with readability. That is, companies with many extraordinary profits and losses have lower readability of MD&A than companies with few extraordinary profits / losses.

Companies with many NBSEG, NGSEG, and NFSEG are conducting regional development, business diversification, overseas expansion and so forth. Thus, it is assumed that the company is doing more complicated business, leading to more complex disclosure in annual reports. Therefore, hypothesis 5 is set:

Hypothesis 5: NBSEG, NGSEG, and NFSEG are inversely correlated with readability. That is, companies performing complex business have lower readability of MD&A than companies that do
not conduct complicated business.

\textit{EARN\_VOL} is considered to be a proxy variable of a company in an unstable business environment. Companies are expected to have more complicated disclosures to investors as the uncertainty of the business environment increases, leading to hypothesis 6. \textit{EARN\_VOL} is calculated based on the standard deviation of operating profit over the past five years:

Hypothesis 6: Earning volatility is inversely correlated with readability. That is, companies performing unstable businesses have lower readability of MD&A than companies doing stable business.

\textit{NITEMS} is a variable representing financial complexity. Firms with complex finances are expected to become more complex, leading to less readable annual reports. Therefore, hypothesis 7 is set. The complexity of finance was measured as follows. Among the additional disclosure items included in Nikkei NEEDS, the number of items (logarithmic transformation) not voluntarily disclosed is counted. This is because firms reporting many items in financial statements are considered to be complicated in finance. In other words, companies with a large value for \textit{NITEMS} are financially complicated:

Hypothesis 7: Financial complexity is inversely correlated with readability. That is, companies with complex finance have lower readability of MD&A than companies with a simpler finance.

In this paper, we analyse the usefulness of MD&A according to Li (2008). First, we analyse difficulty and length of sentences to gather information about readability. However, Li (2008) targeted English, and we are focusing on Japanese publications. Language differences in text mining are major issues. Thus, Shibasaki and Tamaoka (2010) is used in this paper. We make a grade judgment to measure the difficulty of sentences. Therefore, for hypotheses 1 to 7 on the readability of MD&A, the dependent variable is set to difficulty or length, where a high value indicates low readability. Verification is carried out by the following equation:

\begin{equation}
\text{Grade or Length} = \beta_0 + \beta_1\text{SIZE} + \beta_2\text{MTB} + \beta_3\text{AGE} + \beta_4\text{SI\_P} + \beta_5\text{SI\_N} + \beta_6\text{NBSEG} + \beta_7\text{NGSEG} + \beta_8\text{NFSEG} + \beta_9\text{EARN\_VOL} + \beta_{10}\text{NITEMS}
\end{equation}

For verification of the hypothesis, the expected sign of each coefficient is as shown in Table 1.
4. Sampling

Text data was obtained from the Financial Services Agency website EDINET (Electronic Disclosure for Investors' NETwork). The "Detailed document search" function was used to select "Search for only the documents containing XBRL" and to specify the submitter's industry to exclude Banks, Securities & Commodity Futures, Insurance, and Other Financing Business. We performed Specify Type of document and selected Annual Securities Report. We chose the 2015 fiscal year for the reporting period to obtain samples corresponding to the taxonomy version of March 31, 2015. This search procedure resulted in 2,547 cases. To obtain MD&A, we used Perl and R. We first removed all HTML tags from ".xbrl" using Perl. Next, R was used to extract the MD&A of companies with MD&A tag line breaks. Perl was used to extract MD&A of companies that did not have MD&A tag line breaks. This gave us 2,265 enterprises with MD&A. This sample included companies listed on the First Section of the Tokyo Stock Exchange (TSE), unlisted companies, and companies listed on the second section of the TSE and other stock exchanges.

Financial data for the past five years was obtained from Nikkei NEEDS-Financial Quest 2.0 compiled by Nikkei, Inc, and used to calculate $EARN\_VOL$. Furthermore, in order to ensure comparability, we restricted the sample to the fiscal year ending March 31st to match the adoption of the Japanese Generally Accepted Accounting Principles (GAAP). The sample size of the companies that were listed on the First Section of the TSE that meets these conditions was 1,106. Other companies (1,159) excluded from the analysis.

5. Results

Table 2 shows the descriptive statistics. The mean $Grade$: an estimate grade for Japanese difficulty, is 10.81. Li (2008) reported in his US sample that the mean $FOG\_Index$ was 18.23, which indicated unreadable. Although there are issues with comparing the two results due to linguistic differences, we are able to say that Japanese annual reports are easier to read on average than US annual reports. In our paper, the length of the MD&A is measured in terms of characters, not words like Li (2008). However, Li (2008) reported that the mean number of words in MD&A section was 4,665. Compared with our finding that the mean number of characters in MD&A is 2,023, it is obvious
that the Japanese MD&As are comparatively brief. In summary, Japanese MD&As have greater readability than those from the US.

Table 3 shows the results of a regression analysis on equation (3). Column [1] reports the determinants of the MD&A Grade, column [2] and [3] report the determinants of the two factors, PredicateRate and HiraganaRate, respectively, that make up the MD&A Grade. SIZE and AGE are significantly related to MD&A Grade by affected the HiraganaRate. As hypothesised, SIZE raises the difficulty of sentences. However, contrary to our expectation, AGE also has a positive relationship with MD&A Grade. This suggests that firms with asymmetric information to present to shareholders choose plain words for explanation. It is plausible that the MD&As of older firms are easy for shareholders to understand even using difficult words written in Kanji.

Column [4] reports the determinants of the MD&A Length, SIZE, AGE and NFSEG. As hypothesized, SIZE increases the length of the MD&A and AGE decreases it. Regarding the outcome of AGE, this is consistent with previous findings because, if the information content is the same, using Kanji shortens the length of the sentence. As for NFSEG, the result differed from the hypothesis; it seems that companies are conscious of shareholders whose are not good at Japanese.

6. Conclusions

In this paper, we analysed the readability determinants of MD&A. We subsequently summarise the two main contributions of this paper. First, the descriptive statistics of MD&A from Japanese annual reports were presented. There was a trend whereby the readability of MD&A from Japanese companies was better compared with that of US companies. Second, by analysing the difficulty level and length of sentences, we specified the determinants of readability. Specifically, we found that 1) companies with a large market value at the end of the term and companies with a high age have low readability, 2) companies with a large market value at the end of the term and companies with many foreign segments have more characters, and 3) companies with high age have fewer characters. These results suggest that the MD&A from Japanese companies are valuable as sources of empirical information system research from databases such as the iXBRL. The focus on and
clarification of readability in Japanese documents is an important contribution of this research.

Future research should explore the differences in interpretation between Li (2008) and the present study in greater detail. Since it is necessary to discuss whether the Japanese-specific phenomenon of easier-to-read MD&A and fewer characters is desirable for disclosure, future research should discuss the disclosure system. The readability and short length of MD&A reports suggest that it is becoming increasingly important to provide easy-to-understand information to external stakeholders such as investors. On the other hand, since it can also be interpreted that the disclosure of MD&A is becoming less important, further analysis is necessary.
REFERENCE


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### Table 2
Descriptive Statistics

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Text of the MD&As were obtained from the iXBRL provided by EDINET operated by Financial Services Agency of Japan. Grade is an estimate of the equivalent grade in a Japanese language textbook, calculated as 0.587 * PredicateRate – 0.145 * HiraganaRate + 14.016 (Shibasaki and Tamaoka, 2010). PredicateRate is the average number of predicates in a sentence. HiraganaRate is the average number of Hiragana in a sentence. Length is the natural logarithm of the number of characters in an MD&A. SIZE is the logarithm of the market value of equity. MTB (Market-to-Book) is the market value of the firm divided by its book value. AGE is the number of years since a firm was listed on the Tokyo Stock Exchange. SI_Profit is extraordinary profit in special items scaled by the book value of assets. SI_Loss is extraordinary loss in special items scaled by the book value of assets. NBSEG is the logarithm of 1 + the number of business segments. NGSEG is the logarithm of 1 + the number of geographic segments. NFSEG is the logarithm of 1 + the number of foreign geographic segments. EARN_VOL is the standard deviation of the operating earnings in the last five fiscal years. NITEMS is the number of missing voluntary disclosure items. Earnings is ordinary profit scaled by the book value of assets. PL is a dummy variable that equals 1 if a company reports a profit and 0 otherwise. All financial data were obtained from Nikkei NEEDS FinancialQuest.
Table 3

Summary Statistics of the Determinants of Grade and Length

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>SIZE</td>
<td>0.035**</td>
<td>-0.006</td>
<td>-0.263**</td>
<td>0.056***</td>
</tr>
<tr>
<td></td>
<td>(0.015)</td>
<td>(0.016)</td>
<td>(0.108)</td>
<td>(0.014)</td>
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<tr>
<td>MTB</td>
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<td>-0.000</td>
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<tr>
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<td>(0.000)</td>
</tr>
<tr>
<td>AGE</td>
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<td>-0.000</td>
<td>-0.029***</td>
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<td>(0.001)</td>
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<td></td>
<td>(1.185)</td>
<td>(1.286)</td>
<td>(8.746)</td>
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<tr>
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<tr>
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<td>(1.065)</td>
<td>(1.156)</td>
<td>(7.864)</td>
<td>(1.041)</td>
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<tr>
<td>NBSEG</td>
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<td>0.012</td>
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<td>(0.027)</td>
<td>(0.029)</td>
<td>(0.198)</td>
<td>(0.026)</td>
</tr>
<tr>
<td>NGSEG</td>
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<td>-0.082**</td>
<td>0.006</td>
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<td>(0.030)</td>
<td>(0.033)</td>
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<tr>
<td>NFSEG</td>
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<td>(0.145)</td>
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<td>Earnings</td>
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<td>(0.473)</td>
<td>(0.514)</td>
<td>(3.496)</td>
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<td>(0.108)</td>
<td>(0.117)</td>
<td>(0.798)</td>
<td>(0.106)</td>
</tr>
<tr>
<td>(Constant)</td>
<td>9.126***</td>
<td>2.548***</td>
<td>43.421***</td>
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<td></td>
<td>(0.694)</td>
<td>(0.753)</td>
<td>(5.123)</td>
<td>(0.678)</td>
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</table>

Industrial Dummy Yes Yes Yes Yes

Observations 1,106 1,106 1,106 1,106
R² 0.086 0.058 0.072 0.092
Adjusted R² 0.052 0.023 0.037 0.058
Residual Std. Error (d.f. = 1,065) 0.546 0.593 4.034 0.534
F Statistic (d.f. = 40; 1,065) 2.510*** 1.652*** 2.054*** 2.706***

This table shows the regression results of Grade and Length on the determinants and industry fixed effects. Standard errors are shown in parentheses. ***/*/** indicate significance at 0.01, 0.05, and 0.10 level, respectively. Text of the MD&As were obtained from the iXBRL provided by EDINET operated by the Financial Services Agency of Japan. Grade is an estimate of the equivalent grade in a Japanese language textbook, calculated as 0.587 * PredicateRate – 0.145 * HiraganaRate + 14.016 (Shibasaki and Tamaoka, 2010). PredicateRate is the average number of predicates in a sentence. HiraganaRate is the average number of Hiragana in a sentence. Length is the natural logarithm of the number of characters in an MD&A. SIZE is the logarithm of the market value of equity. MTB (Market-to-Book) is the market value of the firm divided by its book value. AGE is the number of years since a firm was listed on the Tokyo Stock Exchange. SI_Profit is extraordinary profit in special items scaled by the book value of assets. SI_Loss is extraordinary loss in special items scaled by the book value of assets. NBSEG is the logarithm of 1 + the number of business segments. NGSEG is the logarithm of 1 + the number of geographic segments. NFSEG is the logarithm of 1 + the number of foreign geographic segments. EARN_VOL is the standard deviation of the operating earnings in the last five fiscal years. NITEMS is the number of missing voluntary disclosure items. Earnings is ordinary profit scaled by the book value of assets. PL is a dummy variable that equals 1 if a company reports a profit and 0 otherwise. All financial data were obtained from Nikkei NEEDS FinancialQuest.
University Budgets and Strategy:

A survey of current practices in Canada

Bryan Boles, Brock University, bboles@brocku.ca
Staci Kenno, Brock University, skenno@brocku.ca *
Michelle Lau, Brock University, mlau@brocku.ca
Barbara Sainty, Brock University, bsainty@brocku.ca

* Contact author
1812 Sir Isaac Brock Way
St Catharines, Ontario
L2S 3A1
University Budgets and Strategy: A survey of current practices in Canada

Abstract

There is a growing demand for policymakers to ensure that public funds are being spent wisely and effectively. In Canada, most universities are publically funded and face increased scrutiny and accountability for to show progress, budgets, and plans for the future. As a result, mission and strategy have become important in the post-secondary institution marketplace. There is a body of research that examines the relationship between budgeting and strategic planning but many questions remain, especially in the public sector. Our survey was designed to determine if there is a link between budgeting and strategic planning in universities. Administered to the Vice Presidents - Finance and Administration, our results identify a number of elements in the budgeting process that may lead to enhanced strategic planning. The results may influence choices made in how best to budget and how to relate the budgeting process to strategic planning and funding initiatives. In determining funding and assessing accountability, governments could be interested in a university’s budget model and may consider the budget model as one element to assess the ability of the institution to achieve its strategic goals.

Keywords: Budgeting, University, Survey, Strategic Planning
INTRODUCTION

Building a stronger post-secondary education system is an important priority for many governments that provide funding to universities. In Canada, many provinces publicly state their desire to enable institutions to build on their individual strengths, while ensuring students continue to have access to innovative and affordable colleges and universities (Chiose, 2015; Herbert, 2016). Though these objectives are not new to higher education, the institutional landscape and context to achieve these objectives continues to evolve. For example, government funding for universities has historically been linked most closely with enrolment in Canada. However, understanding the link between strategic initiatives and funding has become ever important as demand for greater fiscal accountability by public institutions and their stakeholders (e.g., taxpayers and government) continues to rise (Mensah, Schoderbek and Werner, 2009). Specifically universities are tasked with demonstrating a better understanding of the relationship between strategic initiatives and spending. While it is well known that budgeting can be used as a management accounting system to support strategy implementation (Näsi and Aunola, 2002), the relationship between strategy and budgeting in higher education remains underexplored.

Our study examines the link between budget models and strategic planning in higher education. We surveyed the Vice-President of Finance and Administration at 38 publically-funded universities across Canada to determine the link, if any, between the institution’s budget model and its strategic planning. We considered the type of budget model (incremental or incentive-based) and the strength of the strategic planning process. We also assessed the purpose of the budget (planning or decision-making) as it is considered in planning and resource allocation. In addition, we examined the influence of leadership structure of decision-making on strategic planning. Many questions remain, both practically and empirically, on the type and
purpose of the budget model, and its relationship with strategic planning. This study documents
current practices in higher education and provides an important step towards a better empirical
understanding of the relationship between budgeting and strategic planning in the public sector.

Studies examining the link between budgeting as a management control tool and strategic
planning stem from Anthony (1965). However, the focus on this link is new to the university
sector. This study provides additional insights that will help evaluate whether post-secondary
institutions (PSIs) are currently taking steps towards achieving a government’s objectives for
higher education. We believe our research is both timely and relevant to researchers, PSIs, and
governments focused on building a stronger post-secondary education system.

Our work contributes to the literature by providing practical evidence of the role of
budgeting in strategic planning. This is especially important in higher education and public
institutions as the success of these institutions cannot be measured through profits or other
benchmarks commonly used by corporate entities. In addition, while many PSIs report their
strategic mission and vision on their websites, the question remains as to whether universities
consider budgets in this strategic context. Our study informs this question and clarifies the types
of financial structures that are relevant to budgeting, strategic planning, and decision making for
administrators in PSIs. The current research is particularly timely as the need for PSIs to raise
funds, allocate resources efficiently, and report their efforts to key stakeholders in an
increasingly resource constrained environment has never been greater.

This paper is organized as follows. First we provide some background on university
funding in Canada. The following section discusses the prior literature and the theoretical
foundation for our research questions. We then describe our sample data and summary statistics.
We discuss results in section four and conclude our discussion in section five.
A CANADIAN CONTEXT

Publicly funded Canadian universities and colleges obtain funding from two main sources, government grants and individual user fees (tuition). Of the over 1.2 million students attending university in Canada, fewer than 8,500 attend private universities. While some universities have programs that are privatized, where tuition is expected to cover full costs, all public universities receive some form of government funding. Historically, government funding was provided to all public PSIs on a cost-sharing model. Enrolment was the key driver in determining funds received by institutions. However, in recent years attempts have been made to tie funding to various specific outcomes with varying levels of success (StatsCanada, 2016). Although government grants have decreased significantly in recent years (CFS-FCEE document), from a high of 84% of a PSI’s operating budget in the 1980’s to its current level of 57%, there is still significant need for accountability of government funds to ensure continued government support and to provide evidence of support for a government mandate. Furthermore, students (and parents) have shouldered the responsibility of increased tuition costs to cover government shortfalls. These stakeholders also demand accountability for PSI spending.

LITERATURE REVIEW

“… [B]udgeting systems at public universities cannot be separated from the larger economic and public policy environment in which they operate” (Priest et al. 2002, 2). Figure 1 below, has been created to provide a starting point in examining the relationship between budgeting and strategic planning. It depicts the basic building blocks of the budget and strategy processes with which our study is based on. In this section we explore the literature that lead to the creation of the figure and the foundation of our survey.

[Insert figure 1 here]
Budget Models

There are two main categories of budgeting models in organizations, incremental budgeting and incentive-based budgeting. Incremental budgeting can also be described as traditional or historic-based budgeting; it is designed to create budgets based on the incremental or decremental growth of the budget. Incentive-based budgeting is designed to motivate behaviors through a reward system tied to the budget. There are a number of different incentive-based budget subsets including activity-based budgeting, responsibility centered management, value-centered management, and decentralized budgeting (Strauss et al., 1996).

Incremental budgeting is popular at many universities (Whalen, 2002) despite the criticisms highlighted in extant research (Hope and Fraser, 2003). It is an automatic, rather than analytical approach to budgeting and therefore is the least suited to critically examine and analytically adjust previous allocations (Varlotta et al., 2010). Therefore, it may not be suited to the reexamination of resource allocation in an academic environment, especially in times of rescission.

It is certainly easier to implement an incremental budget than other budgeting approaches (Horngren et al., 2016) and, perhaps, is appropriate in a healthy organization where resources are being allocated effectively. However, in recent years there has been increased interest in incentive-based budgeting, both activity-based and responsibility centered across PSIs. This has been triggered by a number of factors including the demand of policymakers to be accountable in the use of public funds (Gaither et al., 1994; Alstete, 1995, Choise, 2015) and the need to link decision making to funding. When universities experience growth, increased enrolments garner increased funding however, in times of fiscal restraint due to reduced funding, universities are
challenged to allocate constrained resources effectively. Without a process for evaluating such decisions, the likelihood of optimizing the university’s limited resources is compromised.

The two incentive-based budgeting systems that are of concern in this research are activity-based budgeting and responsibility center budgeting. Activity-based budgeting creates pools of overhead expenses which are then allocated based on the activities that drive those expenses. There are many documented cases of activity-based budgeting in higher education, such as the University of Michigan (Courant and Knepp, 2002) and Queen’s University (Holmes, 2016). Each university creates its own cost classifications and its own cost drivers, with varying degrees of success.

Responsibility center budgeting on the other hand, is based on three principles: “(1) all costs and income attributable to each school and other academic unit should be assigned to that unit; (2) appropriate incentives should exist for each academic unit to increase income and reduce costs to further a clear set of academic priorities; and (3) all costs of other units, such as the library or student counseling, should be allocated to the academic units” (Whalen, 1991). The basis of this system is that there is devolution of responsibility to the faculties, units, or departments with responsibility. There have been case studies conducted at the University of Toronto (Long, 2002) and Indiana University (Gros Louis and Thompson, 2002) among others studying the responsibility center budgeting systems implemented.

There are hybrids of many of the budgeting systems that can be classified under incentive-based budgeting. Priest, Becker, Hossler and St. John (2002) “found that differences in what individual universities call their incentive-based budgeting schemes often reflect both differences in values, aspirations, priorities, and political realities of the campus on which they are executed, and efforts by senior administrators to make an idea their own by giving it a unique
name and character” (p. 2). In addition, incentive-based budgeting models are not universal, despite their many improvements over incremental budgeting models (Whalen, 2002).

Depending on how the university names and describes its budgeting system it can be thought of as many different budgeting systems, both properly defined and improperly defined. Our research determines what type of budgeting model is actually in place by asking questions that can help identify the core concepts of an institution’s budget system. Our survey questions were based on prior literature identifiers for each of the different budgeting models. We seek to understand what budgeting models are currently employed in the university sector and why.

Budget Purpose

A budget can have many different purposes that have frequently been classified into three different categories (Horngren et al., 2016). The first is the need to properly allocate resources; without the ability to apportion the funds available in the university, there would be no guidance moving forward. The second connected purpose is measurement of what the departments, units, and faculties are bringing in as revenue and paying out in costs. The third stems from the need to evaluate those departments, units, and faculties on how well they are controlling their costs and increasing their revenues to ensure the entire university is successful. In the case of PSI’s evaluation may also incorporate external constituents such as government for compliance or funding purposes and other stakeholders who access public institutions.

Budgeting functions encompass both decision-making and planning purposes; nonetheless these two functions may conflict (Hopwood, 1972; Libby and Lindsay, 2010) presenting administrators with significant challenges. Prior research has examined a number of purposes for budgeting with mixed results (see Covaleski et al. 2003 for an overview). Arnold and Artz (2015) and Ekholm and Wallin (2011) suggest that some budget functions may be
beneficial for planning purposes but detrimental for decision-making while Fisher et al. (2014) find that behaviors vary based on the purpose of budgeting. Therefore, it is important that we examine whether the perceived purpose of budgeting has an impact on the budget model and strategic planning.

**Strategic planning**

Strategic planning involves articulating the mission and vision, prioritizing resources of the organization, and promoting organization focus. A number of researchers (Hopwood, 1987; Dent, 1990; Argyris, 1990; Hedberg and Jonsson, 1978) find strong theoretical support that budgeting can take an active role in shaping organizational change.

Mintzberg (1978) describes strategy as a pattern of decisions about the organization’s future. David and David (2017) define three primary stages in the strategic management process: strategy formulation, strategy implementation, and strategy evaluation (control). The relationship between budgeting and strategy may be particularly apparent both in strategy implementation and strategy evaluation. For example, strategies can only be implemented if they are funded (Galbraith and Kazanjian, 1986). In addition, Thompson and Strickland (1987) suggest that strategy implementation is significantly more time-consuming than strategy formulation. Furthermore, strategy implementation problems have stemmed from failures of control systems and budgetary feedback (Rouch and Ball, 1980). Review and feedback of performance are critical to determine if strategies are being achieved (Daft and Macintosh, 1984). Researchers posit that strategic planning is not sufficiently concretized into clear programs (Näsi and Aunola, 2002) and this leads to problems regarding strategy implementation (Mintzberg, 1994; Beer and Eisenstat, 2000).
The action of implementing strategy typically includes allocating resources to support strategic decisions (Preble, 1992). Jarzabkowski (2002) contends that budgeting is connected to strategic decision-making since the implementation of strategies is likely to require reallocation of funds. Frow, Marginson, and Ogden (2010) find that managers are able to do their jobs effectively, game the system as necessary but boundaries are there to keep them in check. All of the decisions made by managers relate back to the strategy of the organization. Strategy implementation is increasingly identified as a continuous process requiring the constant involvement of managers throughout the organization.

A few studies examine the link between budgeting and strategy in higher education. Lepori et al. (2013) recognize that control and management of financial resources are critical for organizational control in PSIs. They contend that, given its direct connection with resources and organizational activities, budgeting is a place where the practical implications of organizational strategies can be observed more directly than, for example, looking at formal structures and strategic documents. However, many public sector organizations focus more on the reporting of performance measures rather than the use of them for resource allocation and decision-making (Ammons and Rivenbark, 2008; Mensah et al., 2009).

Zierdt (2009) examines budget tools that are most effective in achieving institutional goals and objectives with the strategic plan of PSIs. She provides insights into the implementation of responsibility-centred budgeting at two American universities. Haberaecker (2004) describes how one PSI implemented change by using data analysis to link strategic planning with budgeting. This process was supported by Anderes (1996) who articulated four critical factors to successfully implement a strategic plan including a clear intention to link strategic planning outcomes into budget development and allocation. In addition, Jones (1995)
highlights that a good strategic budgeting process will give university leaders a tool for ensuring the effective management of university assets.

Our study is not related to the specific strategies employed by PSIs but rather to the relationship (if any) between budgeting and strategic planning. Therefore, we do not examine types of strategies nor strategy formulation. Prior research has examined alternative uses of budgeting in contexts that are likely to yield inconclusive or erroneous results (Libby and Lindsay 2010). For example, Lindsay and Libby (2007) examine the use of budgets for strategic planning as applied in the banking sector, when little change was occurring there was no need for adaptation. There is little question that PSIs are going through significant pressures to focus on strategic planning (Chiose, 2015; Herbert, 2016); hence, it is an interesting environment to study the impact of budgeting on strategic planning. With this pressure we argue budgeting has a central role to play in contributing towards the development and planning of strategy.

Risk as it influences budgeting

Extant research tells us that risk can be defined as both process and outcome, “as process, risk is the consideration of unpredictable and uncontrollable events and perceptions of those events. As outcome, risk is the consequences of those events” (Collier and Berry, 2002, 293-294). As an environmental context factor, risk was considered for both process and outcome reasons in this study. Risk at universities can take many shapes, from enrolment figures, to changing grant levels, and the market. The public discussion on risk has steadily been increasing in prior years, from the audit committee to ministry initiatives, the role of risk, the influence of risk continues to grow. The link of budgets and costs, where risk management, risk occurrence, and risk avoidance all play into the choices that the university makes. All choices made to counteract risk cost money (Balakrishnan et al., 2007), for example to counter failing enrolment
additional marketing or scholarships might be introduced. The discussion surrounding risk has been driven by provincial mandates, the board of directors, and the wants of the community.

To understand the ties between budgeting and strategy we need to step back and understand what budgeting models have been implemented at the PSIs. Research has shown that there are those universities that have implemented incentive-based budgeting systems (includes activity-based budgeting, responsibility center management, and value centered management) as a solution to the challenges they have to face. There are also those universities that have turned away from incentive-based budgeting systems because of concern about the public accountability or visibility of an institutions bottom line (Priest et al, 2002). In choosing to study budgeting and strategic planning in a setting where organizations are faced with pressures to change, innovate, and adapt quickly may provide a richer context to understand how budgeting is linked to strategic planning.

**SAMPLE DATA AND STATISTICAL ANALYSIS**

The focus on this study is the institutional budget model and its link to strategic planning. In an initial test of the link between budgets and strategy, we conducted three formal interviews with administrators at an Ontario PSI, and had a number of informal conversations with those in similar positions across PSIs in Canada. These conversations have aided in creating the survey questions, directing us to explore specific avenues of thought including risk and power. The survey questions were created from these interviews and extant literature, pulling questions from previous surveys (eg. Libby and Lindsay, 2010) and creating questions based on the literature highlighted. The questions were pre-tested with practitioners at an Ontario PSI.

We surveyed the Vice-President of Finance and Administration (or equivalent) at 64 universities across Canada. After individual follow-up we obtained usable responses from 38
universities which is a 59% response rate. Our online survey gathered data on a number of factors including the budget model, its process, the incidence of strategic planning, the link between strategic planning and budgeting, leadership responsibility for the budget, the perceived purpose of the budget, and how the budget is influenced by risk from each university.¹ We also accessed publically available data about each university’s size, as measured by total revenues and student enrollment and incorporated this into our analysis. Each applicable question solicited an answer on a Likert scale of one to five.²

**Descriptive statistics**

Prior to conducting factor analysis of the data, we provide descriptive statistics of the universities surveyed. Table 1 provides an overview of the various categories. As previously discussed, the literature defines two broad categories of budget models, incremental (historical) and incentive-based. According to Priest et al (2002), activity-based and responsibility centered are both subsets of incentive-based budget models. We categorized each university as to budget model type according to their responses on nine different questions. The nine questions were grouped by budget type. There were two questions that defined an incremental budget model, two that defined an activity-based budget model, two that described a value-centered budget model and three that met the criteria for a responsibility centered budget model. In aggregate, eleven universities used an incremental budget model; of the remaining 27 universities, 22 used some classification of incentive-based budget model. The other five universities appear to be a hybrid of both categories and were classified as such. These classifications are used for further analysis.

[Insert table 1 here]

---

¹ Ethics approval was received for this research project
² Questions requiring a written response were not assessed on a 1 to 5 scale.
Panel A summarized the categories of budget model; Panel B provides the mean and standard deviation for each budget model question.

To assess strategic planning, we asked 11 questions that evaluate the strength of each university’s strategic planning process. Universities were grouped based on their responses to questions regarding implementation, timing, leadership, and constituent demands regarding the strategic planning process. Based on these responses, universities were categorized as having either a strong or weak strategic planning process.

[Insert table 2]

Panel A provides our categorization for each university based on weightings of each of the questions. Panel B provides the mean and standard deviation for each strategic planning question.

Based on the literature, we asked respondents ten questions to assess the purpose of budgeting at their institution and categorized them into planning, control, communication, and decision-making. These classifications were not mutually exclusive. The budget purpose questions are summarized in Table 3 with descriptive statistics. Panel A shows that budgeting serves a number of different purposes at many universities; the question and responses show that each university did not need to choose just one purpose. Panel B provides the mean and standard deviation for each budget purpose question.

[Insert table 3 here]

We wanted to understand the role that budgeting played (if any) in the strategic planning process of the university. Therefore, we asked nine questions that assessed the use of budgets in the strategic planning process. Most universities indicate some link between budgets and
strategic planning. The questions we designed to evaluate the link between budget and strategic plan are summarized in Table 4.

[Insert table 4 here]

**Factor Analysis**

We conducted a PCA with subsequent rotation (Varimax) on four of the major constructs (Budget Model, Strategic Planning, Link, and Budget Purpose) defined in our study to determine the important factors for each construct.

**Budget model**

There were nine questions in our survey that enabled us to classify universities by budget model (incremental or incentive-based). Applying Kaiser’ Rule and the scree test, three factors were deemed important. Following rotation, component 1 accounted for 27.7% of the variance. The highest loading items are labeled **Results Driven**, reflecting that performance is key when determining budget model and not just using last year’s information. Component 2 accounted for 23.5% of the variance and was labeled **Activity** recognizing that various unit-level activities are key in determining the budget model. The final component accounted for 18.9% of the variance and had one significant factor which we labeled **Priority Decision-making** reflecting that budgets are primarily the responsibility of Faculty Dean’s. The combination of these three factors, results driven, activity and priority decision making, leads us to the notion that incentive-based budgeting, in the form of activity-based budgeting and responsibility center management provided the explanation for the variances.

[Insert table 5 here]

**Strategic planning**
There were 13 questions in our survey that examined the importance of a strategic planning process at each university. Applying Kaiser’ Rule and the scree test, four factors were deemed important. Following rotation, component 1 accounted for 38.13% of the variance. There are several loading items driving this labeled **Resource Allocation**, reflecting that key factors in strategic planning deal with the effective use of resources to support strategic planning. The second component accounted for 17.2% of the variance labeled **Fiscal Responsibility** indicating the importance of fiscal management with respect to the strategic planning process. The third component accounted for 12.45% of the variance capturing the influence of external constituents on strategic planning, perhaps stemming from accountability and funding pressures.

These three factors provide understanding as to the rationale behind strategic planning, from the implementation of the plans and the timing of them to the reason the plans exist to begin with. External constituents drive a portion of the strategic plans, as the PSI would be concerned with accountability and reputation affecting future plans of the institution.

[Insert table 6 here]

**Budget purpose**

Budget purpose was examined with nine questions in the survey. Again, applying Kaiser’ Rule and the scree test, three factors were deemed important. Following rotation, component 1 accounted for 28.0% of the variance and was label **Planning** to reflect the use of budgets in decision making, resource allocation and measurement. The second component relates to reporting and communication as the purpose of budgeting and is labeled **Compliance** (20.7%).

[Insert table 7 here]

**Link**
There were also nine questions in our survey that examined the link between budgeting and strategic planning. Applying Kaiser’ Rule and the scree test, two factors were deemed important. Following rotation, component 1 accounted for 31.4% of the variance. This component recognized the importance of the Support of the strategic plan for the budget. The second component accounted for 27.1% of the variance and appears to focus on the Alignment of the budget with the strategic plan. Both components emphasize an interplay and connection between budgets and strategic planning in PSIs.

[Insert table 8 here]

The quantitative analysis has shown that there is a link between a PSIs budget purpose, model, and strategic plan, from the individuals involved in the budget process or strategic planning process. As figure one diagrammed, our study provides evidence of the role of budgeting in the strategic planning process. Incentive-based budgets are used in the strategic planning process of many universities and they are an effective planning tool when there is an explicit recognition of the link between the two constructs. The management structure (budget responsibility) also appears to play a role in the budget and strategic planning process, incorporating risk into the planning process, a construct that is not in the original figure.

Discussion

Based on the questions posed in Figure 1, we examined a number of relationships in our dataset.

Budget model and strategic planning

As discussed previously, nine questions are used to classify a university’s budget model. Next, we used the rank scores for strategic planning to test the relationship between budget model and strategic planning. Using a Mann-Whitney test, we compared the strength of the university’s strategic planning process with its budget model type (incremental or incentive-
based). There is a significant difference between the strength of a university’s strategic planning and its budget model when comparing Hybrid and Incremental budget models (p < 0.019; mean rank of 12.6 and 6.64 respectively) and a marginal difference when comparing Incremental and Incentive budget models (p < 0.058; mean rank of 12.50 and 19.25 respectively). However, there is no significant difference between Hybrid and Incentive budget models with respect to the strength of strategic planning (p < 0.433; mean rank of 16.50 and 13.43 respectively). We therefore conclude that universities that have stronger strategic planning processes tend to use incentive-based budget models. This is not surprising as much of the literature demonstrates the motivational importance of incentive-based budgeting (Wong-on-Wing, Guo and Lui, 2010). It can be an effective tool for many purposes, including strategic implementation.

Budget purpose and budget model

As budgets can be used for a variety of purposes we asked respondents ten questions to assess the purpose of budgeting at their institution and categorized them into resource allocation, measurement, and evaluation. Both resource allocation (p < 0.002) and evaluation (p < 0.034) were significant. We then assessed whether there was a link between the budget purpose (resource allocation or evaluation) and budget model. We found a significant difference between Incremental and Incentive-based budget models and their purpose both as a vehicle for resource allocation and for evaluation. Universities that used an incentive-based budget model also use budgets for resource allocation (p < 0.002) and evaluation purposes (p < 0.026) when compared to incremental budget models. However, there is no difference between Hybrid and either Incremental or Incentive-budget models when evaluating the budget purpose. These results may imply that many universities consider that a budget based on history (incremental) is not relevant for planning and decision-making as it does not provide insights into the budget’s purpose.
Is there a link between the budget model and strategic planning?

We wanted to understand the role that budgeting played (if any) in the strategic planning process of the university. For our initial test of this relationship we ran a Kruskal Wallis test to determine if the Link was strong when universities also have a strong strategic planning process. The results are significant (p < 0.000). The results are not significant (p < 0.419) when the universities have a weak strategic planning process. Risk also is significant when examining the Link questions (p < 0.001). Consequently, universities with a strong link between budgeting and strategic planning also consider risk in this process. These findings support the use of budgets for strategic planning and demonstrate that universities that engage in strategic planning utilize their budgets to guide the process. As considered in Figure 1, budgets may be a useful tool for better implementation and evaluation of a university’s strategic plan.

As some of the issues may be driven by the size of the university we classified the universities based on size (small, medium, and large) and tested whether strategic planning and budget model were influenced by the university’s size. Results show that medium universities and large universities engage in more strategic planning than small universities (p < 0.010 and p < 0.005 respectively). Results also indicate that large universities use the strategic planning process to focus on government funding and fiscal pressures to a greater extent than both medium (p < 0.005) and small (p < 0.036) universities. However, we found that budget model was not affected by size.

[Insert table 9 here]

Leadership structure

Prior research has determined that the decision-making authority for the budget may influence the model type, the level of strategic planning and whether risk is considered in
planning and resource allocation (Brownell, 1982). However, the focus of prior work was on leadership style rather than leadership authority (Huang and Chen, 2008). We wanted a better understanding of the management of the university budget and its influence on the strategic planning process\(^3\) therefore we examined leadership structure at universities. Respondents were asked whether budget responsibility rested with the academic leadership (provost), the administrative leader (VP-Finance and Administration) or if these two positions shared decision-making authority. Of the 38 universities, 20 indicated that the Provost was responsible for the budget; eight indicated that the VP-Finance and Administration was responsible for the budget and ten indicated that this was a shared responsibility.

[Insert table 10 here]

Risk

Based on this delineation of leadership structure, we considered how risk was emphasized. Results of this test indicate that when budget authority is maintained by the academic leader (provost), there is greater emphasis on risk ($p < 0.003$) when compared to an administrative leader. Furthermore, when budget responsibility is maintained by the VP-Finance and Administration (or equivalent), there is less emphasis on strategic planning ($p < 0.009$) and risk ($p < 0.006$) than when budget authority is shared. This may support the intuition that the Provost is responsible for academic issues and therefore has more responsibility for various risks (such as enrolment) that may impact the university. The VP-Finance and Administration, while maintaining responsibility for a university’s fiscal decisions, does not have the authority to discuss and persuade regarding academic issues which may be able to mitigate risk.

**CONCLUSION**

\(^3\) This idea was suggested by the practitioner member of our research team.
Budgeting is a very commonly research topic in management accounting and studied in a number of different settings, contexts, and industries. Our research extends the role of budgets in PSIs and importantly links budgets to the strategic plans of the PSI. This link provides insights for governments to better link the strategic mandate agreements with the future needs of the higher education sector. Though our findings provide insights into the type of budget model that each university employs, caution must be taken when evaluating these universities based solely on the budget model currently in use. Overall, we contribute to the literature by finding a specific link between budgeting and strategic planning. This may lead to changes in budget models and processes as universities seek to provide more transparency and accountability to various stakeholders.

Though we have found a number of important links between concepts examined, there are limitations to our study. We only have responses from 38 Canadian universities and therefore, the results may not be generalizable to other populations. Each political environment may obtain different results due to different regulations or different external stakeholder pressures. Furthermore, we did not assess the quality of the strategic planning processes at the respondent universities and as a result, while we can provide information on the relationship between budgeting and strategic planning, we are uncertain as the type of strategic planning taking place at each PSI.

Further work will offer insights into specifics on the budgeting process, a concept we allude to in figure one. The nuances behind the budget process will provide further insights into its link with the strategic planning process at PSIs. It would also be beneficial to understand whether governments perceive budgeting as playing a role in the strategic plans of a university. Governments may find that certain budget models are more useful for them to assess the
university’s strategic plan. Additional surveys, field studies and experiments are required to reifying the link between budgets and strategic planning at universities and further develop the model introduced in this paper.

References


Holmes, J. 2016. Implementing an Activity-Based Budgeting Model: The Experience at Queen’s University. *OCUFA University Finance Workshop*. November 4. Toronto, ON.


Figure 1

Budget model
- Incremental
- Incentive-based
  - Activity-based
  - Value-centred
  - Responsibility centred

Budget purpose
- Resource allocation
- Measurement
- Evaluation
  - May include external constituents

Strategic Planning Process
- Strategy formulation
- Strategy implementation
- Strategy evaluation

What is the relationship?
Table 1
Descriptive Statistics
Budget model

<table>
<thead>
<tr>
<th>Panel A</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Budget Model</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incremental</td>
<td>11</td>
<td>28.9</td>
</tr>
<tr>
<td>Hybrid</td>
<td>5</td>
<td>13.2</td>
</tr>
<tr>
<td>Incentive-Based</td>
<td>22</td>
<td>57.9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>38</td>
<td>100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel B</th>
<th>Budget Model Questions N = 38</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>The current year’s budget is mostly based on the prior year’s budget.</td>
<td>3.50</td>
<td>1.13</td>
<td></td>
</tr>
<tr>
<td>The current year’s budget is mostly based on the budgets from the previous five years.</td>
<td>2.64</td>
<td>1.20</td>
<td></td>
</tr>
<tr>
<td>At my university financial resources are allocated to units based on unit activities.</td>
<td>3.61</td>
<td>0.964</td>
<td></td>
</tr>
<tr>
<td>At my university costs are allocated to units based on activities.</td>
<td>2.92</td>
<td>1.23</td>
<td></td>
</tr>
<tr>
<td>At my university financial resources are allocated to units based on unit performance.</td>
<td>2.86</td>
<td>1.20</td>
<td></td>
</tr>
<tr>
<td>At my university financial resources are allocated to the units that generate the greatest revenues.</td>
<td>2.94</td>
<td>1.12</td>
<td></td>
</tr>
<tr>
<td>Responsibility for revenues (e.g., tuition and grants) are assigned to the college, faculty and/or department level.</td>
<td>2.72</td>
<td>1.41</td>
<td></td>
</tr>
<tr>
<td>Responsibility for expenses are assigned to the college, faculty and/or department level.</td>
<td>3.97</td>
<td>0.94</td>
<td></td>
</tr>
<tr>
<td>Faculty budgeting decisions are largely the responsibility of the deans of each Faculty.</td>
<td>3.87</td>
<td>1.03</td>
<td></td>
</tr>
</tbody>
</table>

Note: Likert scale is based on a scale of 1 ‘strongly disagree’ to 5 ‘strongly agree’
Table 2
Descriptive Statistics
Strategic Planning

Panel A

<table>
<thead>
<tr>
<th>Strategic Planning</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strong Strategic Planning Process</td>
<td>24</td>
<td>47.4</td>
</tr>
<tr>
<td>Weak Strategic Planning Process</td>
<td>14</td>
<td>52.6</td>
</tr>
<tr>
<td>Total</td>
<td>38</td>
<td>100</td>
</tr>
</tbody>
</table>

Panel B

<table>
<thead>
<tr>
<th>Strategic planning N = 38</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responding to new, unforeseen opportunities is considered more important than achieving budget targets at my university.</td>
<td>2.77</td>
<td>0.73</td>
</tr>
<tr>
<td>The strategic plan of my university compares our short-term and long-term performance indicators with other referent universities.</td>
<td>2.74</td>
<td>0.95</td>
</tr>
<tr>
<td>The strategic plan defines the major measurement indicators and the timetable of their implementation for my university.</td>
<td>3.46</td>
<td>1.09</td>
</tr>
<tr>
<td>The strategic plan of my university has specific processes with which its strategic goals are developed along with action plans aimed at continuous development.</td>
<td>3.51</td>
<td>0.981</td>
</tr>
<tr>
<td>Our strategic planning process responds to external constituent demands and pressures.</td>
<td>3.63</td>
<td>0.73</td>
</tr>
<tr>
<td>Our strategic planning process responds to internal constituent demands and pressures.</td>
<td>3.97</td>
<td>0.62</td>
</tr>
<tr>
<td>At my university, there is a formal process in place to follow up on strategic planning.</td>
<td>3.74</td>
<td>0.85</td>
</tr>
<tr>
<td>At my university, there are constant reminders of the need to achieve strategic plans.</td>
<td>3.43</td>
<td>0.92</td>
</tr>
<tr>
<td>How often is the strategic plan evaluated to determine if the plan/objectives are being met?*</td>
<td>3.23</td>
<td>0.69</td>
</tr>
<tr>
<td>How often is the strategic plan assessed, updated, and/or changed?*</td>
<td>3.74</td>
<td>0.61</td>
</tr>
<tr>
<td>The process at our university to follow up on strategic planning outcomes is effective.</td>
<td>3.17</td>
<td>0.92</td>
</tr>
</tbody>
</table>

Note: Likert scale is based on a scale of 1 “strongly disagree” to 5 ‘strongly agree’; * indicates the following scale: 1 = never, 2 = monthly, 3 = quarterly, 4 = annually, 5 = every three years.
Table 3 - Descriptive Statistics

Budget Purpose Questions

Panel A

<table>
<thead>
<tr>
<th>Budget Purpose</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resource allocation</td>
<td>27</td>
<td>71.1</td>
</tr>
<tr>
<td>Measurement</td>
<td>36</td>
<td>94.7</td>
</tr>
<tr>
<td>Evaluation</td>
<td>22</td>
<td>57.9</td>
</tr>
</tbody>
</table>

Panel B

<table>
<thead>
<tr>
<th>Budget purpose N = 38</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budgets are used at my university for strong financial</td>
<td>4.51</td>
<td>.692</td>
</tr>
<tr>
<td>strong financial</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Budgets are used at my university to determine the</td>
<td>4.68</td>
<td>.530</td>
</tr>
<tr>
<td>allocation of resources.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My university uses its budget to forecast multiple years.</td>
<td>4.08</td>
<td>.894</td>
</tr>
<tr>
<td>To what extent do deans currently use the budget for</td>
<td>4.00</td>
<td>1.027</td>
</tr>
<tr>
<td>decision making?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Budgets are used at my university to provide information</td>
<td>3.81</td>
<td>.967</td>
</tr>
<tr>
<td>to the government for compliance purposes.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My university uses its budget to provide information to</td>
<td>3.81</td>
<td>.877</td>
</tr>
<tr>
<td>the government for funding purposes.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Our budget is driven by external reporting requirements.</td>
<td>2.59</td>
<td>1.040</td>
</tr>
<tr>
<td>My university uses its budget to provide information to</td>
<td>3.84</td>
<td>.688</td>
</tr>
<tr>
<td>external stakeholders.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To what extent does senior administration currently use</td>
<td>4.32</td>
<td>.709</td>
</tr>
<tr>
<td>the budget to enable discussion in meetings of other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>senior administrators, senate and the board?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Budgets are used at my university to track revenues and</td>
<td>4.49</td>
<td>.607</td>
</tr>
<tr>
<td>expenses.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Likert scale is based on a scale of 1 “strongly disagree” to 5 ‘strongly agree’
Table 4 - Descriptive Statistics

**Link between budgeting and strategic planning Questions**

<table>
<thead>
<tr>
<th>Link between budgeting and strategic planning N = 38</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budgets are used at my university for strategic planning.</td>
<td>4.00</td>
<td>0.75</td>
</tr>
<tr>
<td>There are strong incentives for senior management to request budget changes that align with the university’s strategic plan.</td>
<td>3.76</td>
<td>1.14</td>
</tr>
<tr>
<td>When determining budgeting allocations my university’s strategic plan guides budget approvals.</td>
<td>3.95</td>
<td>0.78</td>
</tr>
<tr>
<td>We use our budget to communicate the strategic plan of my university to our internal constituents.</td>
<td>3.43</td>
<td>1.12</td>
</tr>
<tr>
<td>Our strategic planning process is designed to resolve competing resource allocation priorities.</td>
<td>3.35</td>
<td>0.92</td>
</tr>
<tr>
<td>At my university, the strategic plan is designed to support individual line items from our budget.</td>
<td>2.81</td>
<td>0.88</td>
</tr>
<tr>
<td>At my university, the strategic plan is designed to support unit level budgets.</td>
<td>3.05</td>
<td>0.91</td>
</tr>
<tr>
<td>There are strong incentives for senior management to develop a strategic plan in alignment with the operating budget.</td>
<td>3.24</td>
<td>1.01</td>
</tr>
<tr>
<td>The university's strategic plans are clearly and widely known and understood.</td>
<td>3.89</td>
<td>0.94</td>
</tr>
</tbody>
</table>

Note: Likert scale is based on a scale of 1 ‘strongly disagree’ to 5 ‘strongly agree’
Table 5 - Factor loadings and communalities based on principal component analysis for nine items for **Budget Model** (Rotated Component Matrix)

<table>
<thead>
<tr>
<th>Budget Model Questions</th>
<th>Results Driven</th>
<th>Activity</th>
<th>Priority DM</th>
</tr>
</thead>
<tbody>
<tr>
<td>The current year’s budget is mostly based on the prior year’s budget.</td>
<td>-0.851</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The current year’s budget is mostly based on the budgets from the previous five years.</td>
<td>-0.636</td>
<td></td>
<td></td>
</tr>
<tr>
<td>At my university financial resources are allocated to units based on unit activities.</td>
<td>0.744</td>
<td></td>
<td></td>
</tr>
<tr>
<td>At my university costs are allocated to units based on activities.</td>
<td>0.809</td>
<td></td>
<td></td>
</tr>
<tr>
<td>At my university financial resources are allocated to units based on unit performance.</td>
<td>0.829</td>
<td></td>
<td></td>
</tr>
<tr>
<td>At my university financial resources are allocated to the units that generate the greatest revenues.</td>
<td>0.577</td>
<td>0.367</td>
<td>0.424</td>
</tr>
<tr>
<td>Responsibility for revenues (e.g., tuition and grants) are assigned to the college, faculty and/or department level.</td>
<td>0.490</td>
<td></td>
<td>0.629</td>
</tr>
<tr>
<td>Responsibility for expenses are assigned to the college, faculty and/or department level.</td>
<td></td>
<td></td>
<td>0.813</td>
</tr>
<tr>
<td>Faculty budgeting decisions are largely the responsibility of the deans of each Faculty.</td>
<td></td>
<td></td>
<td>0.925</td>
</tr>
</tbody>
</table>

Note: Factor loadings > |0.70| are bolded and factor loadings < |0.30| are suppressed. n = 36.
Table 6 - Factor loadings and communalities based on principal component analysis for 13 items for **Strategic planning** (Rotated Component Matrix)

<table>
<thead>
<tr>
<th>Strategic planning</th>
<th>Resource Allocation</th>
<th>Fiscal Responsibility</th>
<th>External Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of variance explained by component</td>
<td>38.13</td>
<td>17.20</td>
<td>12.45</td>
</tr>
<tr>
<td>Responding to new, unforeseen opportunities is considered more important than achieving budget targets at my university.</td>
<td></td>
<td>0.533</td>
<td>0.455</td>
</tr>
<tr>
<td>The strategic plan of my university compares our short-term and long-term performance indicators with other referent universities.</td>
<td></td>
<td>0.653</td>
<td></td>
</tr>
<tr>
<td>The strategic plan defines the major measurement indicators and the timetable of their implementation for my university.</td>
<td></td>
<td>0.801</td>
<td>-0.431</td>
</tr>
<tr>
<td>The strategic plan of my university has specific processes with which its strategic goals are developed along with action plans aimed at continuous development.</td>
<td></td>
<td>0.850</td>
<td></td>
</tr>
<tr>
<td>Our strategic planning process responds to external constituent demands and pressures.</td>
<td></td>
<td></td>
<td>0.821</td>
</tr>
<tr>
<td>Our strategic planning process responds to internal constituent demands and pressures.</td>
<td></td>
<td>0.315</td>
<td>0.751</td>
</tr>
<tr>
<td>At my university, there is a formal process in place to follow up on strategic planning.</td>
<td></td>
<td>0.684</td>
<td>0.364</td>
</tr>
<tr>
<td>At my university, there are constant reminders of the need to achieve strategic plans.</td>
<td></td>
<td></td>
<td>0.821</td>
</tr>
<tr>
<td>How often is the strategic plan evaluated to determine if the plan/objectives are being met?</td>
<td></td>
<td>-0.777*</td>
<td></td>
</tr>
<tr>
<td>How often is the strategic plan assessed, updated, and/or changed?</td>
<td></td>
<td>-0.747*</td>
<td></td>
</tr>
<tr>
<td>The process at my university to follow up on strategic planning outcomes is effective.</td>
<td></td>
<td>0.773</td>
<td></td>
</tr>
<tr>
<td>Our strategic planning process focuses on government funding and fiscal pressures to reduce expenditures.</td>
<td></td>
<td></td>
<td>0.917</td>
</tr>
<tr>
<td>Our strategic planning process focuses on government funding and fiscal pressures to increase revenues</td>
<td></td>
<td></td>
<td>0.882</td>
</tr>
</tbody>
</table>

Note: Factor loadings > |0.70| are bolded and factor loadings < |0.30| are suppressed. n = 34

* Reverse coded
Table 7 - Factor loadings and communalities based on principal component analysis for nine items for **Budget Purpose** (Rotated Component Matrix)

<table>
<thead>
<tr>
<th>Budget purpose</th>
<th>Planning</th>
<th>Compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of variance explained by component</td>
<td>28.03</td>
<td>20.67</td>
</tr>
<tr>
<td>Budgets are used at my university for financial planning</td>
<td>0.721</td>
<td></td>
</tr>
<tr>
<td>Budgets are used at my university to determine the allocation of resources.</td>
<td>0.683</td>
<td></td>
</tr>
<tr>
<td>My university uses its budget to forecast multiple years.</td>
<td>0.546</td>
<td>-0.434</td>
</tr>
<tr>
<td>To what extent do deans currently use the budget for decision making?</td>
<td>0.741</td>
<td></td>
</tr>
<tr>
<td>Budgets are used at my university to provide information to the government</td>
<td>0.828</td>
<td></td>
</tr>
<tr>
<td>compliance purposes.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My university uses its budget to provide information to the government for</td>
<td>-0.312</td>
<td>0.572</td>
</tr>
<tr>
<td>funding purposes.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Our budget is driven by external reporting requirements.</td>
<td>-0.481</td>
<td></td>
</tr>
<tr>
<td>My university uses its budget to provide information to external stakeholders.</td>
<td>0.506</td>
<td></td>
</tr>
<tr>
<td>To what extent does senior administration currently use the budget to enable</td>
<td>0.661</td>
<td></td>
</tr>
<tr>
<td>discussion in meetings of other senior administrators, senate and the board?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Budgets are used at my university to track revenues and expenses.</td>
<td>0.399</td>
<td>0.594</td>
</tr>
</tbody>
</table>

Note: Factor loadings > |0.70| are bolded and factor loadings < |0.30| are suppressed. n = 37
Table 8 - Factor loadings and communalities based on principal component analysis for nine items for Link (Rotated Component Matrix)

<table>
<thead>
<tr>
<th>Link between budgeting and strategic planning</th>
<th>Support</th>
<th>Alignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of variance explained by component</td>
<td>31.386</td>
<td>27.064</td>
</tr>
<tr>
<td>Budgets are used at my university for strategic planning.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>There are strong incentives for senior management to request budget changes that align with the university’s strategic plan.</td>
<td>0.766</td>
<td></td>
</tr>
<tr>
<td>When determining budgeting allocations my university’s strategic plan guides budget approvals.</td>
<td>0.525</td>
<td>0.598</td>
</tr>
<tr>
<td>We use our budget to communicate the strategic plan of my university to our internal constituents.</td>
<td>0.345</td>
<td>0.632</td>
</tr>
<tr>
<td>Our strategic planning process is designed to resolve competing resource allocation priorities.</td>
<td>0.614</td>
<td>0.472</td>
</tr>
<tr>
<td>At my university, the strategic plan is designed to support individual line items from our budget.</td>
<td>0.701</td>
<td></td>
</tr>
<tr>
<td>At my university, the strategic plan is designed to support unit level budgets.</td>
<td>0.885</td>
<td></td>
</tr>
<tr>
<td>There are strong incentives for senior management to develop a strategic plan in alignment with the operating budget.</td>
<td>0.658</td>
<td>0.379</td>
</tr>
<tr>
<td>The university's strategic plans are clearly and widely known and understood.</td>
<td>0.527</td>
<td></td>
</tr>
</tbody>
</table>

Note: Factor loadings > |0.70| are bolded and factor loadings < |0.30| are suppressed. n = 37
Table 9
Descriptive Statistics
University Size

<table>
<thead>
<tr>
<th>University Size (Based on Revenues)</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small (≤ $200M)</td>
<td>11</td>
<td>28.9</td>
</tr>
<tr>
<td>Medium ($200M&gt; Med ≤ $850M)</td>
<td>5</td>
<td>13.2</td>
</tr>
<tr>
<td>Large (Large (&gt; $850M)</td>
<td>22</td>
<td>57.9</td>
</tr>
<tr>
<td>Total</td>
<td>38</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 10
Descriptive Statistics
Leadership Structure

<table>
<thead>
<tr>
<th>Leadership</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vice President (Admin)</td>
<td>8</td>
<td>21.1</td>
</tr>
<tr>
<td>Shared</td>
<td>10</td>
<td>26.3</td>
</tr>
<tr>
<td>Provost</td>
<td>20</td>
<td>52.6</td>
</tr>
<tr>
<td>Total</td>
<td>38</td>
<td>100</td>
</tr>
</tbody>
</table>
MAIN BANK RELATIONSHIP AND ACCOUNTING CONSERVATISM:
EVIDENCE FROM JAPAN *

Hideaki Sakawa a,b *,
Naoki Watanabel *

a. Graduate School of Economics, Nagoya City University,
1 Yamanohata, Mizuho-cho, Mizuho-ku, Nagoya, 467-8501, Japan
b. Columbia Business School, Columbia University,
3022 Broadway, New York, NY 10027

ABSTRACT
We analyze the effect of main bank system on accounting conservatism. In the market oriented economy like U.S., the role of lending monitoring mitigate lenders demand for accounting conservatism (Erken et al., 2014). On the other hands, Japanese corporate governance is bank-dominated or relation oriented systems. Under the bank-dominated systems, main bank are expected for effective monitors. We construct that main bank take a role of reducing lender’s demand for accounting conservatism by reducing information asymmetry. We find that main bank would reduce the demand for accounting conservatism. To use a propensity score matching, we check the robustness of our findings. Our findings contribute to understand accounting conservatism related to agency problems. In addition, we also provide an empirical evidence to contribute banking literatures such as relationship banking.

JEL classification: G21; G34; M41
Keywords: Accounting conservatism; Agency Problem; Corporate Governance; Main Bank

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* Corresponding author.
E-mail addresses: sakawa@econ.nagoya-cu.ac.jp (H. Sakawa), naoki-watanabe@econ.nagoya-cu.ac.jp (N. Watanabel)
1. INTRODUCTION

Conservatism accounting is an asymmetric timeline of earnings which come from differential verification for recognizing accounting gain than losses (Basu, 1997). From the view of agency theory, shareholders have an incentive to appropriate wealth from debt holders (Jensen and Meckling, 1976). A major source of demand for accounting conservatisms arises from debt contracts (Watts, 2003a). Under bank-dominated corporate governance systems, main banks are expected for effective monitors (Aoki, 1990; Sheard, 1994). Main bank can gather private information of borrowing firms through their monitoring activity (Hoshi et al., 1991). As a result, firms with main bank relationship might not face severe agency problems. There would be a possibility that main banks might not demand for accounting conservatism if their effective monitoring can reduce agency problems. In this study, we argue whether or not Japanese main bank system can moderate accounting conservatism.

We conjecture that stakeholders who have both positions of lenders and shareholder like Japanese main bank would not demand accounting conservatism. In firms with debt contracts, lenders have only interested in assuring the minimum amounts of net assets in borrowing firms to avoid limited liability problems, and they demand conservative accounting. When a borrowing firm’s net assets are above the face value of the debt, lenders cannot receive any additional wealth (Watts, 2003a). Main banks, which would also be shareholders of client firms firms can have a chance of acquiring additional payment like dividends when projects of borrowing firms produce higher earnings. In other words, asymmetric payoffs are realized between shareholders and debt-holders of firms in a good condition. Therefore, main banks as both of lenders and shareholders do not face asymmetric payoff problems, and they might not necessarily demand accounting conservatism.

As for relations between lenders and borrowers, prior researches suggest that there are two key drivers of conservatism: agency costs and information asymmetry (e.g. Basu, 1997; Watts, 2003a). Debt holders have an asymmetric payoff related to net assets. This asymmetric payoff is problematic when borrowers face distress. In market-oriented economy, lenders are interested in protecting their debt by adopting conservatism accounting (Watts, 2003a). However, accounting conservatism cannot fully solve the agency problems related to debt-contracts (Erkens et al., 2014). Asymmetric information matters in the occurrence of severe agency problems. Using conservative accounting, lenders have to take an effective monitoring roles of mitigating information asymmetry. These effective monitoring would help to mitigate the risk that lender faces borrowers’ limited liability problems.

Accounting conservatism is especially demanded in a firm with higher information asymmetry. Prior studies imply that institutional shareholders demand for accounting conservatism in US. For example, LaFond and Roychowdhury (2008) empirically show that accounting conservatism is highly investigated in firms which separation of ownership and control is more pronounced. In addition, conservative reporting are occurred in firms with
higher information asymmetry (Lafond and Watts, 2008). Ramalingegowda and Yu (2012) show that greater institutional shareholdings are positively associated with conservative reporting in firms with higher information asymmetry.

In this study, we aim to reveal the relation between accounting conservatism and bank relationships in Japan who demand for earlier recognition of loss value. First, we analyze main bank system which is characterized as bank-client firm relations. Under bank-centered economy like Japan, main bank have both of lending and shareholding relations between the client firms. Therefore, main bank can gain an additional compensation when clients’ net asset exceed face value of debt. Main banks do not have incentive to transform wealth from lenders to shareholders as major shareholders because they are the largest lenders for client firms (Prowse, 1990). In this sense, main bank would not have a demand of accounting conservatism from the view of both of lenders and effective shareholders.

Second, we also investigate whether or not commercial banks, which only have lenders position, demand accounting conservatism. Previous studies of bank’s lending focus on the different role of “relational debt” (which is also called as “private loan”) and “transaction debt” (or called as “market securities”) (Boot, 2000; David et al., 2008; O’Brien et al., 2014). These studies also reveal that Japanese banks can gather private information of client firms through the lending relation using of “relational debt”. Owing to the lending relationship using of “relational debt”, banks might gather enough private information of the client firms and their information production activities would decrease agency problems due to severe asymmetric information and results in less accounting conservatism.

Our findings are summarized as follows. We find that firms with main bank relationships have a lower asymmetric timelines than firms without main bank relationships. This finding shows that main banks would not need to demand for accounting conservatisms. In addition, there is no significant relation between relational debt and accounting conservatism. This suggests that banks do not depend on the private information through relation debt. Therefore, monitoring mechanisms of main bank would substitute for conservative accounting. The robustness of our results are confirmed by the examination of restricted sample firms which have lending relationships.

This paper contribute the literature of both conservatisms accounting and banking literature. First, our findings show main bank system can significantly moderate accounting conservatism. This is due to the effective monitoring of main bank that can reduce agency problems. Second, we also provide an empirical evidence to contribute banking literatures such as relationship banking. Our study is the first study to reveal the role of main bank related to accounting conservatism. In addition, only bank lending do not affect management decision of accounting conservatism.
2. HYPOTHESIS DEVELOPMENT

Accounting conservatism is in principal functioned as to mitigate information asymmetry between insiders and outsiders. From the view of agency theory, there are conflicts between shareholders and managers under separation of ownership and control in public companies. To mitigate the potential conflicts among shareholders and managers, corporate governance are important systems that affect managerial decision making (Jensen and Meckling, 1976). Agency cost arising from information asymmetry are incurred by both of lenders and shareholders of a firm. In that sense, accounting conservatism are not only demanded by lenders who have an incentive of minimizing agency cost by late loss recognition of borrowing firms, but also are caused by the effective monitoring of shareholders.

Accounting conservatism is especially demanded in a firm with higher information asymmetry. As for the relation between agency problem and accounting conservatism, Ramalingegowda and Yu (2012) argue that institutional shareholders demand conservatism in dispersed ownership country like US. In the family firms, Chen et al. (2014) show that conservative accounting is pronounced by founding CEO ownership because they have incentive to reduce potential litigation risk and agency costs consistent with Watts (2003a; 2003b). These studies imply that who demands the conservatism might depend on the difference of corporate ownership structure.

Debt contracts would also mitigate agency problems of debt by transferring control rights from borrowers to lenders during bad conditions through covenant violations (Black and Cox, 1976; Jensen and Meckling, 1976). As a result, accounting conservatism has been adopted to facilitate debt contracts by triggering covenant violations through accelerated loss recognition (Watts, 2003a; Ball et al., 2008). Hence, debt contracting would be a driver of accounting conservatism.

On the other hand, agency problems between lenders and borrowers would also be solved by effective monitoring by lenders. In the U.S., relationship lending would help to mitigate information asymmetry and substitute for the role of conservatism accounting (Erken et al., 2014). The central source of these agency problems is information asymmetry among lenders and borrowers. In fact, Erkens et al. (2014) point out that “Borrower-lender information asymmetry is central to the agency problem of debt and, therefore, any monitoring mechanism that is effective in reducing this information asymmetry could potentially ameliorate the agency problem.”

This paper analyzes the relation between accounting conservatism and bank-client relations in Japan. One of the features of bank-centered systems like Japan is a close relationship between bank and client firms through lending relationship (e.g; Aoki, 1990; Hoshi and Kashyap, 2001). Under bank-centered economy, banks take a role of main capital suppliers for firms (Biddle and Hilary, 2006) and have a strong influence related to management decision such as R&D Investment (David et al., 2008).
In this paper, we focus on Japanese main bank system which would have both viewpoints of lenders and equity owners (Prowse, 1990). Hoshi et al. (1990) point out that “since the main bank is probably well informed about the firm and its prospects, problems stemming from asymmetric information between creditors and firms are likely to be small.” These studies imply that main banks have a strong incentive to monitor their clients firms to protect their own interests for both lenders and equity owners. For instance, turnover of top executive in a firm with bank relationships tend to be prompted (Kang and Shivdsani, 1995) and executive incentive tends to be provided for firms with higher bank ownership (Sakawa et al., 2012). Their information through the monitoring activity would do not necessarily rely on conservatism financial reporting. Therefore, we construct following Hypothesis 1a:

*Hypothesis 1a: Firms with main banks’ relationship have less conservative accounting than firms without main banks’ relationship.*

In addition, there might be a possibility that commercial banks which do not have stakes of client firms can take an effective monitoring role of them. These banks can gather detailed information of clients’ firms through relationship lending (Boot, 2000). These bank-client relations might provide incentive for effective monitoring of client firms because banks can extend the debt contracts of client firms with multiple beneficial business relationships. Followed as these long-term relationship of banks and client firms, banks without stakes of client firms may not demand for accounting conservatism. To investigate this possibility, we construct following hypothesis 1b:

*Hypothesis 1b: Firms with bank lending have less conservative accounting than firms without bank lending.*

3. DATA AND ESTIMATION MEASURE
3.1. Sample Selection and Variables
We select the data from non-financial firms listed at Japanese stock exchange from 2007 to 2014 to analyze main bank relationship between non-financial listed firms and main banks. We drop all financial firms because we are interested in main banks’ relationships between main banks and client firms. The financial accounting data and corporate governance data including main banks are collected from the Nikkei Needs database such as financial data and corporate governance evaluation system (CGES) data. To remove outliers, we drop the top or bottom 1% of market value deflated earnings. Our selected sample consists of 25,505 firm-year observations.

We define the main bank as the largest lender of the clients, followed as previous studies
We adopt a dummy variable (MBD; Main Bank Dummy) to analyze whether or not the main bank affect accounting conservatism. MBD equals 1 if the proportion of the largest lenders’ shareholdings are positive, and otherwise 0. Following this definition, we find 8,849 firm–year observations (about 35.3 %) which have main bank relation.

3.2. Empirical Strategy

We define accounting conservatism as the asymmetric loss recognition coefficient model of the below Equation (1) followed as Basu (1997).

\[
\text{Earnings}_{i,t} = \alpha_0 + \beta_1 \text{DR}_{i,t} + \beta_2 \text{Ret}_{i,t} + \beta_3 \text{Ret}_{i,t} \times \text{DR}_{i,t} + \text{ID}_{i,t} + \varepsilon_{i,t} \quad (1)
\]

Where:

\(\text{Earnings}_{i,t}\) = Net income of firm \(i\) in fiscal year \(t\) divided by the beginning of fiscal year market value of equity;

\(\text{Ret}_{i,t}\) = Stock returns of firm \(i\) in fiscal year \(t\) over the fiscal year.

\(\text{DR}_{i,t}\) = An indicator variable that takes the value of one if \(\text{Ret}\) are negative and zero otherwise;

We define three variable such as \textit{Earnings, Ret, and DR}, following previous Japanese study of Shuto and Takada (2010). In Equation (1), \(\beta_2\) captures measures timeliness of earnings with respect to good news and \(\beta_3\) captures accounting conservatism in terms of the asymmetric timeliness of earnings.

To analyze our empirical hypothesis, we expand the Basu (1997) model to incorporate the effect of both Main Bank relation and Bank Lending. We estimate the following Equation (2):

\[
\text{Earnings}_{i,t} = \alpha_0 + \beta_1 \text{DR}_{i,t} + \beta_2 \text{Bank Relation}_{i,t-1} + \beta_3 \text{DR}_{i,t} \times \text{Bank Relation}_{i,t-1} \\
+ \beta_4 \text{Ret}_{i,t} + \beta_5 \text{Ret}_{i,t} \times \text{DR}_{i,t} + \beta_6 \text{Ret}_{i,t} \times \text{Bank Relation}_{i,t-1} \\
+ \beta_7 \text{Ret}_{i,t} \times \text{DR}_{i,t} \times \text{Bank Relation}_{i,t-1} \times \text{ID}_{i,t} + \varepsilon_{i,t} \quad (2)
\]

Where:

\(\text{Bank Relation}_{i,t-1}\) = Main Bank Dummy (MBD_{i,t-1}) or \(\text{Bank Lending}_{i,t-1}\);

\(\text{MBD}_{i,t-1}\) = An indicator variable is equal to 1 if the proportion of main bank shareholdings of firm \(j\) at the end of year \(t-1\) are positive, otherwise it is 0;

\(\text{Bank Lending}_{i,t-1}\) = The sum of all bank loans divided by the market value of firm \(j\) at the end of year \(t-1\);
ID_{i,t-1} = \text{Industry fixed effects.}

The other variables are defined as same in Equation (1). If the coefficient $\beta_7$ is negative, firms with main bank relations (MBD) or Bank Lending have lower asymmetric loss recognition than firms without them. We cluster standard errors at the firm and year level to control for residual dependence.

Next, we implement several control variables which would be related to accounting conservatism. These variables are Market to Book ratio (MTB), financial leverage (Leverage), firm size (MV), and the percentage of CEO ownership (CEO Ownership). Market to Book ratio (MTB) is adopted to control for the effects of the future asymmetric timelines of equity value (Roychowdhury and Watts, 2007). Financial leverage (Leverage) is controlled for the demand of accounting conservatism by debt holders. In addition, firm size (MV) is also controlled because firm size is negatively correlated with asymmetric timeliness of earnings (LaFond and Watts, 2008). Finally, CEO ownership is controlled to capture agency problems between shareholders and managers (LaFond and Roychowdhury, 2008). Our models to add several control variables into Basu (1997)’s model is as follows.

\[
\text{Earnings}_{i,t} = \alpha_0 + \beta_1 DR_{i,t} + \beta_2 MD_{i,t-1} + \beta_3 DR_{i,t} * MD_{i,t-1} + \beta_4 Ret_{i,t} + \beta_5 Ret_{i,t} * DR_{i,t} + \beta_6 Ret_{i,t} * MD_{i,t-1} + \beta_7 Ret_{i,t} * DR_{i,t} * MD_{i,t-1} + \beta_8 Ret_{i,t} * Control_{i,t-1} + \beta_9 Ret_{i,t} * DR_{i,t} * Control_{i,t-1} + \beta_{10} Ret_{i,t} * DR_{i,t} * MD_{i,t-1} + \beta_{11} Control_{i,t-1} + \beta_{12} DR_{i,t} * Control_{i,t-1} + \beta_{13} Ret_{i,t} * Control_{i,t-1} + \beta_{14} Ret_{i,t} * DR_{i,t} * Control_{i,t-1} + ID_{i,t} + \varepsilon_{i,t}
\]

(3)

\[
\text{Earnings}_{i,t} = \alpha_0 + \beta_1 DR_{i,t} + \gamma_2 \text{Bank Lending}_{i,t-1} + \gamma_3 DR_{i,t} * \text{Bank Lending}_{i,t-1} + \gamma_4 Ret_{i,t} + \gamma_5 Ret_{i,t} * DR_{i,t} + \gamma_6 Ret_{i,t} * \text{Bank Lending}_{i,t-1} + \gamma_7 Ret_{i,t} * DR_{i,t} * \text{Bank Lending}_{i,t-1} + \gamma_8 Ret_{i,t} * \text{Control}_{i,t-1} + \gamma_9 Ret_{i,t} * DR_{i,t} * \text{Control}_{i,t-1} + \gamma_{10} Ret_{i,t} * DR_{i,t} * \text{Bank Lending}_{i,t-1} + \gamma_{11} \text{Control}_{i,t-1} + \gamma_{12} DR_{i,t} * \text{Control}_{i,t-1} + \gamma_{13} Ret_{i,t} * \text{Control}_{i,t-1} + \gamma_{14} Ret_{i,t} * DR_{i,t} * \text{Control}_{i,t-1} + \gamma_{15} Ret_{i,t} * DR_{i,t} * \text{Bank Lending}_{i,t-1} + \gamma_{16} \text{ID}_{i,t} + \varepsilon_{i,t}
\]

(4)

Where

\[
\text{MTB}_{j,t-1} = \text{Market to Book ratio of firm j at the end of year t-1};
\]
\[
\text{Leverage}_{j,t-1} = \text{Financial leverage of firm j at the end of year t-1};
\]
\[
\text{MV}_{j,t-1} = \text{Market value of equity of firm j at the end of year t-1};
\]
\[
\text{CEO Ownership}_{j,t-1} = \text{The percentage of CEO ownership of firm j at the end of year t-1};
\]

3.3. Descriptive Statistics
Our descriptive statistics and Correlation Matrix, and of the sample are reported in panel A and Panel B of Table 1. In panel A of Table 1, the average of Earnings is 0.034, which is
smaller than US firms reported by Erkens et al. (2014). The mean of stock returns (RET) indicates -0.015 which suggests that Japanese firms suffered from global financial crisis. The mean of DR (negative return dummy) also occupies more than 0.5 which shows same tendency with Japanese previous studies like Shuto and Takada (2010). The average of main bank shareholding dummy is about 0.343 which represent that main bank relationships are still maintained for more than 1/3 of Japanese listed firms.

As for Pearson’s correlation matrix in Panel B of Table 1, we can find that earnings is positively correlated with RET and negatively with DR. This implies that reported earnings includes a part of information in return consistent with previous studies like Basu (1997) and LaFond and Roychowdhury (2008). In addition, bank lending dummy is negatively correlated with MBD. This implies the conflicts among banks as lenders and shareholders.

We compare the differences of sample firms with MBD and without them. Panel C of Table 1 reports the results of mean difference t test. In Panel C of Table 1, we find that firms with MBD have significantly higher earnings, higher indicator of negative stock returns (DR). This suggests that conservatism accounting might be mitigated in firms with MBD. In addition, we also find that higher bank lending ratio and higher leverage. These means that firms with MBD tend to rely on debt financing more than firms without MBD. We also find that MTB and firm size with MBD is significantly lower, implying that firms with lower growth opportunity and smaller size tend to be monitored by main banks. Finally, CEO ownership is significantly lower for firms with MBD. This means that main bank would be helpful to reduce the agency conflicts between shareholders and managers.

4. RESULTS
We firstly test whether or not MBD firms have less conservative accounting than non-MBD firms using whole samples of our analysis. This result is reported in Table 2. Table 2 reports the results which intends to reveal whether or not the degree of accounting conservatism are different between MBD and non-MBD firms. Our estimated models adopt cluster standard errors at the firm and year level to control for residual dependence. To remove outliers, we drop the top 1 percent of absolute standardized residuals.

Insert Table 2 about here
In Table 2, we find that the coefficient ($\beta_6$) is significantly positive and accounting conservatism is observed for all of six estimated models. As for the role of main banks, we find that the coefficient of MBD ($\beta_7$) is significantly negative in Model (1), (2), and (3). This implies that firms with MBD use less accounting conservatism than firms without, consistent with our hypothesis (1a). On the other hands, Table 2 show that the coefficient of bank lending relationship ($\gamma_7$) is not significant in Model (4), (5), and (6) and we do not gain the consistent result with hypothesis (1b).

Next, we check whether or not bank lending relationship are negative to accounting conservatism using of alternative models in Table 3. First, we insert both MBD and Bank Lending into estimation models to adopt all sample in Model (1), (2), and (3). Furthermore, we focus on firms with bank lending relationships in Model (4), (5), and (6) to check the robustness of our results. Using Table 3, we also find that the coefficient ($\beta_6$) is significantly positive, implying the accounting conservatism for not only all firms but also firms with bank lending relationships. We can find the coefficient ($\beta_7$) is also significant and negative in all models, consistent with our hypothesis 1a. The coefficient ($\gamma_7$) is not significant to accounting conservatism and do not support with our hypothesis 1b. Therefore, we can conclude that main bank as both of lenders and shareholders matter for decreasing conservatism accounting.

5. Additional Analyses
5.1. Determinants of Main Bank Relation
To control for impact of covariates on the dependent variable, we use a propensity score matching (PSM) to model main bank relationship. We adopt a Market to Book ratio (MTB) as a proxy for the understatement of net assets. We include financial leverage (Leverage) to control for debt contracting demand for conservatism. Firm size is controlled by the logarithm of total Assets ($\ln(Assets)$). We adopt Stock return volatility (Volatility) to control for firm risk. We measure the amount of free cash-flow (Free Cash) as cash flow from operating activities and investing activities divided by Total Assets. Bank lending (Bank Lending) is the sum of all bank loans divided by the market value of the firm (O’Brien et al., 2014).

In Table 4, we show the results of logit models to derive the PSM. The dependent
variables is the dummy of MBD firms. This tables indicates that MBD firms tend to be smaller and have higher debt ratio than non-MBD firms. A larger amount of Main bank lending are also investigated in MBD firms. In addition, free-cash flow is less used for MBD firms, implying that main bank monitors help to reduce managerial free cash flow. Overall, the controlling variables might be potentially important factors.

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Insert Table 4 about here
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5.2. Robustness of Results
To control for impact of covariates on the dependent variable, we use a propensity score matching (PSM). The final sample of score matching is 16,492 firm–year observations, which consist of 8,246 from MBD firms and 8,246 from Non-MBD firms.

Using PSM, we confirm the robustness of our results in Table 5. In Table 5, the negative coefficient $\beta_7$ is also significant and negative, supporting our hypothesis 1a. We confirm the supporting evidence that lower asymmetric timelines arises from both of gain and loss recognition in Table 5. Therefore, we can conclude that our estimated results are robust after using of PSM method.

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Insert Table 5 about here
------------------------

6. CONCLUSIONS
We investigate how main bank relationships influence the demand of conservative accounting in Japanese corporations. Different from market-oriented system like US, Japanese main banks takes role of monitors from the viewpoint of both of lenders and shareholders. From the view of lenders, they might demand accounting conservatism to mitigate agency problems. We empirically reveal that firms connected with main bank relationship use less conservative accounting. This implies that effective monitoring of main banks do not demand for accounting conservatism. This findings would be interpreted that main banks take a role of effective monitoring and do not depend on conservative accounting. On the other hand, we cannot gain the same significant results for firms connected to commercial banks without stakes. This implies that commercial banks in Japan might not prompt less accounting conservatism, different from main banks. The robustness of our findings is confirmed by
PSM method.

We focus on whether or not main banks and banks with only lending relationships demand for accounting conservatism. Our findings are differently characterized between main banks and the other banks with only lending ties. This conclusion would contribute to understand who demands for accounting conservatism to mitigate agency problems. In addition, we also provide an empirical evidence to contribute banking literatures such as main bank and relationship banking.
### Variable definitions

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earnings</td>
<td>Net income divided by the beginning of fiscal year market value of equity</td>
</tr>
<tr>
<td>DR</td>
<td>Indicator variable that takes the value of one if Stock returns ($Ret$) re negative, and zero otherwise</td>
</tr>
<tr>
<td>Ret</td>
<td>Stock returns over the fiscal year</td>
</tr>
<tr>
<td>MBD</td>
<td>It is equal to 1 if the proportion of main bank shareholdings are positive, otherwise it is 0.</td>
</tr>
<tr>
<td>Bank Lending</td>
<td>The sum of all bank loans divided by the market value of the firm</td>
</tr>
<tr>
<td>MTB</td>
<td>The market value divided by book value of capital of the firm</td>
</tr>
<tr>
<td>Leverage</td>
<td>The sum of debt divided by total assets</td>
</tr>
<tr>
<td>Firm Size</td>
<td>Logarithm of the market value of the firm</td>
</tr>
<tr>
<td>CEO Ownership</td>
<td>The percentage of CEO ownership</td>
</tr>
<tr>
<td>Ln(Assets)</td>
<td>Logarithm of total assets</td>
</tr>
<tr>
<td>Volatility</td>
<td>Stock volatility during three years</td>
</tr>
<tr>
<td>Volatility(^2)</td>
<td>Square of stock volatility ($Volatility$) during three years</td>
</tr>
<tr>
<td>Free Cash</td>
<td>Cash flows from operating activities and investing activities divided by total assets</td>
</tr>
</tbody>
</table>
REFERENCES
TABLE 1

Panel A. Descriptive Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Q1</th>
<th>Median</th>
<th>Q3</th>
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</thead>
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Notes: N= 25,055. Descriptive statistics are based on the data from non-financial firms listed at Japanese stock exchange from 2007 to 2014. See Appendix A for variable definitions.

Panel B. Correlation Coefficients

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Notes: N= 25,055. See Appendix A for variable definitions.
* p<0.05
Panel C. Mean Difference between MBD and Non MBD

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Notes: N= 25,055. See Appendix A for variable definitions.
* p<0.05, ** p<0.01, *** p<0.001
**TABLE 2** Conservatism and Main Bank Relation (All data)

Earnings\(_{it}\) = \(\alpha_0 + \beta_1 DR_{it} + \beta_2 Bank\ Relation_{it-1} + \beta_3 DR_{it} \times Bank\ Relation_{it-1} + \beta_4 Ret_{it} + \beta_5 Ret_{it} \times DR_{it} + \beta_6 Ret_{it} \times DR_{it} \times Bank\ Relation_{it-1} + \beta_7 Ret_{it} \times DR_{it} \times Bank\ Relation_{it-1} + \beta_8 DR_{it} \times Bank\ Relation_{it-1} + \beta_9 Control_{it-1} + \beta_1 Control_{it-1} + \beta_1 DR_{it} \times Control_{it-1} + \beta_1 DR_{it} \times Return_{it-1} + \epsilon_{it}\) (3)

Earnings\(_{it}\) = \(\alpha_0 + \beta_1 DR_{it} + \gamma_2 Bank\ Lending_{it-1} + \gamma_3 DR_{it} \times Bank\ Lending_{it-1} + \gamma_4 Ret_{it} \times Bank\ Lending_{it-1} + \gamma_5 Ret_{it} \times DR_{it} \times Bank\ Lending_{it-1} + \gamma_6 Ret_{it} \times DR_{it} \times Bank\ Lending_{it-1} + \beta_1 Control_{it-1} + \beta_1 Control_{it-1} \times DR_{it} \times Return_{it-1} + \epsilon_{it}\) (4)

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<td>0.006 +</td>
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<td>-0.006 +</td>
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ID: Yes, Yes, No, Yes, Yes, Yes, No
Control: No, Yes, Yes, No, Yes, Yes
N: 25055, 25055, 25055, 25055, 25055, 25055
Adjusted \(R^2\): 0.122, 0.132, 0.130, 0.140, 0.150, 0.146

Notes: This table presents the results of a regression model that examines the relation
between the presence of Bank Relation and accounting conservatism using a Basu (1997) model. Estimated data is based on all sample. We cluster standard errors at the firm and year level. T-values are presented in parentheses. See Appendix A for variable definitions.

* p<0.05, ** p<0.01, *** p<0.001

**TABLE 3** Conservatism and Main Bank Relation

\[
\text{Earnings}_{it} = \alpha_0 + \beta_1 \text{DR}_{it} + \beta_2 \text{Bank Relation}_{it-1} + \beta_3 \text{DR}_{it} \times \text{Bank Relation}_{it-1} \\
+ \beta_4 \text{Ret}_{it} + \beta_5 \text{Ret}_{it} \times \text{DR}_{it} + \beta_6 \text{Ret}_{it} \times \text{Bank Relation}_{it-1} \\
+ \beta_7 \text{Ret}_{it} \times \text{DR}_{it} \times \text{Bank Relation}_{it-1} + \gamma_2 \text{Bank Lending}_{it-1} \\
+ \gamma_3 \text{DR}_{it} \times \text{Bank Lending}_{it-1} + \gamma_6 \text{Ret}_{it} \times \text{Bank Lending}_{it-1} \\
+ \gamma_7 \text{DR}_{it} \times \text{Bank Lending}_{it-1} \times \text{Control}_{it-1} \times \text{DR}_{it} \times \text{Control}_{it-1} + \gamma_7 \text{DR}_{it} \times \text{Control}_{it-1} \times \text{ID}_{it} + \varepsilon_{it}
\]

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<td>(0.95)</td>
<td>(0.84)</td>
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<td>(0.98)</td>
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| ID             | Yes | Yes | No | Yes | Yes | No |
| Control        | No | Yes | Yes | No | Yes | Yes |
| N              | 25055 | 25055 | 25055 | 16410 | 16410 | 16410 |
| Adjusted $R^2$ | 0.143 | 0.152 | 0.148 | 0.161 | 0.168 | 0.163 |
| F              | 136.30 *** | 81.64 *** | 99.87 *** | 104.20 *** | 60.54 *** | 74.27 *** |

Notes: This table presents the results of a regression model that examines the relation between the presence of Bank Relation and accounting conservatism using a Basu (1997) model. Estimated data is based on all firms in Model (1)-(3) and firms with bank lending
relationships in Model (4)-(6). We cluster standard errors at the firm and year level. T-values are presented in parentheses. See Appendix A for variable definitions.

* p<0.05, ** p<0.01, *** p<0.001

**TABLE 4. Logit Models Predicting on MBD**

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<td>Industry</td>
<td>Yes</td>
</tr>
<tr>
<td>Year</td>
<td>Yes</td>
</tr>
<tr>
<td>N</td>
<td>24012</td>
</tr>
<tr>
<td>Pseudo R2</td>
<td>0.1507</td>
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Notes: This table presents the estimated results of a logit model to reveal the determinants of main bank relation (measured as MBD). T-statistics are shown in parentheses. See Appendix A for variable definitions.

* p<0.05, ** p<0.01, *** p<0.001
TABLE 5. Conservatism and Main Bank Relation (Using propensity-matched sample)

\[
Earnings_{it} = \alpha_0 + \beta_1 DR_{it} + \beta_2 MBD_{it} + \beta_3 DR_{it} * MBD_{it} + \beta_4 Ret_{it} + \beta_5 Ret_{it} * DR_{it} + \beta_6 Ret_{it} * MBD_{it} + \beta_7 Ret_{it} * DR_{it} * MBD_{it} + ID + \varepsilon_{it}
\]

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<tr>
<td>(\beta_1)</td>
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<td>-0.010 *</td>
</tr>
<tr>
<td>(\beta_2)</td>
<td>-0.002</td>
<td>-0.002</td>
</tr>
<tr>
<td>(\beta_3)</td>
<td>-0.007</td>
<td>-0.007</td>
</tr>
<tr>
<td>(\beta_4)</td>
<td>0.191 ***</td>
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<td>(\beta_5)</td>
<td>0.264 ***</td>
<td>0.258 ***</td>
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<td>(\beta_6)</td>
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<tr>
<td>(\beta_7)</td>
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<td>-0.154 **</td>
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<td>Adjusted R^2</td>
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<td>F</td>
<td>141.2 ***</td>
<td>288.7 ***</td>
</tr>
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</table>

Notes: This table presents the results of a regression model that examines the relation between the presence of Main Bank relation and accounting conservatism using a Basu (1997) model. Estimated data is based on all sample. T-values are presented in parentheses. See Appendix A for variable definitions.

* p<0.05, ** p<0.01, *** p<0.001
1. **Introduction**

The aim of this study is to investigate the association between board effectiveness and firm investment efficiency. The goal of long-term survival and prosperity is important for firms because it affects the economic well-being of society both in the present and in the future (Kuhlman, 2010). To achieve this goal, firms must consider their operations and investments from a long-term efficiency perspective.

Attention given to the importance of long-term development can be seen from changes in regulations and market initiatives. For example, the recently issued 3rd edition of ASX Corporate Governance Principles and Recommendations (CGPR, hereafter) has made a significant change to the principle of risk management (ASX, 2014). This indicates that the focus of corporate governance has now extended beyond the goal of maximizing shareholder value to the long-term survival and prosperity of the company. The newly formed S&P Dow Jones Indices’ Long-Term Value Creation Global Index further symbolises investors’ attention to firms’ long-term performance (FCLT, 2016).

Boards of directors (boards, hereafter) as “the ultimate decision-making body of an organisation” play an important role in ensuring the long-term development of corporations (Psaros, 2009, p. 67). One of the boards’ responsibilities in corporations is to provide strategic advice for investment decision-making and risk management. This role is particularly important in today’s business environment (Barton, 2011), because it takes a forward-thinking perspective, and emphasises the future prosperity and survival of the firm.

To achieve financial success in the long term, firms must invest for their future and promote innovation, prosperity, and productivity. Boards have motivations and capabilities to make sound investment decisions. This is because first, boards act as the link between shareholders and management, and have a legal duty to shareholders to add value to firms. Second, directors are motivated by their financial interest in the firm, either through remuneration or shareholding, to make good decisions to maximise firm value. Finally, the fact that most directors are experts in their area – industry or...
professional – suggests they have the ability to make good decisions in choosing proper investment projects. Considering the important role of boards in making investment decisions to ensure firm survival, this study investigates whether board effectiveness contributes to firm investment efficiency. In particular, this study examines some attributes that represent the level of board effectiveness and see if they can enhance firm investment efficiency.

Efficient firm investment is conceptually defined as the situation that a firm undertakes all the available projects with positive net present value (NPV) under the scenario of no market frictions (Biddle et al., 2009). Accordingly, there are two types of inefficient firm investment situations, under-investment, and over-investment. Under-investment refers to the situation when a firm passes up investment opportunities that would have positive NPV; over-investment refers to situations when a firm invests in more projects than at an optimal level, even if they have negative NPV. Inefficient firm investments are caused by financial market frictions, such as information asymmetries between management and capital providers and agency problems (e.g. Myers & Majluf, 1984; Jensen, 1986). Inefficient firm investments not only are detrimental to the market value of firms (McConnell & Muscarella, 1985) but also affect the economic well-being of the society (Harris & Raviv, 1996). Therefore, improving efficiency in firm investment is important in enhancing wealth at both firm level and macro-economic level. Prior studies have provided evidence that firm investment efficiency can be improved through exercising governance mechanisms (Chen & Chen, 2012), improving financial reporting quality (Biddle et al., 2009) and improving firm information environment (Badertscher et al., 2013). It is important that boards’ play a forward-thinking role in strategy planning, however, there is little evidence about how boards contribute to firm investment efficiency.

Using 14-year panel data of all the companies listed on the Australian Securities Exchange (ASX), this study investigates the association between a variety of board attributes and firm investment efficiency. This study contributes to the board effectiveness literature in several aspects. Differentiating itself from prior studies examining board effectiveness in improving firm performance, this study focuses on board effectiveness in improving firm investment efficiency. Firm performance measures the profitability of the past, while firm investment efficiency reflects firms’ future and long-term survival. Firm investment efficiency is a measure of board task performance rather than overall firm performance.
Compared to firm performance, firm investment efficiency measures the quality of firm investment decisions in regards to resource allocation, which are assumed to be the direct outcomes of board participation.

Second, this study is different from previous studies on boards’ investment decisions that focus on the association between board attributes and acquisition performance or R&D investment decisions. While these studies provide evidence on boards’ role in investment decisions about acquisitions and R&D investment, the evidence is limited when capital expenditures are also included. Since acquisitions are episodic, and R&D only reflects the innovative aspect of firms’ investments, these studies do not capture all the investment activities of firms and thus do not provide comprehensive insights into boards’ role in firms’ overall investment decision-making. Extending prior studies, this study focuses on whether board effectiveness is associated with firm investment efficiency using a measure of a firm’s overall investment performance.

Finally, this study argues that boards’ participation in firm investment decision-making is an important firm internal factor affecting firm investment efficiency. Since firms invest to achieve their strategic goals, their investment activities are determined by their strategic directions and strategic plans. Being responsible for firms strategic planning, effective boards not only influence firm investment efficiency indirectly through monitoring management and maintaining stakeholder relationships, but also work closely with management and directly participate in firm investment decision-making. By investigating the impact of board effectiveness on firm investment efficiency, this study focuses on boards as a firm internal factor and provides insights into firm investment decision-making process.

2. Literature review and hypothesis development

As strategic decision makers, boards are involved in different stages of firms’ investment decision-making process and have a direct influence on firms’ investment decisions. Directors can exercise their influence in the early decision process through advising and consulting, to shape the preparation of capital investment proposals by management. At the end of the capital investment decision process, directors control the decisions by accepting, rejecting or referring to management to modify the capital
investment proposals. More importantly, as a continuous process of influence, boards develop the context for strategic debate, establish a methodology for strategy development, monitor strategy content, and control the conduct of management about strategy (McNulty & Pettigrew, 1999).

The involvement of boards in strategy is consistent with agency theory that treats boards as an important mechanism of corporate control. As discussed above, boards can exert a controlling influence over executive management in different stages of decision-making. According to agency theory, effective boards can detect and deny managers’ sub-optimal investment proposals caused by agency problems such as empire building, short-termism, quiet life, herding, and overconfidence, and hence reduce both over- and under-investment. For example, by voting against negative NPV projects or high-risk projects, boards can limit management’s ability to empire-build and restrain over-investment (Desai et al., 2005). Boards may also limit under-investment to prevent managers’ short-termism by encouraging long-term value-adding investment projects such as R&D (Kor, 2006). Boards’ effective monitoring also facilitates better financial reporting quality (Xie et al., 2003) and reduces information asymmetries between management and shareholders (Kanagaretnam et al., 2007), hence indirectly improve firm investment efficiency.

Boards’ involvement in investment decision-making is also consistent with resource dependence theory, which demonstrates that resources brought by boards to firms can affect firm investment. Apart from monitoring management, directors also work with management to shape the best investment decisions with their knowledge and skills as well as links to the external environment. For example, directors with wide professional and social links will have better ability to identify investment opportunities and initiate investment proposals, encourage investment even when the firm is in financial constraint, and hence limit under-investment (Chen, 2014). Directors’ extensive industry experience and functional expertise also enable them to make better decisions when choosing between investment alternatives and help management make better judgments (Huang et al., 2014). Further, directors with a good reputation and credibility will boost investors’ confidence in firms’ investment decision, mitigate adverse selection problem, and reduce under-investment (Musteen et al., 2010).

As suggested by Forbes and Milliken’s (1999) model, board processes demonstrate good board practices that contribute to board effectiveness in investment decision-making. Consistent with the
proposition about effort norms in Forbes and Milliken’s (1999) model, empirical evidence supports that board members’ commitment is an importance factor that positively affects board performance in all of their tasks (Minichilli et al., 2009). In the processes of investment decision-making, the time and effort that boards devote to their tasks help them achieving effective advising, monitoring, and strategic management. Cognitive conflict captures the critical debates between board members on investment proposals and alternatives (Minichilli et al., 2009). The boards may question and challenge management’s proposals, and request management to explain, justify, and possibly modify their position on important issues (Forbes & Milliken, 1999). This process leads to more careful consideration of investment proposals and hence may improve investment efficiency. The presence and use of knowledge and skills is the third process proposed by Forbes and Milliken’s (1999) model that contributes to board effectiveness in strategic decision-making. This proposition is consistent with the view of resource dependence theory that boards’ functional knowledge and firm-specific knowledge can both affect firm investment decisions (Huang et al., 2014; Kim et al., 2014).

This study uses seven attributes to measure boards’ effectiveness in their role of improving firm investment efficiency. These attributes affect boards’ strategy involvement and strategic decision-making as suggested by the literature (e.g. Forbes & Milliken, 1999; Walters et al., 2007; Chen & Chen, 2012; Chen, 2014; Kim et al., 2014). They are board size, board knowledge and skills, board independence, multiple directorships, board activity, board tenure, and directors’ shareholding.

**Board Size**

Board size refers to the number of board members. There are conflicting views as to the effect of board size on board monitoring performance and firm performance. Agency theory suggests that larger boards will be better monitors because a greater number of people will be reviewing management actions. Resource dependence theory also argues that a larger board brings more links and more access to resources hence better firm performance (Kiel & Nicholson, 2003). However, a different view is taken when considering boards as decision-making groups. Forbes and Milliken’s (1999) model proposes that smaller boards work better as strategic decision makers because smaller boards are more effective in information exchange and are easier to coordinate.

The conflicting theoretical perspectives are reflected in the empirical results on the association
between board size and board performance. Yermack (1996) and Eisenberg et al. (1998) find larger boards relate to lower firm value in large and small US firms respectively. Their results suggest that coordination and communication issues in large boards may prevent directors from performing effectively in their roles (Eisenberg et al., 1998). The benefits brought by adding more board members (as suggested by agency theory and resource dependence theory) may not be justified by the additional costs involved (Yermack, 1996). Mak and Kusnadi (2005) support the negative association between board size and firm performance with their study on a sample of Singapore and Malaysian companies.

In regards to board monitoring performance, Yermack (1996) suggests that smaller boards are more effective in monitoring because CEO performance incentives through compensation and the threat of dismissal become stronger as board size decreases. Beasley (1996) finds that when board size decreases, the likelihood of financial statement fraud decreases. Core et al. (1999) find excessive CEO compensation is positively related to board size. Vafeas (2000) finds that earnings of firms with a smaller board are perceived as being more informative by market participants, which indicates better financial reporting quality.

In contrast to the empirical results that suggest smaller boards are more effective, Kiel and Nicholson (2003) find that board size is positively associated with both firm performance and firm value. Xie et al. (2003) report that larger boards may be more effective in mitigating earnings management because firms with larger boards have lower discretionary accruals. They argue that larger boards may have more experience and therefore be a better mechanism for improving financial reporting quality.

Consistent with Forbes and Milliken’s (1999) model and the majority of empirical findings, this study expects that smaller boards work better as strategic decision makers. This view is also consistent with the results reported in a recent study of Gonzalez and André (2014) that smaller boards make better investment decisions and are associated with lower levels of firms’ short-term risk. If smaller boards are more effective in investment decision-making, they are expected to reduce both over- and under-investment.

**H1: Smaller boards are more effective in reducing over-investment and under-investment.**
Knowledge and Skills

Boards need a high degree of specialised knowledge and skills to function effectively. This study uses directors’ functional knowledge diversity as a proxy for board knowledge and skills. As proposed by Forbes and Milliken’s (1999) model, the presence and use of diversified knowledge and skills enable boards’ effective strategic decision-making. Prior research also suggests that more functional diversified teams are better linked to external networks and possess knowledge and perspectives with more breadth, therefore, can make better quality decisions (Milliken & Martins, 1996).

The effects of directors’ knowledge and skills to board monitoring performance are demonstrated in empirical studies. For example, Xie et al. (2003) find that audit committee members’ financial expertise is an important factor in constraining earnings management. Badolato et al. (2014) find that audit committees with both financial expertise and high relative status can reduce earnings management.

Studies have also shown that directors’ knowledge and skills help them to make better investment decisions. Huang et al. (2014) find that directors’ investment banking experience help firms to achieve better acquisition performance through identifying suitable takeover targets and lowering acquisition costs. Chen (2014) suggests that directors’ education level and industry-specific experience have a positive effect on R&D investment to enhance firms’ innovative capabilities.

Although most research supports the contention that functional knowledge diversity has a positive impact on team decision-making, some research suggests that more functionally diversified teams may suffer from larger “process losses” than less functionally diverse teams (Cannella Jr et al., 2008). “Process losses” refer to the interaction difficulties that prevent groups from achieving their full potential (Forbes & Milliken, 1999). Bunderson and Sutcliffe (2002) suggest that functional knowledge diversity reduces information sharing and has a negative impact on team performance. It is suggested that the differences among members characterizing a diverse top management team can slow the speed of decision-making and are often associated with dysfunctional conflict (Chatman & Flynn, 2001; Harrison et al., 2002).

Consistent with Forbes and Milliken’s (1999) model, this study expects that boards with broad knowledge and skills are more effective in making investment decisions. This expectation is also
supported by agency theory and resource dependence theory. Based on agency theory, directors’ knowledge and skills enable them to detect managers’ self-interested conduct in firm investment proposals, such as negative NPV projects for the purpose of empire building, or under-investment in employee training due to short-termism. Further, directors’ financial expertise is positively associated with better financial reporting quality, which can indirectly improve firm investment efficiency by reducing information asymmetries between managers and capital providers. According to resource dependence theory, directors with extensive industry and functional expertise can work with managers to identify good investment opportunities, and encourage investment even when firms are financially constrained. Therefore, it is predicted that:

**H2: Boards with more diversified knowledge and skills are more effective in reducing over- and under-investment.**

*Independence*

Agency theory suggests that the role of boards in corporate governance is to monitor management to protect the shareholders’ interest. Independent directors who share no interests with managers are in a better position to monitor directors than insider directors. Therefore board independence, measured by the proportion of independent directors on the board, is an important factor that may affect the monitoring function (Fama & Jensen, 1983).

Empirical studies agree that higher board independence level is associated with better monitoring performance. Firms with more independent boards perform better in CEO turnover (Weisbach, 1988; Borokhovich et al., 1996; Huson et al., 2001), restraining excess CEO compensation (Core et al., 1999; Kim et al., 2014), and ensuring financial reporting quality (Klein, 2002a; Xie et al., 2003; Davidson et al., 2005). Boards’ monitoring role also contributes to firm investment decisions. For example, Desai et al. (2005) and Walters et al. (2007) find that outside board monitoring influence the economic outcomes of acquisitions in a positive way. Further, some studies report a positive association between board independence and firm performance/firm value (Rosenstein & Wyatt, 1990; Brickley et al., 1994; Kiel & Nicholson, 2003).

However, some prior studies find contradictive results against the effectiveness of independent
boards. Baysinger et al. (1991) and Kor (2006) find that high insider representation on a board positively affects corporate R&D spending and R&D intensity. In relation to firm performance, some studies find board independence is negatively associated with firm performance (Yermack, 1996; Klein, 1998; Christensen et al., 2010). Bhagat and Black (2002) find that firms with more independent boards do not perform better than other firms. These studies argue that inside directors have greater firm-specific knowledge than independent directors and their superior knowledge leads to better decision-making. Therefore, less independent boards may be associated with better firm performance (Fama & Jensen, 1983; Klein, 1998; Christensen et al., 2010).

Despite the mixed findings in the literature, this study expects a positive relationship between board independence and firm investment efficiency, based on agency theory. Independent directors are more effective than non-independent directors in monitoring managers’ behaviours in investment decision-making. Firms with more independent boards are expected to make better investment decisions in line with shareholders’ value. Moreover, board independence is positively associated with firm financial reporting quality (Klein, 2002a), which can indirectly improve investment efficiency through reducing information asymmetries between managers and capital providers (Biddle & Hilary, 2006; Biddle et al., 2009). Therefore, it is predicted that:

**H3: More independent boards are more effective in reducing over-investment and under-investment.**

**Multiple Directorships**

Multiple directorships refer to the situation when a director holds more than one directorship. Opposite views are held by agency theory and resource dependence theory as to the effect of multiple directorships on board performance. According to agency theory, overcommitted directors might not have their interests aligned with shareholders’. In particular, multiple directorships may result in directors being too busy to focus on maximising shareholders’ wealth. However, according to resource dependence theory, directors add value to firms by bringing linkages, valuable information, skills, and other resources to the firm (Hillman et al., 2000). The directors who hold more directorships may have better intelligence, experience, and skills, which make them more popular for firms hiring directors (Cook & Wang, 2011). They may also have more social links as a result of the multiple directorships they hold (Field et al., 2013). Therefore, the more directorships held by boards, the better the boards can perform
in a resource dependence role.

Prior studies find that multiple directorships have a significant impact on firms’ investment decisions. Ahn et al. (2010) find that acquiring firms where directors hold more outside directorships experience more negative abnormal returns around the announcements of mergers and acquisitions. Chen and Chen (2012) suggest that multiple board directorships are negatively associated with capital allocation efficiency in diversified US firms. However, Chen (2014) finds that directors’ interlocking directorate ties have a positive effect on R&D investment.

Both theories and empirical findings suggest the presence of multiple directorships is an important attribute of boards and may affect firms’ investment decisions. This study takes the view point of resource dependence theory that directors with multiple directorships may help firms to acquire essential resources and diminish uncertainty in investment activities for three reasons. Sitting on the boards of several firms simultaneously permits directors to observe the decision-making process and the consequences of those decisions, and thus enables them to develop a comprehensive view of strategic and management issues and to generate innovative alternatives and solutions (Carpenter & Westphal, 2001). Further, multiple directorships provide directors with timely information about environmental events and trends (Kor & Sundaramurthy, 2009), as well as the viability and potential of alternative projects, thus lessening the impact of uncertainty in the investment environment. Finally, well-connected directors may facilitate access to financial resources outside the firm and thus reduce investment risks resulting from financial constraints (Hillman & Dalziel, 2003). Based on the above discussion, this study predicts that boards with more multiple directorships perform better in improving firm investment efficiency.

**H4: Boards with more outside directorships are more effective in reducing over- and under-investment.**

**Board Activity**

The literature suggests that a higher level of board activity is associated with better board performance. Board activity is commonly proxied by the frequency of board meetings, which are the formal occasions that directors interact with board members, exchange information, and opinions and make strategic
decisions for the firms. Lipton and Lorsch (1992) argue that one common problem that restricts the effectiveness of the board is the lack of time to fulfil its responsibilities. They suggest boards should have an adequate number and length of the meetings to allow directors to carry out their functions.

Prior empirical studies find a positive effect of more frequent board meetings on firm performance or monitoring performance. Vafeas (1999) and Brick and Chidambaran (2010) find that board activity has a positive impact on firm performance and firm value. Anderson et al. (2004) and Lorca et al. (2011) find that firms’ cost of debt is negatively associated with board meeting frequency. Xie et al. (2003) find that the frequency of board meetings is negatively associated with discretionary accruals, indicating more active boards can execute better their monitoring role.

In Forbes and Milliken’s (1999) model, the effort put into performing their tasks by boards, such as preparation, participation, and analysis, are positively related to decision-making performance. This study uses board meeting frequency to proxy boards’ effort. It is anticipated that when boards meet more frequently, they have more time to monitor managers’ investment behaviour and discuss proposed investment projects, and in turn be able to reduce both over- and under-investment.

**H5: Boards meet more frequently are more effective in reducing over-investment and under-investment.**

**Board Tenure**

Board tenure is the average number of years that directors have served on a firm’s board. Some prior studies suggest long board tenure may lead to strategic persistence which deteriorates firms’ ability to respond to environmental changes because greater tenure is associated with greater rigidity and increased insulation against new ideas (Katz, 1982). This argument is supported by empirical findings that top management team tenure is negatively associated with strategic change, especially for firms with poor organizational performance (Finkelstein & Hambrick, 1990; Boeker, 1997). Also, Vafeas (2003) argues that when directors serve too long on a board, their independent status may be compromised, which may lead to less effective monitoring.

However, it is also argued that directors with longer tenure can acquire a high level of firm-specific knowledge and skills (Forbes & Milliken, 1999). The knowledge allows them to understand the
operation, competition environment, and business opportunities of the firm. According to resource
dependence theory, directors’ firm-specific knowledge is a precious resource that directors possess, and
it helps them make better judgements in identifying investment opportunities and providing better advice
to managers in making investments (Hillman & Dalziel, 2003). For example, the board may make better
decisions regarding diversification or acquisition if they have a detailed understanding of how new and
existing businesses would complement one another (Forbes & Milliken, 1999). According to agency
theory, directors’ firm-specific knowledge enhances their ability to monitor (Hillman & Dalziel, 2003).
In the case of making firm investment decisions, the knowledge enables directors to evaluate better
managers’ investment proposals and deny those that may impair shareholders’ value. Besides acquiring
firm-specific knowledge and skills, long board tenure also reflects a high level of cohesiveness of a
board, which encourages knowledge sharing and motivates directors to get involved in group decision-
making and hence leads to an effective board (Forbes & Milliken, 1999).

Consistent with theoretical arguments above, Golden and Zajac (2001) find that board tenure is
positively associated with strategic change when average director tenure is less than 15 years. Kim et al.
(2014) find that outside directors’ tenure is positively associated with firm acquisition/investment policy
advising performance and CEO compensation monitoring performance.

In summary, board tenure is found to be a board attribute that significantly affects boards’
performance in their monitoring, advisory, and strategic roles. Boards with longer director tenure are
expected to be more effective in investment decision-making, by both monitoring managers’ investment
behaviour and giving them better investment advice. Therefore, it is predicted that:

**H6: Boards with longer average director tenure are more effective in reducing over-investment and
under-investment.**

**Director Shareholding**

The effect of director shareholding on board effectiveness is grounded in agency theory. According to
Jensen and Meckling (1976), the alignment of the interests of directors and shareholders may be
achieved with the directors’ holding shares. In this way, directors are encouraged to pursue activities in
the interest of the firms’ welfare.
Consistent with this argument, Yermack (2004) shows that greater performance incentives for outside directors, such as equity and stock options, significantly enhance firm performance. Chen and Chen (2012) find that firms with higher director ownership are more likely to make investment decisions that benefit shareholders. Bhagat and Bolton (2013) find that the dollar value of director stock ownership is positively related to operating performance and the probability of disciplinary CEO turnover when firm performance is poor. They also find that firms with greater director shareholding are less likely to engage in a value-destroying activity such as acquisitions.

Based on the above discussion, directors with more shareholding have more incentives to monitor managers’ misconduct in investment decision-making, and firms with greater board shareholding make better investment decisions consistent with shareholder value. Therefore, it is predicted that:

**H7: Boards with more director shareholding are more effective in reducing over-investment and under-investment.**

3. **Research design**

3.1 Regression model

This study uses Biddle et al.’s (2009) conditional regression model (hereafter Biddle et al.’s (2009) model) to study the association between board effectiveness and firm investment efficiency. Biddle et al.’s (2009) model tests the relationship between firms’ investment level (INVEST) and board attributes conditioned by the likelihood of the firm to over- or under-invest, measured by the firm’s liquidity ranking (OVERI). The model assumes that a firm is more likely to over-invest when it has a high level of cash on hand and a low level of leverage. In this circumstance, effective boards would detect the risks of excessive investments and prevent over-investment. Thus board attributes should be negatively associated with INVEST, holding all other variables constant. On the other hand, it is expected that a firm is more likely to under-invest when it has a low level of cash on hand and a high level of leverage. For this type of firm, effective boards would consider the benefit of long-term value-adding and encourage raising extra capital to fund profitable investments. Thus board attributes for effective boards should be positively associated with INVEST, holding all other variables constant. The ordinary least squares (OLS) regression is presented in Equation (1):
\[ INVEST_{i,t+1} = \beta_0 + \beta_1 BA_{i,t} + \beta_2 BA_{i,t} \times OVERI_{i,t+1} + \beta_3 Governance_{i,t} + \]
\[ \beta_4 Governance_{i,t} \times OVERI_{i,t+1} + \beta_5 FRQ_{i,t} + \beta_6 FRQ_{i,t} \times OVERI_{i,t+1} + \beta_7 OVERI_{i,t+1} + \]
\[ \sum y_j Control_{j,i,t} + \epsilon_{i,t+1} \]  \hspace{1cm} (1)

Where:
- \( INVEST_{i,t+1} \) is investment of firm \( i \) in year \( t+1 \);
- \( BA_{i,t} \) is a board attribute of firm \( i \) in year \( t \);
- \( Governance_{i,t} \) is governance mechanism of firm \( i \) in year \( t \);
- \( FRQ_{i,t} \) is financial reporting quality of firm \( i \) in year \( t \);
- \( OVERI_{i,t+1} \) is the likelihood of firm \( i \) to overinvest in year \( t+1 \).

In Eq. (1), \( INVEST \) is defined as the level of total investment while \( BA \) denotes one of the board attributes representing board effectiveness. \( OVERI \) is a ranked variable (between zero to one) used to distinguish between settings where over- or under-investment is more likely. \( OVERI \) is increasing the likelihood of over-investment. \( Governance \) is governance mechanism, and \( FRQ \) is financial reporting quality (\( Governance \) and \( FRQ \) are control variables). \( Control \) is a set of control variables.

The hypotheses are tested by examining the coefficients \( \beta_1 \) and \( \beta_2 \). For firms that are more likely to under-invest, the value of \( OVERI \) is low (close to zero), and the effect of \( BA \) on investment is captured by \( \beta_1 \). If boards are effective in encouraging more investment, a positive \( \beta_1 \) is expected. In contrast, for firms that are more likely to over-invest, the value of \( OVERI \) is high (close to one), and the effect of \( BA \) on investment is captured by \( \beta_2 \) on the interaction item \( BA \times OVERI \). If boards are effective in preventing excessive investment, a negative \( \beta_2 \) is expected. The expected signs of regression coefficients for all the board attributes being investigated in this study are listed in Table 1.

[Insert Table 1 here]

3.2 Dependent variable

Taking a balance sheet approach, \( INVEST \) in a given firm-year is measured as the net increase of property, plant, and equipment (\( \Delta \)PPE) and intangible assets including goodwill (\( \Delta \)Intangibles) of the firm during the year, scaled by lagged total assets. This measurement captures capital expenditures, acquisitions and
capitalised R&D expenditures. \( \text{INVEST} \) for firm \( i \) in year \( t \) is computed as following:

\[
\text{INVEST}_{i,t+1} = \frac{\Delta \text{PPE}_{i,t+1} + \Delta \text{Intangibles}_{i,t+1} + \text{Depreciation \\ & \text{Amortisation}_{i,t+1}}}{\text{Total Assets}_{i,t}}
\]

3.3 Independent variables

There are three sets of independent variables in the regression model: (1) Board attributes; (2) Likelihood of over- or under-investment (OVERI); and (3) The interaction term of (1) and (2).

**Board size (SIZE)**

Consistent with the literature (Yermack, 1996; Kiel & Nicholson, 2003; Mak & Kusnadi, 2005), this study uses the number of directors on the board to measure board size\(^1\).

**Knowledge and skills (KNOW)**

Prior studies measure boards’ knowledge and skills differently according to their research questions. Some studies focus on a certain type of expertise such as financial expertise or banking expertise using a dummy variable to indicate the presence of the expertise (Xie et al., 2003; Huang et al., 2014). Other studies use proxies to measure board knowledge and skills, for example, Kim et al. (2014) use board tenure to proxy for directors’ firm-specific knowledge and use outside directorships to proxy for directors’ business skills. This study focuses on the diversity of expertise on boards and uses the number of different expertise presented on the board to measure board knowledge and skills.

**Board independence (INDE)**

Prior studies have used the proportion of independent directors on the board as a measure of board independence (Brickley et al., 1994; Christensen et al., 2010). This measure is consistent with the requirement in ASX (2014) Recommendation 2.1 which suggests that the board is independent if the majority of the board comprises independent directors. Consistent with prior studies and ASX

\(^1\)Some studies measure board size using its log transformation in order to make a more symmetrical distribution as required for ordinary least-square (OLS) regression analysis (e.g. Eisenberg et al., 1998).
recommendations, this study uses the same proxy for board independence.

Multiple directorships (MULTI)

Several measures of multiple directorships have been used in previous studies. For example, Kiel and Nicholson (2003) measure multiple directorships as the number of additional board positions held by directors. Fich and White (2005) use the reciprocal CEO interlock to proxy for multiple directorships, where reciprocal interlock is defined as the situation in which the CEO of a company sits on the board of another company and the CEO of the second company sits on the board of the first company. The third proxy for multiple directorships can be found in Chen et al., (2009), as the ratio of the number of directors who hold multiple directorships to the total number of directors. Consistent with Kiel and Nicholson (2003), this study uses the number of additional board positions held by directors, scaled by the number of directors on the board to control for board size. The second measure is not suitable for this study because it only considers CEO interlocks rather than all the board members. The third measure is not used because it does not differentiate a director with one or more external directorships.

Board activity (MEET)

Consistent with prior studies, the number of board meetings in a year is used to measure board activity (Vafeas, 1999; Anderson et al., 2004; Brick & Chidambaran, 2010).

Board tenure (TENU)

Consistent with the literature, this study uses the average tenure of all the directors on the board to measure board tenure (Adams & Ferreira, 2008; Güner et al., 2008; Ahn et al., 2010).

Director shareholding (DIRSHA)

Directors’ shareholding can be measured by the percentage of shares owned by directors on the board (Chen & Chen, 2012; Gonzalez & André, 2014) or dollar value of director ownership (Yermack, 2004; Bhagat & Bolton, 2013). While both measures reflect directors’ incentives for making good decisions, the dollar value measure may be subject to the volatility of share prices. Therefore, this study uses the percentage of shares owned by directors on the board to measure director shareholding.
Likelihood of over- and under-investment (OVERI)

Following Biddle et al.’s (2009) model, two *ex-ante* firm-specific characteristics are used to proxy for the likelihood of over- and under-investment. They are firm cash balance and leverage (measured by debt to equity ratio). Firm cash balance is selected because firms without cash are more likely to be financially constrained whereas firms with large cash balances are more likely to over-invest (Jensen, 1986; Blanchard et al., 1994; Harford, 1999). Similarly, firms with high levels of leverage are more likely to suffer a debt overhang problem that will restrict them from investment (Myers, 1977).

To construct the variable \( \text{OVERI} \), firms are first ranked into deciles by industry sectors based on their cash balance and their leverage\(^2\). Then the rankings are re-scaled to range between zero and one\(^3\). After that, a composite score measure, \( \text{OVERI} \), is computed as the average of ranked values of the two partitions variables.

While both cash balance and leverage are measures of firm liquidity, using only one of them is likely to capture the liquidity of the firm with error (Biddle et al. 2009). Aggregating two sets of liquidity measures to construct variable \( \text{OVERI} \) has the advantage of reducing measurement error. Further, ranking firms by industry sectors effectively controls the possible variation of liquidity between different sectors.

3.4 Control variables

Other factors that affect firm investment efficiency are also controlled in the regression model. First, governance mechanism (\( \text{Governance} \)) and financial reporting quality (\( \text{FRQ} \)), as well as their interaction terms with the likelihood of over-investment (\( \text{Governance} \times \text{OVERI}, \text{FRQ} \times \text{OVERI} \)), are included in the model as control variables as they can reduce over- and under-investment (Biddle et al., 2009). Prior studies argue that large shareholding is the most direct way to align cash flow and control rights of outside investors, effectively limiting management discretion and eliminating inefficiencies (Shleifer & Vishny, 1997). Therefore, governance mechanism is proxied by the presence of substantial institutional

\(^2\) Leverage is multiplied by minus one before ranking so that, as for cash, it is increasing with the likelihood of over-investment

\(^3\) The ranking minus one and then divided by nine
shareholders who hold more than 5% of the outstanding ordinary shares of a firm. The variable \( \text{SUBSHA} \) is measured as the percentage of total shares held by substantial institutional shareholders.

Financial reporting quality is proxied by earnings quality and is measured by discretionary accruals using a modified Dechow and Dichev (2002) model multiplied by negative one. Then the standard deviation of the residuals scaled by average total assets of each model during the years \( t-5 \) to \( t-1 \) is computed to represent discretionary accruals for the firm/year. The value of discretionary accruals is multiplied by negative one to ensure the value of \( \text{FRQ} \) is increasing in financial reporting quality.

According to the earlier discussion of the regression model, a higher level of external governance and better financial quality are expected to improve firm investment efficiency. These two variables are expected to be positively associated with investment level, and their interaction terms with \( \text{OVERI} \) are expected to be negatively associated with investment level.

Consistent with Biddle et al. (2009), tangibility, operation cash flow volatility, sales volatility, loss frequency, operation cycle, slack, and OCF to sales ratio are also included in the regression model because they have been found to be related to firm investment level. Further, we also include investment opportunities (Hayashi, 1982; Firth et al., 2012; Chen et al., 2013), firm size markets (Vogt, 1994; Kadapakkam et al., 1998; Biddle et al., 2009), bankruptcy risk (Altman, 1968; Castanias, 1983; Biddle et al., 2009), investment volatility (Biddle et al., 2009) and dividend payout (Ramalingegowda et al., 2013) as control variables.

4. Data collection and descriptive statistics

The sample targets all the companies listed on the ASX and based in Australia with time series corporate governance available in SIRCA and financial data available in the DatAnalysis database. Banks and financial institutions, insurance and real estate companies are excluded from the sample because their investments are different from those in other industries. At the time of data collection, time series corporate governance data in SIRCA are only available from 2001 to 2014. Therefore, the sample for this study covers this time period. Only company/year observations with both available directors’ data and financial data are included in the data analysis. The final test sample contains 5,138 observations,
covering 814 companies from 2001 to 2014. Table 2 summarises the number of firms within each sector and industry based on the Global Industry Classification Standard (GICS).

[Insert Table 2 here]

As shown in Table 2, the sample contains 814 companies from nine sectors and 20 industries. Among the nine sectors, the largest number of firms is in the Materials sector (238 firms, 29.24%) while the smallest number of firms is in the Utilities sector (11 firms, 1.35%). The wide range of industries covered by the sample companies evidences the representativeness of the sample.

The descriptive statistics are presented in Table 3. The mean (median) INVEST across all firm-years is 9.3% (2.66%) of prior year assets. The mean (median) firm in the sample has a board size (SIZE) of 6.1 (6) members. The largest board has 14 members while the smallest board has three members. On average, the firms have 57.94% (median 60%) of independent directors presenting on their boards. Despite the ASX recommendation of a majority of independent directors, more than 25% of the firms have less than 50% independent directors (Min = 0%, 25% percentile = 42.86%). The boards of the sample firms have an average of 2.7865 (median = 3) different expertise. Each year, they hold 9.9067 board meetings on average (median = 9.83). As shown by the data, multiple directorships are popular in Australia. On average, each director in the sample holds 1.2649 outside directorships (median = 1.20). On boards with the most multiple directorships, each director has 3.67 outside directorships. The boards have an average board tenure of 6.7493 (median = 6.02) years, while the longest board tenure is 18.34 years and the shortest is 1.20 years. The sample firms have an average director shareholding of 16.02% (median = 7.68%). The correlation matrix is presented in Table 4.

[Insert Table 3 & 4 here]
5. Results

5.1 Regression results

**Board size**

As shown in Table 5, the coefficient on \( \text{SIZE} \) is negative as expected and is significant \((p\text{-value} = 0.001)\) but the coefficient on the interaction term \(\text{SIZE} \times \text{OVERI}\) is not significant \((p\text{-value} = 0.296)\). Thus the results partially support \(H1\) that smaller boards are only able to reduce under-investment but not over-investment.

As suggested by Forbes and Milliken’s (1999) model, the advantages of smaller boards are more effective communication and easier coordination. Therefore, it is easier for smaller boards to reach consensus on critical decisions, especially for decisions that involve complexity and ambiguity, such as strategy change (Goodstein, Gautam, & Boeker, 1994). Firms that are short of cash and have limited access to credit face the challenges of raising external capital. If they have a high level of debts, the pressure of saving cash to repay debts and interests may also prevent them from investing in profitable projects. Under these circumstances, smaller boards may be more efficient in making quick decision to change strategic directions or take up extra investments. This explains the results that smaller boards are more effective in reducing under-investment.

On the other hand, firms with large amounts of cash and low levels of leverage may be very passionate about investments due to empire building and over confidence suggested by agency theory. The findings of this study show that smaller boards are unable to constrain empire building and over confidence and thus reduce over-investment. It is consistent with the view that although smaller boards are more efficient in strategic decision-making, their monitoring ability is reduced when smaller boards have to limit the number of independent directors (Klein, 2002b).

**Knowledge and skills**

Regarding board knowledge and skills, results are opposite to the expectation of \(H2\). The results suggest that boards with concentrated functional knowledge and skills are more able to reduce both over- \((p\text{-value} = 0.071)\) and under-investment \((p\text{-value} = 0.044)\).
The results in relation to board knowledge and skills do not seem to support either agency theory, resource dependence theory, or Forbes and Milliken’s (1999) model. However, this finding is consistent with the view that more functionally diverse teams may suffer from larger “process losses” than less functionally diverse teams (Cannella Jr et al., 2008). Diversity within boards may lead to less information sharing, slow decision-making, and more dysfunctional conflict and thus significantly constrain boards’ efforts to take decisive action, especially in an environment with great uncertainty (Goodstein et al., 1994; Chatman & Flynn, 2001; Bunderson & Sutcliffe, 2002; Harrison et al., 2002). The results indicate that the costs of “process losses” are significant and, to some extent, outweigh the benefits of diversified knowledge. Therefore, boards are more effective in investment decision-making when there is fewer functional expertise presented.

Notably, the results should not be interpreted as boards’ knowledge and skills being not important or even harmful to board effectiveness. This is because the proxy used in this study only represents one aspect of board knowledge and skill, which is the diversity of functional expertise presented on boards. The results may be different if other proxies are used for boards’ knowledge and skills.

**Board independence**

No significant results are found between board independence and firm investment efficiency (for under-investment \( p\text{-value} = 0.278 \); for over-investment \( p\text{-value} = 0.296 \)) so \( H3 \) is not supported.

Although the literature generally supports that more independent boards are more effective in their monitoring tasks, some studies suggest that more independent boards are associated with worse firm performance because independent directors do not have enough firm-specific knowledge (Klein, 1998; Christensen et al., 2010). Therefore, the insignificant results on board independence may indicate that benefits of effective monitoring by more independent boards are offset by the shortcoming of independent directors’ lacking firm-specific knowledge (CAMAC, 2010).

**Multiple Directorships**

There is no significant association between multiple directorships and firm investment efficiency (for under-investment \( p\text{-value} = 0.282 \); for over-investment \( p\text{-value} = 0.229 \)), therefore \( H4 \) is not supported.
As suggested by the literature, directors who hold multiple directorships may have better intelligence, experience, skills and social links, and hence can bring more precious resources to the firms they serve (Cook & Wang, 2011; Field et al., 2013). However, directors with multiple directorships may be too busy to perform their monitoring role effectively (Fich & Shivdasani, 2006; Falato et al., 2014). As boards play both monitoring and resource dependence roles in firm investment decision-making (Adams & Ferreira, 2007), a plausible explanation for the insignificant association between multiple directorships and firm investment efficiency may be that the positive effect of more resources brought by directors and the negative effect of director busyness on firm investment efficiency cancelling out each other. However, further investigation is needed to confirm this explanation.

**Board activity**

The number of board meetings in a year is not found to be significantly associated with firm investment efficiency (for under-investment $p$-value = 0.695; for over-investment, $p$-value = 0.359). Thus, $H5$ is not supported.

The insignificant results may be attributed to that the number of board meetings is not an effective proxy for board activity. This measure may ignore some important factors such as how long the meetings last, whether directors prepare for the meetings and how directors are engaged in the meetings (Forbes & Milliken, 1999). A better measure for board activity can be used in future studies to examine the relationship between board activity and firm investment efficiency.

**Board tenure**

Long-tenured boards are found to be able to prevent firms from over-investment ($p$-value = 0.001) but have limited capability to reduce under-investment ($p$-value = 0.358). Thus, $H6$ is partially supported.

The results indicate that boards with long-serving directors can identify projects with negative NPV and avoid investing surplus cash in these projects. However, their firm-specific knowledge accumulated from their long years of service may not increase their willingness and/or ability to raise external capital if the firm does not have cash to fund a good project. The results indicate that long-tenured boards can improve firm investment efficiency under certain circumstances, which are consistent with the findings.
of Kim et al. (2014) that directors’ tenure is positively associated with their advisory performance in acquisitions and improving investment efficiency.

Director shareholding

Highly consistent with expectations, director shareholdings are found to be effective in reducing both over- \( (p-value = 0.002) \) and under-investment \( (p-value = 0.042) \). Thus, \( H_7 \) is supported.

The ASX CGPR recommendation 2.1 states that “the holding of securities in the entity may help to align the interests of a director with those of other security holders, and such holdings are therefore not discouraged” (ASX, 2014, p. 17). Prior academic studies also provide evidence that more director shareholding is associated with higher firm performance (Yermack, 2004). Consistent with the ASX recommendation and the literature, this study finds that boards with higher director shareholdings are associated with lower over-investment and under-investment, indicating that boards work effectively when their interests are aligned with shareholders’ interests.

[Insert Table 5 here]

5.2 Robustness test

To demonstrate the validity of the main results, further statistical analyses are conducted using a different measurement of investment. Recall that a balance sheet approach is taken in the main test to measure the level of investment. The drawback of this approach is expensed R&D expenditures are not covered. Thus, an alternative measure – cash flow approach – is used in the robustness test to measure the level of investment. Under the cash flow approach, investment is measured as net cash flows related to capital expenditure, acquisitions, and R&D expenditure. Compared to the balance sheet approach, this measurement has the potential to capture spending on exploration and R&D activities even if it is not ultimately capitalised. However, since this measurement is derived from cash flows, the possible limitation of this approach is that it may not cover acquisition investments funded by means other than cash.
Regression results using cash flow measure of investment are listed in Table 6. Consistent with the main results, director shareholdings are completely consistent with the expectation in terms of reducing both over- ($p\text{-value} = 0.000$) and under-investment ($p\text{-value} = 0.037$). Smaller boards are only able to reduce under-investment ($p\text{-value} = 0.002$) but not over-investment ($p\text{-value} = 0.706$). Similarly, boards with longer tenure are able to reduce over-investment ($p\text{-value} = 0.004$) but their ability to reduce under-investment ($p\text{-value} = 0.168$) is limited. Also consistent with the main results while opposite to expectations, boards with more concentrated functional expertise are more effective in reducing both over-investment ($p\text{-value} = 0.024$) and under-investment ($p\text{-value} = 0.042$). The results for board activity and multiple directorships are not significant. Overall, the robustness test supports the results found in the main test. The only difference from the main results is that less independent boards are unexpectedly more effective in reducing over-investment ($p\text{-value} = 0.048$) and under-investment ($p\text{-value} = 0.026$), while no significant results are found in the main test on board independence.

[Insert Table 6 here]

6. Conclusions

This study investigates the association between board effectiveness variables and firm investment efficiency across 816 Australian firms over a period from 2001 to 2014. The data analysis relies on Biddle et al.’s (2009) model that allows the examination of board effectiveness in reducing over- and under-investment. Understanding the boards’ role in improving firm investment efficiency is important because boards’ decisions in firm investment affect not only the financial success of the firm in long-term but also the welfare of the society as a whole.

The findings of this study confirm that boards are playing important roles in firm investment decision-making, and effective boards can improve firm investment efficiency. Specifically, the results suggest that boards with more director shareholdings and more concentrated functional expertise can reduce both over- and under-investment, smaller boards can overcome under-investment, while boards with longer average director tenure can restrict over-investment.
The findings on board size and knowledge and skills reflect the importance of including board processes in board effectiveness studies. The results show the negative effect of inefficient communication and coordination on large boards and “process losses” on expertise-diversified boards. When boards work as group decision makers, the cost of inefficient information exchange (Bunderson & Sutcliffe, 2002) and dysfunctional conflicts (Chatman & Flynn, 2001; Harrison et al., 2002) may overweigh the benefit of knowledge brought in by large and diversified teams.

The results also reinforce the claim that encouraging director shareholding adds value to firms. In Australia, some listed companies are encouraging or making it compulsory for directors to hold a certain amount of shares of the companies they serve. For example, Suncorp announced that directors must own at least $200,000 of Suncorp shares, and AMP Capital encourages directors to hold ordinary shares in their companies. While most evidence supports that directors should have a real interest in the company to align their personal interest to the company’s interest, there is still concern that holding company shares can compromise a director’s independence (Stuart, 2014). The results of this study show that regarding investment decision-making, boards with higher director shareholding can reduce both over- and under-investment, while directors’ independence plays no role in board effectiveness.

Further, the results emphasise the benefit of long-serving board members. Among the concerns that long director tenure may compromise independence and entrenched directors may hinder innovation and strategy change, evidence shows that longer board tenure is associated with better monitoring and advisory performance (Kim et al., 2014) and more strategy change (Golden & Zajac, 2001). In a comprehensive study of the effect of board destaggering, Ge et al., (2016) find that this attempt to shorten board tenure is detrimental to firm performance and innovation. The results of this study are consistent with these findings and suggest boards with longer tenure are associated with better firm investment efficiency.

While no significant results are found on board independence, multiple directorships, and board activity, the results should be interpreted with caution. First, while these attributes may not significantly affect firm investment efficiency, they may still be important to boards’ other roles. Also, results may be different if the board attributes are measured with other proxies. Future research on the association between board effectiveness and firm investment efficiency is expected to enrich our understanding of
The results of the study have implications for firms. First, in relation to board size, knowledge and skills, if a board wishes to add directors for the benefits of extra knowledge and expertise, the potential cost of inefficient communication and decision-making should be considered. Second, although the literature suggests long director tenure may compromise directors’ independence status, long-serving boards are more effective in investment decision-making. Based on the insignificant results found for board independence, it is not a critical attribute contributing to firm investment efficiency. Further, firms should encourage directors to hold their own shares. In sum, for the purpose of making good investment decisions, firms can consider setting up an investment subcommittee with features consistent with the findings of this study.

The findings on board independence also have important implications for regulators. Board independence and board committee independence are emphasised in the ASX CGPR (ASX, 2014). However, prior studies show that independence is not a panacea (Christensen et al., 2010). While independent directors may play a valuable monitoring role (Kim et al., 2014), they may not have enough industry and firm knowledge and experience to assist them in dealing with strategic issues and commercial decisions effectively (CAMAC, 2010). Consistent with this argument, this study finds that more independent boards do not improve firm investment efficiency. The findings support the view that there should be a balance between formal independence and relevant industry expertise on a board and companies should be encouraged to choose the governance structures that best allow them to find an appropriate balance between monitoring and performance (UNCTD, 2010).
Table 1. Expected signs for regression coefficients for board attributes

<table>
<thead>
<tr>
<th>Board attribute</th>
<th>Regression Coefficient</th>
<th>Expected sign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Board size</td>
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</tr>
<tr>
<td></td>
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<tr>
<td>Board independence</td>
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<tr>
<td></td>
<td>$\beta_2$</td>
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<tr>
<td>Multiple directorships</td>
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</tr>
<tr>
<td></td>
<td>$\beta_2$</td>
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<td>Board activity</td>
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<td>Knowledge and skill</td>
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<td></td>
<td>$\beta_2$</td>
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Table 2. Summary of sample by GICS sector and industries

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<th>% by</th>
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Table 3. Summary of sample by GICS sector and industries

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<td>0.0515</td>
<td>0.1505</td>
<td>1.2869</td>
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</table>

Notes:
- All the continuous variables presented in above table have been winsorized at 1% and 99% levels;
- INVEST is a measure of total investment, computed as net increase in PPE and intangible assets, scaled by lagged total assets;
OVERI is a measure of likelihood of over-investment based on liquidity (aggregating rankings of cash on hand and leverage);
SIZE is the number of directors on the board;
INDE is the proportion of independent directors on the board;
KNOW is the number of different type of expertise presented on the board;
MEET is the average number of board meetings available to all the directors in a year;
MULTI is the number of additional board positions held by directors scaled by the number of directors on the board;
TENU is the average of tenure of all the directors on the board;
DIRSHA is the percentage of shares owned by directors on the board;
SUBSHA is the percentage of ordinary shares held by substantial institutional shareholders;
FRQ is a measure of financial reporting quality proposed by Dechow and Dichev (2002) and modified by (Francis et al., 2005);
FSIZE is a measure of firm size, computed as the logarithm of market value of capital;
T_Q is the sum of the market value of equity and the book value of liabilities divided by total assets;
Z_SC is a measure of distress computed following the methodology in Altman (1968);
TANGI is a measure of tangibility, computed as the ratio of PPE to total assets;
VOL_I is the standard deviation of investment (INVEST) over year t-5 to year t-1;
DIVID is an indicator variable that takes the value of one if the firm paid a dividend;
VOL_CF is the standard deviation of net operating cash flow over year t-5 to year 5-1, deflated by average total assets;
VOL_S is the standard deviation of sales revenue over year t-5 to year 5-1, deflated by average total assets;
F_AGE is the number of years the firm listed on ASX (or its precedent);
CYCLE is a measure of the operating cycle of the firm, computed as days of inventory turnover plus days of accounts receivable turnover;
LOSS is an indicator variable that takes the value of one if the firm made a loss;
INDLEV is the mean market leverage – the ratio of long-term debt to the sum of long-term debt and market value of equity - for firms in the same industry sector;
SLACK is the ratio of cash on hand to PPE;
CFO_S is the ratio of CFO to sales revenue.
Proceedings Table of Contents

Program Table of Contents

Table 4. Correlation matrix of variables
SIZE
INDE
KNOW
MEET
MULTI
TENU
DIRSHA
SUBSHA
INVEST
OVERI
FRQ
FSIZE
T_Q
Z_SC
TANGI
VOL_I
DIVID
VOL_CF
VOL_S
F_AGE
CYCLE
LOSS
INDLEV
SLACK
CFO_S

SIZE
1.0000
0.2285
(.0000)
0.3219
(.0000)
0.0435
(.0018)
0.2519
(.0000)
‐0.1583
(.0000)
‐0.1930
(.0000)
0.1591
(.0000)
‐0.0364
(.0091)
‐0.2120
(.0000)
0.1669
(.0000)
0.6039
(.0000)
‐0.1139
(.0000)
‐0.0323
(.0206)
0.1919
(.0000)
0.0060
(.6687)
0.3493
(.0000)
‐0.2137
(.0000)
‐0.0419
(.0026)
0.1496
(.0000)
‐0.0713
(.0000)
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0.1488
(.0000)
‐0.1308
(.0000)
0.0851
(.0000)

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‐0.2734
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‐0.0523
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0.1215
(.0000)
‐0.0482
(.0005)
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(.0000)
‐0.0662
(.0000)
0.0813
(.0000)
‐0.0526
(.0002)
‐0.1358
(.0000)
0.0318
(.0225)
‐0.0708
(.0000)
0.0780
(.0000)

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(.0000)
‐0.0766
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0.0637
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0.0410
(.0033)
0.0047
(.7343)
‐0.0684
(.0000)
‐0.0195
(.1628)
‐0.0544
(.0001)
‐0.0242
(.0826)

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0.1335
(.0000)
‐0.0189
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1.0000
0.0892
(.0000)
0.0245
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‐0.1013
(.0000)
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0.0094
(.4999)
‐0.0847
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0.0848
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‐0.0408
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‐0.1404
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‐0.1135
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‐0.1693
(.0000)
0.0801
(.0000)
‐0.2628
(.0000)
0.1280
(.0000)

VOL_I
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‐0.0174
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0.0306
(.0285)
0.0251
(.0722)
‐0.0332
(.0173)
‐0.2904
(.0000)
‐0.0023
(.8673)
‐0.0595
(.0000)
0.0373
(.0075)
‐0.1368
(.0000)
‐0.2164
(.0000)
0.0178
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0.0181
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0.1750
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1.0000
‐0.1446
(.0000)
0.1719
(.0000)
0.1531
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‐0.0737
(.0000)
0.0469
(.0008)
0.1178
(.0000)
‐0.0256
(.0665)
‐0.0217
(.1192)
‐0.0271
(.0525)

DIVID
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(.0000)
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(.0000)
0.2350
(.0000)
0.3288
(.0000)
‐0.0581
(.0000)
0.1626
(.0000)
0.1674
(.0000)
‐0.1535
(.0000)
0.3013
(.0000)
0.5564
(.0000)
‐0.0382
(.0062)
0.2147
(.0000)
0.1972
(.0000)
‐0.1582
(.0000)
1.0000
‐0.2787
(.0000)
0.1147
(.0000)
0.2065
(.0000)
‐0.1486
(.0000)
‐0.6333
(.0000)
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(.0000)
‐0.1749
(.0000)
0.1731
(.0000)

VOL_CF
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‐0.1151
(.0000)
‐0.0821
(.0000)
‐0.0939
(.0000)
‐0.1969
(.0000)
‐0.2194
(.0000)
0.1202
(.0000)
‐0.1388
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(.0000)
‐0.4965
(.0000)
‐0.3368
(.0000)
0.2304
(.0000)
‐0.0467
(.0008)
‐0.1891
(.0000)
0.1849
(.0000)
‐0.3309
(.0000)
1.0000
0.2962
(.0000)
‐0.1246
(.0000)
0.0309
(.0267)
0.2295
(.0000)
‐0.1779
(.0000)
0.1327
(.0000)
‐0.0913
(.0000)

VOL_S
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(.2071)
‐0.0272
(.0511)
‐0.0257
(.0651)
0.0901
(.0000)
‐0.0198
(.1554)
‐0.0101
(.4691)
0.1040
(.0000)
0.0371
(.0078)
0.1204
(.0000)
‐0.0060
(.6697)
‐0.2617
(.0000)
0.0324
(.0202)
0.0118
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Notes:
1. All the continuous variables presented in above table have been winsorized at 1% and 99% levels;
2. The definition of the variables are provided in Table 3;
3. Top part presents Spearman correlation, and bottom part presents Pearson correlation;

| Correlation coefficient (p-value) | Information |
Table 5. Regression results for firm investment efficiency

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Notes:
1. All the models control for the cluster effects of firms and years;
2. All the continuous variables presented in above table have been winsorized at 1% and 99% levels;
3. Model (2)-(8) represents below model, where BA is replaced by independent variables SIZE, INDE, KNOW, MEET, MULTI, TENU, and DIRSHA respectively, and Control is a number of control variables:

\[
INVEST_{i,t+1} = \beta_0 + \beta_1BA_{i,t} + \beta_2BA_{i,t} \times OVERI_{i,t+1} + \beta_3SUBSHA_{i,t} + \beta_4SUBSHA_{i,t} \times OVERI_{i,t+1} + \beta_5FRQ_{i,t} + \beta_6FRQ_{i,t} \times OVERI_{i,t+1} + \beta_7OVERI_{i,t+1} + \sum \gamma_jControl_{j,t,t} + \epsilon_{i,t+1}
\]

4. The definition of the variables are provided in Table 2.
5. Standard errors for heteroscedasticity, serial and cross-sectional correlation are adjusted using a two-dimensional cluster at the firm and year level. This technique is proposed by Petersen (2009) as the preferred method for estimating standard errors in corporate finance applications using panel data.
6. \( P-value \) marked by *, **, or *** indicates significant result at 10%, 5%, 1% level respectively.
Table 6. Regression results for firm investment efficiency using cash flow measure of investment level

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Notes:
1. All the models control for the cluster effects of firms and years;
2. All the continuous variables presented in above table have been winsorized at 1% and 99% levels;
3. Model (2)-(8) represents below model, where $BA$ is replaced by independent variables $SIZE$, $INDE$, $KNOW$, $MEET$, $MULTI$, $TENU$, and $DIRSHA$ respectively, and $Control$ is a number of control variables:

$$INVEST_{it+1} = \beta_0 + \beta_1BA_{lt} + \beta_2BA_{lt} \cdot OVERI_{lt+1} + \beta_3SUBSHA_{lt} + \beta_4SUBSHA_{lt} \cdot OVERI_{lt+1} + \beta_5FRQ_{lt} + \beta_6FRQ_{lt} \cdot OVERI_{lt+1} + \beta_7OVERI_{lt+1} + \sum \gamma_iControl_{j,lt} + \epsilon_{it+1}$$

4. The definition of the variables are provided in Table 2.
5. Standard errors for heteroscedasticity, serial and cross-sectional correlation are adjusted using a two-dimensional cluster at the firm and year level. This technique is proposed by Petersen (2009) as the preferred method for estimating standard errors in corporate finance applications using panel data.
6. $P$-value marked by *, **, or *** indicates significant result at 10%, 5%, 1% level respectively.
References


UNCTD. (2010). *Corporate Governance in the Wake of the Financial Crisis*. Retrieved from


THE PERCEPTION OF FEMALE ACCOUNTANS IN EXPLAINING THEIR MOTIVATIONS AND GENDER GAP AMONG JAPANESE ACADEMIC COMMUNITY

Yuki Tanaka*
Hosei University

Fumiko Hiki
Hitotsubashi University

*Corresponding Author: y.tanaka@hosei.ac.jp
1. Introduction

This study is the first-ever research to conduct a quantitative analysis of the gender gap in accountancy in Japan. Prior studies focused on female accounting researchers in the United States and Europe, but no research covering Japan is known.

As no precise study of the current situation exists, we therefore focused on female accounting researchers. According to the Japan Accounting Association (JAA; 1987), the first Japanese female accounting researcher was Professor Nobuko Nosse in 1962, who joined JAA in 1953. The percentage of women in JAA has since increased steady (14.8% in March 2015; 271 out of a total 1,837 members). However, even basic information such as age, professional achievement, career level remains unidentified.

Furthermore, we verified whether the gender gap, for which there was anecdotal evidence in other occupations, existed among accounting researchers. Should it do so and constitute a problem, it will be necessary to discuss countermeasures, which should ultimately benefit both male and female accounting researchers.

The overall objective of this research study was thus to understand the current situation of the gender gap among accounting researchers, specifically in terms of professional achievement, career level, competitive funding grants, overseas studies, research fields and methods, information sources, and the like.

To formulate a hypothesis, previous research was reviewed (see Section 2). This revealed that both the percentage of female accounting researchers in foreign countries, including Japan, and the gender gap among accounting researchers in the United States and Europe had been analyzed. Consequently, a study specifically focused on Japan was undertaken (see Section 3

---

1 This study was conducted with economic support from JAA and Grants-in-Aid for Scientific Research. Our study group's chairman is Keiko Kitamura (Chuo University). We are deeply appreciate the great supports from Asako Kimura (Kansai University), Kyoko Miyamoto (Kansai University) and Mihoko Nishimura (Meiji Gakuin University).

2 Shari Wescott & Robert Seiler [1986] also pointed out that it is useful not only for future female accountants but also for male to clarify the fact that new issues commonly occurring as accounting experts regardless of gender. This study was conducted with economic support from the Educational Foundation of the College of the University of Houston. They analyze the trajectory to the present before a female certified public accountant in the United States gained social recognition, based on literature research and interview survey.
onwards). The data for this study was collected through a survey, the results of which were subject to cross-tabulation, and other statistical analyses, using different combinations.

Regarding most of the topics, the findings (see Section 4) couldn’t verify any significant gender gap such as hindering women’s research activities. It is consistent with those of some previous studies. However, a slight gender gap was identified for some topics, requiring further studies into the cause. In general, we expect the results of our research to be confirmed, leading to discussions about the activities of accounting researchers, regardless of gender. Furthermore, we are so glad if accounting researchers will be recognized more widely as a profession where women can demonstrate their abilities.

This study contributes an analytical perspective absent from previous studies, as well as the accumulation of knowledge about a specific Asian country, Japan. Our research also added a large number of analytical perspectives, such as competitive funding, to professional achievement, career level, and other aspects included in previous research.

2. Previous research

Some previous studies have analyzed the gender gap among accounting researchers, but almost all focus on the United States. The only research into other countries are Saka [2016], which investigates the percentage of female accounting researchers in 17 countries and regions, and Gago and Macías [2014], which includes Europe in their sample.

2-1. Percentage of female accounting researchers around the world

Saka [2016] conducted a comprehensive survey on the percentage of female accounting researchers, plus their research environments, in 17 countries and regions. The survey was based on interviews with researchers and information on the main accountancy associations’ and universities’ websites.

Figure 1 shows the percentage of female accounting researchers on a world map (the percentage of female members in the JAA and of female accounting researchers in the respective main universities of the other 17 countries). The higher percentages are depicted
by darker shades of green (the highest rate is 73%, in Thailand, and lowest 9%, in South Korea); unshaded countries were not included in Saka’s [2016] survey.

[Insert Figure 1]

The percentage of female accounting researchers is high in the United States, Brazil, and the United Kingdom, and tends to be high in the former communist bloc in Eastern Europe; Saka’s [2016] survey suggests that the equal participation of men and women was undeniable under former communist governments. It is also high in South Africa, where a minority quota system acts as a corrective measure to the apartheid regime. In Asia, percentages are higher in many countries, such as Thailand (73%) and Sri Lanka (60%).

Saka’s [2016] survey results clearly show the percentage of women in accountancy in Japan is considerably lower than other, especially non-developed, countries. Saka [2016] points out many causal factors for this, such as the evaluation of research achievements, employment and promotion systems, and quota system, in addition to social, cultural, and political factors.

2-2. **Causal factors for the gender gap among researchers**

Takada [2016] reviewed previous studies analyzing the gender gap among accounting researchers. According to her, previous research explain the gender gap in terms of three factors, as seen in Section 2.1.

The first is based on gender stereotypes, or division of labor by gender: work is the man’s responsibility while the home is the woman’s. In the past, this was the social norm in many countries, not just Japan. It is possible that there are fewer female than male researchers in societies where this idea survives, because research is considered a profession; however, even where it is thought outdated, the majority of researchers are male, creating path dependence and a situation in which there are fewer female researchers. The theory is that, as there is already a great number of men in the labor force, they make most of the employment-related decisions, which, by comparison, limits the employment (promotion) of women.

The second factor is that women needing time off work for childbirth or other reasons influences employers’ decisions. In other words, a high turnover rate for women because of
marriage and childbirth etc. may be reflected in an employer’s decision-making process on efficiency.

The third possible factor is women’s own choices: making a rational decision not to become a researcher. Women’s independent judgments are based on their aptitude at work and values; evolutionary psychology has repeatedly reported how men and women have inherently different ways of thinking and fields of expertise. These three factors comprise the “gender gap theory” on which previous research is based.

How does the resulting low percentage of female accounting researchers influence their professional achievement and career levels? Taking into account Saka’s [2016] findings, women tend to have shorter research careers in countries where equality of participation is more recent, and this situation will not change immediately, according to the theory underpinning previous research. Therefore, in a simple comparison, it is possible that not only women’s achievements but also their career levels, which are thought to be correlated (to some extent) with research career and extent of achievement, may be lower than those of men.

2-3. Gender gap in research achievements

Dwyer [1994] undertook an analysis of 139 accounting academics (112 men and 27 women) who had obtained a doctorate in 1981, to identify gender gaps in terms of employment as a researcher in universities and research activities. He discovered no gender gap in terms of achievements before or after taking a job, or in entry-level employment, such as in research-oriented universities.

On the other hand, he also discovered that in terms of achievements, women published fewer papers, although there was no gender gap in citation count. The variation in the number of achievements is also significant when the difference in entry-level employment is controlled, and did not change even when the number of coauthors was weighted. This result illustrates

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3 For example, British psychologist Simon Baron-Cohen stated that male brain is "systematized" and female brain is excellent "empathy" (Baron-Cohen [2004]). In social experiments conducted at the community organization "Kibbutz" in Israel, it has been reported that gender differences appear in occupation selection even if they do not distinguish between men and women at all (Pinker [2009], Ridley [2015]).
how there is no tendency for female researchers to opt for a job at education-oriented universities, but, despite the lack of choice, there is a gender gap in terms of achievements.

However, a 1994 study by Streuly et al., which also analyzed the gender gap in research achievements, revealed no significant overall difference in professional achievements between men and women. Their sample comprised pairs of men and women who were analyzed according to: 1) the year they obtained their doctorate, 2) the institution (university) that granted their doctorate, and 3) whether they were employed at a university with a doctorate program. The gender gap was analyzed using such variables as number of papers, quality of papers (publication in top-ranking journals), and number of citations.

Furthermore, Rama et al. [1997] identified a gender gap in the quality of the research: in universities without a doctorate program, female researchers who were promoted from assistant to associate professor had a higher quality of achievements than their male counterparts. Gago and Macías [2014] pointed out that there was no gender bias in research fields, though, after investigating whether women tending not to conduct mainstream research could lead to a gender gap in achievements: the results revealed that at least among researchers who obtained their degree in the 1980’s or later, there was no gender gap in various research fields.

2-4. Gender gap in career levels

Norgaard [1989] first extracted female researchers from the Accounting Faculty Directory, in which Professor Hasselback of Florida State University compiled such information as academic degree and place of employment for accounting researchers (available at http://www.jrhasselback.com/), and identified their jobs. Having sent out 783 questionnaires, 446 were responses received from female researchers, who were highly satisfied with their jobs but felt a lack of equality between men and women in several aspects (specifically, acquiring tenure, salary rise, and promotion), which full-time professors tended to feel more strongly. It is important to note that although these were subjective perspectives, they do reveal the perceptions of female accounting researchers at that time.

However, the majority of previous research indicates no significant gender gaps. For instance, Collins et al. [1998] conducted a survey of whether researchers strived to acquire
tenure at their first employing university, and actually acquired it. They found no gender gap in either circumstance, which was confirmed by Buchheit et al. [2000] and Sayre et al. [2000].

On the other hand, there are a small number of studies that present weak evidence of a gender gap. For example, Dwyer [1994] discovered that at the time of his study in 1990, men held higher positions than women, although the results differed according to the indices used.

3. Hypotheses Development

As already stated, the findings from previous research into gender gaps in professional achievements and career levels are mixed.

The gender gap in professional achievements was pointed out by Dwyer [1994], in terms of number, and by Rama et al. [1997], in terms of quality, for which gender stereotypes, path dependence due to the low percentage of women (and the brevity of women’s research careers), and women’s independent choices were cited as causal factors. It is undeniable that stereotypes survive in Japan, as well as the percentage of female accounting researchers being historically low, possibly due to path dependence. Moreover, as Saka [2016] points out, the increase in the percentage of women in the Japanese labor force has only occurred in recent years, unlike in some other countries. Therefore, it is highly likely that in Japan the average research career of women is shorter than men’s, and their professional achievements and career levels lower. The above is considered as replication of previous research.

This situation is thought to lead to gender gaps in other areas as well: to obtain competitive funding requires a certain level of achievement and career level, which may prove more difficult for women.

H1 Women obtain less competitive funding than men

It might depend on the content of a research whether a researcher can obtain competitive funding or not. More specifically, if a research needs more fund (eq. presentation at an international conference, posting to international scientific journals, database purchases and interview surveys are really costly), a researcher is more aggressive to application for
competitive funding. This is a reason why we also investigated research objective, research method, and information sources.

Secondly, considering such female-specific, inevitable facts as temporary absence from work due to childbirth, and given that child care and nursing is mainly undertaken by women in Japan, the possibility of a gender gap in overseas study was also investigated.

H2  Women have less experience of studying overseas than men

However, the number of achievements, acquiring competitive funding, and studying overseas may be influenced by research method and theme. Gago and Macías [2014] investigated and found no gender gap related to research field, but it is also claimed that men and women prefer and excel in different research methods. Therefore, we also investigated the research fields, research methods (theoretical and empirical research, and the like), and information sources.

H3  There is a difference in the research field, research method, and information sources used by men and women

4. Research Method

Between January and February 2016, we sent out 1,811 questionnaires to all JAA members and received 418 responses; Table 1 shows the list of items included in the questionnaire. The results were cross-tabulated using several different combinations and analyzed statistically (e.g., chi-square test and t-test).

[Insert Table 1]

Of the respondents, 21.8% (91) were women, somewhat higher than the percentage of women (14.8%) in the survey population (JAA).

It is evident that the female age structure is younger than the male. The largest age groups for both genders comprises people in their 30s and 40s: the composition for men is close to a normal distribution; in contrast, women in their 30s and 40s account for nearly 70% of the total number of female respondents. The small proportion of women in their 50s or over
probably reflects the history of women’s social progress. It is difficult to compare simply 20s with other ages because 20s is very few. In their 30s, from 30 to 39 years old members are included, but in their 20s, except for special cases, they are 26 years old or over (they should be in the graduate program and use graduate student membership system of JAA, or be young researchers who straight out of the graduate program).

[Insert Figure 2]

5. Research results

5-1. Achievements

To investigate the gender gap in achievements, the number of papers published in the last three years by men and women was compared (Table 2). According to the result, the proportion of respondents with 10 or more publications was higher among men, but so was the proportion of those with no publications. Also, while there were more men with three publications, there were more women with four to six publications. It is therefore difficult to conclude that women have fewer achievements than men.

[Insert Table 2]

5-2. Career levels

Women’s career levels are lower than those of men (Table 3), this difference being particularly large among professors, which is consistent with the findings from some earlier studies. When analyzed in conjunction with the aforementioned age structure, this may be due to path dependence based on Japanese women only experiencing social progress in recent years. In other words, given that age structure for women is younger than for men, it is possible that women are striving to accumulate the work and research experience necessary to be promoted to professorships.

[Insert Table 3]

5-3. Competitive funding
To investigate competitive funding, Grants-in-Aid for Scientific Research \textit{(Kakenhi)}, the scientific fund with the highest number of recipients in Japan, were examined. Male and female recipients were compared in such areas as the proportion of men and women, age, and field of study, but no significant difference was identified. However, a slight gap between men and women was discovered in terms of the relationship to research objective, research method, and information sources.

First, regarding research objective, statistical analysis showed male and female recipients of \textit{Kakenhi} tended “Getting tenure.” Researchers aggressive in getting tenure may be young, so this may be the effect of preferential treatment\footnote{The proportion of “Getting tenure” is 6.5\% for males and 11.0\% for females. This difference between male and female is not statistically significant (chi\textsuperscript{2} = 2.163, \(p = 0.141\)).} to young researchers (Table 4).

Second, statistical analysis showed male recipients of \textit{Kakenhi} tended towards three objectives: “Discovering new knowledge” or “Presentation at an international conference” or “Publishing in international scientific journals.” On other hands, female recipients tended towards two objectives: “Presentation at a domestic conference” or “Publishing in domestic scientific journals.” It is important to note that women are not domestic oriented. Rather, the proportion of researchers who have "Presentation at an international conference" or "Publishing in international scientific journals" is higher for women than for men\footnote{The proportion of “Presentation at an international conference” is 27.5\% for males and 38.5\% for females. This difference between male and female is statistically significant (chi\textsuperscript{2} = 4.314, \(p\)-value = 0.038). Similarly, the proportion of “Publishing in international scientific journals” is 29.3\% for males and 38.5\% for females. This difference between male and female is slightly statistically significant (chi\textsuperscript{2} = 2.742, \(p\)-value = 0.098).} (Table 4).

Figure 3 shows further analysis of these objectives: there is a higher percentage of male and female recipients aiming for a “Presentation at an international conference” than not; in the case of male researchers, this difference reaches 20\%.

The proportion of men receiving \textit{Kakenhi} who conducted empirical research is also statistically high, as is the probability of using questionnaires and interviews as information sources.
sources (Table 5). Therefore, whereas male recipients are likely to have chosen empirical research and questionnaires and interviews, this tendency was not observed among women.

[Insert Table 5]

5-4. Overseas study

Regarding overseas study, the majority of both men and women had “No experience of studying overseas,” with a chi-square test showing no significant difference between the genders (p-value is 0.035, Table 6). On the other hand, the average age of men on their first trip to study overseas was significantly higher (approximately 33.1 years) than women (approximately 28.1 years) (Table 7). This is probably because the age structure of women is younger, though, as is the case for career levels.

[Insert Table 6]

[Insert Table 7]

5-5. Research field

Finally, we investigated whether a gender gap exists in the research field (financial accounting, managerial accounting, auditing, tax accounting and others), research method (theoretical research, empirical research, analytical research, and the like), and information sources (historical files, databases, interviews, questionnaires, and the like). No significant statistical difference was found between men and women in any of these three areas (Fig. 4), which is consistent with the findings of Gago and Macías’ [2014] analysis of research fields.

[Insert Figure 4]

6. Discussion

The gender gap in achievements discovered by some previous research was not verified in Japan, although it was for career levels. Our new investigations into such areas as competitive
funding and overseas study did reveal some gender gaps as well. However, these gaps in terms of career levels and age when studying overseas are probably due to the young age structure of female accounting researchers; however, we predict that this gap will be eliminated over time.

Analyzing competitive funding, it was found that male researchers with internationally oriented objectives are more successful in acquiring funding than those without. On the other hand, female researchers with domestic oriented objectives are more successful in acquiring funding than those without. The reason of these tendency is not clear. This may also be due to the age structure of women. Or it may be based on women’s own choices as pointed out by previous research. In any case, further analysis is necessary.

Also, male researchers who tended to prefer empirical research based on questionnaires and interviews are more successful in acquiring funding than those without. Together with earlier findings of no gender bias in research field, research method, and information sources, should also be true for female accounting researchers; however, our research did not find any such evidence.

7. Conclusion

This research demonstrates gender gaps among accounting researchers in some areas. A survey of Japan Accounting Association members was conducted, followed by a comprehensive analysis from multiple perspectives: professional achievement, career level, age, competitive funding grants, overseas study, research field, research method, and information sources.

The results for almost all perspectives show no statistically significant gender gap such as hindering women’s research activities, in keeping with some earlier research. Further research studies are needed, but we expect our results stimulate discussion about the activities of accounting researchers, regardless of gender. Furthermore, we are so glad if accounting researchers will be recognized more widely as a profession where women can demonstrate their abilities.
Figure 1  Female accounting researchers on a world map

Note: The percentage of female members in the JAA and of female accounting researchers in the respective main universities of the other 17 countries.
Source: Saka [2016]

Figure 2  Age structure
Figure 3  Receipt funding in the last three years

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes - &quot;Presentation at an international conference&quot;</td>
<td>57, 31, 1</td>
<td>19, 14, 2</td>
</tr>
<tr>
<td>No</td>
<td>75, 31</td>
<td>28, 26, 2</td>
</tr>
</tbody>
</table>

- Receipt Kakenhi in 2013-2015
- Not receipt Kakenhi in 2013-2015
- NA

Figure 4  Research field

<table>
<thead>
<tr>
<th>Field</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial accounting</td>
<td>173, 73.9%</td>
<td>91, 81.3%</td>
</tr>
<tr>
<td>Auditing</td>
<td>24, 77.4%</td>
<td>21, 95.5%</td>
</tr>
<tr>
<td>Tax accounting</td>
<td>1, 3.2%</td>
<td>15, 88.2%</td>
</tr>
<tr>
<td>Others</td>
<td>5, 1.9%</td>
<td>4, 23.5%</td>
</tr>
<tr>
<td>NA</td>
<td>1, 0.9%</td>
<td>1, 3.2%</td>
</tr>
</tbody>
</table>

- Men
- Women
- NA
Table 1  Questionnaire item

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Questionnaire item</th>
</tr>
</thead>
<tbody>
<tr>
<td>[1]</td>
<td>(1) Career levels</td>
</tr>
<tr>
<td></td>
<td>(2) Employment status</td>
</tr>
<tr>
<td></td>
<td>(3) Research career</td>
</tr>
<tr>
<td></td>
<td>(4) Age</td>
</tr>
<tr>
<td></td>
<td>(5) Gender</td>
</tr>
<tr>
<td>[2]</td>
<td>Research Field</td>
</tr>
<tr>
<td>[3]</td>
<td>Research objective</td>
</tr>
<tr>
<td>[4]</td>
<td>(1) JAA conference presentation</td>
</tr>
<tr>
<td></td>
<td>(2) Not JAA conference presentation</td>
</tr>
<tr>
<td>[5]</td>
<td>Studying overseas: 1st time</td>
</tr>
<tr>
<td></td>
<td>Studying overseas: 2nd time</td>
</tr>
<tr>
<td>[6]</td>
<td>Research theme</td>
</tr>
<tr>
<td></td>
<td>Information source</td>
</tr>
<tr>
<td></td>
<td>Research method</td>
</tr>
<tr>
<td></td>
<td>(2) Other competitive fund</td>
</tr>
<tr>
<td>[8]</td>
<td>(1) Award</td>
</tr>
<tr>
<td></td>
<td>(2) Annual average number of papers published</td>
</tr>
<tr>
<td>[9]</td>
<td>(1) Posting to the International Journal</td>
</tr>
<tr>
<td></td>
<td>Journal, referee period, acceptance or rejection</td>
</tr>
<tr>
<td>[10]</td>
<td>(1) Referee experience</td>
</tr>
<tr>
<td></td>
<td>(2) Editor experience</td>
</tr>
</tbody>
</table>

Table 2  the number of papers published in the last three years

<table>
<thead>
<tr>
<th># of papers</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>24</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>7.9%</td>
<td>3.4%</td>
</tr>
<tr>
<td>1</td>
<td>28</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>9.2%</td>
<td>12.6%</td>
</tr>
<tr>
<td>2</td>
<td>41</td>
<td>122</td>
</tr>
<tr>
<td></td>
<td>13.5%</td>
<td>140.2%</td>
</tr>
<tr>
<td>3</td>
<td>69</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>22.8%</td>
<td>17.2%</td>
</tr>
<tr>
<td>4-6</td>
<td>85</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>28.1%</td>
<td>36.8%</td>
</tr>
<tr>
<td>7-9</td>
<td>31</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>10.2%</td>
<td>6.9%</td>
</tr>
<tr>
<td>over 10</td>
<td>18</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>5.9%</td>
<td>3.4%</td>
</tr>
<tr>
<td>NA</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>2.0%</td>
<td>5.7%</td>
</tr>
<tr>
<td>Total</td>
<td>302</td>
<td>87</td>
</tr>
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</table>

Table 3  Career levels

<table>
<thead>
<tr>
<th>Table 3</th>
<th>Career levels</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
</tr>
<tr>
<td>Postgraduate student</td>
<td>9</td>
</tr>
<tr>
<td>Research Associate</td>
<td>9</td>
</tr>
<tr>
<td>Senior Lecturer</td>
<td>26</td>
</tr>
<tr>
<td>Associate Professor</td>
<td>69</td>
</tr>
<tr>
<td>Professor</td>
<td>132</td>
</tr>
<tr>
<td>Professor Emeritus</td>
<td>32</td>
</tr>
<tr>
<td>Others</td>
<td>50</td>
</tr>
<tr>
<td>Total</td>
<td>327</td>
</tr>
</tbody>
</table>
Table 4  Correlation coefficient between research objective and receipt funding in the last 3 years

<table>
<thead>
<tr>
<th></th>
<th>Men p-value</th>
<th>Women p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discovering new knowledge</td>
<td>0.1657***</td>
<td>0.0360</td>
</tr>
<tr>
<td>Social contribution</td>
<td>0.0821</td>
<td>-0.0711</td>
</tr>
<tr>
<td>Presentation at a domestic conference</td>
<td>-0.0096</td>
<td>0.741</td>
</tr>
<tr>
<td>Presentation at an international conference</td>
<td>0.2723***</td>
<td>0.0557</td>
</tr>
<tr>
<td>Publishing in domestic academic journals</td>
<td>-0.0784</td>
<td>0.513</td>
</tr>
<tr>
<td>Publishing in international academic journals</td>
<td>0.3015***</td>
<td>0.1983*</td>
</tr>
<tr>
<td>Publishing a book</td>
<td>0.0420</td>
<td>0.0481</td>
</tr>
<tr>
<td>Taking a doctoral degree</td>
<td>-0.0362</td>
<td>-0.2061</td>
</tr>
<tr>
<td>Getting tenure</td>
<td>-0.1936***</td>
<td>0.001</td>
</tr>
<tr>
<td>Transferring to new institution/university</td>
<td>0.1016*</td>
<td>0.0257</td>
</tr>
<tr>
<td>Promotion</td>
<td>0.0261</td>
<td>0.1296</td>
</tr>
<tr>
<td>Nothing</td>
<td>-0.1021*</td>
<td>-0.1169</td>
</tr>
</tbody>
</table>

Note: *=10%, **=5%, ***=1% Significance level

Table 5  Correlation coefficient between information sources and receipt funding in the last 3 years

<table>
<thead>
<tr>
<th></th>
<th>Men p-value</th>
<th>Women p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting standards</td>
<td>-0.095</td>
<td>-0.089</td>
</tr>
<tr>
<td>Historical materials</td>
<td>-0.001</td>
<td>-0.091</td>
</tr>
<tr>
<td>Academic literature</td>
<td>-0.009</td>
<td>-0.162</td>
</tr>
<tr>
<td>Questionnaire</td>
<td>0.287***</td>
<td>0.144</td>
</tr>
<tr>
<td>Experimental result</td>
<td>0.014</td>
<td>0.044</td>
</tr>
<tr>
<td>Public information</td>
<td>0.101*</td>
<td>0.114</td>
</tr>
<tr>
<td>Interview</td>
<td>0.158***</td>
<td>0.160</td>
</tr>
<tr>
<td>Internal information</td>
<td>0.069</td>
<td>0.372</td>
</tr>
<tr>
<td>Others</td>
<td>-0.124</td>
<td>0.925</td>
</tr>
</tbody>
</table>

Note: *=10%, **=5%, ***=1% Significance level
Table 6 Experience of studying overseas

<table>
<thead>
<tr>
<th>Experience of studying overseas</th>
<th>Men</th>
<th>Women</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experience of studying overseas</td>
<td>135</td>
<td>41.7%</td>
<td>33</td>
</tr>
<tr>
<td>No experience of studying overseas</td>
<td>189</td>
<td>58.3%</td>
<td>58</td>
</tr>
<tr>
<td>Total</td>
<td>324</td>
<td>91</td>
<td>415</td>
</tr>
</tbody>
</table>

Table 7 First trip to study overseas

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obs.</td>
<td>129</td>
<td>32</td>
</tr>
<tr>
<td>Average</td>
<td>3.31</td>
<td>2.813</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>0.074</td>
<td>0.145</td>
</tr>
</tbody>
</table>

\[ t = 3.0227 \]
\[ p = 0.0029^{***} \]

\[ t = 3.3584 \]
\[ p = 0.0036^{***} \]

Note: *=10%, **=5%, ***=1% Significance level

REFERENCE

(6) Japan Accounting Association [1987] “Japan Accounting Association 50 year’s history.”


Abstract

The Alpha Conglomerate is one of the largest financial conglomerates of Brazil. For the purposes of this study, was awarded this fictitious name. In a financial conglomerate, must take into consideration the return and the risk of the amount invested in each company. The study in question deals with the analysis of the risk and return of the conglomerate Alpha, using the Data Envelopment Analysis (DEA) and the modern theory of Portfolio. It is expected that the capital is allocated in investments presenting greater ROI (return) to the lowest possible volatility (risk). Thus, in this study, the subsidiaries of the Group Alpha how to efficiently create value for investors, in the period of 2011 to 2015, with the lowest risk, using the DEA, considering the risk standard deviation and the risk Range as input variables, and the return on investment (ROI) as output variable. It was found that the company 2 was the most efficient in generating value for its investors in the analysis period, followed by the Company 11. On the other hand, the company 18 was the least efficient in the analysis period. To build the ranking, it has been estimated the border composed and standard composite border. The company 16 was considered a false efficient, when we analyze the companies across the border. Although this work has included only the phase of analysis and presentation of results, a deeper study might consider the feedback loop of the template and the inclusion of other variables, or association with other techniques able to promote the improvement of the results obtained.

Keywords: Risk versus Return. DEA Model. SIAD. Portfolio Theory. Markowitz.

1. Introduction

According to Bacen (2016), the Financial System has the important role of doing the brokering resources among economic agents and the resource deficit surplus, resulting in a growth of productive activity. Its stability is crucial to the safety of the relations between economic agents. This is evident when one observes that these agents relate to each other in their operations of purchase, sale and exchange of goods and services, so that with each economic fact, be it of simple movement, transformation or consumption, matches at least one monetary operation carried out by a financial intermediary, usually a commercial bank that receives a deposit, pays checks, cash a title or anticipates a future credit.
In the national financial System (SFN), financial conglomerates are formed by the entities entrusted with each financial institution holds in their conglomerates, be they subsidiaries or affiliates.

The Accounting Pronouncement Committee (CPC) in your standard CPC 36 (2012) pronounced that within the conglomerates, there is also the situation of jointly controlled entities, when two or more investors collectively control the onslaught when they act together to drive the relevant activities. In these cases, as no investor can direct the activities without the cooperation of others, no individual investor controls the onslaught. Every investor should account for your participation in charge according to the technical pronouncements, Guidance and Interpretations of the CPC.

Bacen Resolution 4,403/2015 dispenses with the preparation and submission of financial statements Consolidated economic-financial consolidated (Conef) by the Central Bank of Brazil. In this way, the financial statements of the subsidiaries are consolidated together, passing the treatment of equity investment.

In Brazil, the concepts of financial conglomerate and financial conglomerate defined the set of entities that should be considered by each financial institution, at the time of the definition of that capital requirements would be subject.

The index of Main Capital, Basel III, consists of shares and retained earnings and, in 2019, will reach the minimum requirement of 9.5% for the Alpha Conglomerate, according to Bacen (2016).

In your Financial stability report of September 2016, Bacen (2016) indicates that despite the break in the schedule for implementation of Basel III and the materialization of the scenario of falling profitability of the system, these movements were compensated by accommodation to the value of risk-adjusted assets, which led to the reduction of capital consumption and the balance of the statutory rates. The system generally demonstrates good margin to cope with the full implementation of Basel III, with less time off of public banks. This evidence, together with the analysis of metrics or not sensitive to risks, assessed aggregate or individual way, reinforce the message of solidity of the banking system.

However, these capital requirements impose financial conglomerates greater concern about the profitability and the risk involved in investing resources in their subsidiaries and affiliated companies.

To Assaf Neto (2014), to buy shares, investors apply your capital in the hope of receiving the greatest possible return on invested, which feature that imputes to the company invested the obligation to be effective to use the resources invested, the return to the investor and minimizing your risk.

Thus, Gitman (2004) argues that the goal of a company and all managers and employees is to maximize the wealth of the owners. Iudícibus (2010) makes a similar assertion: "the main task of financial management is to maximize the market value to the possessor of the actions and establish a flow of dividends pay'.
Of the claims of Gitman (2004) and Iudícibus (2010) it appears that investors set administrators of companies the role of minimizing the use of resources and to maximize the results in the form of profits and dividends.

Aligned to those claims, Sarkar (2005) ratifies the understanding of investors to delegate the management of business administrators. However it is necessary to analyze the work of the administrators in the management of these businesses, with regard to the expectations of profit, security, and continuity of the Organization's image.

Data Envelopment Analysis (Data Envelopment Analysis - DEA) is a multivariate method for evaluation of performance of individuals or units, providing quantitative inputs in the decision-making process for the improvement of the status quo of inefficient units. DEA defines the efficiency curve (or maximized productivity), whereas the best relationship between an input and your product.

Originally proposed by Charnes, Cooper & Rhodes (1978), Data Envelopment Analysis DEA or data envelopment analysis, as it is called in Brazil, is a technique of measuring performance that has as main objective to determine the relative efficiency of production units, considering your proximity to an efficient frontier. Through the application of a linear programming model, this methodology allows the comparison of the efficiency of various decision-makers similar units (DMU- Decision Making Units), making the stay decision driven by a single indicator, constructed from several different performance approaches.

The efficient frontier comes from studies of Markowitz (1952) about the relationship between return, risk and asset correlation. Markowitz (1952) proposed the use of a model of optimization of risk and return in portfolio selection. Markowitz noted that each investment has a particular risk and expected return. However, if we add several investments in a portfolio, the risk and expected return, acting together, can prove more efficient than in an isolated investment. Thus, the overall risk of a portfolio of investments is more important than the individual risk of each investment.

There are previous published studies on the same theme, such as Neves Júnior et al. (2012), Soares de Mello (2003), Lee (2010), Bach (2015) and Mann (2014). However, they do not address the economic and financial conglomerates or, if the address, predate the Bacen Resolution No. 4,403/2015, which repealed Art. Resolution No. 3/2000, 2,723 and directs the accounting treatment of the companies controlled by equity method. It is expected to contribute to the evaluation method that should be taken into consideration by the Alpha Conglomerate for investments in its subsidiaries and affiliates.

Neves Júnior et al. (2012) studied the efficient frontier of the largest companies in the telecommunications industry. Therefore, a different sector of the proposed in this study. Soares de Mello (2003) used the DEA method for evaluating the efficiency of Brazilian Airlines in the years 1998, 1999 and 2000. Also, a different sector of the study this article. Lee (2010) applied the Markowitz optimization model for portfolio selection, through the DEA model, and compared your efficiency with the Ibovespa index portfolio for the period 2006 to 2008. Bach (2015) investigated the relationship between efficiency, diversified portfolio risk and return, in the Brazilian stock market. Although using DEA model, your analysis occurred with greater predominance of companies linked to construction, food and beverages, steel and metallurgy, textile and transport and services. Medeiros (2014) analyzed the efficiency on return from 306
in the Brazilian market shares between 2001 and 2013, from portfolio theory of Markowitz and the use of the method of parametric optimization of portfolio.

Thus, for the originality of this study, it is proposed to analyze the efficiency in the generation of return to shareholders of the subsidiaries of the Group Alpha Bank between 2011 and 2015, through the data envelopment analysis and modern Portfolio theory. The Alpha Bank is one of the largest Brazilian banks that, for the purposes of this study, it was assigned cover name.

The point of this research can be outlined by the proposition: what reveals the efficiency analysis of Alpha Bank Conglomerate, from the use of the efficient frontier and Markowitz portfolio theory?

The main objective, proposed to highlight the companies consolidated in the financial statements, that is, only the subsidiaries of the financial conglomerate, tracing the efficient frontier by the method of Data Envelopment Analysis (DEA) and the concepts of the Hyperbola of Markowitz (1952).

The Alpha Bank has several companies in your conglomerate. Whereas only has interference on that controls alone, the analysis is performed in subsidiaries as defined in CPC 36 and its assumption that the economic-financial Conglomerate companies Alpha work on the border of the Hyperbola of Markowitz, raising the most return to less risk exposure.

The analysis of efficiency of financial conglomerates is an important issue, given the importance of this sector in intermediating financial resources. In a financial conglomerate, to your corporate setting, with the allocated capital in companies of the conglomerate, should take into consideration the return and the risk of the amount invested in each company. The capital must be allocated in investments presenting greater ROI (return) to the lowest possible volatility (risk).

The differential of this study is the analysis of Alpha Conglomerate after Bacen Resolution No. 4,403/2015, which withdrew the subsidiaries together the economic financial conglomerate used for consolidation of the results of the conglomerate.

2. Theoretical

The financial market in Brazil is organized by SFN, being governed mainly by laws: 4,595/64 – Brazilian Bank Reform Law, Law 65/4,728-Law, capital market Law 6,385/76 – creation of Law 6,404/76 and CVM – Brazilian Corporation law, in addition to complementary laws (LEE et al. 2011).

According to Assaf Neto (2014), the SFN can be understood as a set of financial institutions and financial instruments aimed at ultimately transfers of resources between surplus and deficit ones. Thus, financial institutions must lead to the achievement of the flows of funds between borrowers and savers of resources in the economy.

According to the 1.32.1.1-Cosif, financial institutions authorized to operate by the Central Bank shall prepare its financial statements in a consolidated manner, including stakes in companies located in the country and abroad in which they hold, directly or indirectly, in
isolation or in conjunction with other partners, including on the basis of the existence of voting agreements, membership rights that they ensure, individually or cumulatively (Bacen Resolution nº 2,723/2000).

Later, Bacen resolution No. 4,403/2015 revoked part of Bacen Resolution nº 2,723/2000 and dispensed the preparation and shipment of consolidated financial statements of the subsidiaries together.

As defined in accounting standard no. 36 of the Accounting Pronouncement CPC 36 (2012), the Investor controls the onslaught when you're exposed to, or has rights over, variable returns arising from your involvement with the onslaught and has the ability to affect those returns through your power over the onslaught.

In Brazil, the concepts of financial conglomerate and financial conglomerate defined the universe of entities that should be considered by each financial institution, at the time of the definition of that capital requirements would be subject. The first concept, more narrowly defines financial conglomerate as "the set of financial entities are linked, directly or not, by ownership or operational control, characterized by common management or administration, or for acting in the market under the same brand or trade name"; the concept of financial conglomerate, for your time, covered a wider universe of entities. (ANBIMA, 2013).

In recent years, the Brazilian financial system has the fitness for Basel III as one of its main concerns, because it determines a new structure of regulatory capital levels, with minimum required capital indices (main, level I and heritage) and schedule until 2019 for their effects.

The communication Bacen 20,615/2011 publish preliminary guidelines and schedule concerning the implementation, in Brazil, of the recommendations of the Basel Committee for Bank Supervision, about capital structure and liquidity requirements, known as Basel III.

Modern portfolio theory explains about optimization, from the diversification of investment portfolios by rational investors. The first study on the optimization of portfolios proposed by Markowitz (1952).

Great contribution was made by Markowitz (1952) and Sharpe (1964) in investment portfolios (Portfolio Theory), for which the statistical data medium with diversification of historical series favored increasing the return and risk reduction.

To Markowitz (1952), the choice of a portfolio takes place in two steps. First, there is an analysis and experiment to the expectation of the future performance of investments that make up the portfolio. The second begins in expectation of future performance of investments and ends with the choice of portfolio. Portfolio theory of Markowitz (1952) has as its premise the choice of investments for optimization is done by observing the relationship between risk and return on assets. Portfolio optimization methodologies have been created and enhanced to cooperate with these procedures. To be effective, these methodologies should be able to quantify the risks and returns of investments.

The risk of the portfolio reflects the volatility of each asset, their weights in the portfolio and, mainly, the covariance between these investments, i.e. how relate to each other. So, it should be noted that the diversification of investments cannot be made at random, but noting the correlation between assets to find out the best composition and weight of each.
Charnes, Cooper and Rhodes (1978) developed the method of DEA (Data Envelopment Analysis), in Portuguese Data Envelopment Analysis, based on studies of efficiency made by Debreu (1951), Koopmans (1951) and Farrell (1957), for the calculation of the relative efficiency of decision-makers units, called DMU (Decision Making Units) with multiple inputs (inputs) and products (outputs).

This function of linear analysis was defined by Charnes, Cooper and Rhodes (1978) as inter-envelope, which wraps the other functions of the analysis. Giving the name Data Envelopment Analysis (DEA).

For Ferreira and Garrido (2009), the DEA looks at each of the comments, in an attempt to form the efficient frontier (Figure 1), forming a curve composed only of DMU efficient, enveloping the area of inefficiency, where are the inefficient units.

![Figure 1 – Efficient Frontier](image)

Source: own Elaboration

The measurement of the efficient frontier is made from a mathematical programming, in order to calculate the efficiency using the distance between each of the DMU and the border drawn as efficient. This distance between the DMU and border line is understood as the efficiency be achieved, showing thus the goal that every company needs to achieve to achieve your inefficient their reference in efficient frontier (FERREIRA; GARCIA, 2009).

There are two main methods to use DEA model: CCR (initials of its authors Charnes, Cooper and Rhodes, which the proposed in 1978) which implies that the units investigated have constant returns to scale, so also known as CRS (Constant Returns to Scale); and the BCC model, proposed by Banker, Charnes and Cooper in 1984, which implies that the units studied present scale variables returns, being also known as VRS (Variable Returns to Scale).

For Neves Júnior et al. (2010), the formulation of the BCC model prevails, that the increase in one unit of input can generate a non-proportional increase in the volume of products, allowing you to identify a difference between technical efficiency and efficiency of scale, that is, that the units in question have variable returns to scale.

The border flipped the outputs as inputs and inputs as outputs, reversing a preliminary analysis. This new analysis allows two thoughts: the first is that the border consists of the DMU more inefficient, i.e. with the worst managerial practices (and could be called the inefficient border); the second, that those same DMU have best practices considering the opposite point of view, that is, do the best to be inefficient (SOARES DE MELLO et al., 2003).

According to Soares de Mello et al. (2003), the use of inverted border improves analysis of the problem, since it assesses what the DMU are inefficient, that is, the DMU must focus on that has excellence and should not have a poor performance in other tasks. The identification of DMU perceived as false efficient is possible by reverse border, since the DMU considered efficient across the border pattern can be discovered as inefficient by inverted border, featuring a false efficiency.

Figure 2 shows the two borders, the classic and the reversed, to the DEA model BCC.

Figure 2 – efficient frontier and reversed

Source: own Elaboration

Requires a low degree of adherence to the pessimistic border and high degree of grip compared to the border optimistic for a DMU possess high efficiency. So, all variables in the final index. Not just the DMU have good performance at its best, she can't have a poor performance on the criterion that is worse. This is achieved without any subjective weight assignment to any criterion. (SOARES DE MELLO et al., 2003).

In this sense, it is estimated the efficiency standard composite, unique to each company, a way to calculate and show a ranking of efficiency, as Angle-Meza et al. (2005).

Composite efficiency is the result of the analysis of the DMU by the border pattern and inverted. According to Angulo-Meza et al. (2005), the result is obtained by the arithmetic mean between standard efficiency and the value obtained by subtracting the inverted efficiency for unity, according to the following formula:

\[
\text{Composite efficiency} = \text{Standard Efficiency} + \frac{(1 – \text{Reverse Efficiency})}{2} \quad \ldots \quad (1)
\]

According to Angulo-Meza et al. (2005), standard composite efficiency is obtained by dividing the value of the composite efficiency the highest value among all the composite efficiency values, according to the following formula:
Standard Composite Efficiency = Effectiveness/Max Composite (Composite Efficiency). \( \text{(2)} \)

With respect to the use of software to calculate the efficient frontier, Fernandez (2009) lists, in your book, a list of the main software available on the market to run DEA models. Among these software is the Integrated decision support System (SIAD), free software that, according to Angulo Meza (2005), was developed mainly to solve linear programming problems of data envelopment analysis. According to this same author, SIAD is able to handle 150 DMU, 20 variables (inputs or outputs), works with an accuracy of six decimal places and provides as standard efficiency borders results, reversed, composed and composed, in addition to the standard results of improvement goals.

3. Methodology

The research methodology the methodological framework of the study understood, an indication of the conglomerate, the parsed data collection, indicators of risk and return used in research, the model of data envelopment analysis (DEA) and the procedures used in the study.

3.1. Search Classification

The methodological framework of this research was done about your purpose and means of investigation.

With respect to your purpose, this study is classified as descriptive and, once described the characteristics of the cases analyzed with the use of methods of treatment and analysis of the data. In relation to the means of investigation, this documentary and bibliographical research, by collecting data base provided by the company analyzed and references used (VERGARA, 2000).

On the approach of research, this study is positive in nature, as it aims to study the data and establish relations between them, from the application of statistical techniques (MALIK and THEOPHILO, 2009).

3.2. Company parsed and data acquisition

This study was applied in conglomerate of a Brazilian financial institution that called Alpha Conglomerate.

The Alpha Conglomerate is one of the largest financial conglomerates of Brazil and, for the purposes of this study, was awarded this fictitious name.

The Alpha Conglomerate has 21 subsidiaries, whose names will be replaced by companies 1 to 21.

To maintain the confidentiality of the information of the Alpha Bank conglomerate, the numbers of the database will be multiplied by a factor multiplier.
It is important to note the difference of this study regarding the analysis of Alpha Conglomerate, after the Central Bank Resolution No. 4,403/2015, which withdrew the subsidiaries together the economic financial conglomerate used for consolidation of the results of the conglomerate.

The data were extracted from the consolidated financial statements – balance sheet, statement of income and value added statement – obtained through database provided by Alpha Bank, in the period from 2011 to 2015.

3.3. Return and risk indicators used in the survey

The choice of indexes of efficiency analysis on generation of shareholder return used for the development of this research was preceded by identification of published studies that cover these indicators. As results of this survey, it was evidenced that the indexes used to parse the return to shareholders, according to Braga (1989), Malik and Assaf Neto (1996), Pereira da Silva (1997), (2000) and Iudícibus Matarazzo (2010), and confirmed by Krauter (2006), in research conducted with 800 industrial companies of medium and large companies from various areas of the State of São Paulo, were the following:

(a) ROI—return on investment: is the quotient between profit and investment.
(b) ROA — return on Assets: is the quotient between the operating profit and total assets.
   Shows how administrators are using the assets.
(c) ROE—return on Equity: is the quotient between the net profit and net equity. Measures the return on the resources invested by the owners.
(d) RONA – return on liquid assets: is the relationship between the net operating profit after taxes (NOPAT) and the total assets.
(e) LPA-earnings per share: is the relationship between the net income and the number of shares of the company.
(f) Price/profit: is the ratio between the market price of the share and the earnings per share.

Thus, defined as return indicator the ROI (return on investment) of the subsidiaries, which is the ratio between profit and investment. The ROI was chosen for being a return expressed as a percentage, allowing for comparability between companies with different magnitudes of investments and financial returns within the same conglomerate.

Like Risk, the variability of returns, being calculated by the standard deviation and range, which are statistical measures. The calculation of the risk by the standard deviation will be made by the historical series of returns (ROI), using the following formula:

\[ \sigma_k = \sqrt{\frac{\sum (K_j - \bar{K})^2}{n - 1}} \] ...... (3)

Being: \(K_j\) = known returns; \(n\) = number of returns known; \(\bar{K}\) = average of returns verified.

The calculation of the risk by the range used in this study is the difference between the smallest and largest value of series of returns.

3.4. DEA Model and the variables used in the research
From the precepts submitted to DEA models, set the BCC output oriented model for application in this study. The justification of this choice is due to the fact that the units assessed, in this work, feature scale variables returns.

In this sense, the application of DEA model in this research, aims to answer the following question: "given the level of inputs used, what the highest level of outputs which can achieve the level of inputs constant?"

The definition of variables to compose the model was also made following the concepts and the recommendations in the review of literature, in which sets the return (ROI) to the shareholder is the ratio between profit and investment.

Made the definition of DMU, DEA model and the variables, the data base to be used for the operationalization of the DEA.

The analysis was made with the use of Microsoft Excel ® software for tabulation and organization of data and software SIAD, to run the DEA proposed model, establish the efficient frontier, build the relative efficiency ranking companies and identify improvement goals for inefficient companies.

In table 1, the database with the DMU and 21 output variables (average return) and inputs (Standard Deviation Risk and Risk Magnitude).

<table>
<thead>
<tr>
<th>Companhia</th>
<th>Retorno Médio (ROI)</th>
<th>Risco (Desvio Padrão)</th>
<th>Risco (Amplitude)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Companhia 1</td>
<td>0,0094</td>
<td>0,0157</td>
<td>0,0743</td>
</tr>
<tr>
<td>Companhia 2</td>
<td>0,0150</td>
<td>0,0086</td>
<td>0,0394</td>
</tr>
<tr>
<td>Companhia 3</td>
<td>-0,0046</td>
<td>0,0304</td>
<td>0,1391</td>
</tr>
<tr>
<td>Companhia 4</td>
<td>-0,0226</td>
<td>0,0739</td>
<td>0,3144</td>
</tr>
<tr>
<td>Companhia 5</td>
<td>0,0633</td>
<td>0,0535</td>
<td>0,2038</td>
</tr>
<tr>
<td>Companhia 6</td>
<td>0,0560</td>
<td>0,2333</td>
<td>1,1503</td>
</tr>
<tr>
<td>Companhia 7</td>
<td>-0,0350</td>
<td>0,1905</td>
<td>0,9478</td>
</tr>
<tr>
<td>Companhia 8</td>
<td>0,0054</td>
<td>0,0185</td>
<td>0,0952</td>
</tr>
<tr>
<td>Companhia 9</td>
<td>0,0348</td>
<td>0,1256</td>
<td>0,5679</td>
</tr>
<tr>
<td>Companhia 10</td>
<td>-0,0081</td>
<td>0,0659</td>
<td>0,2386</td>
</tr>
<tr>
<td>Companhia 11</td>
<td>0,1191</td>
<td>0,0298</td>
<td>0,1039</td>
</tr>
<tr>
<td>Companhia 12</td>
<td>1,3107</td>
<td>0,2085</td>
<td>0,8425</td>
</tr>
<tr>
<td>Companhia 13</td>
<td>0,1346</td>
<td>0,0554</td>
<td>0,1983</td>
</tr>
<tr>
<td>Companhia 14</td>
<td>0,0909</td>
<td>0,0375</td>
<td>0,1047</td>
</tr>
<tr>
<td>Companhia 15</td>
<td>5,8844</td>
<td>2,0124</td>
<td>8,0257</td>
</tr>
<tr>
<td>Companhia 16</td>
<td>6,1323</td>
<td>4,0552</td>
<td>10,9679</td>
</tr>
<tr>
<td>Companhia 17</td>
<td>0,1918</td>
<td>0,1098</td>
<td>0,5176</td>
</tr>
<tr>
<td>Companhia 18</td>
<td>0,0583</td>
<td>0,3727</td>
<td>2,0029</td>
</tr>
<tr>
<td>Companhia 19</td>
<td>1,6047</td>
<td>3,5365</td>
<td>14,0065</td>
</tr>
<tr>
<td>Companhia 20</td>
<td>0,3638</td>
<td>0,1615</td>
<td>0,5049</td>
</tr>
<tr>
<td>Companhia 21</td>
<td>0,0331</td>
<td>0,0636</td>
<td>0,2790</td>
</tr>
</tbody>
</table>

Source: own Elaboration

As the steps were outlined the following procedures: (I) the definition of the sector and the efficiency indicator to be parsed, as well as the identification of the population and sample; Therefore, the delimitation of the study; (II) collection of data on the basis of being provided by Alpha Bank; (III) the completion of the treatment and the Organization of collected data in
worksheets in Microsoft Excel ® software. Later, applies to correlation analysis to verify the degree of relationship between the inputs and outputs. Then, it is concluded that analyzing the variables, step through the DEA model-BCC, SIAD software; (IV) presentation of the results with the construction of the ranking of the degree of efficiency of companies, the histogram of the efficient and inefficient companies and proposal of improvement for the inefficient achieve efficiency, concluding with the final considerations.

4. Analysis of the results

Using the program as previously described methodology SIAD, the DEA/BCC method to output the table data base 1. The results obtained are shown in the following tables.

In table 2, are shown the information of 21 DMU, after examining the period from 2011 to 2015, containing the default borders efficiency scores, reversed, composed and standard composite, respectively.

<table>
<thead>
<tr>
<th>DMU</th>
<th>Padrão</th>
<th>Invertida</th>
<th>Composta</th>
<th>Composta*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Companhia 1</td>
<td>0,5478</td>
<td>0,0714</td>
<td>0,7382</td>
<td>0,7518</td>
</tr>
<tr>
<td>Companhia 2</td>
<td>1,0000</td>
<td>0,0362</td>
<td>0,9819</td>
<td>1,0000</td>
</tr>
<tr>
<td>Companhia 3</td>
<td>0,2832</td>
<td>0,1596</td>
<td>0,5618</td>
<td>0,5722</td>
</tr>
<tr>
<td>Companhia 4</td>
<td>0,1253</td>
<td>0,3879</td>
<td>0,3687</td>
<td>0,3755</td>
</tr>
<tr>
<td>Companhia 5</td>
<td>0,3402</td>
<td>0,1397</td>
<td>0,6002</td>
<td>0,6113</td>
</tr>
<tr>
<td>Companhia 6</td>
<td>0,0640</td>
<td>0,6383</td>
<td>0,2128</td>
<td>0,2168</td>
</tr>
<tr>
<td>Companhia 7</td>
<td>0,0451</td>
<td>1,0000</td>
<td>0,0226</td>
<td>0,0230</td>
</tr>
<tr>
<td>Companhia 8</td>
<td>0,4649</td>
<td>0,0911</td>
<td>0,6869</td>
<td>0,6996</td>
</tr>
<tr>
<td>Companhia 9</td>
<td>0,0928</td>
<td>0,4197</td>
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<td>0,3428</td>
</tr>
<tr>
<td>Companhia 10</td>
<td>0,1651</td>
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</tr>
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<td>Companhia 11</td>
<td>1,0000</td>
<td>0,0599</td>
<td>0,9700</td>
<td>0,9879</td>
</tr>
<tr>
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<td>0,9641</td>
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<tr>
<td>Companhia 13</td>
<td>0,5724</td>
<td>0,1048</td>
<td>0,7338</td>
<td>0,7474</td>
</tr>
<tr>
<td>Companhia 14</td>
<td>0,8255</td>
<td>0,0853</td>
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</tr>
<tr>
<td>Companhia 15</td>
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<td>0,5730</td>
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<tr>
<td>Companhia 16</td>
<td>1,0000</td>
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<td>0,5000</td>
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<tr>
<td>Companhia 17</td>
<td>0,3267</td>
<td>0,1703</td>
<td>0,5782</td>
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<tr>
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<tr>
<td>Companhia 21</td>
<td>0,1814</td>
<td>0,2164</td>
<td>0,4825</td>
<td>0,4914</td>
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</tbody>
</table>

Source: own Elaboration

From the indexes of efficiency, shown in the column of the default border, 2 companies, 11, 12, 15 and 16 make up the efficient frontier in return to Alpha Bank Conglomerate.

These results identify companies that presented from the perspective of efficient performance optimization – lower volatility (risk) with the maximum return (ROI) for the conglomerate.
To build the efficiency ranking, which is one of the objectives of this study, the default border would not be enough to identify what the most efficient company in the conglomerate Alpha, and nor would it be possible to make a playoff of the considered efficient. In this way, the exposed in the theoretical foundation that it may become a problem when you want to make a decision about the best investment option between efficient companies.

As specified in the description of the methodology, for this question uses inverted border that, as Soares de Mello (2005), it is proposed to identify companies which, initially, are presented as efficient, yet can represent a false efficiency.

So, with the application of reverse border, discriminates against the efficiency because all companies efficient, default, if they were not false, proved inefficient, efficient in inverted and border less efficient companies would pass by more efficient, the new frontier.

Were it not for the fact some DMU efficient, the first border, also, be considered efficient in the second border, the tie-breaker of the companies considered more efficient, by default border, could be done by DEA model specific to the DMU in the area of inefficiency. A company that was effective on the border pattern, i.e., very good in managing their results and risks, but was also considered very good to be inefficient when applied to reverse border, is taken as a false efficient. This was the case with the Company 16, confirming the theoretical foundation of DEA model on the occurrence of DMU with "efficiencies" at the border.

So, the boundaries were calculated comprised and standard for the construction of the composite ranking, the results presented in table 2.

Company 2, based in the rankings, was the more efficient in aggregate to the shareholders, in eight quarters examined, followed by Company 11, which occupies the second position with 98.79% degree of efficiency. On the other hand, the company 18 was the least efficient in the analysis period.

These results will meet the considerations of Assaf Neto (2014), as the identification of the company more efficient can favor the investor decision-making in the selection of your portfolio to the aggregate value, in search of the best alternative resource allocation, since the competitive market recognizes efficient companies.
These results – about the perspective of the concept of efficiency – confirm the affirmative of Hendriksen et al. (1999) that defines the efficiency in the use of capital from shareholders in order to obtain the maximum results with minimal resources.

5. Final considerations

According to Bacen (2016), the Financial System just assumes the role of financier of consumption and investment, should there be security for savers, strengthening economic and financial conglomerates and freedom to be created innovations of products and services. The healthy development of financial intermediation is a necessary condition for economic stabilization to be consolidated, as well as to create essential requirements to the resumption of economic activity, sustainable way.

Within the financial system, the Brazilian banking market is concentrated in the main economic and financial conglomerates, a reflection of the recent mergers, mergers and acquisitions in the 21st century. In this scenario, you will find the Alpha Conglomerate and your obligation to monetize its shareholders with the lower volatility and breadth.

The efficiency of the subsidiaries of the Group Alpha in adding value to the stockholder in the period from 2011 to 2015, with the lowest risk, was analyzed in this work, using the DEA, 

<table>
<thead>
<tr>
<th>DMU</th>
<th>Eficiência Normalizada</th>
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<tbody>
<tr>
<td>Companhia 02</td>
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<td>Companhia 07</td>
<td>0,0230</td>
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<tr>
<td>Companhia 18</td>
<td>0,0209</td>
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</tbody>
</table>

Source: own Elaboration
considering the risk standard deviation and Range, as input variables, and the return on investment (ROI), as output variable.

The use of the border flipped to discriminate the DMU and separate them from false efficiency, as described in the theoretical framework of DEA method, managed to succeed against the conditions of the study. Through the inverted border, it was possible to identify the company 16 to false efficient when presented to be effective in the inverted curve, i.e., proved to be one of the best being inefficient, contradicting the information from efficient frontier, it was an efficient company in generating good returns with low risk.

The analyses in this study, as well as its results, were able to respond to hypotheses and purposes of this article. Showed the efficient frontier, identified the false efficiency, across the border inverted; classified businesses more efficient, through the normal boundaries and composed, and built a conglomerate's companies Alpha, in the period from 2011 to 2015.

The great merit of this study was the identification of the company 2 as the most effective in adding value for the Alpha, considering your risk Conglomerate, and the company 18 less efficient within the Group of subsidiaries of the Group Alpha. However, it is not possible to extrapolate the conclusions due to the limitations of the analysis. The results of efficiency calculated by DEA were related to the DMU set, to the input and outputs considered and the model used so any amendment to this set, any removal or addition of variables or change of model can interfere in the result.

To highlight the efficiency or inefficiency of the subsidiaries of the Group Alpha in adding value to investors, enabling greater return to lower risk, this study can bring a contribution both to current investors or future Alpha, for the conglomerate's subsidiaries. To shareholders, because the results evidenced will be of great service and help to decide on allocating/continue allocating resources or not in a particular company of the conglomerate, given the efficiency of each history; the subsidiaries, especially the inefficient, because knowing the distance of your degree of efficiency for all analyzed can be used as an indicator for realignment of investment strategies and implementation of shareholder capital, in order to maximize return.

A new study may be done with the inclusion of more variables in the model, or even using new methods able to promote the improvement of the results obtained.

Thus, it is suggested, for possible future work, re-evaluate the companies using a longer data series and the adoption of other variables that complement those used in this study, as the index of efficiency of companies. The use of a longer series, combined with correlation analysis of variables, would check the factors that contributed to the increase in efficiency in the best ranking companies.
REFERENCES


VIRTUAL ENTERPRISE BUSINESS MODELS.
RESEARCH PROJECT. PRELIMINARY ASSUMPTIONS

Irena Hejduk
Institute of Information Systems and Digital Economy

Anna Karmańska,
Institute of Accounting

Ryszard Bartkowiak
Institute of Political Economy, Law and Economic Policy

Sylwester Gregorczyk
Institute of Management

Piotr Wachowiak
Institute of Management

Warsaw School of Economics (SGH)

Abstract

The present study is an element of the conducted research factually justified by the dynamic changes in the business pursuit environment and related to the necessity for the verification of performance measures commonly applied in practice. The authors put the title problem within the trend of research on three issues: business models, information system assisted corporate management and performance measurement systems. The major reason behind the research is the curiosity – in view of the universal virtualisation of human activities, including business activities – about how topical are the findings made 10 years by K.M.Gupta and A.Gunansekaran and published in: Costing in new enterprise environment. A challenge for managerial accounting researchers and practitioners [Gupta, Gunansekaran, 2005].

This text presents the research results of the business models characteristic of virtual organisations. Taking into account a specific character of the virtual enterprise, at this stage of research, two theses have been put forward:

[T1] – virtual enterprise managers have to acquire an ability to apply a business model to competitive struggle and to work out mechanisms to efficiently modify a business model, which is a prerequisite of this advantage and

[T2] – a virtual organisation business model is to be perceived as a process because it is characterised by an extreme agility, which gives rise to a necessity for permanent monitoring of its ability to adjust to the environmental changes.

Because of this, the authors present the general principles of the creation and evaluation of a virtual enterprise business model which is to guarantee it a permanent competitive advantage. The presented model needs to be more precisely specified, especially in the area of detailed operationalisation of the model elements. The procedure of corporate business model creation is based on G. Nadler's concept of the design and improvement of operational systems (IDEALS – Ideal Design of Effective and Logical System) [Nadler, 1967]. The authors emphasize that the complete base of parameters of a business model needs to be carefully described with a number of criteria and control lists, which will allow for the evaluation of the strategic value of the business model elements and the indication of mutual relations. Moreover, the authors propose a concept of evaluation of the change process management in the virtual organisation business model.

KEYWORDS: performance measurement systems, virtual enterprise, business model, managerial accounting
1. INTRODUCTION

The title problem is an element of a concept of research undertaken by the authors due to the dynamic changes in the business pursuit environment. As the changes occur on many planes at the same time, follow the idea of sustainable development and corporate social responsibility and have a profound impact on the model on the business pursuit, it has been assumed that they may lead to a necessity for a thorough verification of business performance measurement systems. It is this intuitive supposition as well as curiosity that constitute a starting point for methodical studying of questions which determine the business performance measurement systems.

It has been assumed that because changes affect business from many perspectives, creating the so-called new enterprise environment, the research of the need for verification of well-known and appreciated performance measurement systems and a possible creation of a concept of business measurement specific to virtual organisations, require a methodical approach and interdisciplinary research competences.

The research has been undertaken as it is related to a current significant issue in the management of business entities. It refers to value creation and cost management, which are presently the key determinants of a business financial success.

The holistic analytical context for the researcher is determined by the aforementioned term new enterprise environment.

With regard to the decade of 2006-2016 the characteristics of new enterprise environment may be most accurately summarised by the terms cyberspace and digitalisation. They suggest a connotation with a virtual enterprise i.e. the one operating and achieving success or ending in failure in the virtual space as well as with an enterprise which, though operating in the real space, makes use of the virtual space in order to communicate with customers and contractors or to manage the repositories of different databases.

The virtual environment, thanks to the enormous IT capacity, accelerates business activity, supports cost optimisation of many processes and favours the rationalisation of corporate potential use. It creates opportunities to implement extremely sophisticated business concepts, so far unimaginable, giving rise to the generation of extraordinary benefits at decisively lower costs.

Simultaneously, the cyberspace and digitalisation create conditions for criminal abuse of virtual space resources, which is connected with the specific risk factors related to this space. They require new, often technically refined and expensive risk management methods and instruments, or sometimes on the contrary very simple ones (usually being socially unaware yet).

The range of the problems referring to the performance at the time of universal digitalisation and advancing IT technologies is comprehensive and includes the question about the direction of changes in business pursuit or in management style, and consequently changes in financial as well as managerial accounting. A virtual enterprise embodies the consequences of these changes.
changes. It may be observed that the virtual space allows for business initiatives inaccessible or hardly accessible in the real space, giving birth to the relationships between the company on the one hand and customers, other companies, fiscal institutions or institutions particularly important in business turnover on the other.

A virtual enterprise, which the title problem refers to, is an „ad hoc alliance of independent experts (consultants, designers, developers, producers, suppliers, etc.) who get together to pursue a particular business opportunity. Virtual enterprises have little or no physical presence or infrastructure, they rely heavily on telecommunications and networks such as internet, and usually disband when their purpose is fulfilled or the opportunity passes. Agile, flexible, and fluid, they are extremely focused and goal driven, and succeed on the basis of little investment requirements, low startup and overhead costs, and fast response time. Geographically dispersed members of a virtual enterprise collaborate on the basis of their core strengths from wherever they are and whenever they are able to do so, and may become competitors in pursuit of another opportunity.” [www].

Bearing in mind a specific character of virtual enterprise, we formulate a major thesis [T0] saying that the verification of current business pursuit cost measurement models and, consequently, the performance measurement is indispensable in the contemporary managerial accounting, posing a great challenge at the same time. It requires developing new concepts of performance and cost measurements, in particular those which require pursuing the managerial imperative of value creation, which is a key to success of virtual enterprises.

There are four research analytical steps to confirm the thesis:

[S1] A comparative study of features of traditional and virtual enterprises, the idea of which is depicted accurately (and concisely too) in the statement: “A satirical abstract model of a 21st century enterprise envisages only two employees, a person and his/her dog. The man will be there to feed the dog. The dog will be there to keep the man from touching the equipment.” [Hotler, 2002]. This step will allow for the identification of the areas of difference requiring a new approach with regard to the performance measurements, which are the research axis. This step is conducted on account of economic and at the same time global changes, important for the development of the business pursuit environment.

[S2] The indication of the "milestones" in the development of the cost and performance measurement concept and the creation of the image of change determining factors. This step is to identify the events or business situations which changed the business pursuit face significantly enough to necessitate the introduction of new performance measurements. The review of these measures, in relation to the factors causing their evolution, will allow for a critical analysis of their usefulness with regard to virtual enterprises.

[S3] Change tracking – on the time axis – in the functions performed in practice by the system of managerial accounting. What is being observed is a shift in the status of managerial accounting as an information system performing management supportive functions towards a system aimed at the active participation (even partnership is mentioned) in a decision making process. The review will allow for finding the way in which the participation of the management accounting system in decision making may be implemented.
[S4] A thorough examination of the issue of value creation in business pursuit. A proposal of performance measurements in the conditions of the value creation imperative, which is an ultimate goal of the presented research concept, requires a prior review of solutions and instruments aimed at value creation as well as the monitoring of their application effectiveness.

[S5] Undertaking conceptual work to present a proposal of performance and cost measurements specific to virtual enterprises. One may expect the development of the measurement conceptual framework and proposals of approaches/methods/measures adequate for virtual enterprises.

The research makes use of the following research methods: literature study, critical comparative analysis, selected environmental interviews or conceptual projects. The aforementioned research steps required creating a research team with interdisciplinary competences. It is absolutely necessary to thoroughly analyse the changes (their determinants and consequences) in the global environment, important nowadays in human business activity. It may allow for the extrapolation of further directions of transformations in the environment of human business activity.

Moreover, it is important to diagnose the ways of pursuing business and appropriate styles, which are observed at present, including the focus on the specific character of virtual enterprises.

It was assumed that this kind of research is important to design a performance measurement system of a virtual enterprise. It will allow for the mapping of connections between formerly established:

a) features of the present business environment, saturated with digitalisation and need for personification,

b) features of virtual enterprises and business models embodying a new way of value creation in business,

c) functions of management accounting,

thanks to which it is possible to verify the appropriateness of concepts of performance and cost measurement and – possibly – to present a new proposal dedicated to the virtual enterprise.

The research is meant to be a workshop study of a conceptual dimension. It is assumed that it will be possible to present a proposal of performance measurement for virtual enterprises. Its empirical verification, despite the virtual character of organisations to which it will refer, seems to be real.

The present text does not reveal the results of the whole research as it is being conducted at present. The authors synthetically present the analytical findings formulated within the identification of changes in the global environment, important for human business activity, business models and virtual organisations.

Bearing in mind a specific character of virtual enterprise, at this stage of research, the formulated theses are to announce another research step to be made by the authors, i.e. diagnosing (in the course of empirical research and in the context of authors' designed business model criteria) business models used in virtual organisations, operating in business in real terms.

The first thesis refers to the functioning in the new enterprise environment:
[T1] – virtual enterprise managers have to acquire an ability to use the business model for competitive fight and to work out mechanisms efficiently modifying the business model, which the prerequisite for the competitive advantage.

The second thesis refers to the virtual enterprise and its business model and has been formulated as follows:

[T2] – a virtual organisation business model should be perceived as a process as it is characterised by an extraordinary agility, which gives rise to the necessity for permanent monitoring of its ability to adjust to environmental changes.

2. MAIN STAGES OF ECONOMIC CHANGE IN HUMAN HISTORY

The idea of economic activity is human impact on nature in order to acquire its resources and their final processing into consumer goods. It is then, at least as a matter of principle, a natural process within the Malthusian principle of population dating back to the 18th century [Malthus, 1992]. Due to this, it cannot be excluded that this process will come across a natural limit to growth, which will be dealt with later.

An economic process is subject to constant changes, which 80 years ago made Alvin Hansen declare: "Throughout the modern era, ceaseless change has been the law of economic life. Every period is in some sense a period of transition" [Hansen, 1939, p. 1].

At present, Douglass North adds: "In the Western world, and in particular in the United States, we tend to take order for granted. We should not. Disorder – revolution, lack of personal security, chaos – has characterized a great deal of the human condition. (...) Understanding the underlying conditions of order and disorder is essential for coming with grips with the process of economic change. (...) Economic history is a depressing tale of miscalculation leading to famine, starvation, defeat in warfare, death, economic stagnation and decline, and indeed the disappearance of entire civilizations" [North, 2005, p. 7].

The modern world economic history includes three particular revolutions due to which the changes were especially profound:
- Scientific Revolution,
- Agricultural Revolution,
- Industrial Revolution.

The Scientific Revolution was a process of rethinking the way in which the universe and life were comprehended. Donald Kagan, Steven Ozment and Frank M. Turner claimed that it had started in the sixteenth century in Europe with Copernicus’s new concept of the universe: "The process by which this new view of the universe and of scientific knowledge came to be established is normally termed the Scientific Revolution. (...) It took place in the studies and the crude laboratories of thinkers in Poland, Italy, Bohemia, France and Great Britain" [Kagan, Ozment, Frank, 1987, p. 475].

Then Francis Bacon immensely contributed to the development and use of scientific methods, i.e. to the experimentation and induction, as well as to the progressionist bias in European thinking: "Bacon (...) was an Englishman of almost universal accomplishment. (...) Traditionally he has been regarded as the father of empiricism and of experimentation in science. (...) In a famous passage he divided all philosophers into ‘men of experiment and men of dogmas’. (...) His great achievement was persuading increasing numbers of thinkers..."
that scientific thought must conform to empirical experience" [Kagan, Ozment, Frank, 1987, pp. 481 and 483-484].

Thereby, the idea of a permanent progress in science was born: "However, Bacon linked in the public mind the concepts of science and material progress. This was a powerful idea and has continued to influence Western civilization to the present day. (...) Thus, though not making any major scientific contribution himself, Bacon directed investigators of nature to a new method and a new purpose" [Kagan, Ozment, Frank, 1987, p. 484].

Eventually, John Locke paved the way for a new political philosophy, and later economics, and thus the Scientific Revolution was completed: "Locke proved to be the most influential political thinker of the seventeenth century. (…) Although he was not as original as Hobbes, his political writings became a major source of the later Enlightenment criticism of absolutism, and they gave inspiration to both the American and the French revolutions. (...) Some view Locke as the first philosopher to synthesize the rationalism of Descartes and the experimental science of Bacon, Newton and Boyle" [Kagan, Ozment, Frank, 1987, p. 497].

The Scientific Revolution was a preliminary to the Agricultural Revolution which was followed by the Industrial Revolution: "The methods that the Dutch farmers had pioneered were extensively adopted in England during the early eighteenth century. The major agricultural innovations undertaken by the English included new methods of farming, new crops and new methods of landholding, all of which eventually led to greater productivity. This advance in food production was necessary for the development of an industrial society. It ensured adequate food for people living in cities and freed agricultural labour for industrial production" [Kagan, Ozment, Frank, 1987, p. 544].

According to David Weil, the Industrial Revolution itself was the most significant turning point in the history of technology [Weil, 2009, pp. 248-252]. Thanks to the Industrial Revolution, for the first time in human history, a permanent economic growth was achieved: "The Industrial Revolution constituted the achievement of sustained economic growth. (...) However, since the late eighteenth century the economy of Europe managed to expand relatively uninterrupted. Depressions and recessions have been temporary, and even during such economic downturns the western economy continued to grow. (...) Industrialism in Europe eventually overcame the economy of scarcity" [Kagan, Ozment, Frank, 1987, p. 547].

The industrial revolution contributed to a higher pace of natural resources acquisition by people. As a consequence, a resource-based economy came into being, with the economic growth rate higher than ever before (Figure 1). Simultaneously, food surpluses allowed for a faster rise in the number of population.

The first modern economist to claim in the 1960s that the scope of business activity should be taken into account as the Earth cannot be regarded to be a constantly developing open system was Kenneth Boulding [Bartkowiak, 2013, pp. 210-213]. Boulding declared that the Earth was a closed system.
A steady economic growth, performed by mainly profit-oriented (traditional) enterprises, combined with the expanding world population and its demand for material goods, finally resulted in the growing risk of depletion of natural resources. This led to the concept of sustainability. As Anthony Clunies-Ross, David Forsyth and Mozammel Huq state: "The study of development will probably be increasingly centred on sustainability" [Clunies-Ross, Forsyth, Huq, 2009, p. 68].

The concept of sustainable development is very complex. Its most popular definition is a formulation submitted by the Bruntland Commission in 1987, and afterwards adopted by the UN Division for Sustainable Development. Sustainable development means "development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Moreover, it implies significant sustainable improvements in the circumstances of the peoples of the developing world" [Clunies-Ross, Forsyth, Huq, 2009, p. 286].

In 2002, Mathis Wackernagel and other people proposed a specific approach to assess human impact on the environment, called the ecological footprint of humanity [Clunies-Ross, Forsyth, Huq, 2009, pp. 318-320].

Approaching the natural limits to growth means a necessity for the formulation of a new global economic theory, together with new recommendations for the economic policy. Its key points are: a better balanced distribution of the world product and national products than so far, and perhaps also a zero growth as the only way to stop the excessive exploitation of natural resources, as Tim Jackson claims [Jackson, 2010].
The alternative is circular economy, whose concept was put forward by Ellen MacArthur Foundation in 2013 [Barczak, Holec, Wojciechowski, 2017]. Within this economy there will be traditional as well as virtual enterprises.

Recently, there have been several attempts to revise the system of national income accounting [Weil, 2009, pp. 482-483 and 486]. A common method of measuring economic performance is national income accounting, which was proposed by Simon Kuznets in the 1930s. Because of the widespread natural resource depletion and environmental degradation, an idea emerged of incorporating those issues into the system of national income accounting. This is the origin of the concept of natural capital by Paul Hawken, Amory Lovins and Hunter Lovins of the 1990s. A country’s natural capital generally declines over time as its non-renewable resources are being used up: "A decline in the stock of natural capital indicates that a country has destroyed an asset that would be valuable in the future" [Weil, 2009, p. 482].

Natural capital can be incorporated into the system of national income accounting by constructing a measure called green gross domestic product.

The research of some other measures of economic activity than product (income) per capita should also be mentioned. Primarily, it refers to behavioural economics and happiness economics. Particular achievements in this research area are attributed to Richard Easterlin [Easterlin, 2007], Daniel Kahneman [Kahneman, 2012] and Bruno S. Frey [Frey, 2008].

An opinion of this kind is expressed by historian Nicholas Crafts: "Both development economists and economic historians have become increasingly concerned with developing measures of living standards that are more comprehensive than real wages or real GDP per capita. (...) Studies of industrialization, in particular, have alerted economic historians to the possibility that there may be circumstances in which material prosperity increases while other aspects of living standards (...) deteriorate" [Crafts, 2001, p. 322].

At the beginning of the 21st century a concept of knowledge-based economy, which is also called the new economy, was born, it (Figure 2). This concept is based on an assumption that since the end of the 20th century the basic significance in economic processes has been given to knowledge, which gives rise to the new generations of manufacturing factors of increasingly high productivity. However, the point is that it has never been different in the whole history of mankind. In fact, the whole history has been a process of creation and accumulation of knowledge.

The authors of the latest World Bank report express a firm view on the issue: "We find ourselves in the midst of the greatest information and communications revolution in human history. (...) We must take advantage of this rapid technological change to make the world more prosperous and inclusive. (...) traditional development challenges are preventing the digital revolution from fulfilling its transformative potential" [World development report 2016, 2016, p. xiii].

On the other hand, however: "For many people, today’s increase in access to digital technologies brings more choice and greater convenience. Through inclusion, efficiency and innovation, the access provides opportunities that were previously out of reach to the poor and disadvantaged" [World development report 2016, 2016, p. xiii].

Later on: "Digital technologies have dramatically expanded the information base, lowered
information costs and created information products. This facilitated searching, matching and sharing of information, and contributed to greater organization and collaboration among economic agents – influencing how firms operate, people seek opportunities and citizens interact with their governments. (...) By overcoming information barriers, augmenting factors and transforming products, digital technologies can make development more inclusive, efficient and innovative" [World development report 2016, 2016, pp. 8-9].

Nevertheless, an uneven access to digital technologies may cause a further division of the world economy into traditional resource-based and modern knowledge-based economy: "Digital technologies have spread rapidly in much of the world. Digital dividends – the broader development benefits from using these technologies – have lagged behind. In many instances digital technologies have boosted growth, expanded opportunities and improved service delivery. Yet their aggregate impact has fallen short and is unevenly distributed" [World development report 2016, 2016, p. 2].

In order to simply bring to mind, as early as in 1957, Gunnar Myrdal discussed the idea of two economic circles in detail – a vicious and a virtuous circle [Clunies-Ross, Forsyth, Huq, 2009, pp. 108-109]. The retention of these circles deepens – as indicated in the World Bank report – a phenomenon of social exclusion, whose negative aspects were first particularly strongly emphasized by Fred Hirsch [Hirsch, 1976]. Then, the dual division of the world economy will be or, better to say, will remain a fact.

For the needs of circular and knowledge-based economies it will be necessary to create a new accounting system on the macro- and microeconomic scale to account for the aforementioned requirements of natural capital calculation, satisfaction with life as well as new business models of traditional and virtual enterprises.
3. BUSINESS MODEL CONCEPT

The aspiration to constantly increase the shareholder value (SHV) forces corporate managers to permanently search for new methods and tools of building an effective mechanism of value creation. Recently, there has been an enormous popularity of a business concept model which focuses on three key elements: creating value, delivering value and capturing part of this value [P. Aversa et al. 2015]. The literature presents many business model definitions, which on the one hand indicates a great interest of practitioners and theoreticians in the discussed problem and on the other the ambiguity of the discussed problem, which is still in the initial phase of development and a universally acceptable definition has not appeared yet [Teece 2010].

Undoubtedly, the idea to combine many corporate areas (for example customer segments, value chain links, key partners sets, value resources etc.) into one concept constituting a logical whole, deciding about the way of how to earn money, is an attractive offer for entrepreneurs who look for a reply to the question of how to organise the corporate operational activity so that it could bring fair profits. This sort of short-sighted approach to enterprise from the business model perspective (profitable business model) was one of the reasons for corporate failures in the time of Internet boom. The focus on selected aspects of business only, in particular, the omission of elements significant for the corporate success, like: strategy, competition or key competences, could not guarantee a long corporate life [Keen, Qureshi 2006].

The business model concept treats enterprise as a system of logically connected elements which allow for the customer value creation and for the profit derivation from the created value. The concept of value chain popularised by M. Porter [Porter 1985], consolidates a conviction among managers that value is created at every stage of the sector economic path, which should be sought and maximally captured. The mechanism of customer value creation in the business model is explained in R. McIvor's concept, which treats unique corporate resources as crucial in value creation; however a true source of corporate value is the final effectiveness of the concluded transaction [McIvor 2009]. As a consequence, a corporate business model represents a specific combination of tangible and intangible resources as well as activities which, through effective transactions, generate value for customers as well as for the enterprise itself [DaSilva, Trkman 2013].

On many occasions the literature, instead of defining the business model, indicates only its components, describing its idea and significance. At the beginning, the most frequently mentioned business model components included: the sources of incomes/profits (i.e. the ways of earning money), customer value (the so-called value proposition), resources issues, corporate architecture and competitive strategies [Golębiowski et al. 2008]. However, the majority of authors described the business model around three elements: how much does the company earn? (revenue flow), how is the company built? (its logic), what does it offer to customers and investors? (customer and investor value). These areas may have a different form. Therefore, the literature indicates many reference business models which may be applied in the corporate practice [Gassmann et al. 2015].

There is a dispute in the literature on how to distinguish the business model from the corporate strategy [DaSilva, Trkman 2013]. Some authors give priority to the business model rather than strategies, treating the latter as a tool to implement the business model. In this
perception, the business model determines a general outline of the idea of the business done by the company, without specifying any detailed solutions to it. The others treat the strategy (a long term perspective) as a tool to define a dynamic corporate potential (a medium term perspective), which determines then the potential of business models (short term perspective) in coping with the existing or approaching determinants. In this approach, the business model is responsible for the current way of earning money, and the strategy describes the path to reach extraordinary profits in the future. For this reason start-up founders focus primarily on defining the business model for their idea – the mechanism of creating and capturing part of value, satisfying the identified customer need. Only when such a business model has been created, it is time to work out the SBU strategy [Magretta 2012].

However, modern management concepts impose more requirements for effective corporate business models than just profit generation. The value management concept sets corporate goals of value maximisation in the long run not only with regard to shareholders but also other stakeholders: customers, staff, suppliers, creditors, local community as well as the society [Dudycz 2005]. The concept of corporate sustainable development describes its development in relation to three major features: sustainability (adequate proportion between development and natural environment protection), durability (availability of resources for the present and future generations) and self-reliance (interdependence between economic, social and ecological factors contributing to a long term growth) [Brdulak 2005]. The stakeholder concept perceives enterprise as a place where different interests clash, group and individual interests – those of corporate stakeholders. The managers' goal is to aspire to best satisfy the expectations of key stakeholders, i.e. those having a strong position and a huge impact on the corporate operations. A company may effectively manage the stakeholders through a systematic dialogue with them [Kasiewicz et al. 2006]. The concept of corporate social responsibility puts an emphasis on the transparent and ethical business pursuit [Adamczyk 2009]. The concept of intellectual capital treats human organisational and relational capital as a foundation for corporate development [Wachowiak 2005]. The resource concept explains the role of strategic resources in corporate strategy creation [Godziszewski 2001].

In view of the basic principles of the aforementioned management concepts, a company may only built its competitive position on the basis of principles of sustainable development and corporate social responsibility, involving in this connection appropriate strategic resources and intellectual capital so as to meet the expectations of their key stakeholders, related primarily to profit generation and increased corporate value. Taking into account the above conditions, the authors’ designed definition of a corporate business model was created, in the light of which: a business model is a tool describing the method of a responsible use of the corporate intellectual capital and resources so as to guarantee corporate competitiveness in the sector through providing customers with an appropriate value and the generation of profits allowing for the increase of corporate value with the pursuit of the principles of sustainable development considering the expectations of other key stakeholders.

"A business model is a tool ...” – the presented concept treats a business model as a simplified plan of corporate action in the sector. It is a model, static description of individual business elements showing its character and mutual relations.

"...describing the method of a responsible use of the corporate intellectual capital and resources ...” – company operation is connected with the use of certain resources and intellectual capital. A business concept model imposes a responsible conduct of a company according to the ethical standards, law, respect for the nature and activities in favour of the environment.

"...in order guarantee corporate competitiveness in the sector ...” – a business model is
built for a specific sector in order to achieve a competitive advantage. A profitable business model, adjusted to customer requirements and accounting for the efficiency of resources and intellectual capital growth constitutes the basis for the durable competitive advantage. "...through providing customers with an appropriate value ..." – the business model idea is based on the generation of value for a specific segment of customers. The success is possible only when it is based on a unique customer value proposition. "... and the generation of profits allowing for the increase of corporate value ..." – a business model explains how the company earns money and as a consequence how it raises its value. An adequate customer value proposition results in a specific flow of incomes, which after deducting from costs determine the corporate profit. The constant generation of profits in relation to non-financial value generators raise the general corporate value. "...with the pursuit of the principles of sustainable development considering the expectations of other key stakeholders" – the target business model has to account for the necessity for the operation according to the principles of sustainable development, i.e. the target means such a management of corporate resources as to achieve the competitive advantage today as well as in the future. It is not possible to create a development business model if it does not account for the expectations of key stakeholders.

The components of the proposed business model concept are [Osterwalder, Pigneur 2010]:

- **customer area** – is an area of defining value propositions – the most important business model element, including customer segments, value propositions (products or services bringing all the benefits – technological, economic, emotional and socio-ethical) and customer access channels (communicative and distributive).
- **activity area** – is an area of creating value by an enterprise, indicating indispensable operations and processes implemented by the enterprise in favour of creating customer value proposition defined before.
- **resource area** – is an area of value sources, describing resources (financial, tangible and intangible) necessary to create and deliver the value proposition.
- **profit area** – is an area of capturing value, indicating the sources of incomes and structure of costs related to the creation and delivery of customer value.

The discussed business model may be presented in the form of a dependence scheme shown below.

Two groups of factors have an impact of the final shape of business models:

- **internal factors** – result from the strategy of corporate development and concern requirements with regard to the target competitive position in a specific sector and the expected level of efficiency. In later stages of research on a business model its shape is also determined by access to resources, the level of intellectual capital as well as the principles of CSR or corporate sustainable development.
- **external factors** – which primarily include the customer behaviour and attitudes, competition activities, tendencies in the technological and legal environment.

There are five mutual relations between business model elements to be accounted for in the process of business model creation. They are discussed below.

I. External factors (primarily customer attitudes and expectations) and internal factors (assumed competitive position) determine the parameters of the customer area (what customer segments, what value proposition (products and service packet which meets specific needs in the customer segment) and the use of access and communication channels. There is a cause and effect relation between the components of the customer area: customer segments affect the value proposition, and the latter affects the customer access channels. The choice of a specific customer segment is explicitly determined by the kind and method of satisfaction of customer needs. Thus, it is
possible to prepare the value proposition (products and services packet), which meets specific needs in the customer segment. In order to reach customers with a specific value proposition, distribution and communication channels should be adequately selected (resulting from the type of customers and value proposition).

**Figure 3. Relations between business model elements and corporate value**

II. The layout of elements in the customer area determines the area of resources, activities and profits. In order to implement the value proposition, it is indispensable to involve adequate resources and human capital (people, organisational solutions and relationships) and to launch the necessary actions (operations connected with the transformation of resources into final results and a dialogue with key stakeholders). The use of these elements affects the structure and level of corporate costs. The development of the assumed value proposition requires involvement of corporate

Source: S. Gregroczyk, P. Wachowiak
resources and intellectual capital components. There is a mutual relationship between the resources and intellectual capital – the level of the engaged resources affects the state of capital and vice versa – the value of intellectual capital requires a specific profile of corporate resources. The outlays of resources and intellectual capital directly affect the structure and volume of costs of the business model. The costs are also determined by activities undertaken by the company in relation to the delivery of products and services as well as to the impact on stakeholders. The scale of activities depends on the expectations of customers, resources owned by the enterprise and intellectual capital value.

III. The offer for the customer is a source of corporate revenue, and in combination with the incurred costs it determines the level of profitability of a business model. A corporate business model is profitable when the offer which is attractive for customers will be worked out at lower costs than gains from different income flows (for example sales, rental, licensing, commissions, transactions charges, advertising charges etc.). An innovative approach to income generation may help the enterprise retain competitive prices with constant investment in resource replenishment and intellectual capital level rise.

IV. An adequately constructed business model affects the competitive position of an enterprise in the sector. A strong corporate competitive position is determined by, for example, a big market share, high profitability or recognizable brand. The source of corporate competitive advantage includes appropriately selected and maintained business model elements: an attractive offer, precious and unique resources, valuable intellectual capital and perfectly implemented activities. A permanent verification of corporate business model elements may contribute to the achievement of a durable competitive advantage.

V. Profit levels and corporate credibility as perceived by stakeholders affect the total value of a high profit in the sector and satisfaction may contribute to the rise in the value of the whole enterprise. Stakeholders form their opinions on an enterprise through the evaluation of the effects of corporate activity (primarily including corporate competitiveness but also social effects), opinions on the possessed resources and corporate intellectual capital satisfaction with the generated profits. The more efficient impact on stakeholders, with a well working business model, the better the support for the activities implemented in the sector.

The presented authors' understanding of the corporate business model creates a reference point for the recognition – in the next research step – of business model components actually occurring in practice, but with regard to virtual enterprises, which will be discussed below.

4. VIRTUALISATION IMPERATIVE. VIRTUAL ORGANISATION

The 21st century enforces the adaptation of new organisation and cooperation forms, which differ from the traditional forms with regard to the basic organisational form. It results from permanent changes in a turbulent organisation environment and increasingly huge customer demands.

Kaplan and Norton [1996] say that quality, price, the right time and functionality are becoming a customer value. Christopher [1998] suggests that the main role in the organisational thinking and gaining the competitive advantage is determined by the result
which may boil down to three adjectives: better, cheaper faster. The implementation of this strategy is possible due to virtualisation.

Virtualisation becomes a recognized paradigm in the management sciences. It is a response to megatrends, namely:

- goods and services are more and more often based on the information and knowledge based processes, thanks to which they may be created, distributed and sold in a digital form [Skyrme, 1998],
- the Internet era re-defined the way business is done, allowing for the telework at relatively low costs [Skyrme, 1998],
- networks and mutual dependence became common ways to organise cooperation giving rise to the effective use of resources as well as a great flexibility and high pace of reaction to market changes [Skyrme, 1998],
- market and resource globalisation allowed enterprises to enter the world markets, acquire expert reports of the world standard irrespective of their business location [Skyrme, 1998],
- a new business environment requires the application of corporate strategies based on three key elements: low costs, high quality and prompt reaction to customer needs [Keinänen, Inas-Kukkonen, 2000].

At this background, the idea of virtualisation is becoming a key to the understanding of modern economic and technological transformations and business pursuit methods.

The word *virtual* itself is derived from the Latin *virtus* and means "able to come into being, (theoretically) possible". The word *virtual* may be interpreted as effect, power which exists though cannot be observed or measured [Grudzewski, Hejduk, 2002, p. 41]. The philosophical understanding of virtuality boils down to what is potential, but outdated, what is an infinite source of implementation [Jaroszuk, 2003]. Virtuality is "aspatial" and "atemporal", it does not physically exist, but functions in reality as the effects of its activity may be recognized.

The term virtual organisation known also as *virtual cooperation* [Davidow, Malone, 1992], *virtual enterprise* [Cheng 1996], *imaginary organisation* [Hedberg, Dahlgren, 1997] is a new organisation paradigm.

The roots of the virtual organisation paradigm may date back to the early works of economists in the 70s, such as Olivier Williamson, and in particular his work *Markets and Hierarchies*, 1975.

(Important: the terms *virtual organisation* and *virtual enterprise* are not synonymous, though frequently used interchangeably in the literature. Virtual organisation is a broader term than virtual enterprise, whose primary goal is to generate profit. The term virtual enterprise does not include non-profit organisations.)

There have been many definitions of virtual organisation. Generally, two approaches to virtual organisation may be distinguished:

1. institutional (or structural) represented by Davidow and Malone [1992], Byrne, Brandt and Port [1993],
2. functional (or process based) represented by Venkatraman and Henderson [1995].

Institutional (structural) approach is represented for example by Byrne, Brandt and Port, Goldman, Davidow and Malone. This approach focuses on the development and improvement of the existing mechanisms of coordination and determination of features, which make virtual
organisations (VO) different from other organisational forms. A VO is created voluntarily [Kisielnicki, 2004]. A generalised VO definition characteristic of this trend may be formulated in the following way: "a temporary network of independent companies linked by information and communicative technologies in order to share skills, costs and access to one another's markets." The cooperation is usually over when the goal has been attained. The network is based on trust, and not hierarchical organisation structures. The VO structure is subject to analysis. The institutional approach critics point to its weak points, namely:

- it does provide information about processes which need to designed to support the organisation,
- it does not give insight into the differences in processes supporting different forms of organisation.

Process based approach (functional) signed by, for example, Hale and Whitlam, Venkatraman and Henderson, Grudzewski and Hejduk (2002) emphasizes a strategic VO function and the role of communicative and information technologies in the process of constant changes and achieving competitive advantage.

Virtual organisation is an organisation which has the ability to obtain and coordinate critical competences through its design of value-adding processes and governance mechanisms involving internal and external constituencies to deliver differential, superior value in the market place. [Venkatraman, Henderson, 1998].

Virtual organisation is every organisation which is continually evolving, redefining and reinventing itself for practical business purposes [Hale, Whitlam, 1997].

Virtual organisation means a set of geographically (even globally) dispersed organisations representing a common business undertaking, chosen dynamically – according to the process based criterion – in order to implement a specific task and for the time of its implementation [Grudzewski, Hejduk, 2002].

VO is not treated as a separate structure, and virtuality is a strategic feature, which may refer to every organisation and means constant improvements in the existing business logic – it is a dynamic management tool [Grudzewski, Hejduk, 2002]. It should be observed that the VO definition made by Grudzewski and Hejduk, besides features of process based approach, includes also structural approach features – "a virtual organisation is a set of geographically dispersed organisations." A functional approach may be applied to the "new" as well as the "old" companies. Information and communicative technologies allow for effective organisation. Venkatraman and Henderson [1998] claim that without their significant support the existence of a virtual organisation is not possible. It is an issue to be disputed. For example, McKinsey research (2004) proves that management practices have primacy over the application of information technologies (the productivity growth of 8% in relation to the growth of 2%). Nevertheless, the application of appropriate management and IT practices gives rise to the effect of synergy (productivity rise of 20%), which is important for the VO effectiveness. In planning the organisation strategy it is essential to understand the ICT potential and the benefits resulting from it for the organisation.

Virtualisation plays increasingly important role in corporate activities, which is reflected by a growing interest in virtual organisation. The problems related to the work of this organisation have to be solved continuously and systematically. A continuous improvement in virtual organisation should be considered on two planes:

- improvement in the methodology of conduct (regulations and instructions of conduct) and
- improvement in network participants' attitudes.
The latter is especially important in modern management as it decides whether the people will find their positions in the future integrated teams on the global scale.

A good illustration of the idea of virtualisation in enterprise activities, i.e. virtual organisation is the virtual organisation integrated model presented by Saabel, Verduijn, Hagdorn, Kumar (2002) created from the combination of VO process based and structural perspectives. The model consists of three levels:

- the world of modules,
- dynamic network and
- dynamic organisation representing every structure
- and shifts between levels representing processes.

The organisations which form VOs according to the model of Saabel et al. [2002] come from a larger network, in which selection is made. It means that at the moment of forming a VO, the organisations possess information about each other and show a certain degree of familiarity. Goldman, Negel and Preiss (1995) introduced the term of virtual network.

A virtual network is an open collection of initially authorised partners who agreed to create a circle of potential VO members. Potential VO members are selected from the world of modules. The world of modules is a set of all organisations and consists of individual organisations from for example a definite sector. While the objective of a dynamic organisation is the exploitation of an emerging market chance, the objective of a dynamic network is to guarantee the organisation an ability to work when the market chance appears.

A virtual organisation may be also perceived as a strategic option. There are a few strategic reasons behind the implementation of this concept in practice, for example:

- sharing risk, costs, infrastructure as well as research and development activities,
- combining complementary distinguishing competences in order to provide new goods/services,
- reduced time delivery of products/services on the market,
- obtaining access to new markets, market division,
- a higher flexibility of operation,
- increased organisation growth rate,
- reduced spending on infrastructure,
- better satisfaction of customer needs.

There are many concepts explaining a gradual development of organisation virtuality. The following two are widely spread in the literature:

- Venkatraman and Henderson's evolutionary path model and
- Scholz's virtual cube model.

Venkatraman and Henderson's evolutionary path model emphasizes the major role of Information and Communication Technologies (ICT). They understand virtualisation as the ability to obtain and coordinate critical competences through its design of value-adding processes and governance mechanisms aimed at delivering unique and desirable value on the market. This model is based on the research Henderson and Venkatraman began already in 1991 and on the strategic dimensions presented by Porter and Fuller [1986] in their simplified chain value model. In the descriptive evolutionary model Venkatraman and Henderson distinguish three dimensions of virtualisation:

1. customer interaction,
2. assets configuration,

The first dimension of virtualisation of new challenges and opportunities in customer interaction includes three stages:
- remote experience of products and services,
- customisation of products and services and
- consumer community

Remote experience of products and services is crucial for the process innovativeness. There has to be a shift from market oriented product centres to customer oriented profit centres. A company should create relations with customers and enable distance delivery of products and services.

Venkatraman and Henderson based their dynamic customisation of products and services on three principles: modularity, intelligence, organisation [Keinänen, Inas-Kukkonen, 2000]. Modularity is an approach for organising complex products and services from small systems. The benefits are an increased rate of innovation, lower unit costs and greater customer satisfaction. Intelligence is based on the continuous exchange of information with customers, which can be used to match users with similar interests and make recommendations on their shared interests. Dynamic customisation of products and services requires an organisation that is committed to operating in a new way. Venkatraman and Henderson stress [1998] that modularity and intelligence are useless without the adoption of the right organisational form.

The second dimension of virtualisation: asset configuration aims at obtaining critical assets and resources in three stages:
- sourcing modules,
- process interdependence
- resource coalitions.

The value-adding role is more important in the creation of products than in the manufacture of a critical component. Venkatraman and Henderson [1998] suggest that organisations should constantly examine what modules should be obtained from outside and how existing sourcing logic should be revised. Process interdependence focuses on the interdependence of business processes across organisational boundaries, which means that processes are delegated to an external specialist who then manages and administers them. Organisations in the future may confine to two roles: a leadership position in setting the configuration of resources and a secondary role related to delivering complementary resources. The resource coalitions remain a strategic challenge as the orchestration of position in a dynamic resource network. Venkatraman and Henderson [1998] stress that these coalitions highlight one important feature of virtual organising, which is the blurred distinction between competition and cooperation.

The third dimension – knowledge leverage – focuses on the possibilities and mechanisms with regard to the leverage of expertise at many levels (internal and external). It includes three stages: harnessing work-unit expertise, recognizing knowledge as a corporate asset and gaining access to broad professional community expertise. The use of work-unit expertise lies not only in designing the technological platform to support the group work (e.g., groupware, videoconferencing and Intranet) but also in designing the organisation structure and processes. The second stage focuses on harnessing collective expertise across work units rather than within units. The main focus is on tacit knowledge.

In the third stage, the focus moves to the community well beyond the domain of local organisation. Organisations are aspiring to gain access to the expertise in the extended...
network and the broader professional community.

Scholz's virtual cube model is based on the assumption that an organisation operating in a turbulent environment is forced to undertake strategic activities. These activities may take three different forms: virtuality realisation through the ICT tools, manufacturing process integration through soft mechanisms of value added creation, such as vision and goals, trust and core competence development. These three different forms and their amalgamation provide evidence of the existence of more than one kind of VO according Scholz [2000]. He analysed the development of virtuality in three axis:

- core differentiation,
- soft integration,
- virtual realization.

The configuration of these three theoretical dimensions creates a virtual cube. The core differentiation is indicated by the VO partners' concentration on their core competences. VO participants should attempt to provide their unique competences within the cooperation. The discussion about core competences originated from the modularity as a concept of extent to which the elements of the system may be isolated and reconfigured. Modularity allows for the flexibility of the system through the increased number of possible configurations attained from the set of possible inputs.

**CONCLUSION**

The synthetic case studies presented above, derived from three related planes:

1. transformations in the world economic history,
2. corporate business model,
3. virtualisation and virtual organisation

are to illustrate the context which the next research steps will focus on:

A) empirical research of business models used in virtual organisations operating in business in real terms as well as the analysis of the way they are used in the business environment which is simultaneously competitive and highly virtualised,

B) verification of the need for the creation of a special concept of performance measurement in such organisations.

The case study within the first plane leads to general observations:

- the world economy approaches the natural limit to growth, which gives rise to the need for the formulation of a new global economic theory, and together with it: new recommendations for the economic policy,
- in the circular economy, which seems to be the only alternative in these circumstances, there will be both traditional and virtual enterprises,
- new business pursuit measures are being sought, not just the product (income) per capita,
- the concept of the knowledge based economy, called also a new economy, will require the creation of a new accounting system on the macro- and microeconomic scale to account for the aforementioned requirements of natural capital calculation, satisfaction with life as well as new business models of traditional and virtual enterprises of natural capital calculation, satisfaction with life as well as new business models of traditional and virtual enterprises.
The case studies within the second plane of analysis were to work out a business model conceptual framework, which was particularly significant due to the multitude of definitions and different interpretations with regard to this fairly new idea. Business models are important is the research of management as well as that referring to performance presentation. An example to be quoted here is corporate performance integrated reporting, whose concept is firmly based on a business model. A thorough study of the business model issue indicates that a business model is a tool describing a method of the responsible use of corporate intellectual capital and resources in order to achieve the competitive advantage in the sector through providing appropriate customer value and generating profits at a level sufficient to raise the corporate value, with the pursuit of the principles of sustainable development considering the expectations of other key stakeholders. The components and relations comprising the business model were listed, thanks to which a conceptually coherent reference point was created for diagnosing (in the course of the next research stage) business models operating in practice and for the supporting the following theses:

[T1] – virtual enterprise managers have to acquire an ability to apply a business model to competitive struggle and to work out mechanisms to efficiently modify a business model, which is a prerequisite of this advantage and

[T2] – a virtual organisation business model is to be perceived as a process because it is characterised by an extreme agility, which gives rise to a necessity for permanent monitoring of its ability to adjust to the environmental changes.

Business models were included in the context of virtual organisations, which are the primary research plane within the most important research issue, i.e. the performance measurement system. There was a description of virtualisation, which may significantly affect multifaceted performance characteristics. The understanding of the features making the virtual organisation different is important for diagnosing the methods and models of business pursuit in the virtual space as well as the management styles and business models specific to it. This kind of research will allow for the mapping of connections between formerly established:

a) features of the present business environment, saturated with digitalisation and need for personification,

b) features of virtual enterprises and business models embodying a new way of value creation in business,

c) functions of management accounting,

thanks to which it is possible to verify the appropriateness of concepts of performance and cost measurement and – possibly – to present a new proposal dedicated to the virtual enterprise.

REFERENCES


[Sustainable corporate development and relationships with stakeholders], Oficyna Wydawnicza SGH, Warsaw.


[28] Hedberg B., Dahlgren G., 1997, Virtual Organizations and Beyond Discover Imaginary Systems, John Wiley & Sons Ltd., Chiches


[41] Malthus T, 1992, An essay on the principle of population; or a view of its past and present effects on human happiness; with an inquiry into our prospects respecting the future removal or mitigation of the evils which it occasions, selected by D. Winch, Cambridge University Press, Cambridge
Malgorzata Mierzejewska, PhD
Warsaw School of Economics

PROPOSAL OF AUTOMATED TAX FRAUD DETECTION MODEL IN CONTEXT OF POLISH TAX SYSTEM

THE TAX SYSTEM IN POLAND – FEATURES AND AN ATTEMPT TO DIAGNOSE IT

This paper aims to present, in the context of the Polish tax system an idea of a model in advanced analytics. This is based on the standard and unified format data received from taxpayers and provides the basis to identify fraudulent operations (made by taxpayers) when collecting taxes.

Tax and tax revenues as the core of the tax system

Tax is a legal concept. The notion of a tax system is organised around the notion of a state taxing its citizens. This is defined as the concept of tax that is used to identify the tax system as an entirety of taxes existing in a given place and time (Gomułowicz and Mączyński, 2016; Grądalski, 2004; Etel et al., 2013). However, there is a need to adopt a broader approach if tax is to be understood not just as a concept of law, but also as the economic base of state activity. In this context the efficiency is also important. In practice, any given tax system is designed to provide revenue to the state and local governments in order that they can pursue their goals to the benefit of society. Within such a broad framework, any tax system should be interpreted as a set of taxes, which are integral and binding in any given jurisdiction within a specified period of time – usually in most cases annually. This interpretation must be extended to encompass fiscal administration, tax law and tax administration, as well as the principles of taxation (Dzwonkowski, 2013; Ickiewicz, 2014). Below, it is presented, in brief, the components of the tax system in Poland and its features, which will further be used to diagnose the current situation.

In the Polish legislation tax is defined in the Act of 29 August 1997 Tax Ordinance (Act 1), which reads that it is a public, gratuitous, enforced and non-refundable pecuniary contribution for the state budget or local authorities. Namely: province (voivodeship), county (poviat) or community (gmina) resulting from the Tax Act (Art. 6, Act 1). The act outlines principal features that distinguish taxes from other public and legal contributions, such as fees or supplementary charges (for more tax characteristic see e.g.: Głuchowski, 1993; Gomułowicz and Mączyński, 2016).

The Polish tax system covers a wide range of taxes categorised in many different ways. Typically, they are classified into categories based on the type of tax or taxpayer, but also according to social, legal and economic criteria. Other categories take into account tax destination, the degree of compulsory tax collection, rates and place of destination (for more see: Dolata, 2013).

It would appear that, most of the above categories are actually irrelevant for the purpose of this paper, because JPK include data only non-local taxes. That is why the categorisation of taxes based on the budget is relevant. They are paid to central or local budget and can be shared. Taxes collected by the central government include: VAT, excise duty and tax on betting and gambling. The taxes feeding only local budgets include agricultural tax, forestry tax, real property tax, tax on means of transport, inheritance and donation tax, stamp duty,

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1 This part of paper is based on the unpublished research “An analysis of the efficiency of taxation systems for businesses” conducted in 2016 by Malgorzata Mierzejewska.
tonnage tax and tax on the extraction of certain natural resources. Shared taxes are: personal income tax (PIT) and corporate income tax (CIT). According to this criterion, one might list as many as 13 types of tax in Poland (Dzwonkowski, 2013).

The table below presents proportions, in which taxes are shared between the central government budget and budget of local government units.

Table 1: Share of individual budgets in revenue from common taxes

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<th>Personal income tax (PIT)</th>
<th>Corporate income tax (CIT)</th>
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<tbody>
<tr>
<td>State</td>
<td>48.81%</td>
<td>77.14%</td>
</tr>
<tr>
<td>Voivodeship</td>
<td>1.60%</td>
<td>14.75%</td>
</tr>
<tr>
<td>County</td>
<td>10.25%</td>
<td>1.40%</td>
</tr>
<tr>
<td>Commune</td>
<td>39.4%</td>
<td>6.71%</td>
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Source: Figures based on the Act of 13 November 2003 on revenue of local government units (Act 2)

Taxes within the framework of the tax system cover practically all economic activity pursued by businesses and households in Poland.

The relevance of taxes for the State cannot be overestimated since tax revenue represents over 90% of central government budget income. The amount and structure of tax revenue in Poland is presented in Table 2 below.

Table 2: Budget revenue and its structure in 2011-2016 in Poland

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<tbody>
<tr>
<td>corporate income tax (CIT)</td>
<td>24 861 922</td>
<td>25 145 736</td>
<td>23 075 275</td>
<td>23 266 188</td>
<td>25 813 386</td>
<td>26 381 400</td>
</tr>
<tr>
<td>personal income tax (PIT)</td>
<td>38 074 916</td>
<td>39 809 425</td>
<td>41 290 531</td>
<td>43 021 971</td>
<td>45 028 000</td>
<td>48 232 400</td>
</tr>
<tr>
<td>goods and services tax (VAT)</td>
<td>120 831 951</td>
<td>120 000 697</td>
<td>113 411 541</td>
<td>124 262 243</td>
<td>123 120 798</td>
<td>127 991 000</td>
</tr>
<tr>
<td>excise duty</td>
<td>57 963 709</td>
<td>60 449 853</td>
<td>60 653 116</td>
<td>61 570 439</td>
<td>62 808 633</td>
<td>65 749 300</td>
</tr>
<tr>
<td>gambling tax</td>
<td>1 476 951</td>
<td>1 441 634</td>
<td>1 303 910</td>
<td>1 234 718</td>
<td>1 337 125</td>
<td>n.d.</td>
</tr>
<tr>
<td>others</td>
<td>1 487</td>
<td>1 427 226</td>
<td>1 916 551</td>
<td>1 425 426</td>
<td>1 553 465</td>
<td>4 784 300</td>
</tr>
<tr>
<td>total</td>
<td>243 210 936</td>
<td>248 274 571</td>
<td>241 650 924</td>
<td>254 780 985</td>
<td>259 673 511</td>
<td>273 138 400</td>
</tr>
</tbody>
</table>

*estimation based on ministry of finance data

Source: Author’s own calculations based on www.finanse.mf.gov.pl
As shown by data in the table above, VAT is the main source of revenue to the State budget. Followed by personal (PIT) and corporate income tax (CIT) and the almost negligible gaming tax, generates the least revenue.

Changes in tax revenues in 2011-2016 in relation to the three main taxes VAT, PIT and CIT are presented in Table 3.

Table 3: Budget revenue change in 2011-2016 in Poland in main taxes VAT, PIT and CIT

<table>
<thead>
<tr>
<th>Tax:</th>
<th>Budget revenue change 2011 to 2012</th>
<th>Budget revenue change 2012 to 2013</th>
<th>Budget revenue change 2013 to 2014</th>
<th>Budget revenue change 2014 to 2015</th>
<th>Budget revenue change 2015 to 2016</th>
<th>Budget revenue change 2011 to 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>corporate income tax</td>
<td>1,14%</td>
<td>-8,23%</td>
<td>0,83%</td>
<td>10,95%</td>
<td>2,20%</td>
<td>6,11%</td>
</tr>
<tr>
<td>(CIT)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>personal income tax</td>
<td>4,56%</td>
<td>3,72%</td>
<td>4,19%</td>
<td>4,66%</td>
<td>7,12%</td>
<td>26,68%</td>
</tr>
<tr>
<td>(PIT)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>goods and services tax</td>
<td>-0,69%</td>
<td>-5,49%</td>
<td>9,57%</td>
<td>-0,92%</td>
<td>3,96%</td>
<td>5,92%</td>
</tr>
<tr>
<td>(VAT)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2,08%</td>
<td>-2,67%</td>
<td>5,43%</td>
<td>1,92%</td>
<td>5,19%</td>
<td>12,31%</td>
</tr>
</tbody>
</table>

Source: Author’s own calculations based on www-finanse.mf.gov.pl

As can be observed from the data the change in tax revenue year by year from 2011 to 2016 is of various kinds, but in 2013 it was extremely damaging to the state budget. It should also be noted that stable growth of state’s budget revenue comes from PIT and was as high as 26% for 2011-2016. This may mean that the burden of imperfect administrative work and the tax gap lies primarily with PIT taxpayers. If the VAT part is paid by private individuals, it can be stated that a significant part of the burden of the state is on this group of taxpayers. This may mean that taxes are imposed unfairly and mainly on this group of taxpayers.

Budget revenues are related to the phenomenon of reducing them due to the existence of a shadow economy and the tax gap.

The shadow economy applies not only to taxes but also to other areas of social life and public levies, such as social insurance or the labour market. It is an illicit activity existing alongside the country’s official economy, controlled by state authorities (Łapiński et al., 2014) and often developed in response to the excessively burdensome administrative regulations. Since, for obvious reasons, no official data for the shadow economy exist, attempts are being made to estimate its size.

Estimates are and have been produced by the Central Statistical Office of Poland (GUS) and they can also be found in reports of the Institute for Market Economy Research (Łapiński et al., 2014; Fundowicz et al., 2016) or Global Compact (Przeciwdziałanie szarej strefie w Polsce, 2015/16). In its estimates of the shadow economy, GUS for example, takes into account three of the following elements (Fundowicz et al., 2016):

1. illegal activities,
2. tax fraud consisting of, reducing taxable income or leaving part of the output, undeclared,
3. undeclared and informal business operations (unregistered businesses) undertaken by private individuals.

At this same time, GUS argues that reducing the taxable income by legally operating companies, which do not declare some of their business activity, exerts the biggest impact upon the size of shadow economy. In the years 2009–2012 the share of the latter in the GDP was estimated at ca. 9.9 %, representing almost 75% of all the shadow economy. In its estimates GUS uses data from the labour market as well as others surveys (for more see: *Praca niezarejestrowana w Polsce w 2014r.*, 2015)

From the viewpoint of the idea of SAF-T-based automated taxpayer audit, it should also examine the notion of the tax gap, which in turn, reflects the effects of the shadow economy. Similar to the shadow economy, the tax gap has no official definition in the Polish legal system. In general, it can be described as the difference between tax revenue that is theoretically expected under the currently binding legal framework and the amount of taxes actually paid to the budget. Due to the absence of the tax gap definition that could assist when estimating the scale of the phenomenon, some authors expand on the above described, as the tax gap with a political gap. The latter informs about the relation between tax revenue reduced as a result of a specific government policy with fiscal effects, and an income that could have potentially been collected if there were no reliefs therein. For example, in value added tax (VAT) preferences, it consists mainly of applying reduced tax rates (Adamczyk and Czyż, 2015).

When estimating the tax gap for the purpose of the PwC report (*Wyłudzenia VAT – luka podatkowa w 2014 roku i prognoza na 2015 – VAT extortion – tax gap in 2014 and forecast for 2015, 2015*) the following was taken into account:

- unregistered transactions in “the shadow economy”
- criminal activities – including tax fraud, mainly VAT,
- tax avoidance through legal but also aggressive tax optimization,
- other events – bankruptcy, errors, disputes.

As can be seen, according to the experts, it affects tax optimization, i.e., legal operations designed to reduce tax obligations and create part of the tax gap. However, tax optimization is interpreted predominantly as operations planned at the level of individual transaction or economic decision (Kudert and Jamroży, 2013). Optimization (tax planning) uses arrangements not banned by the legislator or measures, which were not explicitly specified and can be used due to gaps existing in tax legislation (and its low quality). That is why according to some estimates as much as PLN 100 billion does not go into the Polish budget. Out of that amount, PLN 46 billion represent tax gap in CIT, i.e. majority of tax optimization used by international corporations and holdings companies. A further PLN 57 billion account for VAT gap and includes not only fraud and the shadow economy, but also in (aggressive) legal tax planning (www.money.pl). According to estimated data, in Poland, the VAT gap increased from PLN 10.6 billion to PLN 36.5 billion over the period 2006-2012, while the possible maximum estimates, suggest an of amount of PLN 25.2 billion and PLN 58.5 billion respectively, i.e. higher by 27% and 43% (see: *Luka podatkowa w VAT – jak to zwalczać – Tax gap in VAT – how to fight it, 2014*).

Currently the (2015) VAT gap is estimated at PLN 40 billion accounting for 2.5% of the GDP. It is larger than in 2014, but only, by 0.5 pkt % and less than predicted. The diagram below demonstrates the VAT gap in relation to GDP in the years 2006-2015.
The VAT gap has been estimated considering the theoretical expected VAT revenue calculated and based on the assumption that all taxpayers declare and pay the tax in compliance with binding regulations. The expected VAT revenue was compared to VAT actually paid. Calculations were made for theoretical tax base versus that calculated on total consumption of households, public entities, indirect use and investment (Wyludzenia VAT – luka podatkowa w 2014 roku i prognoza na 2015, PWC, www.pwc.pl).

Apparently, the overall tax gap is the most relevant in the case of VAT since, as it has already been mentioned, VAT is the biggest contributor to the budget and its structure\(^2\) in some cases “facilitates” gap development. In the case of VAT, fraud temptation arises when input VAT is deducted from output VAT (Kardas, 2006) or, more precisely, when the taxpayers must declare their turnover, i.e. sales and purchases that they made. Entrepreneurs, who decide to commit intentional VAT fraud, are fully aware which goods and services are best suited for

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\(^2\) VAT mechanism is based on purchases/sales of goods and services. Whenever goods are sold or services rendered, taxpayer is requested to calculate output tax by applying an appropriate VAT rate or deducting it from one’s purchases. Thus we may offset output tax with input tax. Following the settlement, taxpayer may be left with surplus or amount to be paid.
this purpose. Besides this, the VAT gap appears mainly as a result of criminal and or and poor business performance in the area of fiscal administration and is a counteracting phenomenon.

Undoubtedly the tax gap is unfavourable, not only because it reduces budget revenue, but also because:

- honest traders are exposed to burdensome and frequent audits undertaken to compensate for loss of revenue to the state budget and some are found to have committed a crime
- tax authorities are unwilling to consider any further reduction of tax rates,
- tax authorities tend to amend tax legislation to make it more stringent or expand taxes to cover a new communities of actors, or interpret tax regulations in a different way to increase revenue to the budget.

As a result of the activities listed above, the tax system becomes more restrictive and can cause taxpayers to move into the shadow economy and thus the tax gap will increase. Such behaviour by the tax authorities mean the tax gap is not the basis for building a proper taxpayer-state relationship.

As we can see, there is a serious problem is the existence of a tax gap. Until 2016, the problem was also the prospect of a VAT gap widening year after year. There is a chance that 2016 will be the first year that the phenomenon will decline as the result of actions taken by the tax authorities. For now, there has been a decrease in the actual gap in relation to its forecasts formulated in 2015.

Fiscal administration in the tax system

Besides the various taxes imposed on taxpayers’ activities conducted within a given country or on citizens of a given country who pursue activities outside of its borders, tax system, include tax administration as a relevant component. This means, that without the administration the system does not work. Tax administration consists of bodies and institutions that take care of tax services, i.e. the registration of taxpayers, tax assessment, audit and collection, as well as enforcement of tax obligations and investigating treasury crimes and offences in additions to.

The primary goal of tax administration is the collection of taxes in the most effective, fair and efficient way. The tax administration has the authority to determine the amount of tax payable regardless of the tax regimes being followed, self-assessment, official assessment, or withholding (Darono and Ardianto, 2016). Delivering this task is crucial for the economic foundations of Parliamentary decisions, i.e. state budget and tasks entrusted to local government.

In 2011 Polish fiscal administration employed 48,000 clerks at a cost of PLN 3.3 billion. In the report of “Fundacja Republikańska” (Republican Foundation) (Jagiński, 2013) in 2012 the ratio, which compared the cost of administration to the amount of collected taxes was 1.5%. This means that for every PLN 100 of tax revenue received there was PLN 1.5 used to pay for the cost of fiscal administration. The ratio has fluctuated slightly over recent years. However, there is a need to understand that it is very high compared to other countries. In 2015 it amounted to 1.6% (for more see: Mierzczewska, 2016). Calculations (Furman, 2014) demonstrate that the cost of tax administration in Poland is too high when compared to other European countries. In international statistics Poland ranks 22 among 25 countries in Europe.
Only in Saudi Arabia and Japan tax administrations found to be more expensive than in Poland.

At this point, we need to stress that at the end of 2015 the fiscal administration employed 64,159 full time staff out of whom 2,123 were employed in the Ministry of Finance, 41,640 in tax offices and chambers, 5,194 in tax audit offices, 14,894 in customs offices and chambers, 167 in Data Processing Centre and 141 in the Treasury Centre for Vocational Education (Kulicki, 2016). Attention should be drawn to the relatively low employment in the Data Processing Centre.

Despite such a large number of employees and considering the rather low efficiency of the tax system, the leadership of the Ministry of Finance has (since) initiated appropriate measures.

Firstly, they diagnosed the major issues in tax compliance and in the efficiency of tax administration. Then the Ministry of Finance prepared and adopted on 8 April 2014 a document listing actions planned for 2014-17 to enhance compliance and improve the efficiency of tax administration (www.mf.gov.pl) in line with the Ecofin Council recommendation for Poland of December 2013.

Secondly, they addressed International Monetary Fund (IMF) asking for technical assistance in tax the administration modernisation and received a report (Toro et al., 2015). The report was divided into several sections, which examined the current situation and formulated recommendations for actions that could eliminate identified problems. In particular, the authors focused on finding out if the tax administration has got: (1) adequate management and organisational structures; (2) an efficient approach to managing compliance; (3) solid business processes and effective methods of identifying operational goals and measuring their achievement and (4) the proper approach to drafting, managing and implementing modernisation strategy of tax administration (Toro et al., 2015):

The above mentioned report discusses the need for the institutional reform of tax administration, management and implementation of its fundamental goals and its approach to managing tax compliance risk. Its conclusions stress the need to create a new single structure for tax administration reporting to the Minister of Finance that would deal with all tax-related matters in Poland.

Recommendations and conclusions presented in the report were recognised and translated into the Act on the National Fiscal Administration (Act 3). As of 01.03.2016 tax administration (referred to as the National Fiscal Administration – KAS in Polish) was reorganised to maximise the use of available human, organisational and financial resources, as well as reducing unfavourable occurrences, such as dissipation and replicating of efforts. KAS reports to the Minister in charge of public finance and it is headed by the Deputy-Minister of Finance. Consolidated KAS includes: 16 chambers of fiscal administration, 16 tax offices, 16 customs and fiscal regional offices, 45 customs and fiscal regional representative offices and 143 customs and fiscal branch offices. The following entities within this structure deal with taxes: A Minister responsible for public finance, the Head of the KAS, the Directors General of fiscal chambers, the Heads of tax offices and the Heads of customs and fiscal offices (for more see: www.mf.gov.pl).(It has to be remembered that, the fiscal administration framework also covers: the mayors of villages, municipalities, towns and cities, county governors, marshals of voivodeships (provinces) and local appeal councils if they deal with taxes.3)

3 Structure and competences of individual constituents of tax administration are explained on the website of the Ministry of Finance (www.mf.gov.pl).
Therefore, the Act of KAS has modified the structure of bodies, introduced new tax-audit procedures, a new division of fiscal administration staff (fiscal officials and KAS inspectors) and expanded the rights of KAS inspectors (Szulc and Jędrzejewska, 2016). It has also introduced a new entity within the National Fiscal Administration, the IT Centre of KAS established to render IT services to organisational units of KAS (Art.43, Act 3). As Marian Banaś, the Head of KAS appointed by the Prime Minister, explains “One of KAS’s objectives is to streamline operations of services responsible for the collection of taxes. We want to facilitate rather than restrict taxpayers’ access to tax offices. When developing KAS we need to ensure smooth audit operations, make compliance easier and combat tax fraud” – he adds. (www.infor.pl)

It seems that the conclusions from the IMF report (Toro et al., 2015) have been considered when developing this new tax administration structure. The Head of KAS also believes that “…consolidated operations of the Customs, tax administration and fiscal audit offices will tighten the tax system and enhance financial security of the country. There will be fewer audits and KAS will focus on efficient audits conducted in relation with irregularities. (…) They will use the knowledge and experience of inspectors, currently employed in fiscal and customs control, to the maximum. Moreover, there will be a single database synchronised with the central register of invoices and a Standard Audit File combining data from banks, tax offices, customs and the National Court Register (Polish abbr. KRS).” (www.infor.pl)

Data provided in EU analytical documents clearly show that Poland loses huge chunks of revenue in the budget, approximately PLN 80 – 100 billion (EUR 19 – 23 billion) a year, because it is unable to skilfully and effectively counteract and combat negative tax occurrences. One of the suggestions is to establish a specialised unit that would deal with taxpayers who through aggressive tax planning avoid paying taxes globally, because today tax officers lack knowledge and experience to be able to tackle these situations.

However, it should also be pointed out, that the country’s fiscal administration has improved its tax collection by its own initiative. Evidence can be found in the document drafted by the Ministry of Finance (mentioned earlier), which discusses measures designed to ensure better compliance and boost the effectiveness of tax administration in 2014-2017. The Proposed action plan concerned its implementation through 43 initiatives (for more see: www.mf.gov.pl), out of which we have selected the following connected with new technologies and intended to combat VAT fraud:

1. Central Register of Tax Debtors.
2. POLFISC Platform and ZISAR System – new electronic tools to combat tax fraud and protect financial interests of the country and of the EU.
3. Implementation of the OGNIVO system designed to identify bank accounts owned by the debtors.
5. Improved taxpayer service and fostering other primary functions of tax administration, including the development of electronic ways of communicating with taxpayers and simplified registration procedures.
6. Digital collection and exchange of tax data to, inter alia, launch the pre-filed tax return (PFR) service for personal income tax.
7. A “warning letter” as a new tool to restrict VAT fraud.
8. A task force for coordinated investigation and audits in combating organised VAT fraud.
9. Changes in reverse charge mechanism, joint liability for trading in some steel products (not covered by the reverse charge mechanism), fuels and raw gold plus excluding them from quarterly VAT settlements.
10. Tax returns and other documents sent online by notaries.
11. Online exchange of letters with professional tax representatives.
14. Higher effectiveness in combating tax fraud; Standing Task Force reporting to the Minister of Finance.
15. Better effectiveness of audits in associated companies; Standing Task Force reporting to the Minister of Finance.

It should be noted that the Polish tax administration is extensive and employs a large number of clerks, but still is not effective. However, we are currently observing its organizational transformation and the implementation of changes as recommended by international organizations. Some of these new solutions have the form of IT systems as will be described later in this paper.

Tax law in the tax system

When analysing changes in fiscal administration, attention should be drawn to the legal base, i.e., the tax law as a set of norms that regulate the structure of individual taxes (substantive tax law), rules of tax proceedings (procedural tax law), as well as structure and responsibilities of tax bodies (constituent tax law) (Dzwonkowski, 2013).

Tax law defined, as above, determines also the structure of the tax administration in the way it operates (tax procedure). In the structure of individual taxes and the method of assessing tax obligations and in the aspects most relevant from taxpayer’s point of view. Previously, tax law was a section of financial law but its later development and abundance of regulations have turned it into a separate, independent branch of law (Nykiel, 2015), it is in the case of Poland a vast one.

The general section of tax law includes legal norms that apply to all or most of taxes binding in any given country within a specified time frame, e.g. provisions included in the Constitution and in the Tax Ordinance. Specific provisions relate to concrete taxes and are known as the so called “substantive tax law”. In regards to the Polish tax law, there is a need to bear in mind that independently of its source, be it the Constitution, international agreements, acts of law or regulations, there are court decisions and interpretations of acts of law issued by the tax administration.

Unfortunately, all discrepancies and doubts connected with tax law in Poland are explained by interpretations issued by the Ministry of Finance (MF). Interpretations may be individual (issued in response to individual applications by Deputy-Ministers of Finance) and general (issued by the Minister of Finance, since 2012 – also in response to applications). In the period 2008–2014 there were as many as 230, 101 individual interpretations and 71 general interpretations.

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4 In Tax Ordinance tax law is defined as a set of laws included in acts on taxes, acts on charges and non-tax budget payables, which specify who is expected to pay, for what, taxable events, tax base, tax rates, as well as acts on rights and obligations of tax administration, taxpayers, payers and collectors, as well as their legal successors and third persons; also provisions of double taxation treaties ratified by the Republic of Poland and other international agreements ratified by the Republic of Poland on taxation, as well as provisions of implementing acts issued based on acts on taxation (Art.3, Act 1).
ones. The fact that, for four years the Ministry of Finance has issued more than 30,000 individual interpretations annually, demonstrates a dramatic need to explain unclear and sometimes contradictory tax regulations arising from continuous amendments and updates, of dubious quality. Of course, Polish tax legislation is unusually burdensome to all who wish to pursue economic operations here. According to the report *Paying Taxes* 2015 drafted by PwC, the auditing company and the World Bank, Polish entrepreneurs spend on average 286 hours (i.e. 36 working days) annually to pay 18 taxes, which earned Poland the 87th place (amongst 189 countries covered by the study) in the ranking assessing the ease of paying taxes. Compared to other EU Member States Poland looks even worse when it comes to deal with tax-related formalities and the number of taxes to be paid (EU average is 189 hours spent on 12 tax payments). These data present Poland as a country where paying taxes is exceptionally burdensome and time consuming (Bańkowski, 2015).

It should be stressed that Polish legislation changes the most frequently across all of the EU Member States. According to calculations made by Grant Thornton in the period 2012-2014, the country produced on average almost 56 times more regulations than Sweden, 11 times more than Lithuania and twice as many as Hungary (estimates focus on the number and size of adopted legal acts; these two factors were used to calculate the EU legal certainty index). (www.barometrprawa.pl)

On top of that, only in 2015 as many as 29,847 pages of new legislation brought into force (including 992 amendments to tax legislation) in areas directly affecting businesses and, in 2016 a further 31,906 pages, i.e. 6.9% more. It should be also remembered that these are new acts of law and regulations and only a fraction of them relate to taxation.

It should be noted that the tax law in Poland:

- **changes very often, ie it is unstable,**
- **is largely based on interpretations, which results from its poor quality.**

Moreover, taxpayers in Poland are exposed to fiscal consequences resulting from changes made in interpretations by tax authorities. These consequences, are in the form of penalty interest and are often imposed on the entity several years after the submission of tax settlement and therefore may be high for the taxpayer.

**Tax principles in the tax system**

To present more complete picture of any tax system we need to mention the principles of taxation. The practice of collecting taxes treats them exclusively as postulates of science, which as general canons may help organise an efficient and socially acceptable tax system (for more see: Gomułowicz, Mączyński, 2016; Dzwonkowski, 2013)

The principles of taxation result from representatives of different schools of thought in economics striving to find the “golden rule”, which would strike the right balance between economic interests of the state and those of taxpayers. Despite the passage of time, postulates expressed in principles of taxation are still pertinent. Smith’s and Wagner’s principles of certainty and economy of taxation are willingly quoted, especially in the interest of taxpayers. When developing its tax system, states must consider the taxpayer and his trust in the state and its legislation as they must be able to predict and plan their operations without the risk of unexpected change in legal regulations. Principles of taxation surely play a prominent role in the tax system as guidelines of fairness and rational approach for legislators.
Any tax system and any tax should be productive, certain, convenient, economical, coherent, fair and simple. Sticking to these principles will only contribute to developing a fiscal-friendly environment for unrestricted entrepreneurship and growth (Sosnowski, 2012).

Studies by the OECD Forum on Tax Administration resulted in the drafting of Principles of Good Tax Administration – Practice Note, which formulated the following General Administrative Principles. Revenue authorities are encouraged to: (Principles of Good Tax Administration – Practice Note, 2001)

1) apply tax laws in a fair, reliable and transparent manner,
2) outline and communicate to taxpayers their rights and obligations as well as the available complaint procedures and redress mechanisms,
3) consistently deliver quality information and treat inquiries, requests and appeals from taxpayers in an accurate and prompt fashion,
4) provide an accessible and dependable information service on taxpayers rights and obligations with respect to the law,
5) ensure that compliance costs are kept at the minimum level necessary to achieve compliance with the tax laws,
6) where appropriate, give taxpayers opportunities to comment on changes to administrative policies and procedures,
7) use taxpayer information only to the extent permitted by law,
8) develop and maintain good working relationships with client groups and the wider community.

In tax systems composed of the above mentioned elements, all of them, if properly linked and operational, should ensure efficient collection of public contributions. Even if one of the components fails to operate correctly its overall effectiveness, will suffer.

Although tax rules are only some of the proposals addressed to the legislator and the tax administration, they determine trends and influence the quality of tax policy. It can be said that they are the basis for building a just, well organized, convenient and cheap tax system. Such a system can successfully fulfil the fiscal function for any state budget and for taxpayers.

This examination of the Polish tax system has brought us to the following conclusions:

In recent years the state budget suffers from an increasing tax gap.
1. Fiscal administration is ineffective and needs to be reorganised and equipped with new skills.
2. Tax legislation is highly inaccured and unstable.
3. The tax authorities have implemented a process of self-repair due to high inefficiency
4. Steps have been made recently to increase the budget revenue from indirect taxes.
5. New IT solutions are being implemented to improve both the efficiency of the administration and increase budget revenue.

CHARACTERISTICS OF SAF-T ON THE EXAMPLE OF SOLUTIONS IN POLAND

We need to recognise that there are problems connected with the Polish tax system, its effectiveness and the tax gap, however this is not just exclusively a Polish issue. Recently, the “tax gap”, in particular the “VAT gap” have become buzzwords. The VAT system, originally designed and first introduced in Europe, has always been seen as a simple and efficient tax.
However, at the time of its introduction in the European Union, the VAT system only had to deal with the need of individual member states to ensure stable tax revenues in their domestic markets. The foundation of the internal market in 1993 (abolitions of the internal tax frontiers), plus the enlargement of the European Union and the various options and derogations laid down by the VAT Directive 5 have made the VAT system complex and inefficient, leaving the European Union with an estimated average “VAT gap” of 12% in 2006. (I. Lejeune and al., 2012).

Member States prevent the development of VAT gap and strive to cooperate in working towards common solutions and mechanisms. To counteract the reduction in tax revenue, in particular from VAT, they have deployed substantive and legal instruments designed to combat illegal operations in the shadow economy, crime (including tax fraud and ‘carousel’ operations) or borderline cases of aggressive tax planning. For example the instruments already in use in Poland include: (1) cashless turnover promotion, (2) fiscal receipt lottery, (3) reverse charge, (4) buyer’s joint tax liability, (5) exchange of information on Polfisc Platform and a (6) standard audit file for tax (SAF-T) - recently introduced for some taxpayers. Some instruments which are repressive in character should not be forgotten, for example (7) treasury audits (including cross-audits) or (8) denunciations.

Besides the existing and operating instruments limiting the possibility of tax abuse some new projects are about to be launched; they include: (9) central register of invoices, (10) electronic fiscal receipt and (11) split payment (for more see: Mierzejewska, 2016).

The last tool is expected to increase budget revenue by reducing tax fraud (in particular VAT fraud) is the Standard Audit File for Tax (SAF-T, in Poland called JPK).

Also the Commission has referred in its Communication to two new technologies to improve VAT collection, which were also described in the Green Paper, i.e. the split-payment model and the “data warehouse pull model” in combination with SAF-T. Description of these methods were already published in 2010, while the tool was developed and (partially) implemented in Poland in 2016.

Under the data warehouse pull model, businesses upload predefined data concerning transactions in an agreed format to a data warehouse. The details could be based on the SAF-T, as laid down in the OECD Guidance (Guidance for the Standard Audit File – Tax, 2010). The data includes the particulars of the related invoice and may contain proof of delivery and payment, i.e. all the data needed to carry out a VAT audit. Entrepreneurs provide tax authorities with direct access to their transaction data in the data warehouse. If necessary, tax authorities can pull the data out of the warehouse, in order to perform real-time VAT monitoring and decrease the risk of VAT fraud (hence the term “pull” model). A reform of the design of VAT and the compliance process will help to narrow the VAT gap. In addition, the Commission should also look at improving and standardizing audit methods, creating an EU Standard SAF-T, so as to allow cross-border auditing and efficient domestic audits and further investigate alternative ways of VAT collection and monitoring. A targeted and in-depth approach to these different aspects will make it possible to achieve the strategy goals.

Poland has decided to implement a tool based on SAF-T concept. As a result, we have witnessed technological advancement in the tax administration, which - compared to business – which is digitally lagging behind. IT systems have been used in business accounting for over 20 years while in their environment the last non-digital fortress has been tax administration. In 1999 Poland introduced practically the first universal system in social insurance while in 2008 e-Podatki (e-Taxes) and priority e-Deklaracje (e-Declarations) were launched for the first time. E-declarations are also tools of modern, effective and user-friendly
fiscal administration, which enable submitting tax returns online. By the end of 2016 more than 62 million documents were submitted in electronic format. (www.mf.gov.pl) The next step in the process of digitization of tax administration is the introduction of reporting as described above, in Poland called JPK.

The system of transferring fiscal data in SAF-T format is more technologically advanced than the above mentioned systems (e-Podatki and e-Deklaracje) as it allows to automatically examine the content of submitted files (Advanced Analytics for Better Tax Administration. Putting Data To Work, 2016). Pursuant to binding regulations, taxpayers must submit data on (and without) request of tax administration in uniform electronic format identical for all. Implementation of Polish SAF-T draws on the experience of solutions successfully incorporated into legal systems of many EU Member States (e.g. Austria, Belgium, Denmark, the Netherlands, Lithuania, Luxemburg, Germany, Slovenia, Sweden, Portugal and the United Kingdom). (www.mf.gov.pl)

Below it can be found a description of the SAF-T concept, based on the assumptions of the Polish system JPK, to show the ideas of this instrument and its possible solutions.

The Ministry of Finance defines Polish concept of SAF-T as a collection of data (database), consisting of the information systems of entrepreneur, including information on business operations for the period in question, with layout and format allowing for easy processing. The Ministry of Finance has prepared a set of reporting formats and data required (7 structures) in areas such as:

1) accounting books JPK_KR
2) bank statements JPK_WB
3) warehouses (adoption from the outside, exit, internal expenditure, movements in the stock) JPK_MAG
4) records of the purchase and sales of VAT JPK_VAT
5) invoices (the invoices) JPK_FA
6) tax revenue and expenses ledgers JPK_PKPIR
7) records of revenues JPK_EWP

Each of the seven structures mentioned above consists of three sections:

1...First section - contains information that identifies the entity involved in both the JPK (date of file creation, dates defining the scope of information reported in the file, purpose of submission, etc.) and the entity itself (company, NIP - tax identification number, address, etc.);

2...Second section contains information about economic events that depend on the structure that the JPK relates to;

3...Third section contains checksums to verify that all information has been correctly read, ie: the number of reported rows, the sum of reported figures.

Data of the 4th structure will need to be submitted to the Ministry of Finance every month without requirement via electronic means on communication considering the need to ensure security, reliability and incontestability of data in books of accounts. JPK_VAT shall be filed monthly by 25th day of the month following the month to which it applies.

Because it is transferred directly to the Minister of Finance every month the structure JPK_VAT is the most important, as shown in Tax Ordinance (Art. 82 p.1b, Act 1).

JPK_VAT structure includes sections such as: VAT registration supply - this subsection should include date of sale, date of issue, invoice number, buyer information (company,
address), sales taxed at 23%, 8%, 5%, 0%, exempt sales, import, export, intra-Community acquisition, intra-Community supply of goods, tax output amount.

VAT registration acquisition - should include: information about the invoice issuer (name, address, tax identification number, etc.), invoice number, date of receipt of the invoice, net amount on purchase of goods and services classified as taxable item in fixed assets; tax input amount.

The duty to submit JPK_VAT file on a monthly basis (structure 4: records of VAT purchases and sales) was introduced based on the following principles:

**From 1 July 2016** large companies transmit:
- Compulsorily and without request, send reports from their VAT records and in accordance with the structure of a single audit file, obligatorily at the request of the authorities data in the form of a single audit file.
- Large companies are those companies, which employed more than 250 employees (on an annual average) in at least one of the last two financial years, or have achieved more than 50 million EUR in net annual revenue from sales of goods and services as well as in financial transactions and the total assets in the balance sheet as of the end of one of those financial years, exceeded 43 million EUR.

**From 1 January 2017** medium-sized and small companies compulsorily and without request, send monthly reports on VAT records (according to the established structure).
- Medium-sized companies are those, which have employed less than 250 staff members (on an annual average) in at least one of the last two financial years which earn less than 50 million EUR in the net annual revenue from sales of goods and services as well as financial transactions, or the total assets in the balance sheet as of the end of one of those financial years, did not exceed 43 million EUR.
- Small entities (SME) who have employed less than 50 staff members (on an annual average) in at least one of the last two financial years which have achieved less than 10 million EUR in the net annual revenue from sales of goods and services as well as financial transactions, or the total assets in the balance sheet as of the end of one of those financial years did not exceed 10 million EUR.

**From 1 January 2018** micro entities obligatory and without request, must send monthly reports on VAT records (according to the established structure).
- Micro entities who employed less than 10 staff members (on an annual average) in at least one of the last two financial years and have achieved 2 million EUR in the net annual revenue from sales of goods and services as well as financial transactions, or the total assets in the balance sheet as of the end of one of those financial years did not exceed 2 million EUR.

The obligation to transmit data in the JPK format will also apply to companies whose fixed establishment is outside Poland but which are registered for VAT, in Poland. JPK will oblige ca. 1,842,589 traders registered in Poland and subordinated to the Polish Tax Ordinance (Act 1) to transmit data within this system. Initial estimates show that actions undertaken so far and the implementation of the JPK from 1 July 2016 with the intention of increasing revenue, already in 2016, helped reduce the VAT gap by 1.6 p.p. (from 23.5% VTTL in 2015 to 21.9% in 2016, where VTTL represents theoretical VAT revenue), (Government adopted Multiannual Financial Plan for 2017-2020).
Enterprises which, for no good reason, refuse or fail to present tax ledgers or accounting evidence underlying those ledgers in the JPK format within a specified time frame will be liable to a fine of 2,800 PLN. Other sanctions related to SAF-T may be charged upon persons responsible for JPK format reporting. It is a fine decided, on a case by case basis, depending on the financial status of the fined individual (maximum amount for 2017 is PLN up to 19,199,995.20). The penalty will be imposed when any taxpayer fails to submit the JPK and her/his conduct is interpreted as uncooperative or leading to prevent tax or fiscal audit to happen. The maximum fine for failing to submit requested tax data to the competent authority within a specified deadline amounts up to PLN 3,199,999.20 (in 2017).

Under this new solution - JPK will generate benefits to the tax administration but it also offers advantages to taxpayers, such as:

- being able to use invoice records as a tool in communication between taxpayer-business partners;
- facilitate auditors (internal and external), to help monitor the performance of accounting services;
- do away with obstacles in transmitting electronic data;
- provide rapid confirmation of the correct returns, which will ensure timely VAT settlements with compliant taxpayers.

Undoubtedly, to tax authorities the solution is more relevant since it will:

- improve tax authorities efficiency (better collection of taxes at lower operational costs of tax authorities);
- create a perspective to reduce taxes (VAT rate) due to the narrowing of the tax gap (more efficient in combating VAT fraud or tax avoidance);
- give access to data in a format suitable for multidimensional analysis;
- uniform checks and audit procedures, which should translate into better management of audit teams;
- reduce cost as a result of storing documents in electronic format.
The author’s outline of a possible analytical model based on SAF-T files

Considering the possible features of SAF-T system (described in the example of the Polish system design above), the author presents a model of automatic tax auditing of economic entities supplying data in SAF-T file format. On the basis of literature studies and own experiences, a conceptual author's model was designed. The idea is shown on Figure 2, below.

Figure 2: The author's proposal of an automatic fiscal controller model based on SAF-T files

The goal is to define a self-learning system that can adjust to new patterns of company behaviour. This could be achieved thanks to:

1) modelling of company behaviour based on SAFT data, results of inspections and external data (like scoring or credit bureau, economic information bureau etc),
2) involvement of experts (qualified tax auditors) as the source of information about company behaviour and procedures.

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5 The intention is to build data driven models to predict probability of fraud.
In the first step, segments to which individual units will be assigned, should be defined. Segments will be extracted based on the features of the units, such as the size of revenue, amount of total assets, number of employees, type of reporting standard or branch in which they operate.

Then, expert rules will be prepared for each segment. They will be formulated by experts of the field of tax auditing in the form of rules specifying suspected entities.

The statistical models will be prepared for each segment. It will be necessary to define other priorities for the use of expedition rules and statistical models for each segment as well. This means that, depending on the segment, the system should use the expert rules and the statistical models with a different validity.

Each of three components: the models, the rules and the priorities for their use will determine the Audit Strategy (AS) for the segment.

Constructed Automated Auditor (AA) module examines the population of business entities and identifies these which are suspected. The list of suspected entities will be transferred directly to the tax inspectors and then they will select the entities that should be audited.

Based on the results of the audit, the tax administration will impose penalties or take other actions against frauds. The results of the control with the decisions made are the basic data that will be used to evaluate the effectiveness of the whole model.

The main requirements are located in areas of:

**Data**

SAFT data is the input into a system that automatically identifies suspected/fraudulent traders. When developing the automated audit model based on SAF-T structures, the following assumptions were made to identify transactions and entities which actions may reduce tax revenue:

1. A mechanism of selecting transactions and operators should be based on data from mandatory part of the SAF-T system, which is transferred to tax authorities each month.
2. The efficiency of selecting suspected traders may be enhanced if the following external sets of data is used simultaneously and coherently:
   a) on the scope and results of previous audits
   b) from external registers, such as, e.g.: Economic Information Bureau,
   c) typology of transactions collected by GIIF (General Inspector for Financial Information)

available online (social networks and SNA analysis, auction platforms, etc.), so called Open Source Intelligence
3. The use of a wider spectrum of data will help identify suspected traders not only through direct validation of financial data but also based on market intelligence (e.g. employees’ opinions), opinions of business partners (e.g. data from Economic Information Bureau) and data from associated entities.

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6 The assumption is that experts will formulate rules in common language. The system will be able to process them together with analytical models.
4. Integrated and coherent rough data shall provide foundations for preparation of:
   a) The expert analysis leading to the drafting of a catalogue of already known types of tax fraud, their mechanisms and ways of revealing them recorded in expert rules;
   b) The lists of indicators/parameters to be used in statistical analysis. Those lists will be prepared by the tax experts and will be used in description companies itself and their behaviour. Those data will be the base for derivation of statistical probability models of suspected trader at the level of individual companies.

**Process**

In process of detecting fraud, taking into account constructed modules based on data from many data base, expert rules and prioritise of them because of the belonging to particular segment of entities, special role is for indications of suspected traders.

1. Database analyses results will be a justification for audit decisions of tax authorities.
2. Audit process will be automated thanks to Automated Auditor software. It’s aim will be to manage Audits Strategies and base on them AA automatically browse SAF-T data bases to validate records and identify suspected traders, as well as any dubious entries or events. Automated Auditor will be based on expert rules and also on statistical models.

**Efficiency**

There is an expectation to dramatically improve efficiency thanks to:
1) automation and transparency,
2) reduction time of identification and reaction for known frauds,
3) reduction of time needed to adoption to new fraud technics,

To maintain the high efficiency of the mechanism over time, expert rules and statistical methods must be updated on an on-going basis. Thus the system must be structured as a self-learning one.

As we have already observed, the tax system is important for the economy of the country as it fuels resources for the implementation of government objectives, which if the system is not efficient will never be accomplished. In order to counteract the tax gap, the government must use various tools and methods as discussed in the paper in relation to VAT. Methods must be adequate to operations of dishonest traders or tax criminals and, preferably, they should be applied before fraud is committed. These methods and instruments should bring the expected effect, i.e. they will tighten the tax system, only when they are backed up by an effective and well organised tax administration. Hernando de Soto’s (de Soto, 2003) claims that if entities avoids paying tax it was not their fault but the government’s. It was the responsibility of the tax authorities to help people tax. Inefficiency that produces a tax system which is unfair to honest taxpayers directly translates not only on revenue to the budget but also upon competitiveness of individual businesses and that of the economy and the society as a whole. New technologies will change the performance of the tax system in Poland in many areas. The model focused on multilayer analysis of the system of SAF-T records and the reports offers a solution, which may effectively prevent the widening of the tax gap resulting, inter alia, from fraudulent business operations. Based on OECD recommendations and experiences of other countries, the every tax authority can deliver a modern solution. The first step is to
monitor whether tax data are complete and collect them in an efficient (and effective) manner. Hence, the subsequent stages are designed to “learn” as much as possible from the available data about tax fraud.

REFERENCES:


Przeciwdziałanie szarej strefie w Polsce, UN Global Compact (2015/16), available on-line at

http://www.economist.com/node/11511806?zid=316&ah=2f6fb672fa113fdd3b11cd1b1bf8a77), accessed as of 26.05.2017


Act of 29 August 1997 Tax Ordinance, Dz.U. 1997 Nr 137 poz. 926 (Act 1)
The use of accounting information for sugar business operations at the South Seas Development Company

By

Yuta Sumi
Graduate School of Business Administration
Kobe University
yuta.sumi@stu.kobe-u.ac.jp

and

Masayoshi Noguchi
Graduate School of Social Sciences
Tokyo Metropolitan University
mynoguchi@tmu.ac.jp
1. Introduction

In the context of the modern development of East Asia, Japan’s government agencies wielded a great deal of influence through their involvement in colonial and territorial management throughout the region. The influence was wielded through so-called “special companies” (tokushu kaisha), which included the South Manchuria Railway Company (Minami Manshū Tetsudō) (hereinafter, SMR) in the State of Manchuria, the Oriental Colonization Company (Tōyō Takushoku) (hereinafter, OCC) in Korea, and the South Seas Development Company (Nan’yō Kōhatsu) (hereinafter, SSDC) in the South Sea Islands (Micronesia) (see Figure 1).1

These “enterprises” operated primarily in fields where a high degree of public interest existed, such as transportation, given the necessity to achieve Japan’s national goals, and large-scale projects were in fact undertaken in the transportation industry as represented by the case of the South Manchuria Railway (see also Noguchi and Boyns 2013). However, the accounting impact resulting from the activities of the national policy companies prior to and during the Second World War has not yet received sufficient scholarly attention, with some few exceptions (e.g., Sasaki (2001) on Japanese National Railways and Yamaguchi (1998, 2000, 2001) on Nippon Yusen).

These companies succeeded in introducing and establishing pioneering management tools for control purposes that outdid the accounting practices of other, more conventional Japanese firms at an early stage of 20th century. In fact, it is now being revealed that such accounting innovation was influenced by national policies of East Asian colonial and territorial management developed by the Japanese government that promoted militarization in order to make the transition to modern statehood during the global period of colonial and territorial expansion.

While the national and government policies that have been examined are related to businesses classified as non-manufacturing industries, such as transportation and

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1 See https://tighar.org/Projects/Earhart/Archives/Research/ResearchPapers/mandates.html (accessed 27 May 2017), in which governance, economic development and military development under the Japanese Mandate were summarized.
settlement promotion (especially the financial aspect), i.e. the SMR and the OCC, the focus of development in the mandated territories of the South Sea Islands region was on food and agricultural resources such as raw sugar. Prior studies indicate that the accounting practices of the important special companies, developed against the backdrop of national policies, were subject to the specific influence of the policies adopted, but it still remains unclear whether they were also subject to differences in the respective pattern of substantive production. In this regard, the significance of previous research has been limited; thus, the basic research question examined in the present study is to clarify whether, within the same national policy company, the difference of industries brought about any differences in their respective accounting practices. In sum, we focused on how accounting practices functioned in the agricultural resource development in the South Seas Islands.

The SSDC was engaged in the sugar business. Whereas the enterprise was basically in charge of refining raw sugar derived from processes such as squeezing and filtration, the cultivation and growth of the sugar cane (the raw material), though partly undertaken by company’s own farms, were in the majority of cases carried out by tenant farmers, who had migrated from Okinawa to rent company-owned plantations or the public lands hired out to the SSDC free of charge or at a low price (Imaizumi, 1992: pp. 142-3; Nanyocho, 1932: pp. 333-4) and sell their crops to the SSDC. This research is based on historical materials of the financial statements and the related schedules that the SSDC submitted to the Ministry of Colonial Affairs, the supervisory agency within the Japanese government, via its parent company, the Oriental Colonization Company, and other documents relating to sugar business of the SSDC archived in the Japan Centre for Asian Historical Records (formerly the collection of the Training Institute of the Foreign Ministry of the Government of Japan in Myogadani) and the National Archives of Japan, Tsukuba Annex. The financial statements and the related schedules played an important role for allowing the supervisory authorities to monitor the validity of profit sharing between the company and the tenant farmers. To better understand the relationship between the SSDC and the farmers, the present study draws on the analytical framework of strategic outsourcing proposed by Nishiguchi (1997 and 2001) that deals with the relationship between a prime contractor and subcontractors that is commonly observed in Japanese firms.

The structure of the study is as follows. The next section examines patterns peculiar to the exploitation system, based on the analytical framework of strategic outsourcing, particularly in the relationship between a prime contractor and subcontractors. Section 3
presents an overview of the establishment of the SSDC and the development of its sugar business. Section 4 considers pricing processes involved in the acquisition of the raw sugar cane that played a decisive role in the profit sharing system between the SSDC and the tenant farmers. Section 5 analyzes the premium incentive system that played a “retrospective” role in compensating distribution through the purchase price of raw sugar cane. The highlight here is that the premium incentive system was revised from 1933 to 1934, this being made without regard to the interest of tenant farmers and implemented in a fashion that resulted in the unilateral exploitation of the former by the SSDC and the South Seas Agency (Nanyō-chō), another supervisory agency stationed in the territory. Section 6 investigates the nature of the role played by the financial statements and the related schedules submitted by the SSDC so that its supervisory agencies could monitor the validity of profit sharing between the company and the tenant farmers. The final section discusses the conclusions gained through this study along with the implications.

2. Accounting in the Context of Colonial and Territorial Management and the Concept of Strategic Outsourcing

Accounting techniques were and are utilized, directly or indirectly, under different political regimes and they were occasionally used even to promote specific interests closely connected with the interests of the regime (Davie, 2005: p. 56). In addition, accounting practices played an important role to sustain a social regime (Tyson et al. 2005: pp. 228-29 Tyson and Davie, 2009: p. 161). Accounting techniques indeed played central roles military organizations promotion of imperialism (Neu, 1999: pp. 55-6, 2000: p. 164; Funnell, 2003, 2005, 2006). Each imperial country was able to acquire and even bring its colonial territory under rule and make its resident population “controllable” through the special technology represented by accounting techniques. Therefore, Bell et al. (1995: p. 2) described accounting techniques as the “software of imperialism” (see also Neu, 1999: p. 57). Miller and Rose (1990: p. 8), using the expression “technologies of government” (see also Neu, 2000: p. 166), explain the role of the technologies represented by accounting in the following way:

We use the term technologies to suggest a particular approach to the analysis of the activity of ruling, one which pays great attention to the actual mechanisms through which authorities of various sorts have sought to shape, normalize and instrumentalize the conduct, thought,
decisions and aspirations of others in order to achieve the objectives they consider desirable (Miller and Rose, 1990: p. 8).

In particular, research focusing on sugar business have been conducted in Anglo Saxon settings such as Cowton and O'Shaughnessy (1991), Fleischman and Tyson (2000), Hooks and Stewart (2007), Irvine (2012), Sharme and Irvine (2016) and Tyson and Davie (2009). These studies indicate that accounting was not only “used to monitor the performance of economic entities as well as to provide behavioral incentives to achieve these rewards” (Tyson and Davie, 2009: p. 161), but also had diverse functions such as governing workers, controlling different ethnic labors, justifying and sustaining authority and hierarchy of the social system (Sharme and Irvine, 2016: p. 148; Fleischman and Tyson, 2000: p. 28; Hooks and Stewart, 2007: pp. 143, 165; Irvine, 2012: p. 211).

However, this theme of research has been occupied in Anglo Saxon settings. Accordingly, this study focuses on the area of East Asia, particularly the South Sea Islands, which has received little attention from accounting historians, to provide an additional important case about the details of accounting under non-Anglo Saxon colonial and territorial management. By so doing, this study aims to enrich our understanding of function of accounting.

So, this study is to clarify that the Ministry of Colonial Affairs and the South Seas Agency (Nan'yō-chō), the supervisory authority of the area, could continuously monitor the income distribution relationships between the SSDC, which played a pivotal role in governance over the territory of the South Sea Islands, and the tenant farmers who engaged in sugarcane cultivation in the area, through disclosed detailed accounting information concerning “material costs of sugar cane” and “farm rents” in the accounts provided by the company.

The analytical framework adopted in this study is the one proposed by Nishiguchi (1997 and 2001) to examine interrelationships of strategic outsourcing and shared supplier networks (Nishiguchi and Brookfield, 1997: p. 90). According to Nishiguchi (1997: p. 75), outsourcing is defined as “contract that partly contribute in executing a bundle of major contracts”. The case of outsourcing defined by Nishiguchi is clearly recognizable in the relationships between prime contractors and “subcontractors (or associated companies, suppliers, etc.)” (Nishiguchi 1997: p. 75) in manufacturing industries, as represented by the instances of outsourcing of component development and production (based on engineering designs set by the prime contractor itself or collaboratively with
Adapting a biological analogy, Nishiguchi (2001: p. 202) classifies relationships between prime contractors and subcontractors into three types: exploitation, competition, and symbiosis. Exploitation is “a relationship in which one species gains whereas the other suffers”, competition is a relationship “in which two coexistent species hamper each other”, while symbiosis promotes “each other’s proliferation”. Competition applies when competitive products or services are in the same markets, while the remaining two patterns are appropriate for analyzing relationships between prime contractors and subcontractors (Nishiguchi, 1997: p. 65).

The systems of exploitation and symbiosis can be distinguished from each other by several characteristics. First, decision-making is largely a top-down, unilateral process when the prime contractor is exploitative, while it tends to be based on interactions among all the constituents in a symbiosis system (Nishiguchi, 2001: p. 203). Second, the prime contractor is mainly concerned with portfolios or deployment of functional skills and emphasizes result information in an exploitation system. In contrast, relational skills and process information are stressed in a symbiosis system (Nishiguchi, 1997: p. 67; 2001: p. 203). According to Nishiguchi (2001: p. 216), “[f]unctional skills refer to those required and…used to perform specific tasks and achieve specific goals”, while “[r]elational skills refer to capabilities of a requisite variety to connect and reorder one’s own and other’s functional skills as necessary in a relatively localized field or context of activities” (see also Nishiguchi and Beaudet, 1998 and 2000). Third, there are “clearly discernible boundaries between organizations” in the case of exploitation, while “organizational delineations essentially have no boundaries (as exemplified by interfirm crossfunctional teams)” under symbiosis system (Nishiguchi, 2001: p. 203). These contrasting features are mirrored in differences in the control structures of both systems. While in exploitative control structure the prime contractor operates at arm’s length from the subcontractors, some freedom is delegated from the prime contractor to the subcontractors in symbiosis (Nishiguchi, 1997: pp. 67-8).

According to Nishiguchi (1997: p. 67), the focus is placed on the concept of “hire many and control them by division” (Nishiguchi, 2001: p. 204) and the system of “specific control of each individual subcontractor at arm’s length transaction” tends to be adopted under the exploitative control structure, while the structure of “clustered control” is adopted in the case of a symbiosis system. Nishiguchi (1997: p. 68) points to how the others, including subcontractors and third parties in some way) (Nishiguchi 1997: p. 75).
contracts between a prime contractor and subcontractors are carried out under both exploitation and symbiosis systems as follows:

In the exploitation system, safeguards against organizational dysfunctions and paralysis in outsourcing are bidding, multiple sourcing, and short-term contracts, whereby an order of the same specifications may be sourced to several bidders, subject to the market forces. The prime contractor’s bargaining power can be maximized by rotating short-term contracts, whereby bidders and contract winners may be frequently changed based on the result information, for example, the price. In contrast, in the symbiotic system a small number of select suppliers meeting the requirements of requisite variety are employed, usually under single or parallel sourcing arrangements built on long-term contracts (Richardson, 1993). The relations are based on the process information accumulated thorough deeper commitments such as design-in (early supplier involvement in design). The reason for parallel sourcing of certain categories of products and/or services (but usually with different specifications) is to proactively safeguard against potential moral hazards of a monopolistic single sourcing situation and to keep a level of requisite variety (Nishiguchi, 2001: p. 205).

Nishiguchi (1997: p. 67) argues that decision-making is made from the top down based on simplified result information, i.e., summarization, at a fixed time point, of process information (e.g., price information at a market, which plays an effective role but does not allow a reversible interpretation in non-contextualized settings), while decisions are made introspectively, and through synergistic coordination, by focusing on process information under a symbiosis system. Nishiguchi (2001: p. 205) also summarizes the difference in objectives between the two systems as follows:

The ultimate objective of the exploitation system is a kind of zero-sum distribution where one party tries to secure as large a portion of the share as possible at the cost of the other. By definition, the system is divisive, and its orientation dichotomous. A party tries to add a little more of its own share to the disadvantage of the other, and vice versa. By contrast, parties in the symbiosis system are inclined to cooperate to enlarge the pie itself in the spirit of cocreation and coadvancement. The system encourages them to be permeable, absorptive, and win-win oriented (Nishiguchi and Anderson, 1995).

The above classification simply describes ideal types, whereas in reality the features of both systems coexist subject to differences in degree (Nishiguchi, 1997: p. 66). More importantly, it is supposed that a new vision will be presented through which the two systems are complicedly entangled and synchronized (Nishiguchi, 2001: p. 203). Nishiguchi (1997: p. 65) adds that:
in so far as there is scope for repeated (as opposed to one-shot) games it is very unlikely that there will be an exploitative relationship reaching an extreme stage in which the prime contractor (the predator) kills off the subcontractor (the prey). This is because the former’s survival depends on the latter’s survival, and therefore a policy of neither sparing nor devouring prey is an evolutionary stable strategy (Nishiguchi, 2001: p. 203).

3. The SSDC and Its Sugar Business

The SSDC was established after the First World War in November of 1921 with funding advanced by the OCC to develop the South Sea Islands, then under naval administration, as a primary site for the production of raw sugar. The OCC was the principal shareholders in the SSDC and dispatched directors and auditors to the company during the SSDC’s lifetime period (Takagi, 2008: pp. 33-35; Takemura, 1984: pp. 145-147). Haruji Matsue who had originally engaged in the sugar company in Taiwan was exception because he was appointed as executive director from the outside, when the SSDC was established (Takagi, 2008: pp. 28; Takemura, 1984: pp. 145-147).

On the other hand, the South Seas Agency2 was established in March 1922, under the direct supervision of the Prime Minister of Japan, to govern the South Seas Islands, while, after 1929, the authority was transferred to the Ministry of Colonial Affairs (Nanyocho, 1932: p.46) (see also appendix 1).3 According to Yanaihara (1963: p. 94), the SSDC “was from the outset an enterprise that was formed in association with the governance of the South Sea Islands,” and under the auspices of “government protection” was closely interdependent with the “governance” of the South Seas Agency, the administrative agency responsible for the management conducted by the SSDC and the civil administration in the South Sea Islands.4 While

2 The governor of the South Seas Agency was able to issue orders as well as penal regulations based on its authority (Nanyocho, 1932: p. 46).

3 The Ministry of Colonial Affairs governed agencies in each territory such as Korea, Taiwan, Kwantung, Sakhalin and South Seas Islands and supervised the SMR and the OCC. Also, the Ministry supervised projects concerning immigration and colonization (JACAR, A01200589200).

4 Fischer (2013) describes that “Matsue [in the SSDC] was destined to be financially successful… he had no competition, his cheap Okinawan labourers knew the sugarcane business, and he had the Japanese government offering him cheap land, planting subsidies and low taxes” (Fischer, 2013: p. 199). Peattie (1988) refers to the relationship between SSDC and South Seas Agency in chapter 5. The growth of the SSDC was due to the support from the South Seas Agency and “[i]n return for its support the South Seas Government closely monitored Matsue’s company and obliged it to cooperate in the development of the mandate…” (Peattie, 1988: p. 132).
the SSDC received financial support, from the time of its establishment, in the form of production subsidies from the South Seas Agency, it also made significant tax payments in the form of “departure taxes (imposed on alcohol and sugar exported from the South Sea Islands to Japan and other colonies)”. In particular, fluctuations in the volume of sugar production refined by the SSDC were directly linked to the amount of departure tax supporting the financial foundation of the South Seas Agency. Accordingly, supervision of the SSDC’s sugar business was also the principal task in the territorial administration by the South Seas Agency.

Records in the Diplomatic Archives of the Ministry of Foreign Affairs of Japan (records formerly in the collection of the Training Institute of the Foreign Ministry of the Government of Japan in Myogadani) show that immediately after the establishment in 1921, the SSDC was closely involved with labor management among migrant laborers (the majority of whom were natives of Okinawa, where conventional industries were as yet underdeveloped) (Iitaka, 1999: p 107; Matsue, 1932: pp. 80-82) through setting price standards for the raw material, sugar cane, at the principal sugar refineries on Saipan, Tinian, and Rota because the cultivation was a labor-intensive operation.5

From Figure 2, it is clear that the operations of the SSDC grew steadily during the period lasting up to the outbreak of the Pacific War in 1941, though net income decreased during the years from 1938 to 1940, the principal factor for this slump being sluggish growth of sugar revenues based on reduced production and increases in costs due to price increases (JACAR, B06050184400; B06050184600). The return on sales (ROS) for the business operations of the SSDC during the period from 1933 to 1941 are shown in Figure 3.6

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5 Fischer (2013: p. 199-200) points out that the number of immigrants from Japan, in particular from Okinawa, to South Sea Islands increased and the land was taken from indigenous people as the SSDC engaged in the development of the land. On the other hand, Iitaka (1999: p. 133) indicates that the indigenous people received economic benefits (money) and came to expect its benefit by lending and selling the land to Japanese.

6 ROS indicates gross income on sales. However, ROS in the mineral phosphate business indicates operating income on sales.
From Figure 3, it is clear that the ROS for the sugar business contributed significantly to the stability of the SSDC’s growth. After 1929, the sales volumes were assigned to each sugar producer by agreements on the disposal of produced sugar made inside the Sugar Producers Association (Tōgyō Rengōkai) (Fujita, 2009a: pp.109-110; Kubo, 2009a: pp. 58-9). The lowest price per unit (the price of sugar) was supported with this agreement (Kubo, 2009c: pp. 308-309). On the other hand, companies such as Dainippon Sugar Company, Taiwan Sugar Company, Meiji Sugar Company and Ensuiko Sugar Company engaged in sugar business in Taiwan, where each company was eager to reduce the production cost, in particular the material cost of sugar cane, in getting competitive advantage (Kubo, 2016: p. 8). So, reduction of production costs was still necessary for the SSDC to ensure profitability of the sugar business. This was clear from the following explanation by the SSDC itself:

…by virtue of the climatic and soil conditions and the rough and unskilled character of the cultivators, the quality of the sugar cane produced in the South Seas Islands is of a much lower grade than that in Taiwan. It is significantly inferior in terms of yield as well, and as the material costs per thousand kin [i.e., per 600 kg] are quite high in comparison with [those produced in] Taiwan, the cost of sugar production is unavoidably high. Moreover, since this product must compete with Taiwanese sugar in the market, it is necessary to curtail expenditures as much as possible in order to avoid setting the selling price at a higher level, given the high manufacturing costs (JACAR, B06050151300).

Income from the sugar business accounts for about 77-90% of total income in the SSDC from 1933 to 1941 (JACAR, B06050222400; B06050156500; B06050157000; B06050161800; B06050162000; B06050172500; B06050172700; B06050184400; B06050184600; B06050193000; B06050193800).

In particular, a production quota was assigned to each sugar company by the agreement on the production adjustment made inside the Sugar Producers Association from 1933 to 1934 (Kubo, 2009a: pp. 58-9; Kubo, 2009b: p. 225).

While the price of sugar in the world was declined in 1929 due to oversupply of sugar and further aggravated in 1930, the price of sugar in Japan remained stable (Fujita, 2009b: pp. 166-167). In fact, the SSDC referred in the business reports from 1929 to 1930 to the good performance achieved in the sugar business (The South Seas Development Company, Business Reports no. 10, 5; no. 11, 5; no. 12, 5).
Table 1 shows that the production costs accounted for a large portion of the total manufacturing costs per tan (60 kg) of raw sugar. Based on available records, information on the components of the production costs can be ascertainable only from 1935. However, as shown in Table 1, it is clear that the principal part of these costs was the material cost of sugar cane, i.e., the purchase price of the raw material. While some sugar cultivation was carried out on plantations managed directly by the company, the SSDC arranged for the majority of the cultivation to be carried out by tenant cultivators (mostly migrant laborers) (Matsue, 1932: p. 198). With the collection of the farm rents from these tenants, the SSDC also purchased the sugar cane they produced at a price set in advance (Imaizumi, 1992: p. 156; Matsue, 1932: p. 198). The material costs of sugar cane shown in Table 1 are the total cultivation costs on directly managed farms and material costs arising from purchases from tenant farmers and others of the sugar cane they cultivated.

4. Pricing of Sugar Cane Purchased by the SSDC

Engaging in the sugar business in the South Sea Islands required permission from the Governor of the South Seas Agency, and it was for this reason that the sugar business in the region was exclusive to the SSDC. On the other side, cultivation of sugar cane in the region was strictly limited; without the permission of the Governor, its use as raw material for anything other than sugar or its export outside the region was prohibited. Article 4 of the Sugar Industry Regulations (Tō-gyō Kisoku) enacted in September 1, 1922 stipulated that “sugar cane cultivators in the raw material collection area shall be

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10 While farm rents were on average 30% from 1921 through 1927, these dropped to an average of 24% from 1927, to an average 20% in 1930, and were lowered to 15% on average in 1934 (JACAR, B06050150500). From 1936 to 1941, farm rents were as follows: 13.63% in 1936, 13.86% in 1937, 13.22% in 1938, 12.84% in 1939, 12.13% in 1940, and 11.13% in 1941 (JACAR, B06050162000; B06050172700; B06050184600; B06050193800).

11 Although few in number, there were also some subsistence farmers not employed by the SSDC (Imaizumi, 1992: pp. 155, 176).

12 The “Sugar Industry Regulations” (Tō-gyō Kisoku) and “Ordinance for the Encouragement of the Sugar Industry” (Tō-gyō Shōrei Kisoku) were established by the South Seas Agency in September and October of 1922 (Nanyocho, 1938: pp. 1550-1) respectively, in order to control and promote sugar production in the South Sea Islands region. As a result, it became necessary to obtain advance permission from the South Seas Agency not only for sugar production but also for the export or use for other purposes than sugar production of sugar cane. Cultivated sugar cane was stipulated as being reserved for sale to sugar operators inside the region.
required to sell [their crops] to sugar business operators in that region, and sugar business operators shall be required to collect [this produce] within the period designated by the Governor of the South Seas Agency” (Nanyocho, 1938: pp. 1550-1). In fact, for the tenant farmers who produced sugar cane, the SSDC occupied the position of sole buyer, i.e., a monopsony.

In order to prevent the SSDC’s use of its exclusive position to exploit tenant farmers, the price at which sugar cane would be purchased from the farmers was determined with the prior approval of the Governor of the South Seas Agency. Article 6 of the Sugar Industry Regulations stipulates that “when a sugar business operator wishes to purchase sugar cane in a raw material collection area, the purchase price thereof shall be determined in advance and a written statement clarifying the basis of the price calculation must be provided, as well as obtaining the permission of the Governor of the South Seas Agency” (Nanyocho, 1938: p. 1551).

As far as can be determined from the SSDC’s historical records, the standard unit purchase price of sugar cane, which constituted the material costs for the sugar business, between 1923 and 1935 on the islands of Saipan and Tinian where its major sugar refineries were located changed as indicated in Table 2.

[insert Table 2 around here]

In addition, the mean value of the purchase unit price for sugar cane for the period between 1923 and 1943 (for Saipan, Tinian, and Rota) was as shown in Table 313.

[insert Table 3 around here]

As Table 3 shows, during the period from 1923 until 1939 (i.e., the majority of the existence of the SSDC), unlike in the period after 1940, the purchase unit price for sugar cane was almost fixed at around 2 yen per 600 kg.14 This suggests that the approval

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13 The SSDC began to operate the Tinian sugarhouse in 1930, and the Rota sugarhouse was operated from 1936 to 1939.

14 According to Imaizumi (1992: pp. 168-9), tenant strikes, as far as can be determined from the historical materials, occurred in 1923, 1927, 1928, and 1931-2 because of reductions in the unit purchase price of sugar cane and high farm rents.
system whereby the purchase price of sugar cane was authorized by the South Seas Agency, which had originally been intended to prevent the exploitation of tenant farmers by the SSDC, was largely ineffective. In fact, the intention behind the setting of the purchase price was explained by the SSDC as follows:

Even if the purchase price of raw materials was set at only one quarter of the production cost, it should not be regarded that the company obtained excess profits at the sacrifice of the suppliers of the raw materials, namely the farmers, since various expenses concerning the purchasing, processing, manufacturing, selling, and trading activities tend to amount to several times the cost of raw materials. The point is not the income ratio between the two parties, but lies rather in the comparison of their respective net business earnings. It is certainly not unjustified that the company realize a 9% annual dividend by making investments in the solitary islands across the seas, while the farmers could have a stable and profitable economic life. Indeed, the profit margins of this company are quite low, when compared with the profitable management of the companies involved in the same industry in Taiwan (JACAR, B06050151300).

From the explanation above, it is clear that the SSDC was setting the purchase unit price for sugar cane at a relatively low level, in accordance with the unit price of its product (the price of sugar), in order to secure the resulting profits. As far as can be determined from a historical document of 1934, the purchase price for 600 kg of sugar cane was set according to the degree of quality at 2.5 yen for Grade 1, 2.2 yen for Grade 2, 1.9 yen for Grade 3, and 1.3 yen for other grades (this category being discontinued after 1934) (JACAR, B06050151300). A document dated 1938, as well, indicates that purchases were still carried out at these same prices. In the latter document, the “Grading Criteria for Purchase of Raw Material Cane Stalks” were set as follows:

- **Grade 1**
  1. Excellent growth, peak maturity, no trace of damage due to disease or pests
  2. Cane stalk preparation, de-topping, and removal of debris absolutely complete
  3. Not mixed with buds that have sprouted after leaves have dried and/or broken stalks
  4. Leaves have been completely stripped within an appropriate timeframe

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15 On the other hand, the SSDC explained the levels of its sugar cane purchase price as follows: “While in Taiwan, it is possible to choose methods that could reduce the cost of raw materials (such as putting the burden of the harvest and transportation costs onto the farmers), in the South Seas, the cultivation of sugar cane controls the entire livelihood of the farmers in the region, and almost all of the cultivators are farmers from Japan and brought there by the company itself. In consideration of the situation where the company bears a great deal of responsibility to the laborers and others, we should not destabilize the lives of the farmers of the South Seas by methods similar to those used in Taiwan. We must make our own decision on the purchase price of sugar cane after careful study, giving full consideration to the prevailing circumstances” (JACAR, B06050151300).
Grade 2
1. Good growth, high maturity, less than 10% damaged due to disease or pests
2. Cane stalk preparation, de-topping, and removal of debris complete
3. Not mixed with buds that have sprouted after leaves have dried and/or broken stalks
4. Leaves have been stripped within an appropriate timeframe

Grade 3
1. Irregular growth, not mature, less than 20% damaged due to disease or pest
2. Cane stalk preparation, de-topping, and removal of debris incomplete
3. Possibly mixed with canes with buds that have sprouted after leaves have dried and/or broken stalks
4. Leaves have not been stripped within an appropriate timeframe

Materials mixed with cane leaves that have been inappropriately bundled, or cane stalks that have been poorly prepared and carry sediment or other impurities that have no value as a raw material for sugar production shall be deducted from the weight of trade volumes (CIA: 0015-03564-100).

In these grading criteria, it is noticeable that working standards were specified for the sugar cane cultivation that the SSDC expected of its tenant farmers, and that the company demanded that migrant laborers, as a type of subcontractors, perform the functional skills necessary for achieving specific tasks. It is also worth noting that these tenant farmers, who numbered more than five thousand (JACAR, B06050150600; South Seas Development Company, Business Report no. 18, 3), were presented with criteria (specifications) consisting of only three different grades. This fact, as well as the purchase of large amounts of sugar cane (more than 356 million kilograms in 1933) (JACAR, B06050150600) based on the results information of the standard purchase prices that should normally fluctuated every year (but was in fact kept artificially at a low level every year), suggests that the relationship between the SSDC and the tenant farmers was inclined toward an exploitation model that took advantage of the company’s position as a monopsony.

5. Revision to the Premium Incentive System from 1933 to 1934

The SSDC indicated the relationship between the price of sugar and the purchase unit price of sugar cane as follows:

…for the purchase of raw materials, we consider that the argument for the fairness of using the sugar price proportion method, in accordance with the example of advanced cane sugar
producing countries, perceives only one side of the equation. . . .

...when the price of sugar falls, the income of farmers is significantly reduced, and occasionally, their shares decline below the production costs, thus the sugar price proportion method does not always serve the farmers’ interests. . . .

...therefore, our company, in addition to gradually adopting rational purchasing methods in fact, has also decided that the optimal profit sharing method is that of providing premium incentives to the farmers, according to sugar prices and factory yields, so that even when the company’s revenues decline as a result of falling sugar prices, we are not forced to pass those losses on to the farmers. As such, this may be said to be much preferable to the sugar price proportion method. . . . (JACAR, B06050151300).

As evident in the above explanation, tenant cultivators were paid with premiums that were separate from the sugar cane purchase price. The premiums were a system in which a predetermined amount would be paid for the unit amount of 1,000 kin (600 kg) of the net volumes of raw sugar cane (raw sugar cane minus the rent), if the price of sugar were above 9 yen 10 sen and yields were above 7.1% (JACAR, B06050150500).

In other words, instead of keeping the purchase unit price for sugar cane artificially low, the premium system played another profit sharing role by supplying the tenant cultivators “retrospective” awards when the performance turned out to be good enough. According to the Chugai Commercial Newspaper (Shōgyō Shimpō):

[the SSDC] has planted sugar cane on 11,500 chōbu [approximately 11,405 hectares] across the three islands of Saipan, Tinian, and Rota. Farming a large-stalked Javanese cultivar harvested twice every three years, the company achieved the production of more than 444 million kilograms of pressed sugar cane in 1936. Although the cultivation of the greater part of this sugar cane is left to tenant cultivators, its purchase involves the prior setting of a standard price, which is then supplemented by premiums on a sliding scale in keeping with the year’s market price and yields. In this way, a progressive profit sharing system has brought about the realization of a mutually beneficial relationship between the company and the tenant cultivators (Chugai Commercial Newspaper 17.5.1937).

The premium incentive system therefore was the special and unique profit sharing system between the SSDC and its tenant farmers. However, since the operation of the system affected the company’s performance, the company always apprehended gradual

\[\text{Yields} = \frac{\text{volume of sugar production refined}}{\text{volume of raw materials (sugar cane)}} \times 100.\]
increase in the amount of premiums paid to the tenant farmers. For example, in terms of the premiums in 1933, 1.4 yen was paid in Saipan and 1.2 yen in Tinian, which, in relation to the purchase unit price for sugar cane, constituted premiums of 67% and 60%, respectively (see Table 2). The SSDC, concerned about the rapid increase in premiums, entered into negotiations with the South Seas Agency, the Ministry of Colonial Affairs and the Industrial Bureau, and the Sugar Cane Producers Mutual Prosperity Association (JACAR, B06050150500), and executed the revision of the premium system along with their accompanying farm rents, the course of revision from 1933 to 1934 to be reviewed below in detail in order to understand the its unique aspects.

On December 21, 1933, in a letter addressed to the Governor of the South Seas Agency and the Ministry of Colonial Affairs and the Industrial Bureau, the SSDC made the following proposal with respect to the revisions to the premiums on raw sugar cane:

In view of the fact that under the existing raw material cost premium system, being calculated in units of 1,000 kin [600 kg] of raw materials, the quality of the materials has tended to be disregarded, and moreover that the application of the price of sugar as a basic criterion for the calculation of premiums can yield unreasonable consequences. . . .

On the basis of yield and price of sugar, the premium incentive rate should be reestablished with reference to the net amounts of raw materials, and the premium incentive rate should be adjusted in accordance with rises or drops in yields and price of sugar....

These are grounds for abolishing the existing system of calculating premiums, namely a flat amount per thousand kin of raw materials based on yield and price of sugar, and reestablishing the premium rate for the net amounts of raw materials, as well as attempting to calculate individual premiums for each sugar cane producer. . . .

Premium incentive rates should be paid when the price of sugar is 10 yen 60 sen or more and yield is 10% or more. However, sugar prices should be rounded down to the nearest 10 sen and yields should be rounded down to the nearest percent, with all calculations to stay in units of sen. . . . (JACAR, B06050150500).

The key point of the revision was that the current formula for calculating premiums, adopting flat premiums for the unit amount of 1,000 kin (600 kg) of raw sugar cane

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17 According to Tanno (2015: p. 21), “from 1927, the [Sugar Cane Producers] Mutual Prosperity Association was regarded as an institution for promoting mutual understanding between the company and its employees. Important issues relating to the interests of employees were all carried out through consensus decisions taken by this group”. However, according to Imaizumi (1992: pp. 165-6), “the reality was that, rather than a labor-management consultative body, [the association] was actually placed under the control of the company and the South Seas Agency”.

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based on the price of sugar and yield rate, was abandoned in favor of a formula that calculated the premiums by multiplying the graded purchase price by the net volumes of raw materials less rents. In other words, what was contemplated was the use of the premiums as a means to achieve more elaborate profit sharing between the tenant cultivators and the company by basing their calculation on a set of criteria that took into consideration the quality of the raw materials and the net amounts of raw materials (based on the quality categories from Grades 1 to 3). In fact, the SSDC explained the gist of the idea as follows:

Because the existing raw material cost premiums are calculated on the basis of 1,000 kin units, calculation is only based on the actual weight harvested for each sugar cane producer, and even those who supply excellent raw materials and who are improving their yield merely receive a general premium equivalent to that received by others. [The system suffers from] the defect of not discriminating between suppliers of high-quality raw materials and suppliers of inferior raw materials (JACAR, B06050150500).

What is being contemplated here is the structure of a mechanism for considering tenant farmers as individual suppliers, and through the incentive system of premiums, to promote competition between them. In addition, the idea of “grounds for…attempting to calculate individual premiums for each sugar cane producer” corresponds to an idea of (arm’s length) control symbolized by the exploitation relationship advanced by Nishiguchi. In reference to the hiking of the price of sugar and minimum yield rate that formed the basis of the premium payments, the SSDC provided the following explanation:

Limiting yields to 10% or more is proposed not only because it is less likely that there will be yields of less than 10% in the future, as the result of advances in current technology and improvements to sugar cane varieties, but also because, for the reasons described below, it should increase production costs and prevent the creation of margins for paying premium incentives in the case of yields being within the 10% limit.

The government, as the result of so-called emergency financial measures, has spurred extreme financial expansion. The appreciation of imported goods that has taken place as a result of declining exchange rates in the context of this general price escalation, especially the skyrocketing demand for ironmongery in the munitions industry, has inevitably led to a rise in the cost of production. Such circumstances thus inevitably preclude the continuance of the existing case of making premium payment when the price of sugar being more than 9 yen 60 sen (JACAR, B06050150500).
The SSDC’s final proposal states that “when the price of sugar is 10 yen 60 sen or more and yield is 10% or more, 1% of the net amount of raw materials should be paid, which should be increase 1% each time the price of sugar rises by 10 sen and 0.5% each time yield rises by 0.1%, until the price of sugar reaches 15 yen and yield reaches 12%” (JACAR, B06050150500). To this proposal by the SSDC, the Ministry of Colonial Affairs and Industrial Bureau, which held responsibility for the oversight of national policy implementation and supervision of special companies inside Japan, expressed its concerns to the South Seas Agency—as the agency responsible for the supervision of the local region—that it was likely to have a major impact on the livelihoods of tenant farmers (JACAR, B06050150600). It was shown in Table 4 that comparative calculation was carried out by the Ministry of Colonial Affairs based on the accounts the SSDC submitted. It indicated that the company’s sustained performance from 1933 (accounting period 17) to 1934 (accounting period 19) was mainly due to the reductions in the cost of sugar, particularly in raw sugar cane premiums (JACAR, B06050150600) (see “Premiums” in Table 4). Also, Table 5 shows estimates made by the Ministry for premiums and farm rents, based on the proposed revisions, with some assumptions. It was concluded by the ministry that tenant cultivators lost 68% of their premium incomes, which in conjunction with the revised rents amounted to a 91% drop in their income (JACAR, B06050150600) (see “Rates of decrease” in Table 5).

[insert Tables 4 and 5 around here]

However, in correspondence addressed to the Ministry of Colonial Affairs and Chief of the Industrial Bureau dated September 12, 1934, the South Seas Agency, as shown in Table 6, undertook a comparison of tenant farmers’ income based on the new and old premium rates, describing the likely influence that the revision to the raw sugar cane premiums would have on tenant cultivators (JACAR, B06050150600). In the comparison, it was clearly indicated that income of tenant cultivators decreased due to the revision (see “Decrease in income amount of tenant cultivators after the premium revisions” in Table 6).

18 The hypothetical scenario assumed a price of sugar of 11.70 yen and yield rate of 11.2%, with a total purchase of raw materials for the 19th period of 377,031,000 kin (226,218,600 kg) all at 2.20 yen (Grade 2 quality), for a case in which the revision to the premium system was implemented at the same time as a proposed revision to farmers’ rents (JACAR, B06050150600).
According to the South Seas Agency calculations, tenant cultivators had an average of approximately 5 hectares (5 ちぶ) of sugar cane estates, and because they farmed these properties on the basis of two crops every three years, the average productive area in a given year was approximately 3.4 hectares (JACAR, B06050150600). On this premise, the annual income of tenant cultivators was calculated as being reduced by approximately 247 yen (72.819 yen* 3.4 hectares) on Saipan and by around 287 yen (84.609 yen* 3.4 hectares) on Tinian when the new premium system was adopted (JACAR, B06050150600).

On the other hand, as shown in Tables 7-1, 7-2, and 7-3, the effect of the amendment to farm rents (reduced on average from 20% to 15%), in tandem with the abolition of the outlier class in the grading system for purchasing sugar cane, both being planned to be simultaneously executed, was also calculated by the South Seas Agency. Tables 7-1 and 7-2 show that the effects on the net volume of raw sugar canes produced by tenant cultivators before and after the amendment, and on the income amount of tenant cultivators before and after the abolition of the outlier class respectively. Table 7-3 summarizes these effects.

For “Increase in income amount of tenant cultivators” in Table 7-3, applying the same assumptions and similar calculations as above, the increase in incomes of tenant cultivators was calculated as 16.90 yen (4.962 yen* 3.4 hectares) for Saipan and 27.70 yen (8.143 yen* 3.4 hectares) for Tinian (JACAR, B06050150600). Moreover, after juxtaposing the income reductions due to the revised premium rates with the increased incomes due to the amended farm rents and the abolition of the outlier class in the grading system as shown in Table 8, the annual loss for tenant cultivators was estimated as being approximately 230 yen (67.857 yen* 3.4 hectares) for Saipan and 260 yen (76.466 yen* 3.4 hectares) for Tinian (JACAR, B06050150600) (see “Decrease in income amount of tenant cultivators” in Table 8).
Finally, the South Seas Agency made the following claim based on the tenant cultivators’ individual household incomes for financial year 1933 as shown in Table 9 (see “The tenant cultivators' household incomes” in Table 9):

According to the above account, examination of the income situation of tenant cultivators, in conjunction with revisions to the premium rate and farm rents, along with the abolition of the outlier class in the grading system, shows that, even though this will result in an average reduction of 245 yen per household on both Saipan and Tinian, the result for 1933 shows that an individual household still had 797 yen of income, which even after the subtraction of the aforementioned reduction, leaves more than 550 yen as a surplus. Therefore, revision to the premium rate, although it will reduce the income of the tenant cultivators, is not expected to threaten their livelihoods to any major degree (JACAR, B06050150600).

In this view held by the South Seas Agency, it is recognizable that the profits the SSDC derived from the sugar business were dichotomously understood from the sugar cane cultivation income that the tenant farmers could acquire by supplying the raw materials for that business, i.e., the situation being perceived as a zero-sum game between the two players. In response to the South Seas Agency estimates, the SSDC implemented the revisions to the premiums and farm rents in 1934. No evidence has been found as to how, and to what extent if any, this decision incorporated the interest of the tenant farmers, but rather it appears that a unilaterally exploitative decision was carried out by the SSDC and the South Seas Agency.

As a result of the premium revisions, from 1933 to 1934, the unit price of premiums dropped from 1.3 yen to 0.3 yen per 1,000 kin (see Table 3), though the income of tenant cultivators, after the revision, still achieved net income of 550 yen and more as shown in Table 10, in which the tenant cultivators’ individual household incomes for financial year 1934 estimated by the South Seas Agency are indicated (see “Net income” in Table 10).
On the other hand, the revision to the premium system had the significant effect expected by the SSDC; the production costs, among the total manufacturing costs of raw sugar, which had shown a rising trend until the revision of the premium system in financial year 1933, went on to decline rapidly after 1934 (see Table 1). As a result of this decline in the cost of sugar production, as is evident in Figure 3, the ROS of the sugar business improved to the level of 70%.

6. Roles of the Accounts and Schedules after 1934

The SSDC of course understood that the sugar cane (raw material) costs, including various types of premium incentives, were the most important source of income for the tenant cultivators, and this recognition was also shared by the South Seas Agency as its supervisory agency. In fact, when the premium system was revised from 1933 to 1934, the South Seas Agency propounded its view to the Ministry of Colonial Affairs that if the revised system could be seen as “corruption” (kaiaku), this would “bring about the threat of provoking tenant disputes and the like” (JACAR, B06050150500). The financial statements and the related schedules submitted to the Ministry of Colonial Affairs by the SSDC’s parent company, the Oriental Colonization Company, seem to have played an important role in assisting the Ministry to ascertain the validity of profit sharing between the SSDC and the tenant farmers.

Of the financial statements and schedules that relate to the SSDC, those that survive in the Japan Center for Asian Historical Records (records formerly in the collection of the Training Institute of the Foreign Ministry of the Government of Japan in Myogadani) are those for the span from the 19th through 41st fiscal periods (excepting the span from the 21st through 24th fiscal periods). The contents encompass a wide variety of details, listing not only balance sheets and income statements but also accounting data including cost ledgers relating to raw sugar, alcohol, and phosphoric products and yield ledgers relating to the sugar production.

The Ministry of Colonial Affairs subjected the financial statements and the schedules relating to the SSDC to its close analysis, considered the arguments for and against revising the premium incentives system, and ultimately accepted the company’s proposal, as described in the previous section. Documents produced by the Ministry of Colonial Affairs attached to the SSDC’s financial statements for the 19th period include
a summarized breakdown of the production costs relating to the SSDC’s sugar business, within which the entry for the material costs of sugar cane that occupied a major part of the raw material expenses was separately listed (JACAR, B06050150300; B06050150400). With this, it is noted that the Ministry of Colonial Affairs had a grasp of both the profits that the SSDC derived from its sugar business and the amount of money that the company was spending on the raw materials (i.e., from the perspective of the tenant farmers, the amount received as remuneration for the supply of sugar cane).

After the 25th period, the SSDC itself began providing separate entries for “material costs of sugar cane” (also “premium incentives” from the 26th period in the same year) in a schedule related to the material costs of sugar cane listed on its financial statements (JACAR, B06050156500; B06050157000). This practice continued at least until the 38th period (JACAR, B06050208500). Even information relating to the reduction of farm rents that was simultaneously put into practice from 1933 to 1934 started to be listed separately as “rent investigation” in another schedule from the 26th period (JACAR, B06050157000). This information continued to be disclosed until the 34th period (JACAR, B06050193800). These facts suggest that, from the 26th period, the SSDC begun to emphasize the disclosure of information relating to profit sharing with the tenant farmers in the schedules attached to the financial statements submitted to the Ministry of Colonial Affairs. On the basis of these financial statements and detailed schedules related to the SSDC, the Ministry of Colonial Affairs, at least from 1937, was able to grasp the distribution status of the profits acquired from the sugar business on the part of the company and the remuneration obtained by the tenant farmers from their supply of sugar cane as a basic material.

Subsequently, in 1939, when the SSDC planned to increase the value of its “occasional” premiums for Grade 1 from 20 sen to 40 sen, and for Grade 2 from 20 sen to 30 sen (Grade 3 was to be left alone at 20 sen), the South Seas Agency directed instead that the increase should be applied not as the occasional premiums, which were temporary income, but as part of the sugar cane purchase price itself, which was in nature permanent income for the tenant farmers (CIA: 0015-03564-100). Nevertheless, the SSDC insisted that it would be justifiable to handle these as an increase in occasional premiums rather than an increase in basic purchase price, based on data relating to the income status of the tenant cultivators in 1938 (CIA: 0015-03564-100). Even so, it

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19 Since the Ministry of Colonial Affairs was abolished in 1942, the SSDC was placed under the supervision of the Ministry of Home Affairs from 1943 (the 37th period).
acquiesced to some degree to the opinion of the South Seas Agency, as its supervisory agency, deciding to increase the basic purchase price, from 1940, for each Grade by 20 sen plus paying occasional premiums for Grade 1 at 20 sen and Grade 2 at 10 sen, though dealing with the issue in 1939 by increasing the value of its occasional premiums for Grade 1 from 20 sen to 40 sen, and for Grade 2 from 20 sen to 30 sen (Grade 3 was to be left alone at 20 sen) and maintaining basic purchase price (CIA: 0015-03564-100).

What is significant about this episode is the fact that, in the detailed schedule for the material costs of sugar cane attached to the financial statement submitted to the Ministry of Colonial Affairs for the 29th period in the end of June 1939, the SSDC specified in an annotation to “the material costs of sugar cane” that “occasional premiums are included” (JACAR, B06050172500). This means that, through the same schedule, the SSDC was able to communicate its own handling of the occasional premiums to the Ministry of Colonial Affairs. From this point, as well, it is recognizable that a high importance was attached to the disclosure of information relating to the material costs of sugar cane (including each of the various types of premium) between the SSDC and the Ministry of Colonial Affairs.

7. Concluding Remarks

The SSDC was engaged in the development in agricultural resources, such as raw sugar, in the territories of the Japanese mandate for the South Sea Islands region, as well as playing an important role in the local territorial administration. This study has examined the role played by the SSDC’s accounting practices, particularly the financial statements and the detailed schedules relating to the company, which were submitted by the SSDC’s parent company, the Oriental Colonization Company, to the Ministry of Colonial Affairs, which served as its supervisory agency.

In the sugar business that was the principal part of the SSDC’s operation, while refinement was conducted on the part of the enterprise, the cultivation and growth of the sugar cane that served as the raw materials were carried out by the tenant farmers who migrated from Okinawa, rented company-owned plantations or the public lands hired out to the SSDC free of charge or at a low price, and sold their produce back to the SSDC. The relationship between the two via the trading of the raw materials of sugar cane (including various types of premium incentives) seems to have been a
dichotomous profit-sharing mechanism; this study has drawn on the analytical framework of strategic outsourcing proposed by Nishiguchi (1997 and 2001) with reference to the relationships between prime contractors and subcontractors normally seen in Japanese firms.

Even though the price at which sugar cane was purchased from the tenant farmers was determined with the prior approval of the Governor of the South Seas Agency, the SSDC took advantage of its position as a monopsony and set the purchase unit price for sugar cane at a relatively low level in order to secure the profitability of its sugar business. This purchase price was determined separately for each of several grades, and cultivation work standards (specifications) were specified for the tenant farmers. These characteristics are consistent with the exploitation model proposed by Nishiguchi (1997 and 2001) in the sense that the SSDC required functional skills to the tenant farmers and emphasized result information, such as price information.

When revisions to the “premium incentives” system that retrospectively compensated the profit sharing accomplished through the material costs of sugar cane, and the associated farm rent system, were considered in 1933, the profits the SSDC obtained from the sugar business on the part of the company and the sugar cane income obtained by the tenant farmers from their supply of the raw materials were perceived to be basically a zero-sum game, and in response to estimates performed by the South Seas Agency, revisions to both systems were implemented from the following year with the full acceptance of the company’s proposal. The unilateral process founded on the company’s monopsony position is again consistent with the exploitation model posited by Nishiguchi (1997 and 2001).

Concerned with the intensification of exploitation resulting from the revisions to the two systems, as well as the latent frustration among the tenant farmers (and the accompanying danger of tenancy disputes), the South Seas Agency and the Ministry of Colonial Affairs seem to have been faced thereafter with the need to continuously monitor the validity of the profit sharing between the SSDC and the tenant farmers. In fact, the financial statements and detailed schedules relating to the SSDC submitted to the Ministry of Colonial Affairs afterward saw an intensification of disclosure of information relating to profit sharing with the tenant farmers, as represented by the material costs of sugar cane, various types of premiums, and farm rents. This intensification of disclosure is also a phenomenon that was seen in the case of the increase in occasional premiums carried out in 1939. Accounting, as indicated above, was used by the supervisory agency as an instrument to monitor the relationship
between the company and labor forces during the period of imperialism in Japan.

Accounting techniques have been recognized as important tools in the practice and control of colonial and territorial management, and as such have been labelled as the “software of imperialism” and “technologies of government” (Neu, 1999: 2000; Bell et al., 1995; Miller and Rose, 1990). The findings of this study suggest that a similar notion has validity in the case of Japan’s colonial and territorial management in the South Sea Islands region.

While this study has inherent limitation in terms of its limited amount of historical materials used, it would be expected for similar study to be undertaken in the cases of other Japanese companies having engaged in the colonial and territorial management. By so doing, our understanding of how accounting functioned over time and space will be further improved.
References

Primary sources

Closedown Institution Archives (CIA) [National Archives of Japan, Tsukuba Annex]

0015-03564-100 Nanyo Kohatsu KK Kankei (1/2) [Papers related to the South Seas Development Company (1/2)]

The Diplomatic Archives of the Ministry of Foreign Affairs of Japan [Japan Centre for Asian Historical Records (JACAR)]

A01200589200 Takumusho Kansei Seitei, Kakusho Kansei Tsukoku, Tetsudosho Kanseichu Taiwan Sotokufu, Kanseichu Kantougo Kanseichu, Karafutoho Kanseichu, Nanyocho Kanseichu, Ryojikan Shokumu Kisokuchu, Samba Kisokuchu, Meiji 39 nen Chokurei Dai 263 Go Ryojunko Kisoku Seitei oyobi Gai Kisoku Ihansha Bassoku no Kenchu, Sonim Bunkan Tokubetsu Ninyoichu Kaisei, Takumu Rijikan no Tokubetsu Ninyo ni Kansuru Ken o Sadamu [Enactment of government-regulated of the Ministry of Colonial Affairs, a general rule of government-regulated in each Ministry, government-regulated of the Governor-General of Taiwan: government-regulated of the Kwantung Agency, government-regulated of the Sakhalin Agency, government-regulated of the South Seas Agency, office regulations of a consul, the regulation of midwife, the Imperial ordinance no. 263 of 1906: enactment of regulation of Lushun port and a case of penal regulations to an offender against the regulation, amendment to the special appointment regulations of a senior official: determination of the special appointment regulations of the director in the Ministry of Colonial Affairs]

B06050150300 Toyo Takushoku Kabushiki Kaisha Kankei Kaisha Kankei 14 [Papers related to affiliate companies of Oriental Colonization Company 14]

B06050150400 Toyo Takushoku Kabushiki Kaisha Kankei Kaisha Kankei 15 [Papers related to affiliate companies of Oriental Colonization Company 15]

B06050150500 Toyo Takushoku Kabushiki Kaisha Kankei Kaisha Kankei 16 [Papers related to affiliate companies of Oriental Colonization Company 16]

B06050150600 Toyo Takushoku Kabushiki Kaisha Kankei Kaisha Kankei 17 [Papers related to affiliate companies of Oriental Colonization Company 17]

B06050151300 Toyo Takushoku Kabushiki Kaisha Kankei Kaisha Kankei 22 [Papers related to affiliate companies of Oriental Colonization Company 22]

B06050156500 Nanyo Kohatsu Kabushiki Kaisha Dai 25 Ki Kessan narabini Riekkin Shobun no Ken [Papers related to financial statements, no. 25 of the South Seas Development Company]
B06050157000 Nanyo Kohatsu Kabushiki Kaisha Dai 26 Ki Kessan narabini Riekikin Shobun no Ken [Papers related to financial statements, no. 26 of the South Seas Development Company]
B06050162000 Toyo Takushoku Kabushiki Kaisha Kankei Kaisha Kankei: Bunkatsu 8 [Papers related to affiliate companies of the Oriental Colonization Company: division 8]
B06050172500 Nanyo Kohatsu Kabushiki Kaisha Dai 29 Ki Kessan narabini Riekikin Shobun ni Kansuru Ken [Papers related to financial statements, no. 29 of the South Seas Development Company]
B06050172700 Nanyo Kohatsu Kabushiki Kaisha Dai 30 Ki Kessan narabini Riekikin Shobun no Ken [Papers related to financial statements, no. 30 of the South Seas Development Company]
B06050184400 Nanyo Kohatsu Kabushiki Kaisha Dai 31 Ki Kessan narabini Riekikin Shobun no Ken [Papers related to financial statements, no. 31 of the South Seas Development Company]
B06050184600 Nanyo Kohatsu Kabushiki Kaisha Dai 32 Ki Kessan narabini Riekikin Shobun no Ken [Papers related to financial statements, no. 32 of the South Seas Development Company]
B06050193000 Hairin Mokuzai Kabushiki Kaisha Dai 3 Nendo Kesaan oyobi Riekikin Shobun ni Kansuru Ken [Papers related to financial statements, no. 3 of the Hilin Wood Company]
B06050193400 Nanyo Kohatsu Kabushiki Kaisha Dai 33 Ki Kessan oyobi Riekikin Shobun ni Kansuru Ken [Papers related to financial statements, no. 33 of the South Seas Development Company]
B06050193700 Nanko Kankei Nanpo Sangyo Kabushiki Kaisha Yushi no Ken [Papers related to the loan to the South Seas Industry Company by the South Seas Development Company]
B06050193800 Nanyo Kohatsu Kabushiki Kaisha Dai 34 Ki Kessan oyobi Riekikin Shobun ni Kansuru Ken [Papers related to financial statements, no. 34 of the South Seas Development Company]
B06050197800 Nanyo Kohatsu Kabushiki Kaisha Dai 36 Ki Kessan oyobi Riekikin Shobun ni Kansuru Ken [Papers related to financial statements, no. 36 of the South Seas Development Company]
B06050208500 Nanyo Kohatsu Kabushiki Kaisha Dai 38 Ki Kessan oyobi Riekikin Shobun ni Kansuru Ken [Papers related to financial statements, no. 38 of the South Seas Development Company]
B06050222400 Nanyo Kohatsu Nanyo Ringyo Ryo Kabushiki Kaisha ni Taisuru Toshi Kankei [Papers related to investment for the South Seas Development Company and the South Seas Forestry Company]
Business Report 1922-1941 (nos. 3-34).

Newspapers

Chugai Shogyo Shimpo (Commercial Newspaper) 17.5.1937

Secondary and other sources


on the adjustment of produced sugar], in Kubo, F. (Eds), *Kindai Seitogyo no Hatten to Togyo Rengokai –Kyoso o Kicho toshita Kyoko no Mosaku – [Development of the modern sugar industry and the Sugar Producers Association: groping of the cooperation based on the competition]*, Nihon Keizai Hyoronsha, Tokyo, pp. 157-97.


and competitive behavior of the four sugar companies and the Sugar Producers Association], in
Kubo, F. (Eds), Kindai Seitogyo no Hatten to Togyo Rengokai −Kyoso o Kicho toshita Kyöcho
no Mosaku −[Development of the modern sugar industry and the Sugar Producers Association:
groping of the cooperation based on the competition], Nihon Keizai Hyoronsha, Tokyo, pp.
289-313.
Kubo, F. (2016), Kindai Seitogyo no Keieishiteki Kenkyu [A research of business history of the
modern sugar industry], Bunshindo, Tokyo.
Matsue, H. (1932), Nanyo Kaitaku 10 Nenshi [A record of 10 years of development in the South Sea
Islands], Nanyo Kohatsu Kabushiki Kaisha, Tokyo.
1-31.
Nanyocho. (1932), Nanyocho Shisei Junen shi [A record of 10 years of the South Seas Agency],
Nanyocho Chokan Kambo, Koror.
Nanyocho. (1938), Nanyo cho Horei Ruiju. Showa 12 nen 8 gatsu [Statute book of the South Seas
Agency at August 1937], Nanyocho, Koror.
Accounting, Organizations and Society, Vol. 25 No. 2, pp. 163-84.
Metamoderu no Teisho − [Coevolution and double-helix of Interorganizational Relations:
(Eds), Knowledge Emergence: Social, Technical, and Evolutionary Dimensions of Knowledge
Creation, Oxford University Press, New York, pp. 197-222.
Kogut, B. (Eds), Redesigning the firm, Oxford University Press, Oxford, pp. 65-84.
management”, in von Krogh (Eds), Knowledge Creation: A Source of Value, Macmillan Press,


Yanaihara, T. (1963), *Yanaihara Tadao Zenshu dai 3 kan Nanyo Gunto no Kenkyu* [The complete works of Tadao Yanaihara vol. 3 the research for the South Sea Islands], Iwanami Shoten, Tokyo.

*Internet sources*

Figure 1. Map of Micronesia.

Source: Peattie 1988, 4.
Figure 2. Net income or loss and dividends of the South Seas Development Company, 1922-1941 (yen).

Sources: South Seas Development Company, Business Report nos. 3-34.
Figure 3. Return on sales of each business, 1933-1941 (%).

Sources: JACAR, B0605022400; B06050156500; B06050157000; B06050161800; B06050162000; B06050172500; B06050172700; B06050184400; B06050184600; B06050193000; B06050193800.
Table 1. Total manufacturing costs of raw sugar per *tan* (60 kg), 1931-1941 and components of the production costs per *tan* (60kg), 1935-1941 (yen).

<table>
<thead>
<tr>
<th>Year/Items</th>
<th>Production costs</th>
<th>Expenses for agriculture and livestock</th>
<th>Railway and shipping expenses</th>
<th>Selling expenses</th>
<th>Operating, interests and welfare expenses</th>
<th>Miscellaneous expenses</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1931</td>
<td>4.465</td>
<td>0.571</td>
<td>0.413</td>
<td>0.835</td>
<td>1.666</td>
<td>0.007</td>
<td>7.977</td>
</tr>
<tr>
<td>1932</td>
<td>4.570</td>
<td>0.366</td>
<td>0.229</td>
<td>0.830</td>
<td>1.685</td>
<td>0.020</td>
<td>7.700</td>
</tr>
<tr>
<td>1933</td>
<td>4.845</td>
<td>0.379</td>
<td>0.417</td>
<td>0.940</td>
<td>1.764</td>
<td>0.007</td>
<td>8.352</td>
</tr>
<tr>
<td>1934</td>
<td>3.754</td>
<td>0.398</td>
<td>0.218</td>
<td>1.000</td>
<td>1.317</td>
<td>0.000</td>
<td>6.687</td>
</tr>
<tr>
<td>1935</td>
<td>3.498</td>
<td>0.322</td>
<td>0.166</td>
<td>1.054</td>
<td>1.359</td>
<td>-</td>
<td>6.399</td>
</tr>
<tr>
<td>1936</td>
<td>3.956</td>
<td>0.475</td>
<td>0.281</td>
<td>1.107</td>
<td>1.988</td>
<td>-</td>
<td>7.807</td>
</tr>
<tr>
<td>1937</td>
<td>3.888</td>
<td>0.463</td>
<td>0.228</td>
<td>1.174</td>
<td>2.216</td>
<td>-</td>
<td>8.469</td>
</tr>
<tr>
<td>1938</td>
<td>4.688</td>
<td>0.343</td>
<td>0.278</td>
<td>1.840</td>
<td>2.299</td>
<td>-</td>
<td>9.448</td>
</tr>
<tr>
<td>1939</td>
<td>5.195</td>
<td>0.414</td>
<td>0.235</td>
<td>1.570</td>
<td>3.042</td>
<td>-</td>
<td>10.456</td>
</tr>
<tr>
<td>1940</td>
<td>5.514</td>
<td>0.813</td>
<td>0.372</td>
<td>1.469</td>
<td>4.316</td>
<td>-</td>
<td>12.464</td>
</tr>
<tr>
<td>1941</td>
<td>6.243</td>
<td>0.914</td>
<td>0.415</td>
<td>1.665</td>
<td>4.465</td>
<td>-</td>
<td>13.902</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year/Items</th>
<th>Material costs of sugar cane</th>
<th>Harvest and transportation costs</th>
<th>Premiums</th>
<th>Miscellaneous expenses</th>
<th>Manufacturing costs</th>
<th>Repairing costs</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1935</td>
<td>1.735</td>
<td>0.487</td>
<td>0.332</td>
<td>0.037</td>
<td>0.701</td>
<td>0.206</td>
<td>3.498</td>
</tr>
<tr>
<td>1936</td>
<td>1.906</td>
<td>0.558</td>
<td>0.349</td>
<td>0.106</td>
<td>0.715</td>
<td>0.322</td>
<td>3.956</td>
</tr>
<tr>
<td>1937</td>
<td>1.961</td>
<td>0.636</td>
<td>0.405</td>
<td>0.231</td>
<td>0.904</td>
<td>0.251</td>
<td>4.388</td>
</tr>
<tr>
<td>1938</td>
<td>2.061</td>
<td>0.706</td>
<td>0.544</td>
<td>0.224</td>
<td>0.915</td>
<td>0.238</td>
<td>4.688</td>
</tr>
<tr>
<td>1939</td>
<td>2.087</td>
<td>0.710</td>
<td>0.708</td>
<td>0.349</td>
<td>0.969</td>
<td>0.372</td>
<td>5.195</td>
</tr>
<tr>
<td>1940</td>
<td>2.269</td>
<td>0.756</td>
<td>0.609</td>
<td>0.134</td>
<td>1.285</td>
<td>0.461</td>
<td>5.514</td>
</tr>
<tr>
<td>1941</td>
<td>2.507</td>
<td>0.899</td>
<td>0.610</td>
<td>0.220</td>
<td>1.546</td>
<td>0.461</td>
<td>6.243</td>
</tr>
</tbody>
</table>

Sources: JACAR, B06050150400; B06050151300; B06050157000; B06050162000; B06050172700; B06050184600; B06050193800.
Table 2. The purchase unit price for sugar cane and unit price of premiums, 1923-1935 (per 1,000 kin: 600kg) (yen).

<table>
<thead>
<tr>
<th>Year/Items</th>
<th>Saipan Purchase unit price for sugar cane</th>
<th>Unit price of premiums</th>
<th>Tinian Purchase unit price for sugar cane</th>
<th>Unit price of premiums</th>
</tr>
</thead>
<tbody>
<tr>
<td>1923</td>
<td>2.049</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1924</td>
<td>2.033</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1925</td>
<td>2.046</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1926</td>
<td>2.173</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1927</td>
<td>2.224</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1928</td>
<td>2.239</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1929</td>
<td>2.301</td>
<td>1.050</td>
<td>2.207</td>
<td>0.600</td>
</tr>
<tr>
<td>1930</td>
<td>2.273</td>
<td>0.000</td>
<td>2.153</td>
<td>0.000</td>
</tr>
<tr>
<td>1931</td>
<td>2.208</td>
<td>1.414</td>
<td>2.059</td>
<td>1.240</td>
</tr>
<tr>
<td>1932</td>
<td>2.143</td>
<td>0.355</td>
<td>2.143</td>
<td>0.383</td>
</tr>
<tr>
<td>1933</td>
<td>2.185</td>
<td>0.401</td>
<td>2.175</td>
<td>0.399</td>
</tr>
</tbody>
</table>

Notes: Premiums is included in calculation of purchase unit price for sugar cane from 1923 to 1929. Purchase unit price for sugar cane include the sugar cane cultivated by tenant cultivators and in plantations managed directly by the company. Unit price of premiums indicate premiums to the net volumes of raw sugar cane of tenant cultivators.

Source: JACAR, B06050222400.
Table 3. The mean value of purchase unit price for sugar cane and unit price of premiums 1923-1943 (per 1,000 kin: 600kg) (yen).

<table>
<thead>
<tr>
<th>Year/Items</th>
<th>Purchase unit price for sugar cane</th>
<th>Unit price of premiums</th>
</tr>
</thead>
<tbody>
<tr>
<td>1923</td>
<td>2.049</td>
<td>-</td>
</tr>
<tr>
<td>1924</td>
<td>2.033</td>
<td>-</td>
</tr>
<tr>
<td>1925</td>
<td>2.046</td>
<td>-</td>
</tr>
<tr>
<td>1926</td>
<td>2.173</td>
<td>-</td>
</tr>
<tr>
<td>1927</td>
<td>2.224</td>
<td>-</td>
</tr>
<tr>
<td>1928</td>
<td>2.239</td>
<td>-</td>
</tr>
<tr>
<td>1929</td>
<td>2.301</td>
<td>-</td>
</tr>
<tr>
<td>1930</td>
<td>2.251</td>
<td>0.825</td>
</tr>
<tr>
<td>1931</td>
<td>2.182</td>
<td>0.000</td>
</tr>
<tr>
<td>1932</td>
<td>2.118</td>
<td>0.000</td>
</tr>
<tr>
<td>1933</td>
<td>2.074</td>
<td>1.327</td>
</tr>
<tr>
<td>1934</td>
<td>2.143</td>
<td>0.370</td>
</tr>
<tr>
<td>1935</td>
<td>2.179</td>
<td>0.400</td>
</tr>
<tr>
<td>1936</td>
<td>2.100</td>
<td>0.384</td>
</tr>
<tr>
<td>1937</td>
<td>2.138</td>
<td>0.441</td>
</tr>
<tr>
<td>1938</td>
<td>2.287</td>
<td>0.603</td>
</tr>
<tr>
<td>1939</td>
<td>2.472</td>
<td>0.838</td>
</tr>
<tr>
<td>1940</td>
<td>2.671</td>
<td>0.717</td>
</tr>
<tr>
<td>1941</td>
<td>2.929</td>
<td>0.714</td>
</tr>
<tr>
<td>1942</td>
<td>3.231</td>
<td>1.148</td>
</tr>
<tr>
<td>1943</td>
<td>3.155</td>
<td>0.969</td>
</tr>
</tbody>
</table>

Notes: Premiums is included in calculation of purchase unit price for sugar cane from 1923 to 1929. Also, the mean value of purchase unit price for sugar cane and unit price of premiums is calculated, in accordance with historical material indicated in Table 2, by authors from 1930 to 1935. Purchase unit price for sugar cane include the sugar cane cultivated by tenant cultivators and in plantations managed directly by the company. After 1936, unit price of premiums indicate premiums to the total amounts of raw sugar cane the SSDC squeezed.

Sources: JACAR, B06050222400; B06050157000; B06050162000; B06050172700; B06050184600; B06050193800; B06050197800; B06050208500.
Table 4. The comparison of production costs of sugar between 1933 (accounting period: 17) and 1934 (accounting period: 19) by the Ministry of Colonial Affairs (per 1,000 kin: 600kg) (yen; %).

<table>
<thead>
<tr>
<th>Accounting period: 17</th>
<th>Accounting period: 19</th>
<th>Increase or decrease</th>
<th>Rate of increase or decrease (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Costs of raw materials (yen)</td>
<td>1,497,493</td>
<td>1,235,206</td>
<td>-262,287</td>
</tr>
<tr>
<td>Sugar cane</td>
<td>848,660</td>
<td>802,505</td>
<td>-46,155</td>
</tr>
<tr>
<td>Harvest and transportation costs</td>
<td>241,491</td>
<td>223,173</td>
<td>-18,318</td>
</tr>
<tr>
<td>Premiums</td>
<td>400,000</td>
<td>200,000</td>
<td>-200,000</td>
</tr>
<tr>
<td>Miscellaneous expenses</td>
<td>7,342</td>
<td>9,528</td>
<td>2,186</td>
</tr>
<tr>
<td>Manufacturing costs (yen)</td>
<td>521,242</td>
<td>342,585</td>
<td>-178,657</td>
</tr>
<tr>
<td>Salaries</td>
<td>85,885</td>
<td>79,205</td>
<td>-6,680</td>
</tr>
<tr>
<td>Expenses for necessities of manufacturing</td>
<td>427,665</td>
<td>261,809</td>
<td>-165,856</td>
</tr>
<tr>
<td>Miscellaneous expenses</td>
<td>7,692</td>
<td>1,571</td>
<td>-6,121</td>
</tr>
<tr>
<td>Repairing costs (yen)</td>
<td>107,661</td>
<td>106,869</td>
<td>-792</td>
</tr>
<tr>
<td>Salaries</td>
<td>46,123</td>
<td>29,298</td>
<td>-16,825</td>
</tr>
<tr>
<td>Expenses for necessities of repairing</td>
<td>60,455</td>
<td>76,455</td>
<td>16,000</td>
</tr>
<tr>
<td>Miscellaneous expenses</td>
<td>1,083</td>
<td>1,116</td>
<td>33</td>
</tr>
<tr>
<td>Total (yen)</td>
<td>2,126,396</td>
<td>1,684,660</td>
<td>-441,736</td>
</tr>
<tr>
<td>Production costs of sugar per 1,000 kin</td>
<td>5.246</td>
<td>4.468</td>
<td>-0.778</td>
</tr>
</tbody>
</table>


Source: JACAR, B06050150600.
Table 5. Estimates of revising premiums and farm rents by the Ministry of Colonial Affairs (yen; %).

<table>
<thead>
<tr>
<th>Items</th>
<th>Before revisions (yen)</th>
<th>After revisions (yen)</th>
<th>Decrease by revisions (yen)</th>
<th>Rates of decrease (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Premiums</td>
<td>473,173.91</td>
<td>149,304.28</td>
<td>323,869.63</td>
<td>68.45</td>
</tr>
<tr>
<td>Farm rents</td>
<td>165,893.64</td>
<td>124,420.23</td>
<td>41,473.41</td>
<td>25.00</td>
</tr>
<tr>
<td>Premiums - Farm rents</td>
<td>307,280.27</td>
<td>24,884.05</td>
<td>282,396.22</td>
<td>91.90</td>
</tr>
</tbody>
</table>

Source: JACAR, B06050150600.
Table 6. The comparison of income amount of tenant cultivators before and after premium revisions per hectare (kin; yen).

<table>
<thead>
<tr>
<th></th>
<th>Saipan Before revisions</th>
<th>Saipan After revisions</th>
<th>Tinian Before revisions</th>
<th>Tinian After revisions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average sugar cane yield per hectare (kin)</td>
<td>104,240</td>
<td>104,240</td>
<td>114,061</td>
<td>114,061</td>
</tr>
<tr>
<td>Farm rents (kin)</td>
<td>15,636</td>
<td>15,636</td>
<td>17,109</td>
<td>17,109</td>
</tr>
<tr>
<td>Net volumes of raw sugar canes (kin)</td>
<td>88,604</td>
<td>88,604</td>
<td>96,952</td>
<td>96,952</td>
</tr>
<tr>
<td>Income amount of tenant cultivators (yen)</td>
<td>189.878</td>
<td>189.878</td>
<td>207.768</td>
<td>207.768</td>
</tr>
<tr>
<td>Premiums (yen)</td>
<td>95.604</td>
<td>22.785</td>
<td>112.658</td>
<td>28.049</td>
</tr>
<tr>
<td>Total income amount of tenant cultivators (yen)</td>
<td>285.482</td>
<td>212.663</td>
<td>320.426</td>
<td>235.817</td>
</tr>
<tr>
<td>Decrease in income amount of tenant cultivators after the premium revisions (yen)</td>
<td>72.819</td>
<td></td>
<td>84.609</td>
<td></td>
</tr>
</tbody>
</table>

Notes: Farm rents = Average sugar cane yield per hectare * 15%. Net volumes of raw sugar canes = Average sugar cane yield per hectare – Farm rents. Income amount of tenant cultivators = Net volumes of raw sugar canes * 2.143 (yen). Premiums (Before revisions): Premiums to Net volumes of raw sugar canes (per 1,000 kin) is 1.079 yen in Saipan and 1.162 yen in Tinian. Premiums (After revisions): Premiums to Income amount of tenant cultivators is 12% in Saipan and 13.5% in Tinian. Total income amount of tenant cultivators = Income amount of tenant cultivators + Premiums. Decrease in income amount of tenant cultivators after the premium revisions = Total income amount of tenant cultivators (Before revisions) – Total income amount of tenant cultivators (After revisions).

Source: JACAR, B06050150600.
Table 7-1. The effect on net volumes of raw sugar canes of tenant cultivators before and after the amendment to farm rents per hectare (kin).

<table>
<thead>
<tr>
<th></th>
<th>Saipan</th>
<th>Tinian</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before revisions</td>
<td>After revisions</td>
</tr>
<tr>
<td>Average sugar cane yield per hectare (kin)</td>
<td>104,240</td>
<td>104,240</td>
</tr>
<tr>
<td>Farm rents (gin)</td>
<td>20,848</td>
<td>15,636</td>
</tr>
<tr>
<td>Net volumes of raw sugar canes (gin)</td>
<td>83,392</td>
<td>88,604</td>
</tr>
<tr>
<td>Increase in net volumes of raw sugar canes after the amendment to farm rents (gin)</td>
<td>5,212</td>
<td>5,703</td>
</tr>
</tbody>
</table>

Notes: Farm rents (Before revisions) = Average sugar cane yield per hectare * 20%. Farm rents (After revisions) = Average sugar cane yield per hectare * 15%. Net volumes of raw sugar canes = Average sugar cane yield per hectare – Farm rents. Increase in net volumes of raw sugar canes after the amendment to farm rents = Net volumes of raw sugar canes (After revisions) – Net volumes of raw sugar canes (Before revisions).

Source: JACAR, B06050150600.
Table 7-2. The effect on income amount of tenant cultivators before and after abolition of the outlier class per hectare (yen).

<table>
<thead>
<tr>
<th></th>
<th>Saipan Before revisions</th>
<th>Saipan After revisions</th>
<th>Tinian Before revisions</th>
<th>Tinian After revisions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income amount of tenant cultivators (yen)</td>
<td>184.917</td>
<td>189.878</td>
<td>199.624</td>
<td>207.768</td>
</tr>
<tr>
<td>Increase in income amount after the abolition of the outlier class (yen)</td>
<td>4.961</td>
<td></td>
<td></td>
<td>8.144</td>
</tr>
</tbody>
</table>

Notes: The purchase price of sugar cane before revisions is 2.087 yen in Saipan and 2.059 yen in Tinian (per 1,000 kin). The purchase price of sugar cane after revisions is 2.143 yen in Saipan and Tinian (per 1,000 kin). Income amount of tenant cultivators in Saipan (Before revisions) = 2.087 (yen) * 88.604 (kin). Income amount of tenant cultivators in Tinian (Before revisions) = 2.059 (yen) * 96.952 (kin). Income amount of tenant cultivators in Saipan (After revisions) = 2.143 (yen) * 88.604 (kin). Income amount of tenant cultivators in Tinian (After revisions) = 2.143 (yen) * 96.952 (kin). Increase in income amount after the abolition of the outlier class = Income amount of tenant cultivators (After revisions) – Income amount of tenant cultivators (Before revisions).

Source: JACAR, B06050150600.
Table 7-3. The effect on income amount of tenant cultivators before and after the amendment to farm rents and the abolition of the outlier class per hectare (kin; yen)

<table>
<thead>
<tr>
<th></th>
<th>Saipan</th>
<th>Tinian</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net volumes of raw sugar canes (kin)</td>
<td>88,604</td>
<td>96,952</td>
</tr>
<tr>
<td>Increase in purchase price sugar cane per 1,000 kin after the abolition of the outlier class (yen)</td>
<td>0.056</td>
<td>0.084</td>
</tr>
<tr>
<td>Increase in income amount of tenant cultivators (yen)</td>
<td>4.962</td>
<td>8.143</td>
</tr>
</tbody>
</table>

Notes: Net volumes of raw sugar canes is indicated in Net volumes of raw sugar canes (After revisions) in Table 7-1. Increase in purchase price sugar cane per 1,000 kin after the abolition of the outlier class in Saipan = 2.143 (yen) – 2.087 (yen). Increase in purchase price sugar cane per 1,000 kin after the abolition of the outlier class in Tinian = 2.143 (yen) – 2.059 (yen). Increase in income amount of tenant cultivators = Net volumes of raw sugar canes/1,000 * Increase in purchase price sugar cane per 1,000 kin after the abolition of the outlier class.

Source: JACAR, B06050150600.
Table 8. Juxtaposing the income reductions due to the premium revisions with the increased income due to the amendment to farm rents and the abolition of the outlier class per hectare (yen).

<table>
<thead>
<tr>
<th></th>
<th>Saipan</th>
<th>Tinian</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decrease in income amount of tenant cultivators after the premium revisions (yen)</td>
<td>72,819</td>
<td>84,609</td>
</tr>
<tr>
<td>Increase in income amount of tenant cultivators after the amendment to farm rents and the abolition of the outlier class (yen)</td>
<td>4,962</td>
<td>8,143</td>
</tr>
<tr>
<td>Decrease in income amount of tenant cultivators (yen)</td>
<td>67,857</td>
<td>76,466</td>
</tr>
</tbody>
</table>

Notes: Decrease in income amount of tenant cultivators after the premium revisions and Increase in income amount of tenant cultivators after the amendment to farm rents and the abolition of the outlier class are indicated in Table 6 and Table 7-3, respectively. Decrease in income amount of tenant cultivators = Decrease in income amount of tenant cultivators after the premium revisions – Increase in income amount of tenant cultivators after the amendment to farm rents and the abolition of the outlier class.

Source: JACAR, B06050150600.
Table 9. The tenant cultivators’ individual household incomes for financial year 1933 (kin; yen).

<table>
<thead>
<tr>
<th></th>
<th>Volumes (kin)</th>
<th>Amounts (yen)</th>
<th>Number of households</th>
<th>Per household (yen)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total amount of raw</td>
<td>594,014,650</td>
<td>1,228,611.16</td>
<td>1,467</td>
<td>2,298.22</td>
</tr>
<tr>
<td>materials</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farm rents</td>
<td>102,940,040</td>
<td>158,726.51</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net volumes of raw</td>
<td>491,074,610</td>
<td>951,833.77</td>
<td></td>
<td></td>
</tr>
<tr>
<td>sugar canes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Premiums</td>
<td>-</td>
<td>723,322.54</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incomes from harvest</td>
<td></td>
<td>380,995.78</td>
<td></td>
<td></td>
</tr>
<tr>
<td>and transportation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1,188,029,300</td>
<td>3,371,489.76</td>
<td>1,467</td>
<td>2,298.22</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Expenses</th>
<th>Amounts (yen)</th>
<th>Number of households</th>
<th>Per household (yen)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expenses for cultivation</td>
<td>274,584.26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loan for purchasing goods</td>
<td>192,389.52</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housing expenses</td>
<td>7,299.74</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expenses for plowing by cow and oxcart</td>
<td>14,928.07</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miscellaneous loans</td>
<td>303,150.65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>792,352.24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interest</td>
<td>46,994.60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>839,346.84</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Payment until loan repayment</td>
<td>25,468.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total - Payment until loan repayment</td>
<td>813,878.83</td>
<td>1,467</td>
<td>554.79</td>
</tr>
</tbody>
</table>

The tenant cultivators’ household incomes

<table>
<thead>
<tr>
<th>Incomes</th>
<th>Amounts (yen)</th>
<th>Number of households</th>
<th>Per household (yen)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incomes</td>
<td>1,984,152.09</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expenses</td>
<td>813,878.83</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incomes - Expenses</td>
<td>1,170,273.26</td>
<td>1,467</td>
<td>797.74</td>
</tr>
</tbody>
</table>

Notes. Incomes in the tenant cultivators’ household incomes is calculated as follows. Incomes = Net volumes of raw sugar canes + Premiums + Incomes from harvest and transportation. Expenses in the tenant cultivators’ household incomes is calculated as follows. Expenses = Expenses for cultivation + Loan for purchasing goods + Housing expenses + Expenses for plowing by cow and oxcart + Miscellaneous loans + Interest – Payment until loan repayment. Source: JACAR, B06050150600.
Table 10. The tenant cultivators’ individual household incomes for financial year 1934 (yen).

<table>
<thead>
<tr>
<th></th>
<th>Saipan</th>
<th>Tinian</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Incomes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sugar cane (raw materials)</td>
<td>745.53</td>
<td>758.55</td>
</tr>
<tr>
<td>Premiums</td>
<td>123.75</td>
<td>134.98</td>
</tr>
<tr>
<td>Incomes from harvest and transportation</td>
<td>277.64</td>
<td>244.49</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1,146.92</td>
<td>1,138.02</td>
</tr>
<tr>
<td><strong>Expenses</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expenses for cultivating sugar cane</td>
<td>194.46</td>
<td>173.20</td>
</tr>
<tr>
<td>Expenses for purchasing goods</td>
<td>153.66</td>
<td>140.69</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>146.15</td>
<td>130.49</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>494.27</td>
<td>444.38</td>
</tr>
<tr>
<td><strong>Net income</strong></td>
<td>652.65</td>
<td>693.64</td>
</tr>
</tbody>
</table>

Appendix 1. A structure diagram of the South Seas Islands.

The Ministry of Colonial Affairs
- governed agencies in each overseas territory
- supervised the SMR and the OCC

The South Seas Agency
- governed the South Sea Islands under the direct and supervise of the Prime Minister of Japan and, after 1929, the Ministry of Colonial Affairs

The South Seas Development Company
- sugar cultivation was carried out:
  - on plantations managed directly by the company, by tenant cultivators
  - and by farmers not employed by the SSDC
THE EFFECT OF INTERNAL AUDITOR INDEPENDENCE ON EFFECTIVENESS OF GOVERNMENT INTERNAL AUDIT: GROUP COHESIVENESS AS AN INTERVENING VARIABLE (CASE STUDY AT THE REGIONAL INSPECTORATE AT JAVA ISLAND)

Moh. Ubaidillah
Universitas PGRI Madiun, Indonesia
Ari Kuncara Widagdo
Universitas Sebelas Maret, Indonesia

The objective of this study is to examine the effect of auditor independence, group cohesiveness, and individual factors on internal audit effectiveness of regional inspectorates. In addition, this study also intends to examine whether group cohesiveness mediates relationship between auditor independence and internal audit effectiveness. Population of this study is regional inspectorates located in some regencies/municipalities in Central Java Province and East Java Province, Indonesia. Method of analysis of this study is structural equation modeling by using SmartPLS. The results indicate that, as predicted, auditor independence has a positive and significant relationship with internal audit effectiveness. Interestingly, this study proves that group cohesiveness partially mediates relationship between auditor independence and internal audit effectiveness. Unfortunately, individual factors (i.e. level of education and work experience) do not have significant relation with audit effectiveness.

Keywords: Audit effectiveness, auditor independence, group cohesiveness.

1. INTRODUCTION

Local government internal auditor, which is known also as regional inspectorate, is a unit conducting local government oversight. Regional inspectorate has the task of conducting the general supervision of the local government and other duties assigned by the head of the region (Falah, 2005). The role and functions of the inspectorate of provinces, districts/cities, in general, governed by Article 4 of Regulation of the Minister of Interior No. 64 of 2007. In this article, it is stated that, in carrying out supervisory duties of government affairs, inspectorates provincial or inspectorates district/city have a function as follows: first, planning surveillance program; second, policy formulation and monitoring facilities; and third, examination, investigation, testing, and assessment of supervisory duties.

However, in reality, the roles of the regional inspectorate are being questioned as hundreds of officers in Indonesia caught in corruption. In the period 2009-2014, of the 439 cases handled by the Corruption Eradication Commission, 45.33 percent involves government officials at the local level.
administrators. The data of the Ministry of Internal Affair shows, since decentralization in 2014, as many as 318 heads/deputy heads of the region have involved in corruption. The regional inspectorate seems be absentee in preventing rampant irregularities. In fact, the regional inspectorate should be a means of early detection (Anggoro, 2015).

One of things that led to the ineffectiveness of the regional inspectorate is independence issue of auditor of inspectorate. At this time, the regional inspectorate is an unit under the head of the region. In this condition, infrequently, recommendations issued by the regional inspectorate are not responded by the head of the region. In addition, the regional inspectorate is often considered an enemy. Thus, the auditors of regional inspectorate might get sanctions such as discharged, and mutation to the remote area. Therefore, the auditors of regional inspectorate should adhere to what was ordered by the head of the region to avoid the sanctions. In such situations, the independence of the auditors of regional inspectorate in carrying out tasks is questioned. In fact, the auditor independence is one of the essential elements for the auditors of regional inspectorate in carrying of auditing of local government budget (Anggoro, 2015).

Other variables may affect the effectiveness of the internal audit, namely cohesiveness of the group. As suggested by Ma’Ayan and Carmeli (2016), one among determinants of effectiveness of internal auditor is internal auditor capacity. This determinant includes auditor’s professional skill, scope of service, effective audit planning, fieldwork and controlling, and effective communication (Dessalegn, 2007). In terms of effective communication, most prior studies focus on relationship between auditee and auditor (i.e. Dessalegn, 2007; Ma’Ayan and Carmeli, 2016). However, there are limited prior studies on the effect of group cohesiveness on the effectiveness of the internal audit including in Indonesia. To best our knowledge, only one study conducted by Wibowo (2012) reveals that the group cohesiveness has a positive effect on the performance of auditors. This suggests that, in an audit team, the absence of group cohesion in the audit team might cause ineffectiveness of the audit.

In the extant literature, numerous prior studies examined the effect of independence of internal auditor on effectiveness of internal auditor (i.e Kuta, 2008; Cohen, and Sayag, 2010; Ussahawanitchakit and Intakhan, 2011; Ebissa, 2015). However, results of the prior studies on the association between independence of internal auditors and their effectiveness are not consistent (Stewart and Subramaniam, 2010). This conflicting finding provides justification to examine further the independence issue. Therefore, researchers argue that the inconsistent results
of auditor independence because of the presence of another variable that may affect the relationship. Therefore, this study will examine whether group cohesiveness mediates relationship between the auditor independence and effectiveness of the internal audit.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1 Internal Auditor Effectiveness and Auditor Independence

The effectiveness of the audit is an achievement or completed the audit in accordance with the rules applicable. According to the Professional Standards of Internal Audit (Tugiman, 1997), there are nine indicators of the effectiveness of internal audit, namely (1) feasibility and significance of inspection findings and its recommendations, (2) the response of the object being examined, (3) professionalism auditor, (4) warning, (5) the cost-effectiveness of inspection, (6) the development of personnel, (7) the feedback from other management, (8) the increased number of inspections, and (9) the achievement of the inspection program.

Auditor independence is an attitude that is not impartial or that is not controlled by the outside or inside auditor himself. According IIA, independence means freedom from conditions that threaten objectivity or the appearance of objectivity. Such threats to objectivity must be managed at the individual auditor, engagement, functional and organizational levels. The auditor independence also means that their honesty in the auditors in considering the facts and considerations pre objective impartiality of the auditors themselves to formulate and express opinions. Arens et al. (2000) define auditor independence in auditing as a use of perspective that is not biased in the implementation of audit testing, evaluation of the test results, and reporting of audit findings. According to Messier et al. (2012), auditor independence is a term often used by professional auditor. The auditor independence tends to avoid relationships that might interfere with the objectivity of the auditor.

2.2 Hypothesis Development

2.2.1 Auditor Independence

Based on agency theory, in a democracy country, parliament as a representative of the community can be considered as a principal, whereas government is an agent. Both are different institutions and each function is interrelated to the survival of a country. The function of the government itself is providing services to the public in accordance with regulations, while the
function of Parliament is to oversee government performance. This will probably lead to asymmetry of information that creates agency problems. The information presented authorities may require verification of the other party. Therefore, an independent party is needed to overcome asymmetry information. In the context of local government, one of the independent parties is regional inspectorate. In this such condition, the regional inspectorate auditors should be able to act independently in carrying out their functions. In order to carry out an audit, auditors of regional inspectorate should have a greater degree of auditor independence. Yusri (2013) reveal that auditor independence might improve the performance of the auditor of regional inspectorate. Similarly, Agustin (2010) finds that the auditor independence affects the effectiveness of the internal audit. Therefore, the hypothesis is formulated as follows:

H1: The auditor's auditor independence has a positive influence on the effectiveness of the audit of regional inspectorate.

2.2.2 Auditor Independence and Group Cohesiveness

The working group has become a very important thing today. Working in a group course provides advantages compared to working alone. Baron and Byrne (2004) define that group is as a group of people who are perceived bonded to one another in a coherent unit to a certain degree. Factor that causes the last group members in the group is called cohesion. According to George and Jones (2002), group cohesiveness is a member of a group that has a fascination with each other. A working group with high cohesiveness is mutually attracted to each member, whereas the low cohesiveness of working groups is not mutually attracted to each other.

The audit team is a working group that should have a high cohesion. The cohesiveness is mainly formed due to homogeneous group. Homogeneity can be created because of similarities in background or shared values and goals posed by members of the group. When members have the same properties, then cohesion will increase rapidly and will realize the effectiveness or performance. The audit team is a group of auditors consisting of people who have some similarities, such as educational background, and values/ethical code. The educational background of the auditor usually come from the homogenous education, namely accounting education. In addition, auditor independence is the value/code of conduct that should be owned by every auditor. The higher the level of auditor independence of the auditor, the audit team cohesiveness will also be high, because the homogeneity is also high. In the end, the high cohesiveness will increase effectiveness of internal audit. As evidence, Wibowo (2012) find that
the cohesiveness of the work group has a positive effect on the performance of auditors. Based on the description above, the hypothesis can be formulated as follows:

**H2**: The group cohesiveness mediates relation between auditor's auditor independence and the effectiveness of the audit of regional inspectorate.

### 2.2.3 Individual Factors

Individual factors in this study are audit experience and education level. Audit experience is a job audit Waku a need for long to understand very well about the audit issues so familiar and easily auditor in conducting the audit. According Kusumastuti (2008), the experience is a trip in the quotation by someone of the events experienced in the course of his life. Long working experience is an experience of auditor calculated based on a time or year. An experienced auditor will be able to add to and expand the auditor's knowledge in the field of accounting and auditing field.

The level of education is also needed to determine the effectiveness of the audit. The more knowledge gained will facilitate the auditor in solving problems in performing audit engagements. According Gorda (2004) in Laksmi, (2010), education is an activity for improvement and developing human resources by improving the ability and understanding of general knowledge and knowledge of the economy including the improvement of theoretical knowledge and skills in an effort to solve the problems facing the company.

Audit experience and level of education is the competence or the ability to carry out the audit task, because with these competencies auditor will find out which one is right and wrong in auditing financial statements. The higher level of audit experience and level of education also will be easy to realize the effectiveness of the audit regional inspectorate officials.

**H3**: Individual factors have a positive effect on the effectiveness of the audit of regional inspectorate.

### 2.2.4 Research Framework

Based on a literature review and hypothesis development above, in this study, auditor independence of auditor is an independent variable that influence the effectiveness of audit of regional inspectorate. The group cohesiveness works as an intervening variable that mediates the relationship between auditor’s auditor independence and the effectiveness of audit of regional inspectorate. In addition, the study includes individual factors as independent variable that influence the effectiveness of audit of regional inspectorate.
3. RESEARCH METHOD

3.1 Population and Data

The population in this study is the auditors of regional inspectorate in some regencies in Java island, namely Sragen, Wonogiri, Boyolali, Ngawi, Magetan, Pacitan, Ponorogo and Madiun. The reason for choosing these regencies is due to a few cases of corruption in such regions and also the ease of access to get sample. This study employs all member of population as sample. This research is a quantitative study using primary data. Method of data collection is a questionnaire method. The questionnaire was given to the respondent and the respondent will then fill it in accordance with the opinions and perceptions of respondents. The questionnaire to measure the effectiveness of audit is built based on the indicator of Internal Control System of Government based on the Indonesian Government Regulation No. 60 of 2008. In this study, the group cohesiveness variable is measured by adopting instrument of Forsyth (2010). This variable is measured by two dimensions, namely task cohesiveness and group cohesiveness. The measurement of auditor independence is adopted from the instrument of Yusri (2013). The individual factors consist of the level of education and work experience. In this study, the level of education is formal education that will be measured by giving a value ranging from a high school education to S3, namely senior high school = 1, diploma = 2, undergraduate = 3, master = 4, and doctoral = 5. The audit experience in this study were measured using 3 levels: less than 2 years: 1, 2-5 years:2 and more than 5 years :3. Before the distribution of questionnaire to prospective respondents, the researchers carry out a pilot test to prospective respondents. In this study, a pilot test was conducted on June 1, 2015.
until the date of June 8, 2015. The pilot test questionnaires were distributed to 25 respondents, but only 20 complete questionnaires were obtained. The analysis of the reliability and validity indicated that all questions are valid and reliable.

3.2 Data Analysis

In this study, analysis of data uses Partial Least Square (PLS). PLS is a model equation of Structural Equation Modeling (SEM) based components or variants. According Ghozali (2006), PLS goal is to help researchers for predictive purposes. Thus, it is consistent with the objective of this study to predict the relationship of several variables that affect the effectiveness of internal audit.

4. RESULTS AND DISCUSSION

4.1 Distribution of Respondents

The questionnaire was distributed to 143 respondents, but the complete questionnaire was 120. The detail is on Table 1.

<table>
<thead>
<tr>
<th>Regency / City</th>
<th>Number of auditors</th>
<th>Returned questionnaire</th>
<th>Incomplete questionnaire</th>
<th>Complete questionnaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ngawi</td>
<td>13</td>
<td>13</td>
<td>-</td>
<td>13</td>
</tr>
<tr>
<td>Ponorogo</td>
<td>17</td>
<td>12</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>Magetan</td>
<td>21</td>
<td>21</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>Kota</td>
<td>21</td>
<td>21</td>
<td>-</td>
<td>21</td>
</tr>
<tr>
<td>Madiun</td>
<td>9</td>
<td>9</td>
<td>-</td>
<td>9</td>
</tr>
<tr>
<td>Pacitan</td>
<td>20</td>
<td>18</td>
<td>2</td>
<td>16</td>
</tr>
<tr>
<td>Sragen</td>
<td>24</td>
<td>19</td>
<td>3</td>
<td>16</td>
</tr>
<tr>
<td>Boyolali</td>
<td>18</td>
<td>14</td>
<td>-</td>
<td>14</td>
</tr>
<tr>
<td>Total</td>
<td>143</td>
<td>127</td>
<td>7</td>
<td>120</td>
</tr>
</tbody>
</table>
4.2 Data Analysis

4.2.1 Evaluation of Measurement Model (Outer Model)

The outer model is a stage to determine the validity and reliability of latent variables. To determine the validity, discriminant validity was measured by using the AVE and Communality. The requirements to meet the validity must be above 0.50. The Table 2 below shows that all the variables above 0.50, then they are valid.

Table 2

<table>
<thead>
<tr>
<th>Variable</th>
<th>AVE</th>
<th>Communality</th>
</tr>
</thead>
<tbody>
<tr>
<td>EF</td>
<td>0.58091</td>
<td>0.580909</td>
</tr>
<tr>
<td>EF_A</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>EF_B</td>
<td>0.77602</td>
<td>0.776017</td>
</tr>
<tr>
<td>EF_C</td>
<td>0.79315</td>
<td>0.793147</td>
</tr>
<tr>
<td>EF_D</td>
<td>0.85679</td>
<td>0.856786</td>
</tr>
<tr>
<td>EF_E</td>
<td>0.78027</td>
<td>0.780273</td>
</tr>
<tr>
<td>EF_F</td>
<td>0.80398</td>
<td>0.803978</td>
</tr>
<tr>
<td>EF_G</td>
<td>0.86112</td>
<td>0.861122</td>
</tr>
<tr>
<td>ID</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>IN</td>
<td>0.54749</td>
<td>0.547489</td>
</tr>
<tr>
<td>IN_A</td>
<td>0.62856</td>
<td>0.628555</td>
</tr>
<tr>
<td>IN_B</td>
<td>0.6285</td>
<td>0.628504</td>
</tr>
<tr>
<td>IN_C</td>
<td>0.80213</td>
<td>0.802126</td>
</tr>
<tr>
<td>KH</td>
<td>0.60276</td>
<td>0.602756</td>
</tr>
<tr>
<td>KH_A</td>
<td>0.66605</td>
<td>0.666046</td>
</tr>
<tr>
<td>KH_B</td>
<td>0.65681</td>
<td>0.656812</td>
</tr>
</tbody>
</table>

Source: Data Processing SmartPLS (2015)

The test of reliability in SmartPLS uses two evaluations, namely reliability and cronbach alpha that require loading factor above 0.70. Table 3 shows that all of variables are above 0.70.
### Table 3
The Result of Cronbach Alpha and Composite Reliability

<table>
<thead>
<tr>
<th></th>
<th>Cronbach Alpha</th>
<th>Composite Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>EF</td>
<td>0.93928</td>
<td>0.947193</td>
</tr>
<tr>
<td>EF_A</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>EF_B</td>
<td>0.71228</td>
<td>0.873853</td>
</tr>
<tr>
<td>EF_C</td>
<td>0.739345</td>
<td>0.884638</td>
</tr>
<tr>
<td>EF_D</td>
<td>0.832876</td>
<td>0.92287</td>
</tr>
<tr>
<td>EF_E</td>
<td>0.718999</td>
<td>0.876557</td>
</tr>
<tr>
<td>EF_F</td>
<td>0.756436</td>
<td>0.891333</td>
</tr>
<tr>
<td>EF_G</td>
<td>0.838829</td>
<td>0.925378</td>
</tr>
<tr>
<td>ID</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>IN</td>
<td>0.89423</td>
<td>0.914872</td>
</tr>
<tr>
<td>IN_A</td>
<td>0.706023</td>
<td>0.835011</td>
</tr>
<tr>
<td>IN_B</td>
<td>0.704195</td>
<td>0.835252</td>
</tr>
<tr>
<td>IN_C</td>
<td>0.87635</td>
<td>0.923977</td>
</tr>
<tr>
<td>KH</td>
<td>0.932979</td>
<td>0.943095</td>
</tr>
<tr>
<td>KH_A</td>
<td>0.750127</td>
<td>0.85638</td>
</tr>
<tr>
<td>KH_B</td>
<td>0.925017</td>
<td>0.938588</td>
</tr>
</tbody>
</table>

Source: Data Processing SmartPLS (2015)

### 4.2.2 Structural Model (Inner Model)

The structural models were evaluated using the R-square ($R^2$) to construct the dependent, and the t-test for structural lines of coefficient parameters. $R^2$ can be used to assess substantive effect of latent independent variables on the latent dependent variable. Table 4 shows that the lowest is 0.436818, whereas the highest $R^2$ is 0.968889. These results indicate that the structural model is quite good.
4.2.3 Evaluation of Goodness of Fit

Following is result of the calculation of Goodness of Fit:

\[
Gof = \sqrt{\frac{\text{Commanlity} \times R - \text{Square}}{\text{Commantlity} \times R - \text{Square}}}
\]

\[
Gof = \sqrt{0.777 \times 0.749 \times 0.763}
\]

\[
Gof = \sqrt{0.763}
\]

\[
Gof = 0.763066
\]

The result of GoF is 0.763066 that is higher than 0.50, then the model is fit.

Source: Data Processing SmartPLS (2015)
4.3 Hypothesis Testing

Based on Table 5, it can be seen that effect of the individual factors on the audit effectiveness has a t-statistic value of 0.55324 and path coefficient of 0.008723. This suggests that the result of t-statistic is not significant because it is less than 1.96. The effect of auditor independence of audit effectiveness has a positive and significant because t-statistic is 2.951428 and path coefficient of 0.372806. Furthermore, auditor independence also has a positive and significant effect on the group cohesiveness because t-statistic value is 313.718766 and the value of the coefficient path is 0.982803. The group cohesiveness has a positive and significant influence on the audit effectiveness because t-statistic value is 4.752799 and path coefficient is 0.984322.

| Original Sample Mean (O) | Sample Mean (M) | Standard Deviation (STDEV) | Standard Error (STERR) | T Statistics (|O/STERR|) |
|--------------------------|-----------------|----------------------------|------------------------|------------------------|
| ID -> EF 0.00872 0.02174 | 0.01577 0.01577 | 0.553246 |
| IN -> EF 0.37281 0.34761 | 0.12631 0.12631 | 2.951428 |
| IN -> KH 0.9828 0.98268 | 0.00313 0.00313 | 313.718766 |
| KH -> EF 0.60561 0.63049 | 0.12742 0.12742 | 4.752799 |

Source: Data Processing SmartPLS (2015)

Following Hair et al. (2014), to determine the effect of mediation role of group cohesiveness, there are three questions that needs to answer: (1) Is the direct effect between auditor independence and audit effectiveness significant when the mediator variable (group cohesiveness) is excluded from the path model, (2) Is the indirect effect via the mediator variable significant after the group cohesiveness has been included in the path model and (3) How much of the direct effect does the indirect effect via the mediator absorb?

To answer the first question, the group cohesiveness was excluded from the path model and run the bootstrapping routine with the previously described specifications. As a result, the t-statistic of direct effect between auditor independence and audit effectiveness is 3.155601 that is higher than 1.96. Answering the second question requires re-estimating the full model (i.e., with
the mediator included) and testing the indirect effect’s significance. The corresponding bootstrapping results indicate that t-statistic of the indirect effect is 2.951428 that is higher than 1.96 (see Table 5). Finally, the variance accounted for (VAF) was computed using the following formula:

\[
VAF = \frac{\text{indirect effect}}{\text{indirect effect} + \text{direct effect}}
\]

\[
VAF = \frac{\text{0.595198273}}{0.595198273 + 0.968}
\]

\[
VAF = 0.380755762
\]

\[
VAF = 0.38
\]

\[
VAF = 38\%
\]

The results of this final analysis step yield a VAF value of 0.38 or 38 percent, which, according to Hair et al. (2014), suggests that the group cohesiveness partially mediates the relationship between auditor independence and audit effectiveness.

<table>
<thead>
<tr>
<th>Total Effect (Mean, STDEV, T-Values)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Original Sample</td>
</tr>
<tr>
<td>ID -&gt; EF</td>
</tr>
<tr>
<td>IN -&gt; EF</td>
</tr>
<tr>
<td>IN -&gt; KH</td>
</tr>
<tr>
<td>KH -&gt; EF</td>
</tr>
</tbody>
</table>
5. CONCLUSION

The result of analysis indicates that the auditor independence has a positive and significant effect on the audit effectiveness of regional inspectorate. The positive influence suggests that, if the auditor's auditor independence is high, it will increase the effectiveness of the audit. It implies that the auditor independence of auditors of regional inspectorate has a very important role in enhancing the effectiveness of the internal audit on local government. This finding is consistent with prior studies conducted by Endah and Heru (2011) and Yusri (2013). In terms of mediation variable, the result of analysis reveals that group cohesiveness partially mediates relationship between auditor independence and audit effectiveness. This auditor of regional inspectorate has homogeneity in values/ethics and education background might create a group cohesiveness.

Based on the hypothesis test result, the individual factors do not affect the effectiveness audit of regional inspectorate officials. Thus, the audit experience and education level have significant effect on the effectiveness of the audit. This is in line with Sunarto (2003) that competence only is not enough, but the auditor must be independent, because he was carrying out work in the public interest. In addition, Arens et al. (2006) state that, without auditor independence, audit work will not have a value.

This study has several limitations that should consider in interpreting the results. First, this research was carried out only in a few districts/cities in Central Java and East Java, so the results may not be applicable in other areas. Accordingly, further research may extend the area, so that the results can be generalized. Second, in collecting data, it was difficulty of controlling the answer given by the auditor. Some of the answers given auditors through questionnaires may not reflect their perception, because the researchers did not directly supervise. Therefore, future studies should directly supervise the filling of the questionnaires. Related insignificant individual variable factors, further research may need to place the individual factors as moderating variable.

REFERENCES


(15) Laksmi D. G. 2010. Pengaruh tingkat pendidikan, pelatihan kerja, pengalaman kerja, dan profesionalisme petugas pemeriksa pajak pada penyelesaian pemeriksaan pajak di Kantor


(18) Peraturan Menteri Dalam Negeri Nomor 64 Tahun 2007 tentang *Pedoman Teknis Organisasi dan Tata Kerja Inspektorat Provinsi dan Kabupaten/Kota*.

(19) Peraturan Pemerintah Republik Indonesia Nomor 60 Tahun 2008 tentang *Sistem Pengendalian Intern Pemerintah*


Appadu Santhariah,1 Binh Tran-Nam,2 Dale Boccabella3, Nthati Rametse4

ABSTRACT

The implementation of the Goods and Services Tax (GST) in Malaysia, on 1 April, 2015, was part of the Malaysian government’s taxation reforms aimed at reducing the country’s budget deficit, hence improving the collection of revenue. This article presents findings of some of the major issues and concerns that the Malaysian business taxpayers perceived as key challenges in preparing for the implementation of the GST. Using a survey questionnaire, 1,500 Malaysian business taxpayers5 were surveyed in June 2013 to investigate their GST implementation readiness. The results confirmed that overall, business taxpayers were poorly prepared for the GST implementation, with only nine percent claiming to be substantially ready. Around 22% of the respondents stated that they were well equipped with computer systems for GST purposes. Over 25% of eligible potential GST registrants stated that they would not register. Over 74% of respondents felt that the GST would place an additional compliance burden on them. Only 24% of respondents were confident that they would get the required assistance with the GST implementation, from the Royal Malaysian Customs Department. Additionally, whilst enterprises businesses confirmed that they were better prepared for the GST, smaller businesses felt more stressed out with preparing for the GST. This article concludes with policy implications for Malaysian GST system, particularly those that would alleviate businesses’ compliance burden.

Key words: Malaysian GST Compliance issues, Goods and Services Tax, Business taxpayers, Royal Malaysian Customs Department.

1.0 INTRODUCTION

This paper examines some of the major issues and concerns business taxpayers perceive as key challenges in preparing for the Goods and Services Tax (GST)6 in Malaysia. More specifically, four broad issues were investigated, namely: (i) businesses’ readiness to implement the GST, (ii) the GST compliance burden imposed on businesses, (iii) perceptions of the Royal Malaysian Customs Department.
Customs Department (RMCD), the body that administers the GST in Malaysia and their capacity to provide financial and non-financial assistance and (iv) to determine whether or not business perceptions are related to business characteristics. After two failed attempts which spread over seven years, on the third attempt the Malaysian Goods and Services Tax Act 2014 based on a broad-based consumption tax was finally passed with effective from April 2015. During this prolonged period, the private sector and the Government of Malaysia conducted various information sessions and GST seminars to educate Malaysian business taxpayers. However, not much is known about business taxpayers’ concerns and their readiness for the implementation of the GST in Malaysia. This shortcoming is due to the restrictions on mainstream press reports which only reported a limited range of the views about GST due to the restricted press freedom in Malaysia. Moreover, it is well known that the government controls the press in Malaysia, limiting media freedom and the right to express opinions. Thus, public debates on government decisions and policy matters are almost non-existent.

Further it seems Malaysian academia have not taken the lead to publish studies on pre-GST implementation issues, resulting on the dearth of the Malaysian literature on this area in an effort to address this gap, this study aims to make a contribution to the literature on the pre-GST compliance implementation issues in Malaysia. Thus a survey was conducted from April 2013 to June 2013 with a sample of 1,500 business taxpayers, 426 survey responses were received, a response rate of over 28%. The findings show that Malaysia was not well placed for its implementation of GST scheduled to start on 1 April 2015. This is unfortunate given that the GST was first announced for implementation in 2005. Many in the business community both large and small did not take the implementation date seriously partly due to the postponement of the GST implementation and the “laissez-faire “attitude of many business taxpayers who were hoping that GST will not be implemented. The survey results indicate that overall, business taxpayers were poorly prepared for the implementation of the GST. Further statistical analyses revealed that overall, whilst larger businesses were better prepared for the implementation of the GST, smaller businesses felt more stressed out about the GST, this data was collected around two years before the implementation of GST and it might be that circumstances have improved somewhat since the survey data was collected but it would be surprising if the improvement was sufficiently significant. Some of the negative survey results may also reflect a dis-belief that the GST would actually be implemented this time, thereby causing “GST readiness fatigue”: many hoped that GST would simply not

different names, they are both multi-stage consumption taxes where tax is imposed through the different stages of the supply chain.


The rest of the paper is organized as follows: Section two reviews the literature on the GST implementation experiences in both the developed and developing countries. It also outlines the conceptual issues relating to costs of taxation and compliance costs. Section three briefly discusses the methodology used for this study. Section four provides the findings and analysis of the results. Finally, Section five concludes this paper, articulating some measures that may assist to reduce the GST compliance burden for Malaysian enterprises.

2.0 THE LITERATURE REVIEW

In this section, two major themes of the study are explored, 2.1 GST implementation experiences in some developing and developed countries and 2.2 conceptual issues about the costs of taxation and gross compliance costs and net compliance costs.

2.1 GST implementation experience in developing countries

Tanzi and Howell\(^9\) made some observations about tax implementation issues in developing countries on all types of taxes. First, most workers are employed in agriculture or in small and informal enterprises. Second, it is difficult to create an efficient tax administration without a well-educated and well-trained workforce and operations are rarely computerised. Third, due to the informal structure of the economy, coupled with poor bookkeeping and low-level computerisation, it is hard for taxpayers to meet reporting tax obligations. Bird\(^10\) further argued that developing countries face formidable challenges when they attempt to establish efficient tax systems for direct and indirect taxes. Emran and Stiglitz (2005)\(^11\) argued that by simply relying on GST revenue is not a good strategy due to the presence of a large informal sector. Bernardi, Fumagalli and Gandullia\(^12\)


\(^12\) Bernardi, L, Fumagalli, L, & Gandullia, L2005, ‘Tax systems and tax reforms in South and East Asia: Overview of the tax systems and main policy tax issues’ MPRA Paper No. 01869 (pp. 3-34). Retrieved June 29, 2014, from http://mpra.ub.uni-muenchen.de/1869/1/MPRA_paper_1869.pdf
argued that the adoption of the GST is often seen as an opportunity in developing countries to modernise tax administration. However, many developing countries found the GST to be more difficult to administer than other taxes due to problems with administration and enforcement, compliance burden which together, often undermine the effectiveness of the GST.

Singapore’s GST experience

GST was introduced in Singapore on 1 April 1994 with a registration threshold to S$1 million to reduce the compliance burden. Currently, the GST rate is 7% on all local sales of goods and services. Jenkins and Khadka\(^\text{13}\) stated that Singapore was one of the countries without experience with this general type of consumption tax before the introduction of the GST, yet the implementation and the ongoing operation of the GST in Singapore has been smooth and successful. Casanegra de Jantscher\(^\text{14}\) stated that an important requirement for successful VAT administration is to structure the tax effectively to minimise problems of implementation.

To gain the confidence of registered taxpayers and to minimise problems at the implementation stage, there was strong political commitment and cooperation from all ministries to implement the tax. This was initially met with mixed feelings, because the public was not sure how the GST worked. In response, the authorities set in motion massive awareness programs through the media, information sessions, dialogue sessions, GST seminars and education programs. Several brochures and pamphlets on the GST were prepared and distributed widely, hence minimising doubts and fears from concerned groups. Due to their commitment and confidence in getting the message through, businesses in Singapore were in a better position and confident to comply with the GST law, and consumers did not resist the implementation of this tax.


Pakistan’s GST experience

Pakistan introduced the GST in 1996. It seems Pakistan succeeded in the initial years of the GST implementation but later had some problems with the GST itself. Shahid 15 notes that the extension of the base to wholesalers and retailers led to a significant improvement in GST collection from 1996 to 2000. However, when the GST was first introduced, there were multiple registration thresholds and multiple tax rates, hence created confusion among taxpayers.

Consequently, a single registration threshold and a single GST rate were eventually introduced. Another area of great concern was that only 50% of registered businesses filed the monthly GST returns due to the adversarial relationship between taxpayers and the tax administration. Despite some initial problems, Pakistan expects to have in place a fully modernised and automated GST system and aims to become the first major country in South Asia to have implemented the GST successfully.

Bangladesh’s GST experience

Bangladesh introduced a VAT in 1991 its performance of VAT was quite satisfactory in the beginning, but subsequently, the GST collection stagnated (Smith, Islam, and Moniruzzaman) 16. The reasons for stagnation were due to the participation of a small number of registered taxpayers, a lack of VAT awareness programs and a weak compliance monitoring system. The authors concluded that there was still scope for improving the revenue collection from VAT: by increasing the number of VAT taxpayers; reforming the VAT administration; creating intensive awareness among the people; revisiting the list of VAT-exempt items; and increasing the efficiency of the monitoring system.


2.2 The GST implementation experience in developed countries

Australia’s GST experience

Developed countries have difficulties in selling the GST message, despite extensive consultation with business taxpayers and business organisations. For example, in Australia, there was strong opposition from the public and business taxpayers about the introduction of the GST. After two attempts, the GST was eventually implemented at the 3rd attempt at a rate of 10% in 2000. In November 1999 (a year earlier), a survey was undertaken by Yellow Pages in Australia to seek business taxpayers’ responses to the proposed GST. Evans summarised this report. The key concerns expressed by taxpayers were that the GST burden of compliance would be high and interfering with time available for their business and family. 70% business worried about complexity 60% business do not know how GST will affect them 74% business perceived compliance burden will be increased 50 % business stated difficulty to find adequate information on GST. Though there were initial implementation issues, Pope and Rametse confirmed that the GST was smoothly introduced into Australia, with small business appearing to cope reasonably well on the whole. This was confirmed by Tran-Nam and Glover that despite the high GST implementation cost, careful planning by the Australian Taxation Office (ATO) and other government bodies ensured that the GST was implemented successfully. Tran-Nam stated that the implementation of the GST in Australia could be considered a success, despite some early teething problems.

New Zealand’s GST experience

New Zealand introduced GST in 1986, the GST rate was 12.5% and it increased to 15% in 2010. It was levied on a broad base at a low single standard rate, with few exemptions. Evans\textsuperscript{21} reported that the New Zealand GST has proven to be ‘efficient and relatively problem-free’ due to proper planning, organisation, education and the high level of cooperation the New Zealand Inland revenue (NZIR) has been able to elicit from businesses. Kraal and Kasipillai\textsuperscript{22} citing Rendal\textsuperscript{23} concluded that GST was an non-event in New Zealand in 1986 since the Government had generously invested in GST education. James and Alley\textsuperscript{24}stated that despite initial problems, New Zealand’s GST experiences showed relatively few issues because the legislation was policy driven and the emphasis was based on a consultative approach which was aimed at improving the quality of the product (GST) being introduced. Further Douglas\textsuperscript{25} concluded that the GST success can be traced to five key process elements: political will, right people, the way in which the proposal was packaged, an effective consultative process, and an effective communication process. Thus, it seems the New Zealand government “got it right” the first time.

**Overall GST implementation issues**

GST/VAT has swept the world, from 1965 to 2006 and the number of countries using GST/VAT rose from 10 to 140 and increased to 160 in 2011. Developed countries that implemented VAT/GST were pioneers had the opportunity to learn from other developed countries whereas developing countries had difficulty to learn from other developing countries since the local conditions were not comparable to other developing countries. However, it seems the GST implementation challenges faced by developed and developing countries are nearly the same.

\textsuperscript{21} See No.16


\textsuperscript{23} C Rendall, “Nothing to fear from GST: small business should find the transition to a GST relatively easy” (1999) 70(3) Charter 64.


subject to the different stages of development in these countries. Cottarelli\textsuperscript{26} argued that developing countries faced additional challenges due to ‘hard to tax areas’ because of their agricultural economies and large informal sectors, where tax gaps have been put at, for example, 50\% to 60\% of GDP in Indonesia and Mozambique. In addition to weak revenue administrations, low taxpayer morale, poor governance and corruption and fraud are common in developing countries. This makes it more difficult to implement the GST in developing compared to developed countries. Also, it seems the success of VAT/GST in most developed countries stems from the fact that there was more detail in pre-planning, more government involvement, and better research carried out before GST was introduced. Whereas developing countries used a “copy mentality” none of them seem to have carried out any rigorous analytical framework for the introduction of VAT/GST. However, it seems even developed countries like Australia with all the preparations had difficulties to implement this broad based consumption tax. It had to make three attempts since 1981 to introduce the GST due to lack of internal party backing and broader electoral support. Additionally, the Australian and New Zealand experience suggests that GST education, planning and organisation resulted in a successful GST implementation. In the same light the Malaysian government has set up a RM 100 million training grant in 2014 to increase the tax knowledge of businesses by encouraging employees to participate in GST training courses. Thus it seems up until now, the GST education had been one of major factors for the success of GST introduction in Malaysia.

2.3 Conceptual issues pertaining to costs of taxation and compliance costs

When a new tax is introduced, it creates and adds new costs for the economy, the government and taxpayers. These costs are referred to as ‘costs of taxation’ and these costs have been largely hidden in the past and not been recognized for a long time by governments until the introduction of self-assessment of direct and indirect taxes. These costs were identified only over the past two

decades since governments all over the world have come to recognize its impact on the economy. There is currently a deluge of research papers on taxation costs, hence a suitable definition on what constitutes costs of taxation needs to be established. For the sake of simplicity, a clear definition provided by Evans\textsuperscript{27} was based on other tax compliance costs studies would be adopted in this study see Figure 1 below.

Figure 1 Costs of Taxation


Evans suggested that the costs of taxation typically consist of three elements. First, there are economic or efficiency costs (variously referred to as deadweight losses or excess burden that arises from tax-induced market distortions). Second, there are the costs in administrering and collecting the taxes (usually referred to as ‘administration costs’) that fall on the tax revenue agency. Finally, there are costs expended by taxpayers in complying with their obligations (‘paying their taxes’). These are referred to as ‘compliance costs’.

Economic costs

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Economic costs or efficiency costs refer to costs arising from distortions in the allocation of resources owing to the imposition of a tax. In economics, a deadweight loss (also known as excess burden or allocative inefficiency) is a loss of economic efficiency that can occur when equilibrium for a good or service is not achieved or is not achievable. Taxes can affect the way the economy operates and can lead to less production of goods due to the taxes imposed. The extent to which a tax reduces production of goods is called the excess burden of taxation or deadweight loss to the economy.

Administration costs

A GST, like any tax system, needs government resources for its administration. Sandford, Godwin and Hardwick (1989) defined public sector costs of taxation as conceptually constituting those costs that would not have been incurred by the public sector if the tax had never been introduced. If there is no taxation, there are no administration costs. Tran-Nam (2000) argued that tax administration can be divided into four types of government activities: the design and planning of tax policy; the drafting and enacting of tax law; assessing, collecting and auditing taxes; and resolving tax disputes.

Ramatse and Pope presented the administration costs of the Australian GST as those incurred in the education campaign by the Australian Taxation Office (ATO), industry seminars, compensation package for SMEs, wages of staff, etc. which all must either be directly or indirectly related to the

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28 Distortions generally arise when private action (such as price fixing by a cartel) or public action (such as a tax imposed by the government) changes an individual's or firm's behavior.

29 Deadweight loss is a concept used in economics that describes the loss to society as a result of market inefficiencies.


introduction of the GST. One of the main problems in quantifying administration costs is the valuation and allocation of shared administration costs.

Barbone et al,\textsuperscript{33} estimated that average tax administration costs in the EU were 0.29% of GDP per annum, ranging from a minimum of 0.12% for Estonia to 1.3% for Cyprus. For the VAT in EU countries, the administration costs were between 0.5% and 1% of VAT revenue collected. For the UK, the cost of administering VAT was 0.7% of VAT revenues.

**Compliance costs**

When new taxes such as the GST are introduced it adds an extra compliance burden on to taxpayers, which can be measured and quantified and referred as compliance costs. Sandford et al,\textsuperscript{34} defined compliance costs as those costs incurred by taxpayers, or third such as businesses, in meeting the requirements upon in complying with a given tax structure. The example of these costs typically include the value of the time losses by taxpayers, internal staff and unpaid helpers in dealing with business tax affairs, the costs of external tax advisers, any non-labour costs such as specific travel relating to tax compliance activity, the cost of tax publications, stationery, postage, telephone and facsimile, the use of office and equipment such as computers for tax purposes and any non-labour costs such as specific travel relating to tax compliance activity, the costs of tax publications, stationery, postage, telephone.

Sandford et al,\textsuperscript{35} also included psychological costs in the definition of tax compliance costs. These costs refer to stress, anxiety and frustration experienced by taxpayers in dealing with tax affairs. These costs are hard to quantify and the measurement of these costs have not been figured in empirical studies. These costs are mainly relevant during the transitional stages of introduction of

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\textsuperscript{32} Rametse, N. and Pope, J. (2002), ‘Start-up Tax Compliance Costs of the GST: Empirical Evidence from Western Australian Small Businesses’, \emph{Australian Tax Forum}, 17(4), 407-442

new taxes but a less compliance costs (Glover and Tran-Nam)\textsuperscript{36}. Rametse and Pope\textsuperscript{37} point out that economics such as Adam Smith and Irving Fisher fully recognised the role of psychic costs, particularly Fisher who incorporated psychic costs in defining income. Woellner et al,\textsuperscript{38} attempted to develop a research method to measure psychic costs, however, it seems up until now, there is no clear measurement of psychological costs from a compliance costs perspective. Since this study is based on pre-GST period some attempt has been made in the study to assess psychological costs qualitatively.

Smith\textsuperscript{39} based on his famous quote about taxation, stated that ‘every tax ought to be contrived so as to take out of the pockets of the people as little as possible, over and above that which it brings into the public treasury of the state’. This means that tax authorities should attempt to keep compliance costs to a minimum when collecting taxes from taxpayers. Tran-Nam et al,\textsuperscript{40} argued that compliance costs have long been treated as ‘hidden costs of taxation’ by most governments in developing countries since when tax policies are formulated the emphasis is more on tax collection rather than on compliance costs. Franzoni\textsuperscript{41} concluded that companies develop a kind of resentment against authorities who impose high levies and complex systems. Evans\textsuperscript{42} claimed that there will always be a debate on what should be included in the definition of compliance costs. He added that there was no neat and formal model for tax compliance costs, and that it takes painstaking research to properly estimate compliance costs. Evans\textsuperscript{43} argued that it was the government’s responsibility to make tax compliance easier for businesses.

\textsuperscript{34} See No.26
\textsuperscript{35} See No 26
\textsuperscript{37} See No 32
\textsuperscript{39} Smith, A. 1993. Wealth of nations. An inquiry into the nature and causes of wealth of nations. USA: Readaclassic.com
Gross compliance costs versus net compliance costs

Glover and Tran-Nam\textsuperscript{44} stated that Sandford et al\textsuperscript{45} distinguished between gross compliance costs and net compliance costs. Though compliance burden imposes extra costs on taxpayers there are some benefits that flow through to the taxpayers. Thus the definition of gross compliance costs is reduced by these benefits. Thus the net compliance costs take into account, through a subtraction from gross compliance costs, offsets like cash flow benefits, managerial benefits and tax deductibility benefits associated with the need to comply with the new tax regime.

In light of this, in recent years, the following formula has been widely used to ascertain the net compliance costs of VAT/GST.

\begin{quote}
Net compliance costs = Gross tax compliance costs minus (cash flow benefits plus managerial benefits plus tax deductibility benefits)
\end{quote}

\textbf{Cash flow benefits} exist due to the time lag between the time GST is collected from customers and the time it is paid over to revenue authorities. Thus business taxpayer enjoys this cash flow benefit in the short-term. Tran-Nam, et al \textsuperscript{46} argued that some cash flow benefits derived by business taxpayers can be viewed as cash flow losses to the tax authorities (public revenue), and therefore the cash flow benefit to business taxpayers represents a transfer within the economy, which reduces compliance costs to taxpayers but not to the economy as a whole. This cash-flow benefit may quickly turn to be negative if revenue authorities are late in making tax refunds to taxpayers or if the businesses extend the credit terms for a longer period beyond the GST payment dates.


\textsuperscript{45} See No 26.
Managerial benefits refer to the potential for better and more informed business decision making that may come about because of complying with the GST legislative requirements, particularly arising as a result of better record keeping for GST purposes. These benefits can be maximised when record keeping for substantiation is of a high quality. Managerial benefits exist but are difficult to quantify especially for small and medium sized business when accounting and record keeping methods are poor. Sandford, Godwin, Hardwick & Butterworth1981 indicated that the value of managerial benefits can be quite considerable. Accordingly, as Tran-Nam and Glover48 pointed out, these benefits are normally omitted in empirical compliance cost studies. However, Lignier49 through his research on managerial benefits, uncovered that some business taxpayers were deriving managerial benefits in the form of improved knowledge of financial affairs and that the main source of this benefit was improved use of computer accounting.

Tran-Nam and Glover50 highlighted a distinction between social compliance costs (costs to the economy) and taxpayer compliance costs (directly borne by taxpayers). They argued that tax deductibility benefits (business compliance cost activities are tax deductible) arise since business compliance costs are a transfers from the government sector to taxpayers with zero net effect, while managerial benefits are genuine benefits to the business taxpayer with no cost to the government sector.

What do worldwide compliance studies tell us?

Evans51 pointed out that compliance costs are regressive on SMEs, are high and significant, and not decreasing over time. Thus, compliance costs impact heavily on the smallest business. There is

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also evidence that VAT/GST is responsible for higher compliance costs than other taxes. According to Fernandez and Oats, research in the UK showed that compliance costs as a percentage of turnover for small businesses were 1.94%, whereas they were only 0.004% for large businesses. According to Evans the compliance costs of taxes (personal income tax, corporation tax, VAT/GST) are between 2% and 10% of the tax revenue collected, and up to 2.5% of GDP. Sandford et al.(1989) estimated VAT compliance costs of between 3.7% and 9% of VAT collections in the UK. The Tran-Nam et al. study of personal taxpayer compliance costs found that compliance costs have grown over the period of 17 years measured in absolute terms or relative to tax revenue or Gross Domestic Product (GDP). The average real personal taxpayer compliance costs (whether gross or net) rose by about 73 per cent in the period from 1995 to 2012 for all federal and state/territory government taxes.

**GST compliance cost studies**

Most of the GST compliance cost studies were carried out in developed countries and there is a dearth of literature within the context of developing countries. Cedric Sandford, the ‘father’ of modern compliance costs, did conduct detailed work on the compliance costs of VAT/GST but stated comparing compliance costs between countries can be more misleading than informative due to different tax cultures between different countries. Pope showed that, based on research done by other academics internationally, nearly all studies showed that recurrent compliance costs are very regressive on smaller businesses.
Hasseldine et al., summarised their findings from a tax compliance research study of small businesses in Australia, Canada, South Africa and the UK. This study was based on the various compliance costs for a combination of different taxes. It found it is more expensive to comply with GST when compared to income taxes and other taxes, in every country studied, except for Canada.

Cnossen comprehensively reviewed GST compliance costs in the UK, New Zealand and Canada by taking data from original studies of these countries and converting them into USD for six annual turnover categories. For businesses with less than USD 50,000 of turnover in the UK, the compliance cost is 1.49% of turnover, but as turnover increases to USD 10 million, the cost decreases to 0.07% of turnover. As the size of businesses decrease, compliance costs increase as a percentage of turnover, making VAT regressive in terms of compliance costs.

**GST compliance cost studies in Malaysia**

After the Asian financial crisis, Malaysia had to find a way to build up government revenue quickly. Bernardi et al. stated that in order to achieve this goal of strengthening revenue collections, governments embark on a rationalisation of their administrative procedures and an improvement of tax administration. In the process, the government withdrew its focus on the compliance burden of taxpayers with the result that compliance costs to business taxpayers increased. Abdul and Pope argued that the potential importance of compliance costs in influencing compliance behaviour has not been recognised in the Malaysian tax literature. Despite growing problems of tax non-compliance and evasion in Malaysia, very few studies have been carried out to discover the extent and determinants of the non-compliance and evasion problem. In

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the context of a GST in Malaysia the aim of this study is to make a contribution to GST literature about the potential issues faced by business taxpayers for the implementation of GST in Malaysia. Moreover, there is a dearth of the literature on compliance costs in Malaysia due to the newness of this tax.

3.0 RESEARCH METHODOLOGY

Sandford et al.,\textsuperscript{62} conducted various studies into compliance costs of VAT in the UK using extensive mail surveys. Sandford and Hasseldine\textsuperscript{63} also investigated the compliance costs of New Zealand’s GST using a mail survey. Postal surveys feature most prominently in taxation studies, with two-thirds of studies using this method wholly or partly. For this study a quantitative method was adopted to elicit data determining the different legal forms, sizes, industry sector and years the businesses were established, to analyse and generalise about the issues and to determine the relationship between business perceptions and business characteristics. The research questions were made simple to encompass a broad range of topics on GST matters. Some were selected from “Report into incremental costs of incremental costs of taxpayer compliance” (Evans et al.,\textsuperscript{64}). For this study, a focused survey of business taxpayers was undertaken using a structured questionnaire with 36 questions. Questionnaires were distributed to 1,500 business taxpayers to a sample of various business enterprises throughout Malaysia and 426 responses were received.

This survey was administered mainly through a face-to-face approach at GST seminars to participants from three major business organisations, and to a lesser degree through postal/email surveys. This method was adopted because previous Malaysian survey experiences have shown that


\textsuperscript{62} See note 26.


\textsuperscript{64} Evans, C., Ritchie, K., Tran-Nam, B., Walpole, M. 1996. ‘A report into incremental costs of tax compliance’. A report prepared for the Revenue Analysis Branch of the Australian Taxation Office 21 November 1996.
it was difficult to get responses through postal/email surveys. Mohdali\textsuperscript{65} stated that for most tax surveys in Malaysia the response rate is normally poor at around 14\% to 22\%. There is a fear factor and suspicion that data provided by respondents may be forwarded to revenue authorities.

**Survey sample selection, design and piloting**

The design of the survey instrument comprised three sequential steps involving data selection, questionnaire design and the piloting of the survey questionnaire.

**Data selection**

The survey participants were selected by a direct face-to-face approach via three main business organisations whose members participated in GST seminars. The business organisations agreed to circulate the questionnaires to their members at these seminars. The GST academics who participated in various seminars in Malaysia agreed to distribute and collect the questionnaires after completion of the seminars from the participants. This procedure was chosen since it was the most cost-effective solution for reaching a large wide section of business taxpayers, who are spread out in various parts of Malaysia.

**Questionnaire design**

The survey questionnaires were designed to be user friendly, simple and comprehensive. Mohd-Sani\textsuperscript{66} stated that it is well known that the government controls the press in Malaysia. Media freedom and the right to express opinions is limited, and public debates on government decisions and policy matters are nearly non-existent.

Thus, public debates about the GST are very limited. To make the survey more meaningful and


realistic, most of the material for the questionnaire was fine-tuned to take into account various reactions to newspapers articles which are an important channel of communication in Malaysia.

Measurement/Instruments

The proposed questionnaire was developed and pilot tested on six participants comprising one practising accountant, two compliance costs academics and three revenue officials in Malaysia. The purpose of the pilot study was to solicit comment and suggestion on the survey instrument and to ascertain its reliability and validity. After their comments, the researcher made suggested corrections. The final questionnaire was sub-divided into six identifiable sections, Sections A to F as shown on Table 1 below:

Table 1 – Summary of the questionnaire components

<table>
<thead>
<tr>
<th>Section A: Demographic and background information - Questions about the legal structure, location, primary activity, turnover, and age of the business, as well as its number of employees.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section B: Registration for GST above and below the GST threshold, GST and tax accounting, submission of returns, getting ready for the GST, set-up costs, transitional issues, degree of readiness, grace period for implementation.</td>
</tr>
<tr>
<td>Section C: The fundamentals of GST, GST rates, threshold, the benefits of GST to the economy, the impact on the poor and the burden of compliance.</td>
</tr>
<tr>
<td>Section D: The psychological costs of GST, including stressful aspects of the GST.</td>
</tr>
<tr>
<td>Section E: The administration of GST by revenue authorities, improvements, government assistance, and the attitude of the RMCD in assisting business taxpayers.</td>
</tr>
<tr>
<td>Section F: General comments as well as questions about managerial benefits and cash flow benefits and business taxpayers’ suggestions on how to reduce the compliance burden.</td>
</tr>
</tbody>
</table>

Procedure

Fowler\(^67\) stated that a random sample of 150 would describe a population of 15,000 or 15 million

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\(^{67}\) For practicalities in survey research, it is suggested by Fowler (1993) that a random sample of 150 would describe a population of 15,000 or 15 million with the same degree of accuracy; hence, 290 people will describe the Malaysian population of 29 million. However, when deciding on the sample size, the researcher takes into account non-responses. Of the 1,500 distributed questionnaires, 426 completed responses were received, thereby giving a response rate of 28%. The sample obtained seems to be a fairly representative sample of the population.
with the same degree of accuracy. Assuming a plausible response rate of 20%, a survey sample of 1,500 was selected in order to generate an effective sample size of at least 300 respondents. In this study the effective sample was 426 generating a response rate of 28% is a good rate for statistical sampling. A further test Using the Raosoft sample size selector for a population of 662,939 of Malaysian businesses only a sample size of 384 would be a reasonable minimum assuming a response distribution of 50%, at a 95% level of confidence with a 5% margin of error. The sample size of 426 in this study more than meets the requirement.

Table 2 Distribution and collection of survey forms

<table>
<thead>
<tr>
<th>Survey Distribution</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Associated Chinese Chamber of Commerce and Industry of Malaysia</td>
<td>300</td>
</tr>
<tr>
<td>Kuala Lumpur Malay Chamber of Commerce</td>
<td>300</td>
</tr>
<tr>
<td>Malaysian Associated Indian Chamber of Commerce and Industry</td>
<td>200</td>
</tr>
<tr>
<td>Kuala Lumpur Indian Chamber of Commerce</td>
<td>100</td>
</tr>
<tr>
<td>GST seminar lecturers</td>
<td>600</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,500</strong></td>
</tr>
<tr>
<td>Responses received</td>
<td>426</td>
</tr>
<tr>
<td>Response rate</td>
<td>28%</td>
</tr>
</tbody>
</table>

Based on Table 1 it seems the distribution of the survey forms via the three major business organisations are well represented. The effective sample of 426 generating a response rate of 28% is a good rate for statistical sampling. Mohdali found that, based on tax research carried out in Malaysia by Abdul and Pope and Hanefah, Ariff, and Kasipillai, the response rate to surveys of this nature in Malaysia tend to be fairly low, usually between 14% and 22%. Abdul and Pope stated in Malaysia that business surveys targeting SMEs or large firms often yield a poor response rate of between 10% and 20%. Thus the response rate of 28% for this study is considered satisfactory because of the data collection method that was employed. It also compares favourably

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69 Mohdali, R. 2010. ‘The effects of religiosity and taxpayer’s perception towards government on voluntary compliance’.
   Paper presented at School of Economics and Finance, Curtin University.
70 Abdul, JH & Pope, J. (2008)
71 Hanefah, Ariff, and Kasipillai
to other surveys conducted in Malaysia.

**Statistical Procedure**

The results were derived by using the Statistical Package for Social Sciences (SPSS). Descriptive statements, cross-tabulations and correlations were performed.

**Representativeness of observed samples**

As Miles and Huberman\(^7\) argued, the ability to draw statistical inferences from samples to reference populations is largely dependent on how well the attributes of observed samples represent the attributes of the population.

In order to establish if the survey sample is representative of the population, three attributes, namely, turnover, business sector and the businesses’ location by region were included in the survey questionnaire. It was found that the observed samples seem to show a good representativeness of the attributes of the population surveyed.

A quick examination of the survey data indicates that the samples for this study included 55% of respondents with a turnover above the RM 500,000 compulsory registration turnover threshold, and the rest (45%) were below the compulsory registration turnover threshold. This indicates a good representation of business taxpayers who would compulsorily and optionally register for the GST. Regarding the length of operation of business, only 14% represented new businesses operating between 0-3 years, and established businesses operating for more than 3 years accounted for 86%. Thus a good percentage of established businesses have been included in the survey.

**Profile and representativeness of respondents**

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The survey responses are summarised in Table 3 below.

Table 3 above shows the respondents by legal form of business. The largest category of the legal form was private companies, which accounted for 177 (42%) of respondents, followed by sole traders at 133 (31%), partnerships at 63 (15%), and publicly listed companies at 53 (12%). This signifies a good representation and a mix of the various legal forms of businesses.

Table 3 Respondents by legal form

<table>
<thead>
<tr>
<th>Legal form</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sole trader</td>
<td>133</td>
<td>31</td>
</tr>
<tr>
<td>Partnership</td>
<td>63</td>
<td>15</td>
</tr>
<tr>
<td>Company – private</td>
<td>177</td>
<td>42</td>
</tr>
<tr>
<td>Company – public</td>
<td>53</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td>426</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Question 1: Survey questionnaire

In the USA, Slemrod and Blumenthal\textsuperscript{74} concluded that compliance costs differ between various industry sectors. Table 4 provides two classifications of respondents, by legal form and industry sector. The samples were grouped into 15 industry categories, based on the Malaysian Statistics Department’s Standard Industrial Classification 2008.\textsuperscript{75}

Table 4 Respondents by legal form and industry sector

<table>
<thead>
<tr>
<th>Industry sector</th>
<th>Sole trader</th>
<th>Partnership</th>
<th>Private Co</th>
<th>Public Co</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture, fishery, gardening</td>
<td>7</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>Construction and contractors</td>
<td>8</td>
<td>9</td>
<td>23</td>
<td>4</td>
<td>44</td>
</tr>
<tr>
<td>Finance and business services</td>
<td>19</td>
<td>6</td>
<td>16</td>
<td>9</td>
<td>50</td>
</tr>
<tr>
<td>Hotel and restaurants</td>
<td>13</td>
<td>10</td>
<td>10</td>
<td>6</td>
<td>31</td>
</tr>
</tbody>
</table>


In Table 5 businesses with turnover below the compulsory registration threshold of RM 500,000 numbered 195 (45%), and the rest, 231 (55%), were above the threshold of RM 500,000 and therefore are required to register for GST. The sample selected is therefore a good representation of various businesses with different turnovers that would register for GST. It is worth noting at this stage that 45% of respondents who operate below the threshold would prefer to stay out of the GST net to avoid the compliance burden associated with GST registration. In conclusion the responses received confirm a good representation of the wider use of different legal forms, industry sector and turnover of businesses in Malaysia.

<table>
<thead>
<tr>
<th>Turnover</th>
<th>Sole trader</th>
<th>Partnership</th>
<th>Private Co</th>
<th>Public Co</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to RM 200,000</td>
<td>65</td>
<td>12</td>
<td>20</td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>RM 200,001 to 249,999</td>
<td>16</td>
<td>8</td>
<td>13</td>
<td>3</td>
<td>40</td>
</tr>
<tr>
<td>RM 250,000 to 499,999</td>
<td>22</td>
<td>14</td>
<td>17</td>
<td>2</td>
<td>55</td>
</tr>
<tr>
<td>RM 500,000 to 4,999,999</td>
<td>19</td>
<td>26</td>
<td>54</td>
<td>9</td>
<td>108</td>
</tr>
</tbody>
</table>

Source: Questions 1 & 3: Survey questionnaire
4.0 FINDINGS AND ANALYSIS

Next the findings are discussed in relation to the four objectives are reported, namely, (i) businesses readiness to implement the GST, (ii) the GST compliance burden imposed on businesses, (iii) perceptions of the capacity of RMCD to provide financial and non-financial assistance and (iv) to determine whether or not business perceptions are related to business characteristics. A number of specific conclusions can be drawn for the each of the objectives as explained below.

Objective 1: Business readiness to implement GST comprised of business taxpayers’ overall readiness, getting computer systems ready and to register for GST if turnover exceeds RM 500,000

A. Overall readiness for the implementation of GST

As shown in Figure 2 below, in regard to overall readiness, only 38 (9%) of respondents stated that they were at least 75% ready for the implementation. Overall, the findings suggest that only a small percentage of business taxpayers, about 78 (19%), were more than 50% ready for the implementation of the GST and 81% were overall not ready.
Larger businesses with a turnover of over RM 50 million seemed to be more ready than smaller businesses. The manufacturing sector and the accounting profession were also more ready than other industry sectors. The persons responsible for implementing GST in most businesses were mostly internal accountants (46%), followed by external tax advisers/agents (26%), owners/directors (22%) and internal bookkeepers (6%). This suggests that internal accounting staff (accountants/bookkeepers) and external tax advisers played a major role and were instrumental in the successful implementation of the GST in Malaysia.

B. Computer hardware and software readiness for GST implementation

Figure 3 indicates that overall, only 22% of business taxpayers believed their computer hardware and software were ready for the GST, with 78% not being ready. Again, larger businesses with a turnover of over RM 50 million, and the financial services, manufacturing, and accounting profession seemed to have their computer systems more ready compared with smaller businesses and other sectors.

Figure 3 - Computer hardware and software readiness
This low usage of computers suggest that a large proportion of SMEs still operate on a ‘cash basis’, based on the fact that 78% believed that they were not ready with their computer systems for the GST implementation. This is in line with the findings of Kasipillai and Liew, who pointed out that many small businesses operate on a ‘cash basis’ and do not use computerized accounting or cash registers to maintain records.

In terms of submission of GST returns to the RMCD, 42% indicated they would use electronic filing, 21% external tax advisers, 17% manual returns and 20% were not sure how they intended to submit their GST returns. Though 42% is a good start, the remaining 58% of business taxpayers seemed to be uncomfortable in using computers to submit GST returns knowing manual filing is costlier than electronic filing. The lack of confidence in using electronic filing confirms that their computer systems were not ready for generating reports for the submission of GST returns to RMCD.

C. Compulsory registration for GST turnover above threshold of RM 500,000

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76 Kasipillai, J & Liew, R. 2004. ‘The small and medium enterprises under GST regime.’ Accountants today, November.
As shown in Figure 4, 58% of businesses stated they would register for GST. One of the most worrying results of this research was that 25% of respondents with a turnover above the RM 500,000 which is compulsory registration threshold, said they would not register for the GST. This would entail a clear breach of the law. Another 17% said they were not sure if they would register. These respondents were probably not informed enough about their registration requirements, hence did not know about the level at which the compulsory registration threshold cuts in. Given that the registration thresholds under the sales and services tax (SST) were below the GST threshold, the respondents not planning to register could have not confused the GST registration thresholds with those under the SST. No matter what the reason, the RMCD should be concerned. A significant level of non-compliance with the compulsory registration requirement of the GST would be incredibly damaging to the ongoing success of the GST. Some business taxpayers may adopt a ‘wait and see’ approach and may also be willing to take a chance not to register and face the consequences arising from RMCD action through their audit processes.

**Objective 2: Compliance burden, stress levels, managerial and cash flow benefits**

**A. Compliance burden**

Figure 5 shows regarding the compliance burden, 74% of respondents agreed that the GST will
place an additional compliance burden on their businesses. This confirms the findings of international research on compliance costs of the GST that they are regressive and fall more heavily on small enterprises.

**Figure 5 - Compliance burden of business taxpayers**

High compliance costs can of course provide strong incentives for business taxpayers to illegally stay out of the GST system, which in turn can damage its integrity. Currently the RMCD is using a persuasive approach advocating collaboration with business taxpayers to register for GST, but this may change if business taxpayers continue to be non-compliant. The RMCD may have used the deterrence or stick approach by imposing tax penalties after December 2014 (deadline for registration for GST) to make business taxpayers comply with their tax obligations.  

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77 The hard truth about GST
In regard to GST-induced stress levels, 50% of respondents stated that their stress levels would increase and 36% were not sure about their stress levels, because of the GST. This was mainly because of the increased compliance burden, lack of general information and specific training concerning the GST. This confirms the psychological costs of compliance expressed by the compliance costs literature. The other concern, due to stress levels, is that business taxpayers may voluntarily put off the decision to defer registration and be non-compliant with the GST law.

C. Managerial benefits

Only 44% of respondents believed that they would enjoy some managerial benefits, 30% were not sure and 26% felt there would be no managerial benefit for them. This is a concern since business taxpayers are not fully aware of the advantages of keeping proper books of account, apart from paying the correct taxes. Good records and documentation can assist businesses to make better financial decisions, for example, through having profit forecasts. The following studies indicated there are managerial benefits due to keeping records to meet tax compliance obligations.

D. Positive and negative cash-flow benefits

Based on question 31 (positive cash flow benefits), only 28% of respondents believed they would enjoy some short-term cash flow benefits, 33% are not sure, and 40% of the respondents believed they would not enjoy any cash flow benefits. From an accounting point of view, positive cash flows are very important for businesses, but respondents feel that overall, GST will not contribute to generating positive cash flows for their organisations. RMCD has promised to make tax refunds within 14 days to 28 days, but if they fail to comply with this input tax refund policy, businesses’

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cash flows would be adversely affected. The following studies indicated there are some cash flow benefits accrued to business taxpayers for meeting tax compliance obligations.80

**Objective 3: Business taxpayers’ perceptions of the RMCD**

Singh (2013)81 stated that some of the public are still lacking in knowledge and information regarding taxation, which leads to low awareness of their responsibility to pay taxes. So taxpayers need to have sufficient knowledge of the current taxation system to comply with laws and regulations, as there seems to be a close relationship between knowledge and compliance; more knowledge means more compliance and less knowledge means less compliance. International research has shown that a good positive relationship between taxpayers and revenue authorities is vital for the dissemination of knowledge and information to taxpayers.

**Figure 6 Business taxpayers’ perceptions of the RMCD**

![Bar Graph](chart.jpg)

Author’s survey

Figure 6 above shows, unfortunately, only 24% of business taxpayers feel that the RMCD officers will provide some limited friendly, courteous and helpful assistance to them during the interim

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80 Sandford et al. 1989 (UK), Sandford & Hasseldine 1992 (NZ), Allers 1994 Netherlands

period for implementation of GST, 52% are unsure if they will get any help, and a small percentage, 24%, feel that the RMCD may not provide the required help and assistance.

This low level of ‘approval’ may indicate that business taxpayers are not comfortable but cautious and apprehensive in approaching the RMCD for help and assistance in dealing with queries on GST. This will be an area of concern, since a lack of trust and the absence of a good relationship between business taxpayers and the RMCD staff can hamper the administration and collection of GST revenue. If the RMCD fails to extend the required assistance, taxpayers may have to seek assistance from external tax advisers, but this can be costly. It is crucial that taxpayers have access to inexpensive and accurate information from the RMCD directly to encourage them to be compliant with the GST rules and regulations. In short, prohibitive costs paid to external tax advisers should be avoided since this can induce non-compliance when the same tax advice can be obtained free of charge from RMCD.

**Objective 4: Statistical analysis: a summary**

The fourth objective of this research was to determine whether or not perceptions that businesses have about the GST are related to various characteristics of those businesses. The results of all the chi-square tests were summarised for legal form, turnover and industry sector variables and the corresponding three variables, namely, overall GST readiness of business taxpayers, compliance burden, and GST-induced stress levels. In all these cases, we rejected the null hypotheses and accepted the alternative hypotheses that the three key business perceptions are related to business characteristics relating to turnover. This suggests that any GST promotional plan in Malaysia should take turnover into account because the three perceptions are related to business turnover. The results of the correlation analysis were carried out using business turnover and nine business perceptions. Only three perceptions, the overall readiness to implement GST, computer system
readiness and stress factor seem to have a significant but weak association with turnover. The rest of the six perception variables have weak and insignificant associations with turnover.

### Table 4.6 Correlation between annual turnover and business perceptions

<table>
<thead>
<tr>
<th>Variables</th>
<th>Pearson (r)</th>
<th>Spearman (rho)</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall readiness</td>
<td>0.311</td>
<td>0.312</td>
<td>0.000***</td>
</tr>
<tr>
<td>Computer readiness</td>
<td>0.121</td>
<td>0.114</td>
<td>0.012**</td>
</tr>
<tr>
<td>Compulsory registration</td>
<td>0.086</td>
<td>0.076</td>
<td>0.191</td>
</tr>
<tr>
<td>Optional registration</td>
<td>0.025</td>
<td>0.021</td>
<td>0.724</td>
</tr>
<tr>
<td>Compliance burden</td>
<td>0.037</td>
<td>0.049</td>
<td>0.446</td>
</tr>
<tr>
<td>Managerial benefits</td>
<td>0.060</td>
<td>0.057</td>
<td>0.218</td>
</tr>
<tr>
<td>Cash flow benefits</td>
<td>0.016</td>
<td>0.012</td>
<td>0.744</td>
</tr>
<tr>
<td>GST-induced stress</td>
<td>-0.090</td>
<td>-0.081</td>
<td>0.062*</td>
</tr>
<tr>
<td>RMCD</td>
<td>0.070</td>
<td>0.076</td>
<td>0.147</td>
</tr>
</tbody>
</table>

Source: Author’s survey

* Significant at 10%, ** Significant at 5%, *** Significant at 1%

The first two significant correlation coefficients (readiness to implement GST and computer system readiness) suggest that the larger the business, the more they are ready for the GST overall and better prepared they are in terms of an updated computer system. A negative sign of the third correlation coefficient (stress factor) is that, as expected, smaller businesses feel more stress about the implementation of GST than larger businesses. Legal form and industry sector variables were ignored for this exercise since they were not considered an ordinal variable for the statistical analysis. Finally, the Cronbach alpha estimate was about 64%, suggesting that the data is moderately reliable. Thus, it can be concluded that the collected sample data has the attributes of internal consistency and reliability and is therefore suitable for further statistical analysis.

**What areas business taxpayers wished for before implementation of GST?**

Question 28 asked what business taxpayers wished from the government for the smooth implementation of GST. Normally, this could include monetary assistance to offset GST
compliance costs or free training to enhance tax knowledge of taxpayers. Kasipillai (2000)\textsuperscript{82} stated that tax knowledge is an essential element in maximising voluntary compliance and thereby affects the compliance behaviour of business taxpayers. Pope and Jabbar (2007)\textsuperscript{83} suggested providing free workshops. Kasipillai and Liew (2004)\textsuperscript{84} suggested providing free software packages to business taxpayers. Singh (2005)\textsuperscript{85} suggested, taking the example of the Australian experience, introducing a tax advisory board to assist business taxpayers to raise their issues with RMCD during the implementation stage. Some of the requests for monetary and non-monetary assistance from respondents were as follows: 37% of respondents hope that the government may compensate them for GST start-up costs, which range from RM 5,000 for SMEs to RM 20,000 for larger businesses; 22% of respondents hope that the government will provide free GST training, 20% of respondents want the GST postponed until a tax impact statement is published by the RMCD; 17% want a grace period before the imposition of GST penalties; and 4% want lesser penalties till GST is accepted.

It seems business taxpayers wanted more financial and non-financial assistance to reduce the compliance burden and help become ready for the GST. On top of this, some respondents requested that GST be postponed until a tax impact statement is published, and some have requested a grace period for the imposition of penalties and lesser penalties till GST is fully understood by business taxpayers.

What are the challenges for business taxpayers when GST is implemented?

Based on the survey findings, it seems there are a number of challenges that business taxpayers need to face when GST is implemented. For example, within the organization, urgent steps are needed to set up the computer system using internal staff rather than relying on external accountants, tax consultants and software consultants. There is also a lack of awareness and


\textsuperscript{84} See note 65.

\textsuperscript{85} Singh, V. (2005). Tax thoughts on today are taxing times. Malaysia: Digi book Sdn Bhd
knowledge within the organization on the GST matters since there is a perception that the GST is a complex tax matter and therefore the finance team should take full responsibility. This perception needs to be changed whereby all staff in the organization should be trained in the GST, from pricing, coding, invoicing and recording of all GST transactions. More accounting and non-accounting staff need further training and there is an urgent need to update the computer system to meet GST obligations. The other area of concern is the relationship with the RMCD. There seems to be reluctance on the part of business taxpayers to get necessary help and assistance from the RMCD. This may be due to a lack of clarity in relation to many GST related matters on the application of the GST Act 2014. The RMCD has released a number of customs regulations and private rulings on the GST matters that have not yet been tested in the courts. The potential contradiction between the RMCD positions and the law may add to confusion thus taxpayer reluctance in seeking assistance from the RMCD officials and adopt a ‘wait and see approach’ to get assistance from the RMCD.

5. Conclusion

In the end, taxpayers are legally obliged to be ready for the GST. But, no matter what the reasons for the low preparedness, this research reveals that there are areas where the government, perhaps through the RMCD, could have done more to help prepare the Malaysian businesses for the GST. There is no doubt that the GST can be simplified for taxpayers facing unwarranted complexity, and this can be done without unduly compromising the integrity of the GST. For example, Australia has been very successful in designing simplified GST accounting methods for many taxpayers that make both taxable and non-taxable supplies, thereby avoiding the costly problem of individually classifying a supply at the point of sale. Indeed, it is arguable that the government should be drawing more on external expertise to address the numerous GST implementation challenges. It is worth investing considerable resources to get the implementation right from the start as the legacy
of poor implementation and low business readiness will be felt for some time. While the contribution of this research is significant in identifying the major issues perceived by business taxpayers before the implementation of GST, there is a need to undertake a further study to identify the “real issues” faced after the implementation of GST in 2015. This project obtained survey responses from 426 Malaysian businesses, covering small, medium and large enterprises. The survey respondents represented all the main business forms used in Malaysia (e.g. sole trader, partnerships, private companies and public companies), and it also covered businesses in various regions of Malaysia. In short, the survey appears to be a good representation of the views of business across Malaysia. The research data was collected during January-March 2013. While the research data still needs to be statistically analyzed for deeper and more targeted analysis, overall the survey results indicate that the business sector was poorly prepared for the implementation of the GST. Larger businesses are better prepared for GST overall and smaller businesses felt more stressed about GST. A high compliance rate with the 31 December 2014 deadline to register for GST needs to be achieved to ensure the success of the GST. Finally, an important point to note is that, this data was collected around 21 months before GST was implemented. It may be that circumstances have improved somewhat since the survey date in 2013. Yong (2014)\textsuperscript{86}, the Deputy Finance Minister, announced that as of 16 August 2014 only 12,500 businesses have registered. RMCD expected 122,000 to register for GST and later this figure was revised to 240,000. Surprisingly, by June 2015 registrations had increased sharply. Maslan \textsuperscript{87}stated that 380,313 business entities had registered for GST. On the face of it, it would have presumed that GST education training programs have helped to increase the tax knowledge of business taxpayers to register for GST but on contrary it seems the ‘deterrence or stick approach’ by the RMCD to impose fines has forced substantially increased registration numbers by default by 2015.

It is concluded Malaysian businesses were poorly prepared in 2013 and do require additional


assistance despite the fact registration numbers have increased beyond the projected figures in the later years. A number of measures are suggested to alleviate businesses’ compliance burden. They include compensation for GST set-up costs, more free training and simplification of GST reporting. Further, the RMCD should strive to build a closer relationship with business taxpayers to iron out the major issues so that the existing business taxpayers that have registered can comply with the GST law and regulations and unregistered business are encouraged to register for GST. Also it is timely for RMCD conduct a GST survey internally to find out the major issues faced by business taxpayers so that steps can be taken by RMCD to reduce the GST compliance issues.

Schedule A: GST Survey questionnaire
Survey Questionnaire on the Issues due to the implementation of the proposed Goods and Services Tax in Malaysia
SURVEY QUESTIONNAIRE

A THIS SECTION ASKS ABOUT YOUR BUSINESS' BACKGROUND

1. Legal form of your business
   - Sole proprietor
   - Partnership
   - Private Ltd
   - Public Listed

2. Location of the head office of your business
   - Johor
   - Kedah
   - Kelantan
   - Kuala Lumpur
   - Melaka
   - Negri Sembilan
   - Pahang
   - Others (please specify)
   - Penang
   - Perak
   - Perlis
   - Sabah
   - Sarawak
   - Selangor
   - Terengganu

3. Primary activity of your business
   - Agriculture, Timber, Fishery, Gardening
   - Constructions & Contractor
   - Finance, insurance, business services
   - Hotel, Restaurants
   - Imports & Exports
   - Information Technology
   - Logistics
   - Manufacturing
   - Mining
   - Professionals
   - Property Developer
   - Plantations
   - Travel & Entertainment
   - Wholesale & Trading
   - Others (please specify)

4. Annual turnover of your business in Ringgit Malaysia (RM)
   - Below 200,000
   - 200,000 up to 249,999
   - 250,000 up to 499,999
   - 500,000 up to 4,999,999
   - 5 million up to 9,999,999
   - 10 million up to 24,999,999
   - 25 million up to 49,999,999
   - 50 million or more
5. No of staff employed as at 31st October 2012.
   - 5 or less
   - 6-19
   - 20-50
   - 51-150

6. Number of years of operation
   - 0-3 years
   - 4-6 years
   - 7-9 years
   - 10 years or more

B THIS SECTION ASKS ABOUT YOUR BUSINESS ACCOUNTING/TAXATION MATTERS WHEN PROPOSED GST IS IMPLEMENTED.

7. Do you believe that you need to register for GST business registration?
   (Note if your business annual turnover is more than RM 500,000 you need to register for GST).
   - Yes
   - No
   - Unsure

8. Do you intend to register for GST if your turnover is less than RM 500,000?
   (Note if your turnover is less than RM 500,000, you can still register for GST in order to claim input tax credit on purchases for goods and services).
   - Yes
   - No
   - Unsure

9. Who will handle GST Accounting matters of your business when GST is implemented? (Examples of GST accounting matters include registering for GST, setting up the business records to capture GST, issuing new GST invoices and changing GST tax codes).
   - Owner/CEO/Management
   - Internally hired accountant
   - Internally hired bookkeeper
   - Externally hired tax adviser

10. Who will handle GST Taxation matters when GST is implemented? (Examples of GST tax matters include checking GST records, calculation of GST Taxes, preparing GST returns and dealing with Customs authorities).
    - Owner/CEO/Management
    - Internally hired accountant
    - Internally hired bookkeeper
    - Externally hired tax adviser
11. How does your business intend to submit GST returns?
- GST Electronic filing
- Manual GST returns
- Use of external tax professionals
- Unsure

12. How does your business plan to get ready for the GST? (Please tick more than one circle if appropriate).
- To read GST articles in the media
- To stock up inventory before GST
- To conduct in-house staff training
- To review contracts for goods/services purchases
- To send staff for external training
- To study cash-flow impacts of GST
- To wait for Government public training
- To hire external GST experts
- To change computer software
- Others (please specify)

13. If you have ticked more than one circle in Q12, which is likely to be the most important step you could take to get ready for GST?
Please specify one option from the above ten options.

14. Is your business computer system (hardware and software) ready for the implementation of GST?
- Yes
- No
- Unsure

15. Have you paid any costs pertaining to the proposed implementation of GST? (Costs include one-off advice on GST matters paid to external consultants, training staff in-house or attendance at GST courses, seminars, capital cost such as new computers, software includes bought or hired computers or special equipment e.g. cash registers).
- Below RM 5000
- RM 5001 up to RM 9,999
- RM 10,000 up to RM 19,999
- RM 20,000 or more
16. Have you studied the transitional GST tax issues, to avoid double taxation and business disruption to your entity? Examples are reviewing existing non reviewable and reviewable contracts and review of stock ordering process to account for GST.

☐ Yes    ☐ No    ☐ Unsure

17. How ready is your business to implement the GST. State the degree of readiness of your business for the implementation of GST.

☐ 0%    ☐ 1% - 25%    ☐ 26% - 50%    ☐ 51% - 75%    ☐ Above 75%    ☐ Not sure

18. Assuming your business is not ready to implement the GST. What is a suitable grace period you need to get your business ready for GST?

☐ 12 months    ☐ 18 months    ☐ 24 months    ☐ Not sure
THIS SECTION IS ABOUT THE UNDERSTANDING OF THE FUNDAMENTALS OF GST DESIGN AND STRUCTURE BY THE BUSINESS TAXPAYER

19. The proposed GST rate is 4%, do you think this is a suitable rate for your business?
- Yes
- No
- Unsure

20. The GST threshold is set at RM 500,000. Should this limit be increased to a higher figure to reduce the compliance burden to your business?
- Yes
- No
- Unsure

21. The proposed GST will benefit the Malaysian economy since it will help the government to raise a more stable and more tax revenue.
(Please use the scale below to indicate your attitude to this statement).
- Strongly disagree
- Disagree
- Neutral/Don’t know
- Agree
- Strongly agree

22. The proposed GST will certainly burden the poor since it will lead to an increase in prices due the general belief that there will be an inflationary impact attributable to the introduction of the GST.
(Please use the scale below to indicate your attitude to this statement).
- Strongly disagree
- Disagree
- Neutral/Don’t know
- Agree
- Strongly agree

23. The proposed GST will certainly burden the business in terms of extra paper work to comply with the new tax laws. This will also entail employing new staff, training and purchasing new equipment to carry out the regulatory GST compliance work which will add further load to your current self-assessment role of the business taxpayer.
(Please tick below to indicate your attitude to this statement).
- Strongly disagree
- Disagree
- Neutral/Don’t know
- Agree
- Strongly agree

THIS SECTION ASKS ABOUT THE PSYCHOLOGICAL COSTS OF PROPOSED GST

Stress is often a normal response to change. Stress can sometimes bring positive changes to the business. However other times, the rate of change can be too great and the stress that accompanies can be lead to non compliance of the tax legislation and increase in tax evasion.
24. Have you felt uncomfortably stressed as a response to the forthcoming GST reform? (Please tick below to indicate your attitude to this statement).

- Strongly disagree
- Disagree
- Neutral/Don't know
- Agree
- Strongly agree

25. In terms of your general stress level, which aspect did you find to be most stressful in getting ready for the GST?

- The proposed GST Bill is too technical & complicated.
- Lack of general information for the public.
- Lack of training available for a specific business type.
- It will increase my compliance costs in terms of time and money.
- The penalties and recovery action are too severe.

26. Below are lists of costs that may be a consequence of GST tax reform. Please indicate the level of intensity of stress by ticking a number for each cost, where 1 is highly stressed and 5 is not stressed at all. (For example, if you believe that the financial costs associated with tax reform have been extremely stressful, and then circle financial costs p 1.).

- Financial costs
  - 1
  - 2
  - 3
  - 4
  - 5

- Time costs
  - 1
  - 2
  - 3
  - 4
  - 5

- Worry costs
  - 1
  - 2
  - 3
  - 4
  - 5

- Health costs
  - 1
  - 2
  - 3
  - 4
  - 5

- Other costs - please specify
  - 1
  - 2
  - 3
  - 4
  - 5

E THIS SECTION ASKS FOR YOUR COMMENTS ON GST ADMINISTRATION BY THE ROYAL MALAYSIAN CUSTOMS DEPARTMENT (RMCD).

27. Which area do you wish to see improvement first?

- Reduction of personal and corporate income tax rates.
- Simplified GST rules and regulations for easier compliance.
- Faster in processing and payment of tax refunds by RMCD
- RMCD is designated as one point for GST collections and administration.
- More streamlined counter and online services to sort GST queries.
28. What type of assistance do you desire from the government in regards to the smooth implementation of GST?

- The postponement of its implementation until a GST impact statement is issued.
- Incentives given to taxpayers to compensate for the additional costs incurred due to the implementation of GST.
- Provision of free of charge training by Government.
- A grace period before the imposition of penalties and recovery action.
- Lesser penalties during the grace period until GST is well accepted.

29. How do you perceive the attitude of the RMCD officers who will be handling the administration of GST? In your opinion, will the officers be more friendly, courteous and focused on assisting you during the interim period of GST implementation?

- Yes
- No
- Unsure

**THIS SECTION ASKS FOR YOUR GENERAL COMMENTS**

30. GST reform may provide your business with managerial benefits such as better information for decision-making and better bookkeeping. Since to comply with GST, all books of accounts have to be reconciled and kept up to date to pay the GST liability. As a result, do you think your business will experience such managerial benefits?

- Yes
- No
- Unsure

31. GST reform may provide your business with some cash flow benefits. There will be a timing difference between the date when the GST is collected and paid over to Inland Revenue, so your business would enjoy a use of cash for a short time. Do you think your business will experience such a cash flow benefit?

- Yes
- No
- Unsure
32. GST reform may cause some negative cash flow benefits. For example, if your business uses an accruals system for booking the sales invoices, a credit period would be normally stated in the invoice. In this case, cash is not collected when the sales invoices are generated but delayed for a later time. This may result in a negative cash flow due to timing differences between the time cash is collected from the customer and paid over to the revenue authorities. In other words, you may have to pay the GST before you collect the GST from your customers. Do you think your business will be worse off under the GST regime because you may experience a negative cash flow?

☐ Yes ☐ No ☐ Unsure

33. Please comment on how you think tax compliance costs could be reduced. (but abolishing GST is not an option).

__________________________________________

__________________________________________

Please add any other comments you wish to add on this survey.
THE IMPACT OF ANTECEDENTS AND CONSEQUENCES OF BURNOUT ON INTERNAL AUDITORS PREMATURE SIGN-OFF OF AUDIT PROCEDURE

Mohannad Obeid, Zalailah Salleh, Mohd Nazli Mohd Nor

Department of Accounting and Finance, University Malaysia Terengganu (UMT)

Email: mohannadobeid87@gmail.com

Abstract:

In this study, the impact and consequences of burnout as a factor that influences premature sign-offs (PMSO) by internal auditors was evaluated. To examine this, 187 internal auditors from Jordan were sampled via a questionnaire. Analysis of the questionnaire answers demonstrated that there are several antecedents for job burnout, including ethical tension, role conflict, role ambiguity, and the personality trait of neuroticism. Job burnout can result in a decreased level of job satisfaction for internal auditors. Dissatisfaction in the workplace may result in an increased level of negative behaviours, such as premature sign-offs by internal auditors. The results of this study suggest that internal auditors with a high level of job dissatisfaction may result in a risk to internal audit quality. Therefore, we should be aware that the problem of PMSO exists in the internal audit environment, and preventive steps are needed to overcome this problem. Emanating from these findings, we suggest future research to investigate viable intervention strategies designed to counteract the damaging effects of stress before they manifest into negative consequences to the individual and the company.

Keywords: ethical tension, role ambiguity, role conflict, neuroticism job satisfaction, job burnout, premature sign-off.
1. INTRODUCTION

Despite a recent growing interest in internal audits by regulators and researchers (Coetzee & Lubbe, 2014; Everett & Tremblay, 2014; Neu, Everett, & Rahaman, 2013; Pizzini, Lin, & Ziegenfuss, 2015; Regoliosi & d’Eri, 2014; Roussy, 2013, 2014; Roussy & Brivot, 2016; Shabnam, Zakiah, & Azlina, 2014; Trotman & Trotman, 2013; Vinnari & Skærbæk, 2014), it is still difficult to find a consensus on a definition for internal audit quality. One plausible reason for this non-consensus could be that external auditors are typically responsible for measuring internal audit quality since internal audit reports constitute an important building block of their financial statement audits (Gramling & Vandervelde, 2006). However, due to the scarce archival evidence on the quality of internal audits (Abbott, Daugherty, Parker, & Peters, 2016) and the fact that the definition and description of audit quality is currently ambiguous, it is a challenge to measure quality in an accurate and meaningful way (Herrbach, 2001). This gap will be addressed in the current study to gain a better understanding of audit quality dimensions, which may allow researchers to question auditors about dysfunctional audit behaviours that may result in a reduction in quality (Svanström, 2016).

Studies on internal audits show that audit quality can be negatively affected by dysfunctional audit behaviours, especially premature sign-off (Ling & Akers, 2010). Premature audit sign-offs directly can have a negative impact on audit quality and lead to substandard work (Shapeero et al., 2003). Prior studies suggest that factors, such as job dissatisfaction, are antecedents for deviant behaviours (e.g. Tuna et al., 2016). Homans (1961) explained the relationship in light of the Social Exchange theory, stating that employees that have a high level of job dissatisfaction may have a tendency to participate in deviant behaviours. Such deviant behaviour can also be explained by dissatisfied employees who are not concerned with losing their jobs. In contrast, employees with a high level of job satisfaction are more likely to behave in a positive and constructive manner towards their work and their organisation (Bayarçelik & Findikli, 2016).

There are numerous studies that have looked at job satisfaction, but limited research exists on the predictors of job satisfaction. According to Sun et al. (2016), worker job satisfaction was studied in over 85 peer-reviewed meta-analysis studies. In order to improve job satisfaction, Hodge (2012) proposed that it is critical to identify and understand the factors that contribute to job dissatisfaction for internal audit employees so that they can be appropriately addressed. Many empirical studies (e.g. Leiter & Maslach, 1988; Firth & Britton, 1989; Cordes & Dougherty, 1993; Turnipseed, 1994; Maslach & Goldberg, 1998; Hsieh & Chao, 2004; Fogarty & Kalbers, 2006; Pienaar & Willemse, 2008; Yang, 2010; Chong & Monroe, 2015) suggest that decreased job satisfaction and reduced levels of productivity may be a consequence of burnout. Lu and Gursoy (2016) propose that burnout is likely to lead to job dissatisfaction and thus, companies and researchers should focus their attention on the factors that influence job burnout, particularly for internal auditors.

According to Kalbers and Fogarty (2005), the development of stress, particularly in the roles and responsibilities of internal auditors, must be detailed to get a better understanding of how it impacts burnout, and results in potential dysfunctional behaviours. Although some studies have focused on the factors that lead to burnout from a job and organisational perspective (Larson, 1997; Chong & Monroe, 2015), little attention was given to how individual characteristics can impact job burnout. In addition, Smith, Davy, and Everly (2007) noted that early role stress studies focused primarily on the direct relationship between job-related stressors and key outcomes, such as job satisfaction, often resulting in mixed results. The
authors echoed the proposition by Fogarty et al. (2000) that the inconsistent findings may be attributable to misspecification bias due to the omission of key variables linking role stressors with job outcomes. Thus, this study included job burnout between stressors and job outcome, as recommended by Smith and Emerson (2017). The current research attempts to expand the job stress theory proposed by Parker and DeCotiis (1983). In this study, personality traits, particularly neuroticism, and ethical tension are considered as antecedents leading to job burnout and job dissatisfaction, which, in turn, may lead to premature sign-off. We develop and test a model in this study by evaluating various stressors, such as role ambiguity, role conflict, and neuroticism personality trait, and the behavioural outcomes, such as job satisfaction, on premature sign-off by internal auditors.

Although ethical tension is correlated with dysfunctional behaviours, previous studies on auditing do not include ethical tension in their models. Fogarty et al. (2000), however, propose that a diverse number of stressors be included in future research. The contribution of this study is to build the idea of burnout and attend to the uniqueness of burnout from other criteria of work pressure, like ethical tensions in the internal audit environment. This is an important construct to include because prior research suggests that ethical tension can lead to burnout and dissatisfaction (Jameton, 1984; Pendry, 2007). Ethical tension among internal auditors is, thus, worthy of discussion.

This paper is divided into five sections. In the first section, the hypotheses development will be discussed, followed by a description of the research methodology used. In the third section, the results will be discussed. The fourth and fifth sections will review the conclusions and limitations of the study.

2. DEVELOPMENT OF HYPOTHESES

2.1 The relationship between ethical tension and job burnout

The need to understand the effects and causes of ethics in the workplace has become more crucial in the current times due to today’s nature, size, and effects of current businesses. In literature dedicated to ethics, there are several concepts that could assist in understanding such cause and effects. For instance, researchers have highlighted stress as a significant hazard within the workplace that could adversely impact physical health, psychological well-being, as well as performance on the job (Kahn & Byosiere, 1992; Sauter & Murphy, 1995). A significant number of studies that focused on this phenomenon are based on the perspective of stressor-strain that contends the presence of innumerable factors that function as stressors, each of which can form a strain on the person and could bring about adverse outcomes.

Most professionals encounter ethical tension in their workplace (Nortjé, 2014). Theoretically, ethical tension refers to a case when two norms clash with each other even if, practically, no individual has faced the application of both norms in a situation. Ethical tension can also occur when an individual faces ethical conflicts in actual situations; this is when an ethical conflict arises (Abela & Murphy, 2008). In other words, when an individual feels that his/her duties and responsibilities towards a group clashes with his/her duties to another person, then ethical conflict is said to occur (Hunt et al., 1984, p.310). Ethical tension may also arise when an individual feels that the standard operating procedures established by a moral norm appears to clash those of another. Hence, ethical tension refers to a condition of potential ethical conflict, and if the individual chooses to pursue an action in the ethical conflict that goes against a general moral norm, an ethical violation occurs.
Broadly, in line with the findings of Gaudine et al. (2011a, 2011b), Redman and Fry (2000) and Willis (2015), there are several concepts that are generally considered to be ‘moral problems’ that are used in the literature. For example, ethical tension (e.g. Jensen, 1987), ethical conflict (e.g. Moser, 1988; Schweper, Ferrell and Ingram, 1997; Schweper, 1999), ethical pressure (e.g. Peterson, 2003; Shafer, 2002; Tian and Peterson, 2016) and moral stress (e.g, DeTienne et al., 2012; Reynolds, Owens and Rubenstein, 2012) are concepts of ‘moral problems’. The majority of the work on ethical tension was conducted in the context of the nursing profession. In this study, ethical tension was adopted and examined in the context of internal auditors. Definitions found in the literature concerning ethical problems are summarised in Appendix A.

Ethical tension can be categorised into three groups, namely ethical distress, ethical uncertainty, and ethical dilemma. Ethical distress is defined by an individual being aware of the correct decision to make, but is constrained by the rules of society or the institution. Ethical uncertainty is when a moral issue exists and an individual is uncertain of what ethical value should be used. Ethical dilemma is a situation where an individual has to make a decision between two distinct choices. Nortje (2004) proposed that ethical dilemmas occur when the two distinct choices are mutually important.

According to Near and Miceli (1988; Mbatha, 2005, p. 168), a potential ethical tension in the process of internal audits is expected when a wrongdoing has to be reported. Such disclosure would adversely impact the profits and the reputation of the firm. In this regard, Eller (2014) found that reduced reporting was related to internal auditors that were characterised by lower levels of moral reasoning, especially those who were afraid of being reprimanded by managers. This circumstance could result in increased ethical tensions, and ultimately, burnout (de Veer et al., 2013; Juthberg et al., 2008). A thorough literature review shows that conflicts of personal values with organisational values are significantly correlated with burnout (Maslach, Schaufeli, & Leiter, 2001).

In addition, according to Sharif (2015), the scope of the job and the responsibilities that internal auditors face necessitate them to attend to many interests, including employers, shareholders, clients, the public, and other stakeholders. This leaves internal auditors in a dilemma when the professional standard of conduct that the internal auditors need to abide to does not align with the organisation’s or client’s expectations. Internal auditors generally require freedom to select their objectives. However, they work within the contexts of brokered outputs (Raelin, 1989), whereby they work within an environment where they have less autonomy (Everett & Tremblay, 2014). In other words, internal auditors often face ideological, political, and moral challenges that were largely ignored in the research (Everett & Tremblay, 2014). Adding to this, those who are certified under the internal auditing profession and work in corporations are subjected to a particular pressure. More often than not, they are the key people for management to ensure that corporate policies and procedures are being upheld, while abiding to the ethical and professional standards of their profession (Siegel, O'Shaughnessy, & Rigsby, 1995). In this situation, ethical tension may arise. The ethical tensions are associated with a phenomenon where internal auditors face the dilemma between abiding by the code of conduct and professional ethics, and fulfilling the company’s or client’s needs. Ethical tension was not explored in prior studies in terms of its relationship with job burnout in the context of auditing. On the basis of the above arguments, the following hypothesis is proposed to be tested; *H1: High level of ethical tension is related to high job burnout level.*
2.2 The relationship between role ambiguity, role conflict and job burnout

In other sectors like accounting, stressors are a concern to researchers. However, limited research has focused on stressors for internal auditors. As auditors have to maintain a form on independence, the job responsibilities can create conflicts. For example, an internal auditor may be in conflict if their audit role conflicts with the management services role, or if there are different priorities between the demands of the profession and the goals of the organisation. Further conflict is created by the ambiguous nature of the operating environment of internal auditors due to regulatory and technological change. This lack of clarity can result in job dissatisfaction and job burnout, and can be a roadblock for an auditor to maintain professional independence. This may also result in dysfunctional behaviours. To date, there are limited qualitative studies that have evaluated how internal auditors are influenced by role ambiguity and role conflict. A previous study by Fogarty and Kalbers (2006) noted that job burnout is a result of role conflict and role ambiguity.

Within the workplace or organisation, employees face role stress or role stressors, which are typical sources of stress or stressors (Fisher, 2001). As explained by Montgomery, Blodgett, and Barnes (1996), role stressors comprise role ambiguity and role conflict. Role conflict is born from the simultaneous occurrence of two or more role requirements, so that performance of one of them makes performance of the other more difficult (Katz & Kahn, 1978). This idea was also used by Fisher (2001), who even stressed the impossibility of not fulfilling one of the requirements. For Mohd Nor (2011), these requirements can also be perceived as important sources of stressful conditions in the workplace. Role ambiguity is the lack of specificity and predictability in the job of the employee or in his role functions and responsibilities (Kahn et al., 1964; Beehr, 1976). On the other hand, role conflict occurs when the individual is expected to behave in a way that contradicts with its requirements, capacity, and his values (Viator, 2001).

Many studies have found that role ambiguity and role conflict are antecedents of burnout (Chong & Monroe, 2015; Cunningham, 1982, 1983; Law, Sweeney, & Summers, 2008; Schawb & Iwanicki, 1982). According to Maslach (1982), role ambiguity requires employees to expend excessive amounts of energy and resources, which can result in long-lasting emotional effects that can lead to burnout (Cordes & Dougherty, 1993; Jackson, Schawb, & Schuler, 1986). Several studies have found evidence that there is a correlation between role stress and job burnout (Crane & Iwanicki, 1986; Fogarty et al., 2000; Low et al., 2001; Tunc & Kutanis, 2009), leading to the following hypotheses;

**H2**: High perceived role ambiguity is related to high job burnout level.

**H3**: High perceived role conflict is related to high job burnout level.

2.3 The relationship between neuroticism and job burnout

Until recently, only work-related stressors were incorporated into burnout theories. More current studies have adapted both work-related and individual factors that can lead to stress and burnout (Kokkinos, 2007). However, this integrative approach has remained relatively untouched with internal auditors.

Personality is one of the individual disposition factors. Personality can be described as the individual pattern of psychological processes arising from individual characteristics. Different individuals have different emotions, behaviours, feelings, and patterns of thought
(Thomas & Segal, 2006) and, as a result, each person has a distinct personality. This unique personality and individual traits help to shape thoughts, motivations, and behaviours in different environments and situations (Ryckman, 2012). Personality is an individual's characteristic pattern of emotions, thoughts, and behaviours, together with the psychological mechanisms that arise from those patterns (Funder, 2001). In regards to this, personality traits are a crucial factor that is often ignored in the examination of the relationship between burnout and personality (Morgan & De Bruin, 2010), despite evidence of the significant relationship between the two (McCrae, Costa, & Piedmont, 1993). Specifically, studies like Booth-Kewley and Vickers (1994), Brody and Ehrlichman (1998), and Wu and Clark (2003) showed that personality influences health and day-to-day behaviours. In other words, personality may make individuals vulnerable to ill-health and burnout or it may protect them from it (Hochwälder, 2006).

On the basis of the conceptual meaning of each of the personality factors attributed to the Big-5\(^1\), and the relevant reviewed studies, specific hypotheses were developed that concentrated on neuroticism\(^2\) for two main reasons. First, neuroticism was evidenced to be a predictor of work-related outcomes (e.g. career deviance) (Armon, Shirom, & Melamed, 2012). This was supported by Barrick and Mount (2000), Colbert et al. (2004), and Judge et al. (1999). Hence, this variable is more likely to influence the coping resources in terms of their availability and use (Connor-Smith & Flachsbart, 2007). The second reason lies in the relationship between neuroticism (the tendency to feel a negative impact) and negative health outcomes, as explained by Lahey (2009). Studies show that the neuroticism personality trait is a strong predictor of burnout (Schaufeli & Enzmann, 1998). Neuroticism is also associated with depression, which is a characteristic of job burnout (You et al., 2015).

According to Watson and Clark (1984), a neuroticism trait is defined as an individual’s nature to see events in a negative light. Based on this description, it appears possible that neuroticism could lead to job burnout, as higher levels of neuroticism will lead individuals to be pessimistic and view the world as threatening (McCrae & John, 1992). In support of this, Alarcon et al. (2009) and Swider and Zimmerman (2010) demonstrated that there is positive correlation between the neuroticism personality trait and job burnout. Thus, the following hypothesis is proposed to be tested;

\textit{H4: Neuroticism is positively related to job burnout.}

\subsection*{2.4 The consequences of job burnout: job satisfaction}

Burnout was evidenced in the literature (e.g. Hunsaker, 1986; Low et al., 2001; Fogarty et al., 2000; Chong & Monroe, 2015) as being caused by role stressors. Although it is related to stress, burnout is not itself a stressor, but rather an outcome of stressors. Gill, Flaschner, and Shachar (2006) defined burnout as “a syndrome or state of physical, emotional, and mental exhaustion, as well as cynicism towards one’s work in response to chronic organisational stressors” (p. 471). Prior research suggests that diminished levels of job satisfaction are

\footnote{1 Big-5 refer to the Big Five factors (this factors and prototypical characteristics for each factor) are: “(a) Extraversion (e.g., sociable, talkative, and assertive), (b) Agreeableness (e.g., good-natured, cooperative, and trusting), (c) Conscientiousness (e.g., responsible, dependable, persistent, and achievement oriented), (d) Neuroticism (negative pole of personality traits; tense, insecure, and nervous), and (e) Openness to Experience (e.g., imaginative, artistically sensitive, and intellectually)” (Barrick & Mount, 1993, p. 111).}

\footnote{2 Neuroticism personality represents “an individual’s emotion regulation and tendency to experience negative feelings; people with low levels of neuroticism are calm, secure, emotionally stable and self-confident” (Woods & Sofat, 2013; p. 2207).}
important consequences of job burnout (Jackson & Maslach, 1982; Maslach, 1982; Burke, Shearer & Deszca, 1984; Leiter & Maslach, 1988; Fogarty et al., 2000).

Several researches have shown that job burnout can result in decreased job satisfaction and less productivity by employees (Leiter & Maslach, 1988; Firth & Britton, 1989; Cordes & Dougherty, 1993; Turnipseed, 1994; Wright & Bonett, 1997; Maslach & Goldberg, 1998; Van Dierendonck, Schaufeli, & Buunk, 1998; Hsieh & Chao, 2004; Gill et al., 2006; Pienaar & Willemse, 2008; Yang, 2010). Chong and Monroe (2015) corroborated these findings by demonstrating that job burnout resulted in an increase in job dissatisfaction. Thus, the following hypothesis is proposed:

\[ H5: \text{Job burnout negatively affects job satisfaction.} \]

2.5 The relationship between job satisfaction and premature sign-off

Locke (1976) defined job satisfaction as “a pleasurable or positive emotional state resulting from the appraisal of one’s job or job experiences” (p. 1304). Based on this definition, it can be assumed that individuals are more likely to participate in dysfunctional behaviours if they have a negative appraisal of their job or work. This study uses a motivational approach to explain this phenomenon. From a theoretical perspective, the social exchange theory may help explain the relationship between job satisfaction and dysfunctional behaviour (Gould, 1979; Levinson, 1965). According to the social exchange theory, individuals may feel upset or dissatisfied if they receive unfavourable treatment from their employer. Dissatisfied employees may exhibit destructive or negative behaviours in the workplace (Mount, Ilies & Johnson, 2006).

The deviant behaviour-job satisfaction relationship was investigated in many studies. Among them, Bennett and Robinson (2003) and Bowling (2010) revealed that job dissatisfaction was related to deviant behaviour, with Bowling (2010) stating that dissatisfied employees have a greater tendency to involve themselves in dysfunctional behaviour to release stress. Pickett (2004) noted that, with so many roles to fill, many internal auditors become dissatisfied in their jobs, leading to unproductive environments. Such a negative correlation between the two variables was also supported by Srivastava (2012) and Dalal (2005) in their respective meta-analyses. Further, according to Tuna et al. (2016), lack of job satisfaction is the antecedent to deviant behaviours.

Lastly, Jidin, Lum, and Monroe (2013) found that auditors who were more intrinsically satisfied with their jobs will sign-off on a more conservative inventory amount, compared with auditors who were less satisfied with their jobs. Meanwhile, as indicated by Fakhara and Hoseinzadeh (2016), job satisfaction has a negative relationship with dysfunctional behaviour by auditors. Further, job satisfaction is reported to impart a significant positive impact on the ethical behaviour of employees in the study conducted by Fu (2014). Additionally, Rogojan (2009) reported the linkage of job satisfaction to potential illegal or deviant acts. Further, a negative linkage appears to exist between job satisfaction and counterproductive work behaviours, as reported by Fatima et al. (2012). As such, this study proposes the hypothesis below;

\[ H11: \text{Job satisfaction is negatively related to premature sign-offs.} \]

3. METHODS

3.1 Participants
A total of 385 internal auditors from 248 public shareholding companies in Jordan were selected for this study. All companies were listed in the Amman Stock Exchange ASE in 2015. The data was collected using a survey questionnaire over a period of five months from Sep 2015 to Feb 2016. Of the 385 questionnaires distributed, 298 were returned and 91 questionnaires were unusable due to missing information; thus, the response rate was 48.5% and the data analysis was based on 187 responses. Data was collected for various variables, including ethical tension, role ambiguity, role conflict, neuroticism, job burnout, job satisfaction, premature sign-off, and some demographic information. The average age of our participants was between 36 and 45 years, and participants had 11 to 15 years of working experience. Nearly all respondents (92.5%) were male and most respondents (72.7%) possessed no qualifications and certificates of the internal audit.

Table 1. Descriptive statistics (n = 187)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard deviation</th>
<th>Possible range</th>
<th>Actual range</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
<td></td>
<td></td>
</tr>
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<td>Ethical Tension</td>
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<td>1-7</td>
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<td>1-7</td>
<td>1-7</td>
</tr>
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<td>Role Conflict</td>
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<td>1-7</td>
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<td>1-7</td>
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<td>1.18669</td>
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<tr>
<td><strong>Behavioural consequences</strong></td>
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<td></td>
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<td></td>
</tr>
<tr>
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<tr>
<td><strong>Job outcome</strong></td>
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<td></td>
<td></td>
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<tr>
<td>Premature sign-off</td>
<td>4.8349</td>
<td>1.28083</td>
<td>1-7</td>
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</tr>
</tbody>
</table>

3.2 Measures

The measures incorporated in this study were proven valid and reliable in prior research. With the exception of the ethical tension measure, all were utilised in prior role stress and burnout studies with accounting and auditing populations. The original items in English were translated into Arabic. Via a meticulous process, the research preserved validity by assuring that the questions were understood to prevent ambiguity. All of the measures were self-reported recall scales, as described below.

**Ethical tension:** To measure ethical tension, we used 12 items designed to fit this study, based on the original version of the moral distress scale used by Corley et al. (2001), the ethical dilemmas survey among senior public servants developed by Ehrich et al. (2004), and the ethical pressure questionnaire to assess the pressure on auditors to engage in unethical work behaviours from Shafer (2002). One additional item was added to measure the ambiguity of moral rules (like code of ethics).

**Role ambiguity and conflict:** Eight items were used to measure role conflict and 6 items were used for role ambiguity, using a 7-point Likert scale. Items were adapted from the Rizzo, House, and Lirtzman (1970) instrument. Previous studies have employed this instrument in the auditing field, including Mohd Nor (2011) and Chong and Monroe (2015).
The results indicate that “the Rizzo et al. (1970) role ambiguity and role conflict scales were and are satisfactory measures of two role constructs” (Jackson & Schuler, 1985, p. 17).

**Neuroticism:** This study measured neuroticism using the 10 item scale for neuroticism that is part of the revised NEO Personality Inventory (NEO-PI-R) (Costa & McCrae, 1995). The measure includes items, such as “I seldom feel blue”, “I worry about things,” (reverse scored), and “I change my mood a lot”. The reliability of this measure was acceptable, (Chronbach’s $\alpha = .906$) and was consistently used with previous research, including studies by Kokkinos (2007) and Sulea et al. (2015).

**Job burnout:** Job burnout was measured using the Pines and Aronson (1988) Burnout Measure. The Burnout Measure (BM; Pines & Aronson, 1988) includes 21 items that are to be responded to using a 7-point scale, ranging from 1 = “never” to 7 = “always”. Four items were positively worded, and 17 items were negative worded. The items were designed to measure physical, emotional, and mental exhaustion, such as “feeling energetic”, “being emotionally exhausted”, and “feeling rejected”, respectively.

**Job satisfaction:** The measurement of this construct was based on three questions from the General Attitudes section of the Michigan Organisational Assessment Questionnaire (MOAQ), established by Cammann et al. (1983).

**Premature sign-off:** This study adopted Ling and Akers’ (2010) instrument to measure premature sign-off behaviour in the internal audit environment, with 12 items measured on a seven-point Likert scale, where 1 denoted strongly disagree and 7 denoted strongly agree. The Cronbach alpha for this tool in this study was 0.903, which represents a high level of internal consistency and reliability.

### 3.3 Common Method Bias (Variance)

The same tool was used in this study to collect data on the endogenous and exogenous variables. However, by using the same tool, there is the potential risk of common method bias (CMB). Common method bias is the variance that can be completely attributed to the procedure used for measurement, instead of the variables themselves. To combat common method bias, a full collinearity test was employed, as per the suggestion of Rasoolimanesh et al. (2015). According to Henseler, Hubona, and Ray (2016), common method bias may be present if the variance inflation factor (VIF) values for each latent variable are significantly greater than one. In this study, the VIF values are less than the threshold value of 5, suggesting that multicollinearity is not present (Hair, Ringle, & Sarstedt, 2011). (For more information see Appendix B).

### 4. RESULTS

The partial least squares (PLS) method for the structural equation modelling (SEM) was used in this study, using the statistical package SmartPLS 3 (Ringle, Wende, & Becker, 2015). The PLS-SEM approach was chosen over other approaches, such as covariance-based statistics, for a number of reasons (Barroso, Carrión, & Roldán, 2010; Chin & Newsted, 1999; Hair et al., 2011; Hair et al., 2016; Hair, Ringle, & Sarstedt, 2013; Henseler, 2017; Reinartz, Haenlein, & Henseler, 2009). First, this study is exploratory, meaning that the relationship between ethical tension with job burnout and job satisfaction with PMSO is not proven yet, so discovering a new interconnection is possible. Second, the amount of data collected is
relatively small with only 187 cases. PLS is possible with smaller sample sets. Third, PLS does not require that the data be normally distributed because it is a nonparametric method. Fourth, this research focuses on predicting a model (job burnout by means of stressors). Fifth, PLS-SEM is becoming increasingly useful in explaining complex behaviour research (Henseler et al., 2016), and is used to enhance the explanatory capacity of key target variables and their relationships (Hair, Sarstedt, Hopkins, & Kuppelwieser, 2014). In the next section, we discuss the results of the measurement model and analyse the structural model, according to a method proposed by Chin (1998), Marcoulides and Saunders (2006), and Hair et al. (2016).

4.1 Measurement model

A number of tests, including reliability, discriminant validity, and convergent validity, were conducted to ensure that the items included in the study measured the latent variables. The results reveal that all minimum requirements were met by the measurement models, as illustrated in Table 1. First, this study used a cut-off value of 0.70 significance for factor loadings (t-value > 1.96 and p-value < 0.05). The loadings of all items were above 0.734. A higher level of outer loading factors indicates a greater level of indicator reliability (Hair et al., 2013, 2011). Secondly, using Cronbach’s alpha and Composite Reliability, Dijkstra-Henseler’s rho (rhoA), which provides a more accurate estimation of data consistency, was used and the values indicated that the items loaded on each construct were reliable (Ringle et al., 2017). Furthermore, all average variance extracted (AVE) values exceeded the threshold of 0.50, supporting the convergent validity of the construct measures (Henseler et al., 2016; Henseler, 2017).

### Table 2. Measurement model

<table>
<thead>
<tr>
<th>Construct</th>
<th>Items</th>
<th>Loadings</th>
<th>Cronbach’s Alpha</th>
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<th>rhoA</th>
<th>AVE</th>
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</table>
Lastly, the confirmation of discriminant validity for the analysis was made by heterotrait-monotrait’s (HTMT) ratio of correlations values (Hair et al., 2017; Henseler et al., 2015). According to Nitzl (2016), the HTMT should be used as a criterion to assess discriminant validity. In this study, the values were lower than the (conservative) threshold of 0.85. As such, there was no issue with multi-collinearity in the outer model.

Moreover, the standardised root mean square residual (SRMR) and other fit indices, namely the normed fit index (NFI), were used to test the model fit of the research (Henseler et al., 2014). SRMR\(^3\) produced a value of 0.055, reaffirming the PLS path model’s overall fit (Hair et al., 2014 and Henseler et al., 2014). The NFI results in values between 0 and 1. The closer the NFI value is to 1, the better the fit (Ringle et al., 2017). All the results of the saturated model indicate that the model has a good fit (Bentler & Bonett, 1980; Dijkstra & Henseler, 2015; Hair et al., 2016).

Table 3. Discriminant validity and Model fit

<table>
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<th>Construct</th>
<th>1</th>
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<td>0.465</td>
<td>0.596</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RC</td>
<td>0.493</td>
<td>0.633</td>
<td>0.433</td>
<td>0.332</td>
<td>0.439</td>
<td>0.595</td>
<td></td>
</tr>
</tbody>
</table>

SRMR composite model = 0.055
NFI normed fit index = 0.809

4.2 Structural model

The structural model's results and analysis draws on Hair et al. (2014). The analysis evidenced minimum collinearity in every series of predictors in the structural model, since the values of all variance inflation factor (VIF) were way lower than the threshold value of 5.

\(^3\)SRMR values less than 0.08 are considered a good fit for correctly specified model (Hu & Bentler, 1999; Henseler et al., 2016).
VIF values that are lower than five indicate that there is no problem of multicollinearity (Hair et al., 2011) (see Appendix B). Furthermore, the $R^2$ values of job burnout (0.627) job satisfaction (0.423) and premature sign-off (0.247) support the in-sample predictive power of the model (Sarstedt et al., 2014). Likewise, results from blindfolding with an omission distance of 7, yielded $Q^2$ figures that were way beyond zero and positive values, as recommended by Tenenhaus (1999). Therefore, the model's predictive relevance is supported in terms of out-of-sample prediction (Hair et al., 2012).

Table 4. Significant testing results of the structural model path coefficients

| Structural path | Path coefficient | T Statistics (|O/STDEV|) | Percentile 95% confidence intervals | P-Values | Conclusion |
|-----------------|------------------|-----------------|------------------------------------|----------|------------|
| H1: ET->JB      | 0.319            | 4.808           | (0.188 ; 0.450)                   | 0.000    | Supported  |
| H2: RA->JB      | 0.266            | 4.065           | (0.133 ; 0.390)                   | 0.000    | Supported  |
| H3: RC->JB      | 0.210            | 3.148           | (0.092 ; 0.354)                   | 0.002    | Supported  |
| H4: PNE -> JB   | 0.219            | 3.235           | (0.084 ; 0.348)                   | 0.001    | Supported  |
| H5: JB-> JS     | -0.650           | 13.930          | (-0.736 ; -0.553)                 | 0.000    | Supported  |
| H6: JS -> PMSO  | -0.497           | 8.219           | (-0.615 ; -0.379)                 | 0.000    | Supported  |

$R^2$ Job Burnout = 0.627; $Q^2$ Job Burnout = 0.348
$R^2$ Job Satisfaction = 0.423; $Q^2$ Job Satisfaction = 0.302
$R^2$ Premature Sign-Off = 0.247; $Q^2$ Premature Sign-Off = 0.153

Note: ET = Ethical tension, RA = Role ambiguity, RC = Role conflict, PNE = Neuroticism personality trait, JB = Job burnout, JS = Job satisfaction, PMSO = Premature sign-off.

**Hypothesis 1: Ethical tension and job burnout**

As anticipated, our results fully confirm our expectations regarding the influence of ethical tension as an additional exogenous variable in the role stress model. Specifically, the standardised path coefficients shown in Table 4 confirm a significant positive association between ethical tension and burnout ($\beta = 0.319$, p-value < 0.01) and a t-value of 4.808. In addition, the result of the bootstrap method did not contain zero (0.188; 0.450), thus confirming Hypothesis 1.

**Hypotheses 2 and 3: Role ambiguity, role conflict and job burnout**

This study found a significant positive relation between role ambiguity and job burnout ($\beta = 0.266$, t = 4.065, p-value < 0.01). The associated confidence interval (95%) was 0.133 and 0.390 in the lower and upper levels, respectively. This means that the confidence interval also does not include zero. Therefore, it can be concluded that Hypothesis 2 is supported. Furthermore, Table 4 also shows that role conflict and job burnout has a positive relationship ($\beta = 0.210$ at $t = 3.184$) and is significant at a p-value lower than 0.05. The bootstrap method also did not include zero, indicating the support of Hypothesis 3.

**Hypothesis 4: Neuroticism and job burnout**

Our expectations regarding the influence of the neuroticism personality trait were also confirmed. Specifically, neuroticism had a significant positive association (0.219) with burnout at a p-value of < 0.05. Further, the results of the analysis, based on bootstrapping confidence intervals, were 0.084 and 0.348. This provided support for hypotheses 4.
**Hypothesis 5: Job burnout and job satisfaction**

From the data in Table 4, we can see that job burnout has a strong negative relationship with job satisfaction. The value of the path coefficient (β) was -0.650, with a highly significant t-value of 13.930 at p<0.01. Similar to the other hypotheses, the bootstrapping method indicated that zero was not included in the confidence interval (-0.736; -0.553), thus, supporting Hypothesis 5.

**Hypothesis 6: Job satisfaction and PMSO**

As discussed above, it was expected that PMSO is affected by job satisfaction. The results of the correlational analysis (see Table 4) revealed that the correlation value is relatively large (β= -0.497, p<0.01). The t-value was 8.219 and the confidence interval was -0.615 to -0.379, thus, confirming Hypothesis 6.

5. ADDITIONAL ANALYSIS

To explore the effects of job stressors on job burnout and auditor PMSO, a path analytic technique was used (Kerlinger & Pedhazur, 1973)\(^4\). This technique enables researchers to deconstruct antecedents into direct and indirect effects (Alwin & Hauser, 1975; Duncan, 1966; Perrow, 1967), as seen in Table 5.

**Table 5. Direct and indirect effects stressors and job burnout on premature sign-off.**

<table>
<thead>
<tr>
<th>Construct</th>
<th>Direct Effect</th>
<th>Indirect Effect</th>
<th>Total Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Path</td>
<td>Path t value</td>
<td>Path</td>
</tr>
<tr>
<td>Ethical Tension</td>
<td>0.00</td>
<td>0.103*</td>
<td>0.103*</td>
</tr>
<tr>
<td>Role Ambiguity</td>
<td>0.00</td>
<td>0.086**</td>
<td>0.086**</td>
</tr>
<tr>
<td>Role Conflict</td>
<td>0.00</td>
<td>0.068**</td>
<td>0.068**</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>0.00</td>
<td>0.071**</td>
<td>0.071**</td>
</tr>
<tr>
<td>Job Burnout</td>
<td>0.00</td>
<td>0.324*</td>
<td>0.324*</td>
</tr>
<tr>
<td>Job Satisfaction</td>
<td>-0.497</td>
<td>0.00</td>
<td>-0.497</td>
</tr>
</tbody>
</table>

*\(p < 0.01\) level, **\(p < 0.05\) level.

As shown in Table 5, ethical tension, role ambiguity, role conflict and neuroticism has an indirect effect (β = 0.103, 0.086, 0.068, 0.071 respectively) on PMSO. This result suggests that stressors trigger an employee’s job burnout, which in turn, causes PMSO by internal auditors. This result supports the findings of Smith and Emerson (2017) who found that job burnout was a mediating variable between stressors and reduced audit quality practices (RAQP). Table 5 also shows that job burnout has the greatest indirect effect on PMSO (β =

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\(^4\) Kerlinger and Pedhazur (1973) proposed that the path analytic technique can be implemented to test if a specific theoretical framework is consistent with a set of observations and the pattern of correlations resulting from it.
Thus, in this study, we show that job satisfaction plays a mediating role in the relationship between job burnout and PMSO.

6. CONCLUSION

The purpose of this paper was to evaluate internal auditors in public shareholding companies in Jordan to determine the antecedents and consequences of job burnout on PMSO. Internal auditors were chosen as the sample population because the roles and responsibilities are inherently stressful (Larson, 2004). According to Fogarty and Kalbers, job burnout in an accounting role can directly result in serious behavioural and attitudinal consequences. The findings from this study further the results from previous studies on accounting roles. One significant contribution to the literature is that this study proposes that ethical tension, neuroticism, role ambiguity, and role conflict has an impact on an employee’s perceived level of burnout. Further, this study confirms the prediction of Fogarty et al. (2000) that role stressors, particularly role ambiguity and role conflict, influences job burnout. Our results further suggest that job burnout directly decreases levels of job satisfaction. Dissatisfied internal auditors are more likely to engage in premature sign-off practices.

This study's finding of a significant direct relation between ethical tension and burnout is consistent with Corley et al. (2001). The significant relationship between ethical tension and burnout lends additional support to the proposition by Fogarty et al. (2000) that other stressors can affect auditors’ job burnout. Role ambiguity and job burnout were correlated at 0.266, while role conflict and job burnout correlated at 0.210. Due to the fact that there was a strong correlation, it is possible that a relationship between role ambiguity, role conflict, and job burnout may be downgraded, as reported by Smith and Emerson (2017). The finding that the neuroticism personality trait is significantly and directly related to burnout (0.219) supports the findings of previous research (Maslach et al., 2001). Similar to the findings of Fogarty et al. (2000), this study found that job satisfaction and job burnout is significantly related. Finally, we found corroboration with the results of Chong and Monroe (2015) by demonstrating that job satisfaction negatively and significantly influences PMSO, thus showing the job satisfaction is a strong predictor for employee behavioural outcomes.

7. IMPLICATIONS

Although previous studies have focused on direct stressors, such as job satisfaction, organisational commitment, and dysfunctional audit behaviour, Chong and Monroe (2015) proposed that more research needs to be conducted on the linkages that exist between work stressor and behavioural outcomes. This study shows that several antecedents, including ethical tension, neuroticism, role ambiguity, and role conflict, can lead to job burnout, potentially leading to job dissatisfaction and other behavioural outcomes. The results also show that job satisfaction serves as an early predictor of premature sign-off by internal auditors. The study therefore reveals several interesting findings with regard to dysfunctional audit behaviours research, which has implications for audit quality (Svanström, 2016). This finding contributes to auditing and accounting literatures in several ways.

Management and organisations can use the findings from this study to reduce job burnout. By understanding the factors that can trigger feelings of dissatisfaction for internal auditors, it may also be possible to reduce premature sign-off. One way that management can reduce burnout is by providing support and training to employees to alleviate stress and burnout.
Stress can be attributed to a mismatch between an individual and the environment or setting (Edward, Caplan, & Harrison, 1998). A better understanding of the nature of stress and its consequences may help to eliminate stress altogether, and any dysfunctional behaviour associated with it.

This study extended the findings of previous research by Fogarty et al. (2000) and Chong and Monroe (2015) with the addition of ethical tension and neuroticism as antecedents to job burnout. In general, previous studies on accounting roles did not include individual personality traits, such as neuroticism, into their models, even though personality has a significant influence on behaviour. In this study, we expand prior research by including job satisfaction as a consequential variable to job burnout, and PMSO as a job dissatisfaction outcome. Future research may want to focus on internal auditor satisfaction.

8. LIMITATIONS

There were a few limitations to this study. To start, other antecedents of job burnout, such as time pressure and leadership styles (Larson, 1997), organisational trust (Kalbers & Fogarty, 2005), and other personality variables (e.g. locus of control) (Kalbers & Fogarty, 2005) were not considered. Second, this study focused on shareholding companies operating in Jordan, and it did not include the companies not included in ASE that share similar characteristics, such as the number of employees. The result obtained may be slightly different if other companies that were not included in ASE were included in the study. Therefore, findings of this study should be cautiously generalised to all big companies operating in the country. Additionally, whilst this research targeted all types of shareholding companies (financial, industrial, and service), there is a need to examine these issues based on the sub-sectors. Hence, the study is limited by neglecting the fact that enterprise characteristics can be different according to business type or sector.

Common method variance may also be a concern in studies that utilise the survey methodology. Although full collinearity tests were conducted and suggest that common method variance did not affect the data, it cannot be fully ruled out.

Despite the limitations discussed above, this study “responds to the need for analytically complex models to examine the interrelationships between role stress and job burnout, to psychological well-being and job outcomes” (Jones et al., 2010, p. 35). This study's inclusion of ethical tension and neuroticism addresses a need advanced by Chong and Monroe (2015) calling for the examination of other antecedents to job burnout. It also provides additional evidence to support Maslach et al. (2001) who stated that “Research on the Big Five personality dimensions has found that burnout is linked to the dimension of neuroticism” (p. 411). Finally, this study provides empirical support to show that individual personality traits should be included to improve the traditional role stress model.

9. REFERENCES


Eller, C. K. (2014). Can Using the Internal Audit Function as a Training Ground for Management Deter Internal Auditor Fraud Reporting?


Fatima, A., Atif, Q. M., Saqib, A., & Haider, A. (2012). A path model examining the relations among organizational injustice, counterproductive work behavior and job


### 10. APPENDIXES

**Appendix A. Definitions of Ethical Tension**

<table>
<thead>
<tr>
<th>Term(s)</th>
<th>Author(s), Year</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethical pressure</td>
<td>Tian and Peterson (2016); Peterson (2003)</td>
<td>Ethical pressure as “a situation in which the employees feel pressured by their peers, supervisors, and other members of the organization to compromise their personal values in order to achieve organization goals resulting in an ethical conflict for the employee”.</td>
</tr>
<tr>
<td>Ethical stress</td>
<td>O'Donnell et al. (2008)</td>
<td>Undefined—cited in the work on moral distress</td>
</tr>
<tr>
<td>Ethics-related stress</td>
<td>Ulrich et al. (2007)</td>
<td>“An occupational stress that is the emotional, physical and psychosocial consequences of moral distress (i.e. knowing the morally right course of action but constrained to carry out the action)” (p. 1709)</td>
</tr>
<tr>
<td>Moral distress</td>
<td>Jameton (1984)</td>
<td>“Painful feelings and/or psychological disequilibrium that occurs when nurses are conscious of the morally appropriate action a situation requires but cannot carry out that</td>
</tr>
<tr>
<td>Source</td>
<td>Definition</td>
<td></td>
</tr>
<tr>
<td>-----------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Wilkinson (1987)</td>
<td>“The psychological disequilibrium and negative feeling state experienced when a person makes a moral decision but does not follow through by performing the moral behavior indicated by that decision” (p. 382)</td>
<td></td>
</tr>
<tr>
<td>Fry et al. (2002)</td>
<td>“A feeling state experienced when a person makes a moral judgment about a situation but does not act on those judgments” (p. 374)</td>
<td></td>
</tr>
<tr>
<td>Kälvemark et al. (2004)</td>
<td>“When one believes one knows an ethical dilemma is at stake and also the morally right thing to do, but institutional constraints make it impossible to pursue the desired course of action” (p. 1077)</td>
<td></td>
</tr>
<tr>
<td>Nathaniel (2006)</td>
<td>“Pain affecting the mind, the body, or relationships that results from a patient care situation in which the nurse is aware of a moral problem, acknowledges moral responsibility, and makes a moral judgment about the correct action, yet, as a result of real or perceived constraints, participates, either by act of omission, in a manner he or she perceives to be morally wrong” (p. 421)</td>
<td></td>
</tr>
<tr>
<td>Initial moral distress</td>
<td>Jameton (1992) “Occurs when the person feels frustration, anger, and anxiety when faced with institutional obstacles and interpersonal conflict about values” (p. 544)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fry et al. (2002) “Is experienced when a person encounters a situation and experiences difficulty in carrying out his or her moral responsibilities. The experience itself typically involves strong negative feelings such as anger, frustration and guilt. Feelings such as anxiety, powerlessness, ineffectiveness, one’s personal beliefs or values being violated, and a sense of failed responsibility may also occur” (p. 374)</td>
<td></td>
</tr>
<tr>
<td>Reactive moral distress</td>
<td>Jameton (1992) “Occurs when people do not act upon their initial distress” (p. 544)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fry et al. (2002) “Typically involves behaviours such as crying and anger; psychological reactions such as depression, nightmares, and feelings of worthless; and physical reactions such as heart palpitations, diarrhea and headaches” (p. 376)</td>
<td></td>
</tr>
<tr>
<td>Moral stress</td>
<td>Bird and Waters (1989) No formal definition. A condition of “moral milieu” caused by “the inherent abstractness of moral standards” (p. 17)</td>
<td></td>
</tr>
</tbody>
</table>
|             | Wyld and Jones “An incongruence between organizational
(1997) and individual perspectives on ethical matters” (p. 470)

Lützén et al. “Results when an individual person’s moral sensitivity cannot be put into action because of perceived external constraints” (p. 316)

Reynolds et al. "moral stress is a psychological state born of an individual’s uncertainty about his or her ability to fulfill relevant moral obligations".

Huhtala (2013) "the prevalence of ethical dilemmas and stress caused by these dilemmas".

Schwepker (1999) "Emerges when the ethical values of the employee are incongruous with the ethical values of other employees or the ethical values of the organization itself” (p. 43)

Soutar et al. "An ethical conflict pertains to situations in which an employee’s personal ethics are not compatible with the organization’s business ethics and hence the behavioural expectations and norms of the organization"

Thorne (2010) “In the work place, ethical conflict occurs when an employee makes or observes decisions that go against his or her core values. As a result, an employee will experience emotional distress, which may result in adverse outcomes for the employee and the organization” (p. 269)

Appendix B. Collinearity Test

<table>
<thead>
<tr>
<th>Outer VIF values</th>
<th>Inner VIF values</th>
</tr>
</thead>
<tbody>
<tr>
<td>ET1 1.678</td>
<td>ET JB JS PMSO PNE RA RC</td>
</tr>
<tr>
<td>ET3 1.697</td>
<td>ET 1.430</td>
</tr>
<tr>
<td>ET4 1.589</td>
<td>JB 1.000</td>
</tr>
<tr>
<td>ET8 1.675</td>
<td>JS 1.000</td>
</tr>
<tr>
<td>ET9 1.573</td>
<td>PMSO</td>
</tr>
<tr>
<td>JB1 2.460</td>
<td>PNE 1.524</td>
</tr>
<tr>
<td>JB11 2.124</td>
<td>RA 1.814</td>
</tr>
<tr>
<td>JB12 2.096</td>
<td>RC 1.534</td>
</tr>
<tr>
<td>JB14 1.733</td>
<td></td>
</tr>
<tr>
<td>JB17 1.800</td>
<td></td>
</tr>
<tr>
<td>JB4 1.812</td>
<td></td>
</tr>
<tr>
<td>JB8 2.150</td>
<td></td>
</tr>
<tr>
<td>JSS1 2.450</td>
<td></td>
</tr>
<tr>
<td>JSS2 2.259</td>
<td></td>
</tr>
<tr>
<td>JSS3 1.741</td>
<td></td>
</tr>
<tr>
<td>PNE1 2.634</td>
<td></td>
</tr>
<tr>
<td>PNE2 2.199</td>
<td></td>
</tr>
<tr>
<td>PNE3 2.487</td>
<td></td>
</tr>
</tbody>
</table>
11. ABOUT THE AUTHORS

Mohannad Obeid Al Shbail received the degree in Accounting from Al al-Bayt University in 2009. He received his MSc in Accounting from Al al-Bayt University in 2011. Currently, he is a PhD candidate in School of Maritime Business and Management at the University Malaysia Terengganu. His interests are in Internal Audit, Auditors Behaviour and Behavioural Accounting.

Zalailah Salleh is an assistant professor in the Department of Accounting and Finance at the University Malaysia Terengganu. She received her PhD from the University of Griffith. Her research interests include Audit Quality and Corporate governance and issues related to financial reporting. Her research has appeared in a variety of journals, including The Accounting, Auditing & Accountability, Managerial Auditing Journal, and the International Journal of Accounting, Auditing and Performance Evaluation. She is a Chartered Accountant and a member of Malaysian Institute of Accountants.

Mohd Nazli Mohd Nor is a Senior Lecturer in the Department of Accounting and Finance at the University Malaysia Terengganu. He received his PhD from the Edith Cowan University. His research interests include Financial Accounting, Corporate Governance, Auditing, Ethics and Islamic Accounting. His papers have been published in various international journals.
Abstract

In recent times, big data analytics has become a major trend in catering data queries that has been growing dramatically. This data, which comes from various sources, e.g. media, communication devices, internet, business, etc. and there are many difficulties and challenges that one faces while handling it. Data mining is a process intended to reconnoiter analytical data (typically business or market associated data - also acknowledged as "Big data"). In this paper, we great fairly simple big data analytics models to achieve the answer why some retail outlets fail and some succeed, improve membership renewal rates, improve the return frequency of P1 member, and improve the basket size for each transaction or each member.

Keywords: Big data analytics, membership renewal rates, Predictive analytics, decision making.

1. INTRODUCTION

In the quest to raise numbers of satisfied customers and to increase the count of loyal customers, the retail industry is actively searching for new methods to service customers better. In the US, retail store managers are exploring different tools and applications to improve customer satisfaction and loyalty. Through the technology of marketing and inventory management systems, customer purchase history is studied and dissected into forecasting and improving purchasing power. A general objective and the depth of this research describes the research highlights and define the challenges occurring from this study. In general, businesses are trying to understand why some customer-business relationship last while some don’t. Regardless the level of satisfaction, customer loyalty is not guaranteed. Customer retention is viewed as the focal point of relationship marketing activities (Parish & Holloway, 2010). Retaining customer loyalty for a long period of time has always been a priority for most businesses. Reason being, customer retention determines their lifetime value which then allows a business to improve profitability through time.

Big data has become a main priority for companies in the technology circles. Interest is growing in enterprises that want to harness the power of big data and among consumers who want to benefit from big data-driven applications. There are many reasons to believe that the potential impact is both big and broad-based, as there are a consistent set of levers, across industries that enterprises can apply to create value. The impact is even bigger when economic impact is broadened beyond traditional measures of productivity to
include consumer surplus. We all need to know the big, data is a broad phenomenon, not limited to a few industries. They estimated that, in the US, an average company in any sector has at least 100 terabytes (TB) of data, and many have more than 1 petabyte (PB). For comparison, the library of congress has 235 TB of data in 2011.

How big can big data's impact be?

Quite simply, the economy is forecasted to be heavily affected by big data potential. For example, in retail, $30-55 billion of annual savings estimated in the US, through applying big data levers to supply chain, operations, merchandising, with hundreds of billions of potential profit shifts. For consumer packaged goods, open data are expected to unlock $520 billion to nearly $1.5 trillion in value worldwide, through improvements in product design, manufacturing, store operations, marketing, sales, and post-sale services, as well as create consumer surplus through enabling shopper comparisons of prices, quality and attributes.

In manufacturing, savings in the range of $125-$270 billion for the U.S. may be achieved by leveraging big data across R&D, production and supply chain management.

In the electricity / power industry, it is possible to achieve $340 – 580 billion in value globally by using open data to optimize general investments, make general operation more efficient, optimize investment in transmission and distribution, influence end consumption (e.g., through the use of more energy-efficient products).

According to Gartner, the volume of data is set to grow 800% over the next five years and 80% of it will reside as unstructured data. Big Data Analytics is the inevitable next step in the evolution of the retailers leveraging granular details of data, in making better decisions. Granular level data include unstructured data from sensors, devices, third parties, web applications, and social media. By using advanced analytics techniques on this kind of data, the retailers can make smarter business decisions possible.

Analytics have become one of the most powerful tools available to retailers, and are being used for a broad variety of purposes. This report summarizes trends in the use of analytics in retail across eighteen different categories, as well as several more emerging analytical activities. It is based on interviews with 33 retailers, more than 25 retail analytics experts, and the published literature. For each analytical trend, the description, state of maturity, underlying rationale, and several examples in using the trend are presented. Retailers are already feeling the pressure of too many analytical options in the current market. Retailers should pay attention to select and apply target investment that fits their strategies and economy positions. In a difficult economy, retailers may also need to adopt, first, those analytical applications that have saved money for other adopters, including pricing and assortment optimization. The result of such will indefinitely lead to
high competition among other retailers in the same industry or economic nature due to the effectiveness of an application proven by other businesses that has already adopted and exploited it first.

Understanding customer behavior leads to improvement of customers' academic understanding. On-going research is being done on many different factors for businesses to explore to better understand their customers and to try to prolong customer tenure which then leads to improved profits. While many of these factors have been researched in the context of business-to-business and business-to-consumer regarding the sales of goods, this research will focus on the business-to-consumer relationship in the services portion of the economy.

The purpose of the current study is to determine whether retail stores can improve customer satisfaction and customer loyalty through using big data and data analytics to have better employment of technology, marketing, and inventory management systems. If found there is to be a relationship between improved customer satisfaction and the employment of technology, marketing, and inventory management systems in the retail environment, the relationship will be employed in a manner to predict future improvements. The reason for the study is to analyze data, whether an increase in customer satisfaction and customer loyalty can be achieved through technology, marketing, and inventory management system. If a significant relationship is found, the results of the research study may offer solutions to the potential problems associated with retail store chains thereby helping retail store chains increase revenues. The research objective highlights three specific hypotheses that may be productive in gauging the evaluation, quantitative outcomes of this research study.

2. PURPOSE OF THIS RESEARCH

The purpose of this research is to expand the academic and practitioner knowledge base in these areas.

1. Develop a more complete understanding of Why some Senheng outlets fail and some succeed.
2. Develop a more complete understanding of How to improve membership renewal rates.
3. Develop a more complete understanding of How to improve the return frequency of P1 member.
4. Develop a more complete understanding of How to improve the basket size for each transaction or each member.
3. LITERATURE REVIEW

In this section, I will review the literature to develop the basis and support for my hypotheses. I will start with an examination of customer lifetime value, which is one of the primary factors to understanding current customer tenure. I also examine why it is so important to understand re-engagement measures in terms of how they impact tenure directives and how they impact the selection of a service product. Next up is to study big data and the application of data analytics to find how it can be used to improve understanding of customer behavior. The last construct to be discussed in this paper is how to examine big data and data analytics to forecast customer behavior, based on the expectations portion of the SERVQUAL model and how it impacts customer tenure. One must have an understanding of customer lifetime value (CLV) to understand how both short-term and long-term relationships can be profitable. CLV employs a prospective perspective on customer profitability, predicting future customer behavior (either for current customers or for perspective customers) and discounting derived cash flows over the expected lifetime of a customer in a relationship with a retailer (Pfeifer, Haskins, & Conroy, 2005). The basic formula is to take the revenues less the cost to generate those revenues over the total time of the expected life of the customer and then discount those cash flows back at the appropriate interest rate to reflect current dollars. A customer who generates more net revenue over a shorter period of time may have a greater, equal, or lesser CLV than a customer who generates less revenue over a longer period of time.

Two major factors must be understood to develop an accurate measure of CLV. The first is net revenues and the second is expected life of the customer with the retailer in order to calculate how long the net revenues will be expected and then to set the appropriate discount rate to calculate the present value of future cash flows. Net revenue is a function of what product or service is purchased. Therefore, the service product that is selected by a customer has a tremendous impact on net revenue. The expected time the customer is retained by the retailer is the second major factor. Both of these factors are studied in this paper. Because this study looks at pre-engagement factors that predict the selection of service products and how it impacts customer tenure, this research helps in answering the question of how profitable in the future, both current and, just as important, future customers may be.

As one research paper stated, targeting profitable customers is good, but it is even better to target the customers who will be profitable (Reinartz & Kumar, 2003) to investigate the impact of activity level in conjunction with the retention rate on the customer lifetime value. In fact, they improve a theory of marketing that discusses the effect of customer retention on profitability. Attempts to uncover the relationship between retention rate and customer profitability have yielded various results. Reichheld (1996) and Xevelonakis (2005) determined that customer retention leads to higher profitability.

In 2005, Reinartz, Thomas & Kumar showed that trading off between allocating resources to customer acquisition and retention is necessary to maximize profitability. In defining active and passive customers, as well as focusing on online and offline banking, Campbell and Frei (2009) asserted that active customers have higher retention rates. They have also investigated the relationship between retention rate and CLV for non-contractual products, and mixed (contractual and non-contractual) products. This research empirically investigates and compared in the field of retail banking in Iran.

The bank in this case study has a contractual setting for long-term deposits and several kinds of loans, and a non-contractual setting for checking, free interest savings and short-term deposits, and two kinds of loans. However, all contractual settings require the customer purchases a non-contractual product. For example, in order to have a contract for a long-term deposit, the customer must open a non-contractual deposit.

Businesses encounter difficulty in choosing the most appropriate model when computing the CLV as every business will want only the most accurate predictions for each customer. (Rust et al, 2011) proposed a framework to model links between factors used to measure CLV. Their model performs better than simple managerial heuristic models; however, their context is limited to always-a-share context and does not support negative profits generated, especially by important customers, who could become more profitable into the future.

(Mohamed Ben Mzoughiaa and Mohamed Limama, 2014) have proposed a model based on both RMF and MCM models. their proposed model offers significant advantages over existing alternatives, by handling both positive and negative profits, and providing good forecasting performance. Also, MCM approach is used to model customer relationship within a company and to measure purchase incidence for each customer. The contribution of MCM is its flexibility to adopt both lost-for-good and always-a-share situations, unlike RMF which considers only always-a-share situation. In their empirical study, they show that the proposed method has a better forecasting performance than competing models. A modification needs to be made in order to improve marketing cost prediction by including forward-looking cost allocation strategy.

Historically, the key challenge for researchers is to identify and understand how firm controlled antecedent variables influence important marketing outcomes such as customer loyalty and positive word of mouth (Hennig-Thurau, Gwinner, & Gremler, 2002). A key goal of relationship marketing theory has been and
will be the identification of key drivers that influence important outcomes of the firm. Also, a better understanding of the causal relationships between these drivers and outcomes is required.

Hennig-Thurau et al. (2002) identified two conceptual approaches: the relational benefits approach (Bendapudi & Berry, 1997; Gwinner, Gremler, & Bitner, 1998; Reynolds & Beatty, 1999) and the relationship quality approach (Crosby, 1991; Crosby, Evans, & Cowles, 1990; Dorsch, Swanson, & Kelley, 1998; Smith, 1998).

The relationship quality approach focuses on the nature of the relationship, while the relationship benefits approach focuses on the receipt (exchange) of benefits. These two approaches were shown to be together with work by Verhoef (2003). Relationship marketing theory and customer equity theory posit that customers’ perceptions of the quality of the relationships (strength of the relationships) and customers’ evaluations of the suppliers’ offerings (benefits of relationships) shape customers’ behavior in the relationship (Garbarino & Johnson, 1999; Rust, Zeithaml, & Lemon, 2001; Woodruff, 1997). This research related both concepts - relationship quality as proxied by affective commitment and relationship benefits as proxied by payment equity - to customer tenure. Affective commitment was defined as the psychological attachment, based on loyalty and affiliation, of one exchange partner to another (Bhattacharya, Rao, & Glynn, 1995; Gundlach, Achrol, & Mentzer, 1995).

The relationship marketing literature suggests that affective commitment is a prediction of customer tenure (Gustafsson, Johnson, & Roos, 2005). Payment equity was defined as a customer’s perceived fairness of the price paid for the firm’s product or services (Bolton & Lemon, 1999).

The research indicated payment equity did not have a positive impact on customer tenure; but affective commitment did. This finding indicates that the relational benefits theory may not explain customer tenure well as the perceived relational benefits of the relationship by the consumer may change over time, which could have a negative impact on the relationship and therefore customer tenure. These changes were noted as “situational” or “rational” triggers (Gustafsson et al., 2005).
4. System Design

The new model will collect all the outlets I will study existing data from SenQ and SenHeng in the first semester to find the right data to be used later. Retrieve good data from existing and new data to find the relationship between the two that can help in improving retail business in the second semester. Find new model to use the best data and transform it into knowledge & information by using one of the Analytics tools and Process Analytics and provide a complete report to send to Management to take further actions in the third semester.

In to flow diagram we will find all the data we will need to collect and use in our model for answering all the four questions. we will need to get the Outlet status, Manpower, Outlet size, Conversion rate, Membership Renewal Rate, Redemption Time, Net Promoter Score (NPS Rating) / Home delivery, EZ Redemption, Attachment Sales, Sales Amount, Member data, Member activity, and Factor details VOC.
5. CONCLUSIONS

Big data analytics is not just another technology. It is the nexus of software, computing, and technological capabilities that has ushered in an era of radically different competition and is a “tech” disruption of historic proportions. There are many benefits of big data analytics. We have an enormous amount of data on to our disposal. Our ability to harness this data and use it to make all the outlets succeed, improve membership renewal rates, improve the return frequency for P1 member, and improve the basket size for each transaction or each member.

REFERENCES


THE RELATIONSHIP BETWEEN SERVANT LEADERSHIP AND PERFORMANCE OF UNIVERSITY LEADERS: WORKING ENVIRONMENT AS A MODERATOR

Sharfika Raime\textsuperscript{a} and Raemah Abdullah Hashim\textsuperscript{b}
\textsuperscript{a} UNITAR International University Malaysia
sharfika@unitar.my
\textsuperscript{b} Open University Malaysia
raemah_abdullahhashim@oum.edu.my

ABSTRACT

In the 21\textsuperscript{st} century, higher education is reported to have expanded more quickly as compared to the other education level. The rapidly growing demand for higher education has eventually created the phenomenon where numbers of universities all over the world has actively compete to be in the global rankings universities. Universities capability to be recognized as one of the top ranking global universities not only shows its higher education quality but it may also affect its competitiveness level to be able to select and attract the best students, most qualified professors and researchers especially in the effort of becoming the successful education hub. Nevertheless, Malaysian public universities’ performance as reported recently have slightly declined where none of Malaysian university manage to make it to the top 100 in both the QS Ranking and the Times Higher Education (THE) University Ranking. The major contributor to the problem is pertaining to the leadership qualities which need to be fulfilled. In the turbulent business environment, despite the fact that the job performance of university leaders are remarkably important, leadership in higher education topic nevertheless is as yet an under-researched topic but one which is clearly coming to the forefront in current higher education literature. This conceptual paper hence researches the leadership style which necessary for university leaders in governing and ensuring the worship of the university’s performance. In addition, this paper also explores the role of working environment as the moderator between relationship of the servant leadership and job performance of university’s leaders. It is essential for Higher Education Institutions in Malaysia to continuously review the performance and competence of universities leaders. This research implies to education policy makers, universities leaders, universities lecturers, human resource and students.

Keywords: servant leadership; working environment; job performance; university’s leaders
I. INTRODUCTION

In a fast developing era and century, the importance of education and the effort in producing knowledgeable society has become very profound and intense (Symaco, 2012). The role of education in general and tertiary education in particular, has now become more prominent than ever especially in the construction of knowledge economies and also in the democratic societies (Salmi, 2015; Symaco, 2012; Salmi, 2002). Having said that, the rapidly growing demand for higher education has eventually created the phenomenon where numbers of universities all over the world have actively compete to be in the global rankings universities (Rodionov, Rudskaia, & Kushneva, 2014). The result of these ranking or universities capability to be recognized as one of the top ranking global universities not only shows its higher education quality but it may also affect its competitiveness level in the education realm (Rodionov et al., 2014). The capability of universities around the world to place themselves or be recognized at the international level has become so imperative (Rodionov et al., 2014) especially in the effort of becoming the successful education hub (Hunter, 2016; Yeoh, 2016).

In order to be regarded as world-class universities, it is imperative for universities to be prestigious in research as well as be able to develop the nations in order to make them competitive in the global knowledge economy (Qi, Ying, & Nian, 2012). The world-class universities usually placed at the very highest level in the education hierarchy where they play the prime roles in creating and distributing knowledge, educating a highly skilled workforce for technological and intellectual leadership, and serving the needs of society (Altbach, 2009; Van der Wende, 2009 in Qi et al., 2012). As reported by Altbach and Balán (2007) in Qi, Ying, and Nian (2012), since the past few decade, developing a world-class universities has been the most discussed agenda by various stakeholder worldwide. Numerous numbers of universities in both developed and developing countries have been very aggressive in competing to achieve academic excellence (Qi et al., 2012).

According to Salmi (2009) in Qi et al. (2012), in assessing universities in the international rankings, the focus will be mainly on quality of education, internationalization, research output, prestige and impact (Salmi, 2009 in Qi et al., 2012). Salmi (2009) in Qi et al. (2012) again stated that the main factor that differentiate between world-class universities and regular universities is factors like highly qualified faculty, talented students, excellence in research, quality teaching with international standards, high levels of government and non-government funding, academic freedom, autonomous governance structures and well-equipped facilities for teaching, research, administration and student life. From the above elements, Salmi (2009) has concluded and proposed three (3) complementary sets of factors at play in world-class universities namely high concentration of talent, abundant resources, and favorable and autonomous leadership or governance (Qi et al., 2012). That is to say, a world-class university will be able to select and attract the best students and the most qualified professors and researchers, to possess abundant and diversified funding sources and offer a rich learning and research environment, and to provide favorable and sovereign leadership and encourage strategic vision and innovation, so as to respond effectively to the demands of a fast changing global market (Qi et al., 2012).

In addition to the levels autonomy required to enable the effective functioning of world class universities, Salmi (2009) in Sharpe (2014) also posits the need for further governance features to establish and maintain world class institutions. These features include ‘inspiring and persistent leaders’, a ‘strong strategic vision’, ‘a philosophy of success and excellence’ and a
‘culture of constant reflection, organizational learning and change’ (Salmi, 2009 in Sharpe, 2014).

II. PROBLEM STATEMENT

It is undeniable that Malaysia Education Industry specifically the Higher Education Industry has brought in promising news and achievement into the picture. It is proven by its ability to mobilize Malaysia from the 12th place to ninth in the UNESCO’s ranking (“Malaysia competing for a greater share of international students,” 2016). Nevertheless, despite of the above achievement, there is no guarantee that Malaysian Higher Education Industry is free from any problem or defect. In year 2016, it was reported that Malaysian public universities have not performing really well due to their incapability to place or position themselves not even in the list of world top 100 university, for example in the Times Higher Education (THE) University Ranking (Hunter, 2016), QS World University Rankings (“Rankings of universities in Malaysia,” 2017) and Academic Ranking of World Universities (“Academic ranking of World Universities,” 2017). Supported by the World Bank economist Dr. Frederico Gil Sander in Hunter, (2016) writing for journal of analysis and review, he agrees with Dr. Kamarudin’s comment that the poor state of Malaysia’s education system is more alarming and disturbing as compared to the country’s public debt. Despite of the ranking improvement shown by the Malaysian universities from year 2015 to 2016, according to the QS ranking profiles, Malaysian universities have portrayed of losing its significant ground in academic reputation and tend to be very weak especially in research (Hunter, 2016).

Based on Kamarudin comments and feedback with regards to the issue of the poor performance of Malaysian public universities is primarily due to the authority or leadership problem (Hunter, 2016). Recapitulation on Kamarudin comments to the issue of the poor performance of Malaysian public universities is largely due to the leadership problem (Hunter, 2016), his comments or opinion is strengthen when it is proven that the autocratic attitude pictured by most of the university leaders does not appear to be isolated and due to that, Malaysian universities begins to lose the plot. It is also reported that, instead of focusing and acting more as a facilitator for people to excel and outclass, universities leaders tend to glorify themselves with unnecessary ceremonies that make a mockery of academia and has indirectly dominating the persona of universities, solely (Hunter, 2016). This particular issue hence can be relate to the reason of why Malaysian universities have lost its reputation in the academic field as well as tend to be weak in research which eventually failed to reach the top 100 in the QS World ranking profiles (Hunter, 2016 & Malaysia Education Blueprint, 2015).

Hunter (2016) reported that a major problem is the leadership of Malaysia’s public universities today. Hunter (2016) again asserted that the ability for the Malaysia’s higher education institution, particularly universities, to be top ranked universities at the world level is highly dependent on the performance of the university leaders. Nowadays, vice chancellors of university tend to be domineering, not allowing too much room for disagreement from their own department and university members (Hunter, 2016). Another reason is also because, nowadays, staff are frequently selected upon loyalty rather than merit. This particular practice has indirectly breed a culture of gratitude within their institutions where most staffs choose not to voice out or to act against the decision of the vice chancellors (Hunter, 2016). This is also because of a strong and influential vice chancellors can browbeat the university board, and senate, getting their own way on operational issues, due to the temporary nature of university boards (Hunter, 2016).
(Hunter, 2016) has also added that university leaders are the focal person that is responsible in delivering creative solution by being dynamic as well as responsive to multiple challenges and opportunities in the undoubtedly competitive environment. It is hence crucial for leaders in higher education to possess both personal and interpersonal emotional intelligence to enable them to influence diverse group of people, good at analysing and forming strategies (Hunter, 2016).

Leadership in higher education is as yet an under-researched topic (Bryman, 2007) but one which is clearly coming to the forefront in current higher education literature (Stefani, 2015). Universities are under as much pressure as other public funded entities to change and adapt to the challenges we face in the 21st century. An important aspect of that change is to examine the conceptions of leadership and the identities of the university leaders as leaders and how or what everyone might make a stronger and more explicit contribution to developing the leaders of the future. On the one hand universities are charged with becoming more bureaucratic, more managerial with institutional leaders perhaps overly focused on performativity and revenue generation (Stefani, 2015).

As posited by Hunter (2016) and according to Malaysia Ministry of Education speech (The Challenges and Commitment of the Leaders in Higher Education Transformation, 2016), the performance of the university has a positive correlation with the university leaders performance. Hunter (2016) has also asserted and stress on that major contributor to the problem of Malaysia’s public universities performance pertains to the leadership style where new leadership style to govern the university is needed. All importantly, vision beyond self-glorification is desperately needed by public university leadership (Hunter, 2016).

Even with the numerous studies and publications on servant leadership, the knowledge or awareness pertaining to servant leadership among the Malaysian is still in the vague stage. Moreover, this type of leadership has always created a misconstrued definition as the word servant itself has brought the meaning of “leader being the servant or slave” to the organization or to their own subordinates. In a conventional sense, the words “servant” and “leader” appears to be in opposition and to combine them in one concept would seem to be paradoxical (Chin & Smith, 2006). Robert Greenleaf (1904-1990) purposefully brought them together to challenge the legacy of the power-control model of leadership which dominated leadership theory up to the 1980s. The misconception indirectly created the reluctant feeling among the leaders to practice this leadership style as leaders are afraid of losing their say in the organization or losing power and authority in giving instruction to their followers.

According to Alex Soemadji Nitisemito (2001) in Chandra and Priyono (2015) working environment, is everything that exists around the employee and may affect the employee in performing his or her duties. Agus Ahyari (2004) on the other hand defines the working environment is the environment where the employees perform tasks and work every day (Chandra & Priyono, 2015).

Despite of the many studies done on working environment, there is still a need for future studies to explore more about working environment especially on its impact towards job performance (Chandra & Priyono, 2015; Bushiri, 2014). In Bushari (2014) research, his study explored only impact of working environment on employees’ performance specifically at Institute of Finance Management. The result somehow cannot be generalized as the sample or population is very small. Due to that, researcher therefore has decided to conduct this study in other institutions
specifically public universities in Malaysia that is basically to fulfil the suggestion and gap been discovered in earlier studies.

III. RESEARCH OBJECTIVES

Thus, the aim of this conceptual paper is first, to conduct a correlational study to see type of relationship exists between the independent variables namely servant leadership and the dependent variable, university leaders’ performance. Secondly, to determine the moderating effect of working environment in the relationship between servant leadership and performance of Universities leaders. Subsequently, this study will fill the gap in both literature and research. Despite, this research also implies to education policy makers, universities leaders, universities lecturers, human resource and students.

IV. LITERATURE REVIEW

A. Servant Leadership

“Servant leadership is the natural feeling that one has of desiring to serve others. It seeks to develop individuals who ensure that others’ needs are met and advocates a group-oriented approach to decision-making as a means of strengthening institutions and society” (Greenleaf, 1977, p. 13 as mentioned in Pearson, 2013). It is perception and action in such a way that leader prefer others’ benefits to his own (Mazarei, Hoshyar, & Nourbakhsh, 2013).

Since Robert K. Greenleaf (1977) first introduced servant leadership, it is reported that there are many researchers has come out with different definition and understanding of servant leadership (Kim, Kim, & Choi, 2014). Senge (1995) for instances in Kim et al. (2014) asserted that servant leadership is the leadership that is grounded on the democratic principle that all humans' belief in dignity and value and the power of leader stems from subordinates. This allow members of organization to voluntarily participate in performing tasks within the department or team and promote their learning (Kim et al., 2014).

It is no doubt that the first person to introduce the term servant leadership was Robert K. Greenleaf in year 1977. He was also referred to as the forefather of servant leadership due to his contribution in bringing this unique leadership style to the forefront (Brewer, 2010). In Brewer (2010), Greanleaf was puzzled by the Cultural Revolution and became eager to find out the reason of why the youth of America were so disobedient. He done an in-depth research where he concluded the nucleus of the rebellious movement was due to the America’s Institutions inability to adequately serve others. In early 1970, Robert Greanleaf wrote an essay aiming poor leadership as the impetus for the rebellion of the sixties. His composition promoted old theories as a new application to leadership and he expanded on the idea of service to others and invented the phrase servant leadership (Brewer, 2010). His writings became so influential and manage to attract much interests especially among the corporate executives (Brewer, 2010).

Nevertheless, Greenleaf despite of being the first person to introduce the servant leadership theory and focal person to bring the theory to the forefront, he actually gained insight into servant leadership through his personal reading of Herman Hesse’s (1956) story about a spiritual pilgrimage, The Journey to the East (Sendjaya, 2015). The journey to the east is about a group of men on mythical journey or spiritual pilgrimage. The central character in the novel is ‘Leo’, the servant on the journey who does menial chores as well as sustains the others with his spirit and songs. Leo is a person of extraordinary presence. In the story, Hesse mentioned
that when Leo disappeared, all goes disordered and the group falls into disarray and the journey eventually abandoned. It is reported by one of the party, after some years of wandering, came to the conclusion that the journey failed as they cannot make it without the servant Leo. He later discovered that Leo was a part of the religious order that sponsored their journey. There he learns that Leo, whom he previously referred to as servant was actually the head of the Order, its guiding spirit, a great and noble leader (Greenleaf 1977, p. 7 in (Sendjaya, 2015; Denise & Job, 2012; Herbert, 2005).

Greenleaf after reading this story has concluded that the central meaning or definition of a great leader is someone experienced as a servant to others, and that simple fact defines his or her greatness. True leadership emerges from those whose primary motivation is a deep desire to help others (Greenleaf, p.4 as cited in Sendjaya (2015).

Greenleaf, until his death in year 1990 he continued writing pertaining to the themes of management, servant hood, organizations, power as well as spiritually (Herbert, 2005). His major contribution in introducing the servant leadership model has been continued by the Greenleaf Centre for Servant Leadership. He remain to be looked at as the servant leader and his contribution has been immortalized and has been carried on in current literature pertaining to Servant Leadership (Sendjaya, 2015; Brewer, 2010; Herbert, 2005).

B. Job Performance

Job performance is questionably one of the most significant dependent variables of interest to businesses, educators, the society and government. Businesses and researchers are just now reaching agreement on widespread conceptualizations and definitions of individual level job performance (Johnson & Meade, 2010). Rotundo (2002) describes that although scholars present their own conceptualization of job performance, a classic definition focuses on actions or behaviors of individuals, not outcomes or results of these behaviors and actions.

Sonnentag and Frese (2001) agree that when conceptualizing performance, one has to differentiate between an action (i.e., behavioral) aspect and an outcome aspect of performance (Campbell, 1990; Campbell, McCloy, Oppler, & Sager, 1993; Kanfer, 1990; Roe, 1999). Smith (1976) in Rotundo (2002) argues some of the issues with numerous definitions of job performance and emphasizes that an exact measure of job performance comprises the direct examination of behavior. Murphy (1989) in Rotundo (2002) on the other hand claims that job performance should be described in terms of behaviors rather than outcomes. He clarifies that outcome-based measures are not all the time useful to the organization, as workers may attempt to maximize outcomes at the cost of other things. However, for this particular research, researcher is referring performance as per description by Campbell (1990) where performance as those behaviors or actions under the control of the person, that contribute to the institutional objectives, and that can be evaluated according to the individual’s level of ability, a definition that is constant with the others (Rotundo, 2002).

According to Jex and Britt (2008), job performance is described as all kind of behaviors engaged by the employees while they are at work. The behavioral aspect is referring to what an individual does in the work situation. This is for instances behaviors such as selling personal computers, teaching basic reading skills to elementary school children, or performing heart surgery. Nevertheless, not every behavior is counted under the performance concept (Jex & Britt, 2008). Only behavior that is considered as relevant for the organizational goals is counted
under the performance concept (Jex & Britt, 2008). “Performance is what the organization hires one to do, and do well” (Campbell et al., 1993 in Sonnentag & Frese, 2001). Performance therefore cannot be defined by the action itself but by the evaluative processes instead (cf. Ilgen & Schneider, 1991; Motowidlo, Borman, & Schmit, 1997 in in Sonnentag & Frese, 2001). Moreover, only actions which can be scaled, i.e., measured, are considered to constitute performance (Campbell et al., 1993 in Sonnentag & Frese, 2001).

Besides, as cited by Campbell (1990), when describing job performance, it is crucial for everyone to distinguish or differentiate it from several related item (Jex & Britt, 2008). Campbell (1990) in Jex and Britt (2008) again added and have stressed on that job performance should be distinguished from effectiveness, productivity as well as utility. Effectiveness is defined as the evaluation of the results of an employees’ or ones’ job performance. This is a very important example to explain the distinctiveness because employee effectiveness is being determined by more than just job performance. Employee who is engaging in many form of productive behavior may still be receiving or getting poor performance rating (a measure of effectiveness). This might be because of error in performance rating or maybe simply due to he or she is not the favorite person of the person who is responsible to do the rating (Jex & Britt, 2008).

In lieu to the above argument, performance measurement hence can be described as a mean to monitors and informs “how well someone or something is doing” (Verweire & Berghe, 2004). In theoretically perspective, performance it is a broad phrase pertinent to activities, things, people, organizations and situations whereas performance management is a procedure that assists organizations to devise, execute and modify their strategy with the intention to satisfy their shareholders’ needs, requirements and expectations (Verweire & Berghe, 2004). Performance measurement is an objective-oriented procedure (Mondy, 2008 in Tinuke, 2015) and the phrase is frequently used interchangeably with performance appraisal, performance measurement or performance evaluation as cited by Mello (2006) in Tinuke (2015).

C. Working Environment

Work is a main part in life (Loscocco and Spitze, 1990 in Clarke, Kenny, & Loxley, 2015). The terms ‘working environment’ and ‘working conditions’ are used interchangeably and little agreement exists about specific definitions (Taylor, 2008 in Clarke, Kenny, & Loxley, 2015). Work environment plays an important role in an organization and most of the problems faced by employees are related to working environment (Awan & Tahir, 2015). The level of productivity can be increased through developing a conducive working environment in the organization (Awan & Tahir, 2015).

According to Alex Soemadji Nitisemito (2001) in Chandra and Priyono (2015) working environment, is everything that exists around the employee and may affect the employee in performing his or her duties. Agus Ahyari (2004) on the other hand, as cited in Chandra and Priyono (2015) defines the working environment is the environment where the employees perform tasks and work every day.

A healthy workplace environment makes good business sense and is characterized by respect that supports employee engagement and creates a high performance culture that encourages innovation and creativity (Kohun, 2002 in Samson, Waiganjo, & Koima, 2015). Organizations deemed as a positive place to work will more likely to have a competitive edge since they are in a better position to attract and retain highly skilled employees. This is a significant
consideration in the current tight labor market. A positive workplace environment is likely to result in less employee turnover, fewer cases of fraud, better safety practices, easier to attract and retain qualified employees and improved employees’ wellbeing (Cunnen, 2006 in Samson et al., 2015). In almost all high performing banks, one massage holds true above them all "People are an organization's most important asset (O'Neil, 2007 in Samson et al., 2015). Despite of the many studies done on working environment, there is still a need for future studies to explore more about working environment especially on its impact towards job performance (Chandra & Priyono, 2015; Bushiri, 2014). In Bushari (2014) research, his study explored only impact of working environment on employees’ performance specifically at Institute of Finance Management. The result somehow cannot be generalized as the sample or population is very small. Therefore, other researchers should conduct study in other companies or institutions including those located up country. Also further study should aim to explore advantages which the organizations gain from improving working environment (Bushiri, 2014).

As for study done by Chandra and Priyono (2015) for instance, the distribution of the questionnaires is carried out directly by the employees who responded by using self-assessment. They therefore have suggested in the next research assessment can be done by the leadership.

D. Servant Leadership and Job Performance

As cited by Kaul (2014), the need for leadership is continuing especially in our modern, complex societies. In today's thinking about effective, productive, and enduring organizations, we can reorganize, restructure, or reengineer our organization to be more effective but it will not be successful for very long, unless change is first built on the pre-eminence of human resources. People and process will always be more important than tasks and organizational structure in accomplishing goals and productivity (Clarke et al., 2015; Kaul, 2014). Effective systems and processes are only effective if the people who make them work are effective (Kaul, 2014).

Evidence is accumulating that servant leadership is good and believed as effective for business (Kaul, 2014). Studies by Dennis Romig in year 2001, with thousands of employees have demonstrated that when the practices of servant leadership are implemented through leadership training in a business, performance has improved by 15 - 20% and work group productivity by 20 –50%. This has also brought the meaning of an increase in profitability too (Kaul, 2014).

Management in today’s world is about management in times of rapid change. The need to develop better leadership styles has therefore becoming very important in all organizations (Sougui, Bon, & Hassan, 2015). The conceptual framework or study done by Sougui, Bon and Hassan (2015) is on leadership styles and their impact on employees’ performance. Their research is basically to see the impact of four (4) different leadership styles namely transformational leadership, servant leadership, transactional leadership, and laissez-faire leadership on employees’ performance in Telecom Engineering companies. Nevertheless, there is lack of total agreement in the reviewed literature to agree and confirm the best leadership style to be used (Sougui et al., 2015). The very few empirical researches have been conducted and published to examine the relationship between servant leadership and employees’ outcomes or performance (Sougui et al., 2015). In lieu to that, it has been suggested for researchers to conduct future study to interrogate the significant relationship between leadership style, especially the servant leadership and performance (Sougui et al., 2015).
Structural Equation Modeling (SEM) and SPSS are hence the recommended approach to be used as a tool to analyze the results in future in this research, due to the complexity of the model and the limitation of multi dimension analysis tools in quantitative research such as multiple regressions, factor analysis, and discriminant analysis (Sougui et al., 2015).

In some other research like research done by McCann et al. (2014), recited in Sougui et al., (2015) and according to the research’s finding, the servant leadership model can be considered as the most appropriate leadership style. Data analysis in their research has shown that there is a significant relationship between organization performance and servant leadership. The implementation of servant leadership style by the leader has increased the organizational performance (Sougui et al., 2015).

Jones (2012) in Hale (2016) reported, based on unstructured interviews with 21 senior managers representing 16 businesses, that servant leadership improves profits, employee trust, and satisfaction. Schwepker & Schultz (2015) showed that ethical servant leadership, supporting an ethical climate, fostered sales personnel’s customer value enhancing behavior, resulting in more businesses-to-business sales. When servant leaders are concerned about the well-being and growth of their subordinates, salespeople are likely to respond by generating positive performance. The results therefore demonstrate when sellers are managed by those with SL styles, these influences transfer to achieving higher organizational performance outcomes (Hale, 2016).

Study done by Iftikhar, Syed and Akhtar (2012) with the purpose to examine the impact of two (2) comparative leadership styles on organizational performance outcomes. Result shows that transformational leadership has more positive impact than servant leadership on organizational performance through the mediating organizational learning.

Study done by Stefánsdóttir (2013), was aimed to answer the question of “are there signs of a better organizational performance in the presence of servant leadership?” Two samples of total 232 participants from two previous studies on servant leadership in Icelandic healthcare organizations were compared and explored in relation to measures on organizational performance in the same settings. These two previous studies had measured the presence of servant leadership with the Servant Leadership Survey. Existing hospital data of the routinely measured attrition and absenteeism, that took place at the same time as the servant leadership was measured, was obtained and examined. The data was then compared to the measured score of servant leadership within its organization. The results of this present study display better organizational performance in terms of the human resource measurements, attrition and absenteeism, where servant leadership behavior is measured higher. This is in line with previous studies, but further research is needed to explore in depth this relationship (Stefánsdóttir, 2013).

Based on the inconsistence argument and earlier research findings, the first hypothesis is formulated;

H1: There is a significant relationship between servant leadership and job performance of university leaders.
E. Working Environment as Moderator

The purpose of paper written by Rizwan et al. (2013) is to present an empirical analysis of the managerial perspective and benefits of workplace environment. It is reported that a primary rationale for workplace environment is the impact on employee performance and satisfaction (Rizwan et al., 2013). A questionnaire was employed to collect data from 600 employees working in public and private sector where results revealed there is a relationship between locus of control and workplace environment. The study also confirms the moderator role of workplace environment between job length and job satisfaction. With respect to the avenue of future research, empirical studies from other countries are required to comprehend the dynamic attributes of workplace environment with relation to employee satisfaction. The workplace also plays an important role in the relation of locus of control with employee performance and job length with employee satisfaction. The concept presented in Rizwan et al. (2013) paper is basically an attempt to move towards forward stage that is prescription for the modification of workplace environment.

Charles (2015) research study was done to explore whether the effects of servant leadership on follower satisfaction with the leader can be moderated by some situational variables. For this particular research, Charles (2015) builds a model constituting of five (5) theories, namely servant leadership as the independent variable, satisfaction with the leader as the dependant variable while job demands, fairness in pay and perceived organizational support as situational variables or mostly known as moderator. Charles (2015) employs a cross-sectional survey from a combination of five questionnaires pertaining respectively to each variable under investigation to collect data from 123 employees working in five (5) small organizations in northern Haiti. Using regression analysis, the results indicate that only the first hypothesis is supported and proving that servant leadership is predicted to yield positive effects on followers’ satisfaction with their leaders. Unfortunately, none of the moderators yield significant moderating effects to the relationship between servant leadership and followers satisfaction (Charles, 2015).

Study done by Abid, Gulzar and Hussain (2015) investigated the relationship between servant leadership and organizational citizenship behavior (OCB) along with the role played by trust (mediator) in leadership and group cohesiveness (moderator). The study conducted by Abid et al. (2015) is causal, cross sectional and quantitative in nature. Sample comprised of 202 employees from three (3) public organizations i.e. banking, education and transport. The data was analyzed through descriptive statistics, simple and multiple, mediated and moderated regression tests. Research findings showed a positive association between servant leadership, trust and OCB. Findings further concluded trust as a mediator and group cohesiveness as a moderator (Abid et al., 2015). It is reported that the level of significance between servant leadership and OCB is 0.000 which indicates that servant leadership has significant impact on citizenship behavior of employees in Pakistani public sector organizations. Besides that, the findings also indicate significant influence of servant leadership on trust in leadership. Mediated regression analysis was implemented and after satisfactorily fulfilling the conditions of mediation, findings confirm that trust mediates the relation between servant leadership and OCB. Moderated regression analysis was also being conducted which eventually revealed and proved that group cohesiveness moderates the relationship of servant leadership and OCB. Abid et al. (2015) again added that the results obtained from the empirical research showed that all the four (4) factors of servant leadership, trust in leadership and group cohesiveness play their effective role in shaping OCB. OCB is considered as important in ones’ performance or organizations’ performance (Khazaei, Khalkhali, & Eslami, 2011). Supported by Khazaei
et al. (2011), they have conducted a research to reveal the relationship between OCB and high school teachers’ performance. Their research results show that there is a significant relationship between OCB and high school teachers’ performance with p<0.01 (Khazaei et al., 2011).

In order to examine the moderating impact of working environment and based on previous researched findings, the following hypothesis is put forward;

H2: Working environment moderates the relationship between servant leadership and job performance of university leaders.

V. RESEARCH FRAMEWORK

The proposed research framework for this research or study is illustrated in Figure 2.1.3. The drawn research framework which shows the relationship between the independent variables (servant leadership), the dependent variable (job performance), and moderated by working environment respectively, is actually a result from the meticulous study on literature review, followed by the theoretical gaps found in the literature that has yet been solved or patched up as well as with the identified underpinning theories. Each particular variable is being analyzed at individual level.

VI. EXPECTED OUTCOME OF THE STUDY

The study is expected to suggest the significance of servant leadership and job performance of university leaders from the standpoint of the standpoint of university leaders (H1). Besides, to identify whether working or workplace environment does bring any impact towards the performance of the leaders in Malaysian public university (H2). Leaders who focus more on serving others rather than self-glorification will be a clear determinant for positive job performance.
VII. MANAGERIAL IMPLICATION

Since the population of the survey was being done among the public universities leaders, this research will bring merits and become significant the most to the education industry leaders in creating high or better performance of their universities in order for them to response to the challenges in becoming the education hub and most preferred education location by year 2020. Even though survey is merely done among the public universities leaders, the finding of the research can assist the leaders from private universities, colleges and other tertiary institution as well in improving their university’s performance by making this research result as their benchmark, guideline and references.

It will also be beneficial to the lecturers and students in the related course, like human resource management, workforce management, leading and supervision, organizational behavior as well as talent management. As the participants of this research are mostly universities leaders, the result can later become the ground or basis to the lecturers in giving example or reference to their student on how leaders are normally perceived and what is the most important criteria for a leader to be perceived as a high performing leader.

VIII. CONCLUSION

As a conclusion, the main aim of this study is to contribute to the solving of industry problem as stated in the introduction and research problem. There are many factors that contribute in the performance of university leaders in being one of the prime contributors in overall university’s performance thus being ranked among top 100 universities in the QS Ranking. Examining the performance and unique behavior of leadership that is applicable to university leaders might allow them to perform their jobs more efficiently in the challenging working environment. It can be concluded that leaders in higher education institutions through their unique and influential leadership style (servant leadership) in responding to obstacles and challenges, is essential for meeting the requirements of a specific situation, adapt to the environment, and in some cases best fulfils the requirement of the environmental situation that prevails. This study will not solve the industry problem totally, however, it will give an insight view of required quality of leaders that is deemed important in ensuring the excellent performance of public universities in Malaysia.

REFERENCES


Sharpe, R. (2014). What is a World Class University? A Literature Review.


Stefansdóttir, K. H. (2013). *Are there signs of a better organizational performance in the presence of servant leadership?*


The Effect of Executive Management Support and Cost Accountant Competency on CMS Design Effectiveness and Its Consequences: An Empirical Research of Manufacturing Business in Thailand

Nattawut Tontiset

Mahasarakham Business School, Mahasarakham University, Thailand

ABSTRACT

The objective of this research is to examine the antecedents and consequence of cost management systems (CMS) design effectiveness of manufacturing businesses in Thailand. The effects of CMS design effectiveness on cost information quality are investigated. Moreover, the effect of cost information quality on business success is investigated. Furthermore, executive management support and cost accountant competency is assumed to become the antecedents of CMS design effectiveness. Electronics manufacturing businesses in Thailand are samples of the research. The results indicate that CMS design effectiveness has a positive significant effect on cost information quality. Moreover, cost information quality has a positive significant effect on business success. Additionally, both executive management support and cost accountant competency have a positive significant effect on CMS design effectiveness. Theoretical and managerial contributions are explicitly provided. Conclusions, suggestions and directions for future research are also presented.

Keywords: Cost management system, Cost information quality, Executive management support, Cost accountant competency, Business success

1. INTRODUCTION

Currently, industry growth, competitive environment, and advances in manufacturing technology have changed the economy and caused many businesses in manufacturing to dramatically change the way in which they operate. The changes in the business competition have profoundly affected on cost management systems (Joachim, 2009). Thus, manufacturing business also implements cost management systems (CMS) for sustainable competitive advantage and business success (Cadez and Guilding, 2008). Cost management refer to firms emphasize on cost information in order to reduce costs and improve the strategic position of a manufacturing business at the same time (Anand, 2004; Kumar and Shafabi, 2011).

Cost management provides cost information usefulness to develop strategic decision making, sustainable competitive advantage crucial to operating more efficiently in violently competitive environment (Foster and Swenson, 1997; Sulaiman et al., 2005). For example, cost management information has yielded most significant benefits useful for product decision such as pricing, value-adding or deleting, and outsourcing; helpful for product profitability analysis such as planning budgeting and making operational improvements (Lawson et al., 2009).

Nowadays, cost management literature is a lack of empirical evidence for investigating the relationship between antecedents and consequences of CMS design effectiveness (Baird et al.,
Therefore, the relationship between antecedents and consequences of CMS design effectiveness is necessary for academic researches to investigate and verify. The main objectives of this research are as follows: (1) to examine the roles of CMS design effectiveness on cost information quality, (2) to examine the effect of cost information quality on business success, and (3) to investigate the effect of internal resources and capabilities including executive management support and cost accountant competency on CMS design effectiveness.

This research generates both theoretical and managerial contributions. In the theoretical contribution, this research provides important extension on previous knowledge and relevant literature of cost management systems. Moreover, this research focuses on the dimensions of CMS design effectiveness that can enhance the quality of cost information, and business success. In managerial contribution, the findings of this research provide information for managers of manufacturing business to identify and justify key component of CMS design effectiveness in order to gain success in the more competitive environment.

2. THEORETICAL FOUNDATION

The resource-based view (RBV) of the firm is applied to explain antecedents of CMS design effectiveness and it through to business. Internal resources and capabilities in this research including both executive management support and cost accountant competency which are setting as the antecedents of CMS design effectiveness (Chenhall, 2004; Krumwiede and Suessmair, 2005; Krumwiede, 2008). The RBV emphasizes on the firm-specific resources that are the sources of competitive advantage. The more valuable resources will create sustainable competitive advantage, and bring better firm performance (Barney, 1991; Russo and Fouts, 1997, Pepeard and Ward, 2004). This research has developed the conceptual framework as shown in Figure 1 which builds on RBV and relevant literature as below.

![Figure 1. Model of Antecedents and Consequences of CMS Design Effectiveness](image)

3. LITERATURE REVIEW, HYPOTHESIS DEVELOPMENT, AND VARIABLE MEASUREMENT
3.1 CMS Design Effectiveness

For this research, CMS Design Effectiveness have three dimension including appropriate cost system design, apply advances CMS technique, and always redesign cost system (Cadez and Guilding, 2008; Guan et al., 2009; Kumar and Shafab, 2011). CMS design effectiveness refer to business that attains the goal about cost management system design in several aspects for instance, firm emphasizes on process of design cost accounting system, implementing new technology and computer-based system, and always redesign or update cost system (Nicolaou, 2000; Pizzini, 2006). Moreover, CMS design effectiveness can produce relevant and useful cost information that enhance decision making, and thereby lead to economic performance (Hayes, 1977; Ginzberge, 1980; Pizzini, 2006).

3.2 Antecedences of CMS Design Effectiveness

Internal Resources and Capabilities

Resources and capabilities are a firm’s specific and difficult to imitate resources that firm can use to conceive and implement their strategies for enhanced competitive advantage and business success (Porter, 1981, Barney, 1991). For this research, internal resources and capabilities focus on executive management support and cost accountant competency. These variables are proposed as the antecedences of CMS design effectiveness.

3.2.1 Executive Management Support

Executive management support refer to as board of director or chief executive officers emphasized on the amount of support given to developing and implementing new technique and procedure (Foster and Swenson, 1997; Krumwiede et al., 1998; Krumwiede et al., 2007). Executive management support includes items relating to the sense of ownership other department have toward successful cost management (Maelah and Ibrahim, 2007). Prior researches indicated that executive management support to be a major factor associated with CMS design effectiveness. For instance, Krumwiede et al. (1998), Chenhall (2004), Baird et al. (2007), Krumwiede (2008) also found that executive management support is a key factor affecting on CMS design effectiveness. Hence, the hypothesis is proposed as follows:

**Hypothesis 1:** The higher the executive management support is, the more likely that the firms will gain greater the CMS Design Effectiveness: a) appropriate cost system designs, b) apply advances CMS technique, and c) always redesigns cost system.

3.2.2 Cost Accountant Competency

Cost accountant competency refer to an accountant’s existing capacities that help predict competent performance in a certain job that it encompasses knowledge, abilities, skills, experience, and personality of accountant (Kennedy and Dresser, 2005; Tontiset and Jirapan, 2011). Prior researches indicated that cost accountant competency have a significant impact on CMS design effectiveness. For instance, Foster and Swenson, (1997), Chenhall (2004) found that accountant competency has a significant positive influence on successful strategic cost management. Hence, the hypothesis is proposed as follows:

**Hypothesis 2:** The higher the cost accountant competency is, the more likely that the firms will gain greater the CMS Design Effectiveness: a) appropriate cost system designs, b) apply advances CMS technique, and c) always redesigns cost system.
3.3 Consequence of CMS Design Effectiveness

3.3.1 CMS Design Effectiveness and Cost Information Quality

Cost information quality refers to firm emphasized on the attribute of quality of cost data including accurate calculation cost, and complete cost data and report (Nicolaou, 2002; Dunk, 2004). Cost information quality is implying that cost data that is error-free, and the process of calculation product cost is reliable and completeness (Lamminmaki and Drury, 2001; Dunk, 2004). More accurate and complete cost information is important for practitioners for example, it is assist managers in understanding and decision making effectiveness in order to enhanced business success (Lamminmaki and Drury, 2001; Pizzini, 2006).

**Hypothesis 3:** The higher the CMS Design Effectiveness: a) appropriate cost system design, b) apply advances CMS technique, and c) always redesign cost system is, the more likely that the firms will gain greater cost information quality.

3.3.2 Cost Information Quality and Business Success

Useful cost information that enhance decision making, and thereby lead to economic performance (Hayes, 1977; Ginzberge, 1980; Pizzini, 2006). Moreover, cost information quality is associated with business success (Pizzini, 2006; Tontiset and Ussahawanitchakit, 2009). Hence, the hypothesis is proposed as follows:

**Hypothesis 4:** The higher the cost information quality is, the more likely that the firms will gain greater business success.

4. RESEARCH METHODS

4.1 Sample and Data Collection Procedure

This research selected the electronics manufacturing businesses in Thailand as the sample because they have become increasingly important contributors to Thai economy for example; these companies constitute 35% of Thailand’s total exports (Aung et al., 2009). Brewer et al. (2003) also suggested that electronics manufacturing business will concentrate on CMS design success. Therefore, electronics manufacturing businesses in Thailand have been chosen as the population and a sample of this research. An accounting controllers or chief accountant officers are chosen as a key participant because they have an important direct effect on cost management system in each firm. Furthermore, they are well suited to provide the details of cost management and other information needed for the tests (Cadez and Guilding, 2008). Thailand exporter’s directory database is used for identifying a number of electronics manufacturing business and companies’ addresses which available from: [http://application.depthai.go.th/Center_Public/thailand_export_directory.html](http://application.depthai.go.th/Center_Public/thailand_export_directory.html). A mail survey procedure via the questionnaire was used for data collection and returned by the respondents directly to the researcher to ensure confidentiality.

All 824 electronics manufacturing firms were selected as the sample size. With regard to the questionnaire mailing, 82 questionnaires were undeliverable because some firms were no longer in business or had moved to unknown locations. Deducting the undeliverable from the list of database, the valid mailing was 742 questionnaires, from which 144 responses were received.
The questionnaires were completed and returned only 138 were usable. The effective response rate was approximately 18.59%.

4.2 Questionnaire Development and Variable Measurement

4.2.1 Questionnaire Development

In this research, a questionnaire consists of six parts. Part one asks for personal information. Part two is for general information of electronics manufacturing businesses in Thailand. Part three through five are related to evaluating each of constructs in the research model designed by a five-point Likert scales, ranging from 1 (strong disagree) to 5 (strongly agree). Part three is the measurement of CMS design effectiveness including appropriate cost system design, apply advances CMS technique, and always redesign cost system. Part four is the consequences of CMS design effectiveness including, cost information quality and business success. Part five is the antecedents of CMS design effectiveness including executive management support and cost accountant competency. Finally, an open-ended question for accounting controller’s suggestions and opinions is included in part six.

For this research, two control variables are included to account for firm characteristics that may influence the hypothesized relationships which are firm age and size. Firm age is measured by the number of years that a firm has been in operation, and firm size is measured by total assets of the firm. Business success may be influenced by firm age and firm size because it may be able to achieve superior performance (Banker et al., 2008; Tontiset and Ussahawanitchakit, 2009).

4.2.3 Reliability and Validity

Factor analysis was firstly utilized to investigate the underlying relationships of a large number of items and to determine whether they can be reduced to a smaller set of factors. The factor analyses conducted were done separately on each set of the items representing a particular scale due to limited observations. With respect to the confirmatory factor analysis (CFA), this analysis has a high potential to inflate the component loadings based on a higher rule-of-thumb at a cut-off value of 0.40 (Hair et al., 2006). All factor loadings are greater than the 0.40 cut-off and are statistically significant. The reliability of the measurements was evaluated by Crobach alpha coefficients at 0.81-0.97 which are greater than 0.70 (Hair et al., 2006). The scales of all measures appear to produce internally consistent results. Table 1 presents the results both factor loadings and Crobach alpha for multiple-item scales. Therefore, this research expresses an accepted validity and reliability as shown in Table 1 below.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Factor Loadings</th>
<th>Cronbach Alpha</th>
</tr>
</thead>
</table>

Table 1. Results of Factor Loadings and Cronbach Alpha Coefficients
4.2.4 Statistic Test

The relationship among control variable, antecedents and consequences of CMS design effectiveness was initially assessed using regression analysis (Frazier et al., 2004). Thus, the models of the aforementioned relationships are shown as follows:

Equation 1: \[ ACSD = \alpha_1 + \beta_1 EMS + \beta_2 CAC + \beta_3 FS + \beta_4 FA + \epsilon \]
Equation 2: \[ AACMS = \alpha_2 + \beta_5 EMS + \beta_6 CAC + \beta_7 FS + \beta_8 FA + \epsilon \]
Equation 3: \[ ARCS = \alpha_3 + \beta_9 EMS + \beta_10 CAC + \beta_11 FS + \beta_12 FA + \epsilon \]
Equation 4: \[ CIQ = \alpha_4 + \beta_13 ACSD + \beta_14 AACMS + \beta_15 ARCS + \beta_16 FS + \beta_17 FA + \epsilon \]
Equation 5: \[ BS = \alpha_5 + \beta_18 CIQ + \beta_19 FS + \beta_20 FA + \epsilon \]

5. RESULTS AND DISCUSSION

The descriptive statistics and correlation matrix for all variables are as shown in Table 2. Checking for significant of the relationships between each independent variable is tested by variance inflation factor (VIF) technique. The results show that VIFs ranging from 1.03 to 5.62, well below the cut-off value of 10 recommended by Neter et al. 1985, indicating that the independent variables are not correlated with each other. Thus, there are no substantial multicollinearity problems encountered in this research.

Table 2. Descriptive Statistics and Correlation Matrix

<table>
<thead>
<tr>
<th>Variables</th>
<th>BS</th>
<th>ACSD</th>
<th>AACMS</th>
<th>ARCS</th>
<th>CIQ</th>
<th>EMS</th>
<th>CAC</th>
<th>FS</th>
<th>FA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>3.62</td>
<td>4.12</td>
<td>3.97</td>
<td>4.00</td>
<td>3.80</td>
<td>3.99</td>
<td>3.81</td>
<td>3.09</td>
<td>3.87</td>
</tr>
<tr>
<td>SD</td>
<td>0.54</td>
<td>0.67</td>
<td>0.69</td>
<td>0.68</td>
<td>0.63</td>
<td>0.74</td>
<td>0.56</td>
<td>0.45</td>
<td>0.36</td>
</tr>
<tr>
<td>BS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACSD</td>
<td>.607**</td>
<td>.511**</td>
<td>.755**</td>
<td>.730**</td>
<td>.649**</td>
<td>.646**</td>
<td>.732**</td>
<td>.367**</td>
<td>.571**</td>
</tr>
<tr>
<td>AACM</td>
<td></td>
<td>.511**</td>
<td>.800**</td>
<td>.871**</td>
<td>.649**</td>
<td>.636**</td>
<td>.570**</td>
<td>.390**</td>
<td>.147**</td>
</tr>
<tr>
<td>ARCS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIQ</td>
<td>.672**</td>
<td>.649**</td>
<td>.730**</td>
<td>.687**</td>
<td>.550**</td>
<td>.577**</td>
<td>.590**</td>
<td>.147**</td>
<td>.457**</td>
</tr>
<tr>
<td>EMS</td>
<td>.646**</td>
<td>.636**</td>
<td>.550**</td>
<td>.588**</td>
<td>.577**</td>
<td>.570**</td>
<td>.590**</td>
<td>.390**</td>
<td>.339**</td>
</tr>
<tr>
<td>CAC</td>
<td>.638**</td>
<td>.732**</td>
<td>.570**</td>
<td>.495**</td>
<td>.457**</td>
<td>.390**</td>
<td>.147**</td>
<td>.147**</td>
<td>.210**</td>
</tr>
<tr>
<td>FS</td>
<td>-.339**</td>
<td>-.044</td>
<td>.061</td>
<td>-.150</td>
<td>.058</td>
<td>-.035</td>
<td>.210**</td>
<td>.210**</td>
<td>.210**</td>
</tr>
<tr>
<td>FA</td>
<td>-.174*</td>
<td>-.367**</td>
<td>-.390**</td>
<td>-.339**</td>
<td>-.131</td>
<td>-.198*</td>
<td>-.224*</td>
<td>-.224*</td>
<td>-.224*</td>
</tr>
</tbody>
</table>

**Correlation is significant at the 0.01 level (2-tailed),
* Correlation is significant at the 0.05 level (2-tailed)

Table 3. Results of OLS Regression Analysis

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Dependent variables</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ACSD</td>
</tr>
<tr>
<td>BS</td>
<td></td>
</tr>
<tr>
<td>ACSD</td>
<td></td>
</tr>
<tr>
<td>AACMS</td>
<td></td>
</tr>
<tr>
<td>ARCS</td>
<td></td>
</tr>
</tbody>
</table>
Table 3 presents the results of OLS regression analysis of the antecedents of CMS design effectiveness (executive management support: hypotheses 1a-c) and (cost accountant competency: hypotheses 2a-c). The results show that executive management support have significant positive effects on all dimension of CMS design effectiveness including, appropriate cost system design (H1a, $b_1 = 0.301, p < 0.01$), apply advance CMS technique (H1b, $b_5 = 0.299, p < 0.01$) and always redesign cost system (H1c, $b_9 = 0.329, p < 0.01$). The results indicate that executive management support is a major supporting for CMS design effectiveness in term of appropriate cost system design, apply advance CMS technique and always redesign cost system. Moreover, the result consistent with executive management support can support CMS design effectiveness (Krumwiede et al., 1998; Chenhall, 2004; Baird et al.,2007; Krumwiede,2008). Thus, Hypotheses 1a-c is supported.

Moreover, Table 3 also show that cost accountant competency have significant positive effects on all dimension of CMS design effectiveness including, appropriate cost system design (H2a, $b_2 = 0.629, p < 0.01$), apply advance CMS technique (H2b, $b_6 = 0.431, p < 0.01$) and always redesign cost system (H2c, $b_{10} = 0.448, p < 0.01$). The results indicate that cost accountant competency is a key factor for supporting CMS design effectiveness in term of appropriate cost system design, apply advance CMS technique, and always redesign cost system. Moreover, the result consistent with cost accountant competency can support CMS design effectiveness (Foster and Swenson, 1997; Chenhall, 2004). Thus, Hypotheses 2a-c is supported.

Table 4. Results of OLS Regression Analysis

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>CIQ</th>
<th>BS</th>
<th>Adjusted R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appropriate Cost System Design (ACSD)</td>
<td><strong>1.94</strong></td>
<td>(.087)</td>
<td></td>
</tr>
<tr>
<td>Apply Advances CMS Technique (AACMST)</td>
<td><strong>4.69</strong>*</td>
<td>(.114)</td>
<td></td>
</tr>
<tr>
<td>Always Redesign Cost System (ARCS)</td>
<td>.144</td>
<td>(.105)</td>
<td></td>
</tr>
<tr>
<td>Cost Information Quality (CIQ)</td>
<td><strong>5.43</strong>*</td>
<td>(.053)</td>
<td></td>
</tr>
<tr>
<td>Firm Size (FS)</td>
<td><strong>.229</strong></td>
<td>(.077)</td>
<td></td>
</tr>
<tr>
<td>Firm Age (FA)</td>
<td><strong>.406</strong>*</td>
<td>(.106)</td>
<td></td>
</tr>
</tbody>
</table>

*P < 0.10, **P < 0.05, ***P < 0.01, *Beta coefficients with standard errors in parenthesis

In Table 4, the results show that the consequence of CMS design effectiveness including, appropriate cost system design, apply advance CMS technique and always redesign cost system. The results reveal that CMS design effectiveness in dimension of appropriate cost system design
(H3a, $b_{13} = 0.194, p < 0.05$), and apply advance CMS technique (H3b, $b_{15} = 0.469, p < 0.01$) have significant effect on cost information quality. However, CMS design effectiveness in dimension of always redesign cost system (H3c, $b_{15} = 0.144, p > 0.05$) have insignificant effect on cost information quality. Thus, Hypotheses 3a and 3b is supported but Hypothesis 3c is not supported. Finally, in Table 4 also reveal that cost information quality (H4, $b_{18} = 0.543, p < 0.01$) have significant effect on business success. Thus, Hypothesis 4 is supported.

6. IMPLICATIONS OF RESEARCH

6.1 Theoretical Implications

The objective of this research is to gain a vivid understanding of the relationship between CMS design effectiveness and its consequence. This research provides important expanding on previous knowledge and relevant literature of cost management systems. It applies the RBV of the firm and relevance literature, is used to explain both the antecedents and consequences of CMS design effectiveness. Moreover, this research focuses on the dimensions of CMS design effectiveness including appropriate cost system design, apply advances CMS technique, and always redesign cost system that can enhance cost information quality and business success. In addition, this research integrates the internal resources and capabilities including executive management support and cost accountant competency which effect on CMS design effectiveness.

6.2 Managerial Implications

Another implication now exists for chief executive officer and manager of manufacturing firms. This research helps managers identify and justify key components of CMS design effectiveness that may help business success in the long term. Managers should effectively manage and utilize the components of CMS design effectiveness to sustain and succeed in long term. In the challenge of cost management system implementation, managers should implement advanced cost accounting technique and a computer-based system that provide the important cost information for decision making. They should also plan to expand their cost management implementation to continuously to maintain and increase the levels of competitive advantage, and business success.

7. LIMITATIONS AND SUGGESTION FOR FUTURE RESEARCH

According to the results, constructs of this research are developed and measured by using only prior research. Thus, the future research should explore the scale by different approaches such as in-depth interview or focus group, in order to fuller understanding of construct. Moreover, this research uses only questionnaire for collecting data. Since then, future research may be developing longitudinal data and/or mixed methods designed to observe both antecedents and consequence of CMS design effectiveness. Finally, the results of this research are derived from one sample industry in Thailand. Furthermore, future research may be collecting data from a larger population in another manufacturing industry and/or a comparative population in order to widen the perspective and generalization.

8. CONCLUSION

Nowadays, CMS literature is a lack of empirical evidence for investigating the relationship between antecedents and consequences of CMS design effectiveness. Thus, this research
investigates the effect of internal resources and capabilities including executive management support and cost accountant competency on CMS design effectiveness. Moreover, the effect of CMS design effectiveness on cost information quality is also examined. Finally, the effect of cost information quality on business success is also examined. Additionally, this research also brings the concept of RBV of the firm to help clearly understand this relationship. The electronics manufacturing businesses in Thailand were selected as a sample and data collected from accounting controller by using a questionnaire as an instrument. Finally, 138 mail questionnaires were usable. The results reveal that both executive management support and cost accountant competency have a significant positive influence on CMS design effectiveness. Moreover, CMS design effectiveness has a significant positive influence on cost information quality. Furthermore, cost information quality has a significant positive influence on business success. Additionally, this research also provides both theoretical and managerial contributions to expanding on previous knowledge and literature in cost management systems.

9. REFERENCES


Author Profiles:

Asst. Prof. Dr. Nattawut Tontiset earned his Ph.D. (Accounting) from Mahasarakham University, Thailand in 2010. Currently, he is an accounting lecture at Mahasarakham Business School, Mahasarakham University, Thailand.

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FINANCIAL PERFORMANCE AND EARNINGS MANAGEMENT OF
SOCIALLY RESPONSIBLE INVESTING FUND FIRMS

Wan Suk Ko,
School of Global Business and Technology, Hankuk University of Foreign Studies,
Oedae-ro 81, Mohyun-myun, Cheoin-gu, Yong-In Si, 17035, Korea (South)
wsko7@naver.com

ABSTRACT
While corporate social responsibility (CSR) activities are socially desirable, CSR firms may or may not perform financially well, depending on whether they can convey good corporate image to their customers and financial community and enhance their revenue enough to cover the expenses resulting from CSR activities. There have been many studies looking into this issue, with their conclusions being inconclusive where CSR firms are variously defined. This study examines the financial performance of CSR firms whose stocks are selected into the SRI funds. An SRI fund is the one that screens the companies whose stock investors buy on a list of socially-responsible criteria. The study will examine empirically various financial characteristics of SRI fund firms, the firms whose stocks are included in SRI fund, and their financial performance including capital market measure. If SRI fund firms are found to show good financial performance, a next question arises: Will the managers not try to have their company stock enlisted in SRI funds by earnings management when corporate earnings is an important factor for selection as an SRI firm? The study also empirically examines to answer this question, based on a sample of Korean firms, whose stocks were included in SRI funds (SRI funds were launched in the Korean market, mainly from the year).

Keyword: Corporate Social Responsibility, Social Responsibility Investing, Earnings Management

1. INTRODUCTION
Professional corporate management has been enlarging its investment according to sustainable and responsible investing (SRI) strategies. US SIF Foundation (2012) asserted that the individuals, institutions, investment companies, money managers and financial institutions that practice SRI seek to achieve long-term competitive financial returns together with positive societal impact. SRI strategies can be applied across asset classes to promote stronger corporate social responsibility, build long-term value for companies and their stakeholders, and foster businesses, generate jobs or introduce products that will yield community and environmental benefits.”

In this financial environment, CSR and SRI have played important role and thus, the corporations have expended enormous resources in CSR activities. Naturally, the investors in CSR firms have become interested in the firms’ financial performance and the following issues arose. Are CSR activities worthwhile to the shareholders in terms of their long term wealth increase? Would SRI
factors offer investors performance advantages, especially potential long-term advantages? To answer this question many studies have been done for more than thirty years, but their findings have been mixed and ambiguous.

Accordingly, this study will examine empirically various financial characteristics of SRI fund firms and their financial performance including capital market measure. If SRI fund firms are found to show good financial performance, a next question arises: Will the managers not try to have their company stock enlisted in SRI funds by earnings management when the corporate earnings are an important factor for selection as an SRI firm? This study will also examine to find an evidence related to this question.

The remainder of this research is constructed as follows. Part 2 discusses the literature review background and the research hypotheses. Part 3 describes the model of the research and the criteria and procedure of the sample selection. Part 4 presents the empirical results of this study, and Part 5 concludes with the summary and limitations of this study.

### 2. LITERATURE REVIEW AND HYPOTHESES

Due to the recent movement toward mutual benefits anticipated among companies and society, managers and investors are increasingly aware of the importance of social responsibility. Following this movement, prior studies on CSR such as Carroll (1999), Dhaliwal et al. (2012), Magness (2006), and Orij (2010) discuss the theoretical background of ethical behaviors of firms. Firms’ decisions over ethical behavior such as monetary donations are heavily influenced by the interests or overall philanthropic view of their stakeholders, namely, stockholders, customers, employees, governments, local communities and managers (Bentham, 1996, Carroll, 1999). Lev et al. (2010) argue that firms may conduct CSR activities to develop their reputations because they believe a good reputation leads to increased sales.

Over the last three decades in OECD countries, increasingly more firms have been certified as Socially Responsible (CSR). This leads to research attempting to establish a link between CSR certification/activities and the financial performance of firms.

Luther et al. (1992) investigate U.K. ethical unit trusts and find weak evidence of out-performance of ethical funds over their conventional counterparts on a risk-adjusted basis. However, they consider their results as limited on the basis of being too varied, as well as too closely correlated with low yields to allow for any relation between returns and ethical effects in SRI portfolios. They also find a small company bias and low dividend yields for their screened portfolios. Hamilton et al. (1993), comparing the returns between 17 SRI funds and 170 conventional investment vehicles established before 1985, and also between 15 SRI funds and 150 conventional investment vehicles established since 1986, do not find any significant difference between both groups.

Waddock and Graves (1997) construct a CSP (Corporate Social Performance) index (as proposed by Ullman (1985), based on the eight CSP attributes rated across the entire S&P 500 by an independent rating service firm, KLD (Kinder, Lydenberg, Domini). For a sample of 467 firms, they use this CSP index and profitability measure (ROA, ROE & ROS) as dependent and independent variable alternately, controlling for size (total sales, total assets, number of employees), debt level, and industry, and find not only that changes in corporate social
performance (hereafter, CSP) positively influences financial performance, but also the opposite, that changes in financial performance positively influence CSP, which supports the slack resource theory: Better financial performance potentially leads to more slack resources available for CSP activities. Derwall et al. (2005) examine environmentally friendly and environmentally non-friendly stock portfolios and find significant outperformance by the former portfolio. Derwall et al. (2011) argue that the different investment styles of investors might be the reason for the variety of results.

Poddi (2009) considers that such ambiguity came mainly from the static nature of the analyses and from whether performance is affected more by certification costs or by increasing sales due to its effect on reputation, and used a CSR index that intersects two of the three main international indices (Domini 400 Social Index, Dow Jones Sustainability World Index, FTSE4Good Index) so as to find that CSR firms have better long-run performance, due to higher sales and profits arising from reputation effect, reduced long run costs and increased social responsible demand, outweighing some initial costs. Dhaliwal et al. (2012) reports that CSR disclosures affect analysts’ behavior in a more favorable way.

Contrary to the above evidences for a positive link between CSR certification and the performance of firms, the following studies have reported a negative link. Gregory et al. (1997) find that ethical funds tend to underperform their benchmarks, employing a matched pair and a cross-sectional analysis. Mallin et al. (1995) compare the market performance between ethical trust funds (namely, SRI trust funds) to non-ethical funds, and find that ethical trust funds outperform non-ethical trust funds, but that both trust fund groups perform worse than the market. Statman (2000) finds that average return on SRI mutual funds is a higher, but not significantly, than conventional mutual funds.

Bauer et al. (2005) examine German, UK, and US ethical mutual funds. They find no evidence of significant differences in risk-adjusted returns between ethical and conventional funds for the period between 1990 and 2001, and that ethical funds seem to be less exposed to market variability than conventional funds. Bauer et al. (2006) extend their 2005 study to the Australian market using the same methods. They investigate the performance of 25 ethical mutual funds compared to the Worldscope Australian Index, and find the same performance for the period between 1996 and 2003. Kreander et al. (2005) study 60 European funds, 30 ethical and 30 non-ethical over the period from 1995 to 2001, using a matched pair analysis (on the basis of age, size, and investment universe), and find no signs of significant outperformance of the ethical funds over the non-ethical funds. They use log returns to reduce the effect of skewness in the return distribution.

As seen above, the results of the studies in OECD countries have been ambiguous and not shown any common relationship. However, most studies in Korea in this area have revealed that CSR activities or CSR firms lead to higher financial performance. Kook et al. (2011) find that CSR activities improve the corporate values in Korea’s market. Kim (2009), investigating the characteristics of the firms that participate in CSR activities, shows that CSR firms tend to have longer age, higher growth potential, and better corporate governance, and that CSR activities are positively related to the firm value. Based on this, he suggested that firms can derive a long-term benefit through CSR activities although such activities are cost factors in the short run.
Shin (2011) analyzes empirically the effects of CSR expenditure (contribution expenditure ratio and KEJII (Korea Economic Justice Institute index)) on market value of firms listed on Korea Exchange, and showed that the CSR expenditure has nonlinear and inverted U shaped effects on firm value since CSR expenditure has a positive and significant effect on firm value as the investment on intangible assets (reputation), whereas it has a negative and significant effect on firm value as the overinvestment by management discretion and the excessive perquisite consumption for maximizing manager's private utility. KEJII has a positive and significant effect on firm value. CSR expenditure has positive and significant effects on large firms as well as small and medium firms firm.

Yoon et al. (2012), for a sample of seventy one SRI fund corporations in Korea for the period of early 2003 through late 2010, find that SRI corporations perform relatively better financially after being included into SRI funds than before being included: the inclusion into SRI funds has significant positive effects on each of the two profitability measures such as operating profit margin and return on equity, and on each of the two growth measures such as revenue growth and operating profit growth. They also find that a control variable, the size of SRI funds has significant positive effects on those four financial measures, and that another control variable, the number of employees has also significant positive effects on the profitability and growth measures except for no significant effects on the return on equity measure. They interpret this result as SRI entities becoming superior investment targets by both institutional and individual investors. Ko and Kim (2015) empirically find that SRI fund firms performed better in the capital market (Korea Securities Market) for the period from 2007 to 2010.

However, fewer studies have examined the managerial choices and the signals on financial performances with CSR activities, particularly the role of CSR on earnings quality. Jones (1995) presented that firms demonstrate their philanthropic and ethical behavior when they run their business with integrity. Such firms are more likely to participate in CSR activities and to provide reliable financial statements. This finding seems to be consistent with Paine (1994), who suggested that ethical and philanthropic managers tend to be actively involved in CSR as an exemplary conduct. Furthermore, these firms are encouraged to display more ethical conduct to prevent behaviors that may damage the firm’s value. If this is the case, the managers would provide more accurate and reliable financial reports, which disclose the high quality earnings.

However, Hobson and Kachelmeier (2005) suggested that managers may have a motive to misuse CSR disclosures, to compensate for poor quality of earnings. Prior et al. (2008) examined whether firms strategically use CSR in financial reports. Using 593 sample firms, they found a positive relationship between the discretionary accruals computed based on the performance-matched model (Kothari et al., 2005) and a CSR score computed based on non-financial qualitative factors. Kim et al. (2012) found a negative relationship between earnings management and CSR scores in the U.S., by using the CSR index. However, Chih et al. (2008) found inconsistent evidence regarding the earnings management of CSR firms.

Unlike the prior studies, Pyo et al. (2013) employed donation expenditures and the voluntary filing of CSR reports with GRI, to test whether CSR activities are driven by the integrity or opportunistic motivation. They examined the association between earnings quality and two voluntary CSR activities, namely the level of corporate donations (a direct measure of managers’ willingness to conduct CSR activities) (Card et al., 2010) and/or the voluntary issuance of CSR reports filed with
the Global Reporting Initiative (GRI) as proxies for CSR activities (a direct signal of managers’ willingness to conduct CSR activities) (Dhaliwal et al., 2011). They provided evidence that the firms active in CSR are likely to report earnings with a higher quality. Specifically, after controlling for firm-specific factors, the firms with more corporate donations have lower discretionary accruals and greater accounting conservatism. Furthermore, this negative relationship between donation and discretionary accruals is more pronounced, when firms voluntarily issue CSR reports. Ko et al. (2015) find that SRI firms showed less earnings management (higher earnings quality) compared to the non-SRI fund firms.

Consequently, CSR qualification seems to have an unclear net effect on earnings quality. Therefore, conducting additional empirical tests would be of great interest to shareholders and policy makers. The above discussions lead to the second hypothesis in null form, as follows:

**H:** SRI firms do not more engage in earnings management (namely, reporting low quality of earnings) than non-SRI firms.

### 3. RESEARCH MODEL AND SAMPLE CONSTRUCTION

#### 3.1 Research Model

**The Hypothesis Testing Model**

The following model, equations (1) is established to test the hypothesis. The primary independent variable representing whether a firm is an SRI fund firm is measured by a dummy variable, *SRID* variable. As a proxy for earnings management (or quality of earnings), the study uses discretionary accruals (*DAs*) in the modified-Jones DAs (*DAMJ*) model as suggested by Dechow et al. (1995), since DAs are subjected to estimation errors. DAs will be computed by using the equations (2) and (3) below.

\[
DA_{it} = \alpha_0 + \beta_1 SRID_{it} + \beta_2 ROE_{it} + \beta_3 OCFS_{it} + \beta_4 SIZE_{it} + \beta_5 GRS_{it} + \beta_6 LEV_{it} + \beta_7 BIG_{it} + \beta_8 MSH_{it} + \beta_9 FSH_{it} + \sum_{t=1}^{4} \beta_{9+t} YD_{it} + \epsilon_{it}
\]

where

- \(DA_{it}\): Discretionary accruals of firm i in year t;
- \(SRID_{it}\): 1 if firm i is an SRI fund firm in year t, and 0 otherwise;
- \(ROE_{it}\): Return on equity (net income/average equity) of firm i in year t;
- \(OCFS_{it}\): Net operating cash flows/beginning total assets of firm i in year t;
- \(SIZE_{it}\): Natural log of total assets of firm i at the end of year t;
- \(GRS_{it}\): Sales growth rate of firm i in year t;
- \(LEV_{it}\): Leverage ratio (total liabilities/total assets) of firm i at the end of year t;
- \(BIG_{it}\): 1 if Big 4 auditor audited firm i’s financial statements for year t, and 0 if otherwise;
- \(MSH_{it}\): Share of major stockholders and their related party of firm i in year t;
FSH\textsubscript{it} : Share of foreign stockholders of firm i in year t; 
YD\textsubscript{it} : Dummy variable for year control, 0 or 1;

The Measurement of Discretionary Accruals for Earnings Management Level

The dependent variable DA of the above equation is total accruals less non-discretionary accruals. Therefore, it is first computed by estimating discretionary accruals (\(\varepsilon\textsubscript{t}\)) using equation (2). This equation is based on Modified Jones Model, which was suggested by Dechow et. al. (1995).

\[
TA\textsubscript{t}/ASSET\textsubscript{t-1} = \frac{\alpha_0}{ASSET\textsubscript{t-1}} + \beta_1 (\Delta SALES\textsubscript{t} - \Delta AR\textsubscript{t})/ASSET\textsubscript{t-1} + \beta_2 PPE\textsubscript{t}/ASSET\textsubscript{t-1} + \varepsilon\textsubscript{t} \quad (2)
\]

where

- \(TA\textsubscript{t}\): Total accruals/(net income - net operating cash flows) in year t;
- \(ASSET\textsubscript{t-1}\): Total assets at the beginning of year t;
- \(\Delta SALES\textsubscript{t}\): Sales increase in year t (= \(SALES\textsubscript{t} - SALES\textsubscript{t-1}\));
- \(\Delta AR\textsubscript{t}\): Accounts receivable change in year t (= \(AR\textsubscript{t} - AR\textsubscript{t-1}\));
- \(PPE\textsubscript{t}\): Net depreciable property, plant, and equipment (depreciable tangible assets) in year t;
- \(\varepsilon\textsubscript{t}\): Error term (Proxy for discretionary accrual)

Kothari et al (2005) examined the specification and power of tests, based on performance-matched discretionary accruals, and made comparisons with test statistics by using traditional discretionary accrual measures (e.g., Jones and modified-Jones models). They suggested that the performance-matched discretionary accrual measures would enhance the reliability of inferences from earnings management (quality) research, when the hypothesis being tested does not imply that earnings management (quality) will vary with performance or where the control firms are not expected to have engaged in earnings management (quality). This suggested model is as follows, where the performance matching based on ROA (return on assets) controls for the effect of performance on measured discretionary accruals.

\[
TA\textsubscript{t}/ASSET\textsubscript{t-1} = \frac{\alpha_0}{ASSET\textsubscript{t-1}} + \alpha_1 (\Delta SALES\textsubscript{t} - \Delta AR\textsubscript{t})/ASSET\textsubscript{t-1} + \alpha_2 PPE\textsubscript{t}/ASSET\textsubscript{t-1} + \alpha_3 ROA\textsubscript{t} + \varepsilon\textsubscript{t} \quad (3)
\]

where \(ROA\textsubscript{t}\): Return on asset, which is net income divided by \(ASSET\textsubscript{t-1}\) in year t.

Based on the prior research, several control variables are added in equation (1). It is expected that \(ROE\) and \(GRS\) are positively related to discretionary accruals. Ahmed et al. (2002) reported a negative relationship between accruals and \(GRW\) or \(ROA\). \(SIZE\) may reflect the effects from the omitted variables on earnings quality (Becker et al. 1998). \(LEV\) may capture the managers’ opportunistic behaviors pertaining to earnings quality, as managers may manage earnings to avoid violations of debt covenants (Defond and Jiambalvo, 1994). As in Defond and Subramanyam (1998), auditors who are concerned with litigation risk may decrease discretionary accruals. \(BIG\) is expected to increase an auditor’s litigation exposure, and therefore, it is negatively related to discretionary accruals.
According to the prior studies (DeFond and Jiambalvo, 1993, 1994; Francis et al., 1999; Reynolds and Francis, 2001; Simunic, 1980), it is expected that firms with a smaller size, greater leverage, lower growth rate, and higher returns are likely to manage earnings through discretionary accruals. Firms with non-Big 4 auditors may engage in earnings management (Palmrose, 1988; DeFond and Subramanyam, 1998; Reynolds and Francis, 2001; Francis, 2004).

3.2 Sample Construction

The sample data for this study was acquired from a well-known Korean fund valuation firm (KG Zeroin) that specializes in analyzing funds including SRI funds. SRI funds were launched very lately, mainly from year 2007 in Korea. The sample data was collected from the firms whose common stocks were listed in Korea Securities Market and included in SRI funds for a six year period from 2010 to 2015. The sample was further screened to satisfy the following criteria.

1) The firm should be listed in KOSPI (Korea Securities Market), not in KOSDAQ.
2) The firm does not belong to the financial industry.
3) The firm’s financial statement data are available from TS-2000, a database of Korea Listed Companies Association.

The first criterion is employed to enhance equivalence of the sample because the two Korea Exchange markets are generally quite different in terms of business and financial risk, firm size, industry, and other characteristics of their membership companies. The second criterion is necessary because the operating characteristics and financial statement items of financial companies are very different from non-financial companies. The high leverage that is normal for financial companies probably will not have the same meaning as for non-financial companies, where high leverage tends to signal financial distress.

The total number of firms included in an SRI fund was initially 695 for six years from the year 2010 to 2015. As seen in Table 1, about 11% of these firms, 79 firms were excluded from the sample according to the selection criteria. The excluded firms comprised four KOSDAQ-listed, two KOSPI-unlisted, six KOSPI-delisted firms, three firms whose preferred stocks were included in the fund, 62 in the financial industry; two merged firms. Thus, 616 SRI fund firm-years were selected as a sample for the period of six years. Such firms were more concentrated in years 2011, 2012 and 2013.

Table 1: Sample Selection Procedure

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total SRI Fund Firms</td>
<td>88</td>
<td>142</td>
<td>161</td>
<td>163</td>
<td>76</td>
<td>65</td>
<td>695</td>
</tr>
<tr>
<td>Less:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KOSDAQ-listed</td>
<td>1</td>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>KOSPI-unlisted</td>
<td></td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>KOSPI-delisted</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Preferred Stock</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Financial industry</td>
<td>10</td>
<td>10</td>
<td>9</td>
<td>16</td>
<td>9</td>
<td>8</td>
<td>62</td>
</tr>
</tbody>
</table>
These 616 SRI fund firm-years were from 318 different firms that were included in the SRI fund at least once for the six year period. For these 318 SRI fund firms, the financial data necessary for the models of the study were obtained for the six years from 2010. However, out of 1,908 firm-years in total, 138 (7.3%) firm-years contained missing financial data, and produced the final sample of 1,770 firm-years as seen in Table 2. Among these, 525 firm-years were SRI fund firms, and the remaining 1,245 firm-years were treated as the sample non-SRI fund firm-years, which are the total of the firms not included in the SRI fund in each year during the six year period. The number of SRI firms is the highest with 132 in 2013 and the lowest with 54 in 2013.

### Table 2: Sample Firm Distribution by Year

<table>
<thead>
<tr>
<th>Year</th>
<th>Total SRI Fund Firms</th>
<th>Non-SRI fund firms with complete data</th>
<th>Total Sample (with complete data)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>SRI fund firms with missing data</td>
<td>SRI fund firms with complete data</td>
</tr>
<tr>
<td>2010</td>
<td>73</td>
<td>7</td>
<td>66</td>
</tr>
<tr>
<td>2011</td>
<td>120</td>
<td>7</td>
<td>113</td>
</tr>
<tr>
<td>2012</td>
<td>142</td>
<td>10</td>
<td>132</td>
</tr>
<tr>
<td>2013</td>
<td>145</td>
<td>6</td>
<td>139</td>
</tr>
<tr>
<td>2014</td>
<td>63</td>
<td>1</td>
<td>62</td>
</tr>
<tr>
<td>2015</td>
<td>54</td>
<td>0</td>
<td>54</td>
</tr>
<tr>
<td>Total</td>
<td>597</td>
<td>31</td>
<td>566</td>
</tr>
</tbody>
</table>

### 4. EMPIRICAL RESULTS

#### 4.1 Descriptive Statistics

The descriptive statistics such as mean, standard deviation, minimum, and maximum values for each of the dependent, independent, and control variables used in the model are shown in Table 3. The mean value of a dependent variable, DA-MJ (DA estimated by Modified Jones model), appears about four times as much as another dependent variable, DA-KO (DA estimated by Kothari model). The mean value of the independent variable, SRID, is 0.2966. This indicates that SRI firm-years are almost 30% of the entire sample. It is also noted that the mean value of the control variable, BIG, is 0.7446. This implies that about three quarters of the sample firms are being audited by Big 4 auditors. It is also interesting to see that averages (or median values) of
ROE and OCFS are 7.5% (8.8%) and 7.6% (6.7%), respectively. Their minimum values are less than negative 400% of the average equity amount, and 50% of the asset value), respectively, and the maximum values are about 260% of the average equity and 133% of the asset, respectively.

**Table 3: Descriptive Statistics**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard Dev.</th>
<th>Median</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>DA-MJ</td>
<td>0.0015</td>
<td>0.0022</td>
<td>0.0027</td>
<td>-0.7572</td>
<td>0.7838</td>
</tr>
<tr>
<td>DA-KO</td>
<td>0.0000</td>
<td>0.0021</td>
<td>0.0021</td>
<td>-0.9407</td>
<td>0.6081</td>
</tr>
<tr>
<td>SRID</td>
<td>0.2966</td>
<td>0.0109</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>ROE</td>
<td>7.46%</td>
<td>0.68%</td>
<td>8.80%</td>
<td>-407.35%</td>
<td>260.90%</td>
</tr>
<tr>
<td>OCFS</td>
<td>7.55%</td>
<td>0.25%</td>
<td>6.71%</td>
<td>-54.35%</td>
<td>132.70%</td>
</tr>
<tr>
<td>SIZE</td>
<td>19.5052</td>
<td>0.0444</td>
<td>19.2240</td>
<td>15.4637</td>
<td>25.5501</td>
</tr>
<tr>
<td>GRS</td>
<td>15.4%</td>
<td>1.5%</td>
<td>6.8%</td>
<td>-98.2%</td>
<td>1531.1%</td>
</tr>
<tr>
<td>LEV</td>
<td>0.4533</td>
<td>0.0048</td>
<td>0.4698</td>
<td>0.0079</td>
<td>1.6426</td>
</tr>
<tr>
<td>BIG</td>
<td>0.7446</td>
<td>0.0104</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>MSH</td>
<td>38.2%</td>
<td>0.4%</td>
<td>36.6%</td>
<td>0.0%</td>
<td>97.3%</td>
</tr>
<tr>
<td>FSH</td>
<td>13.4%</td>
<td>0.4%</td>
<td>7.3%</td>
<td>0.0%</td>
<td>89.7%</td>
</tr>
<tr>
<td>ROA</td>
<td>5.22%</td>
<td>9.91%</td>
<td>4.74%</td>
<td>-61.14%</td>
<td>104.56%</td>
</tr>
<tr>
<td>TA (in W billion)</td>
<td>5,568</td>
<td>454</td>
<td>481</td>
<td>17</td>
<td>242,180</td>
</tr>
</tbody>
</table>

$DA_{it}$ (DA-MJ or DA-KO) : Discretionary accruals of firm i in year t (estimated by Modified Jones or Kothari model);

$SRID_{it}$ : 1 if firm i is an SRI fund firm in year t, and 0 if otherwise;

$ROE_{it}$ : Return on equity (net income/average equity) of firm i in year t;

$OCFS_{it}$ : Net operating cash flows/beginning total assets of firm i in year t;

$SIZE_{it}$ : Natural log of total assets of firm i at the end of year t;

$GRS_{it}$ : Sales growth rate of firm i in year t;

$LEV_{it}$ : Leverage ratio (total liabilities/total assets) of firm i at the end of year t;

$CR_{it}$ : Liquidity Proxy of firm i in year t (= current liabilities/current assets);

$BIG_{it}$ : 1 if Big 4 auditor audited firm i’s financial statements for year t, and 0 if otherwise;

$MSH_{it}$ : Share of major stockholders and their related party of firm i in year t;

$FSH_{it}$ : Share of foreign stockholders of firm i in year t;

$ROA_{it}$ : Return on asset, (net income/beginning total assets) of firm i in year t;

$TA_{it}$ : Total accruals/(net income - net operating cash flows) in year t.
4.2 Mean Comparison Analysis

The means for each regression variable and ROA for the SRI and Non-SRI firms are presented in Table 4, which can compare the financial characteristics between the two groups. The means of all the variables, except DA-KO and MSH, are significantly greater in SRI fund firms than in Non-SRI. The means for DA-MJ and GRS differ significantly at 5% and those for the other variables, at 1%. Especially, ROE (ROA) of SRI fund firms is 4.55% (2.01%) higher on average. This indicates that firms perform more profitably in the year when their common stocks are selected into the SRI fund.

**Table 4: Comparison of Variable Means between SRI vs. Non-SRI Fund Firms**

<table>
<thead>
<tr>
<th>Variable</th>
<th>SRI Firms (1)</th>
<th>Non-SRI Firms (2)</th>
<th>Mean Difference [(1) - (2)]</th>
<th>t Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DA-MJ</td>
<td>0.0076</td>
<td>-0.0013</td>
<td>0.0088**</td>
<td>1.7964</td>
</tr>
<tr>
<td>DA-KO</td>
<td>0.0010</td>
<td>-0.0005</td>
<td>0.0005</td>
<td>0.3276</td>
</tr>
<tr>
<td>ROE</td>
<td>10.55%</td>
<td>6.01%</td>
<td>4.55%***</td>
<td>3.5090</td>
</tr>
<tr>
<td>ROA</td>
<td>6.58%</td>
<td>4.58%</td>
<td>2.01%***</td>
<td>3.9687</td>
</tr>
<tr>
<td>OCFS</td>
<td>8.33%</td>
<td>7.18%</td>
<td>1.15%**</td>
<td>2.1284</td>
</tr>
<tr>
<td>GRS</td>
<td>0.0833</td>
<td>0.0718</td>
<td>0.0115**</td>
<td>2.1284</td>
</tr>
<tr>
<td>BIG</td>
<td>0.8304</td>
<td>0.7043</td>
<td>0.1261***</td>
<td>6.1341</td>
</tr>
<tr>
<td>MSH</td>
<td>37.7870</td>
<td>38.3885</td>
<td>-0.6015</td>
<td>-0.7868</td>
</tr>
<tr>
<td>FSH</td>
<td>16.80%</td>
<td>11.85%</td>
<td>4.94%***</td>
<td>6.1264</td>
</tr>
</tbody>
</table>

1) *, **, and ***: Significant at a 10%, 5%, and 1% level, respectively
2) See <Table 3> for definitions of variables.

4.3 Multiple Regression Test Results

The regression results show that both Modified Jones (DA-MJ) and Kothari (DA-KO) models produced almost the same results though adjusted $R^2$ of Kothari model shows almost 80%, whereas Modified Jones, as presented in Table 5. The coefficient of SRID shows a positive value, significantly at 5% in both models. This result of greater DA (discretionary accruals) in SRI fund firms tells us that the null hypothesis is rejected, in favor of the existence of positive association between SRI fund firms and their earnings management. In other words, SRI fund firms tend to engage in more earnings management and thus report with lower quality of earnings.

Regarding the control variables, the regression coefficients of most independent variables such as ROE, OCFS, GRS, LEV, MSH, and FSH in both models are found to be significant all at 1% level. Only the coefficients of SIZE and BIG are insignificant.
### Table 5: Multiple Regression Test Result: H

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>DA-MJ (Modified Jones model)</th>
<th>DA-KO (Kothari model)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Regression Coefficient.</td>
<td>t Value</td>
</tr>
<tr>
<td>Intercept</td>
<td>0.0604***</td>
<td>2.8851</td>
</tr>
<tr>
<td>SRID</td>
<td>0.0073**</td>
<td>2.1192</td>
</tr>
<tr>
<td>ROE</td>
<td>0.1371***</td>
<td>23.4869</td>
</tr>
<tr>
<td>OCFS</td>
<td>-0.6854***</td>
<td>-44.4215</td>
</tr>
<tr>
<td>SIZE</td>
<td>-0.0001</td>
<td>-0.1210</td>
</tr>
<tr>
<td>GRS</td>
<td>0.0259***</td>
<td>10.8272</td>
</tr>
<tr>
<td>LEV</td>
<td>-0.0725***</td>
<td>-8.2974</td>
</tr>
<tr>
<td>BIG</td>
<td>0.0027</td>
<td>0.7179</td>
</tr>
<tr>
<td>MSH</td>
<td>0.0004***</td>
<td>3.6116</td>
</tr>
<tr>
<td>FSH</td>
<td>0.0542***</td>
<td>4.2665</td>
</tr>
<tr>
<td>F Value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted R²</td>
<td></td>
<td>0.5708</td>
</tr>
<tr>
<td>N</td>
<td></td>
<td>1770</td>
</tr>
</tbody>
</table>

1) *, **, and ***: Significant at a 10%, 5%, and 1% level, respectively
2) See <Table 3> for definitions of variables.

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**5. CONCLUSIONS**

This study found that the sample SRI fund firms operated more profitably with ROE (or ROA) being 4.55% (or 2.01%) higher on average during the period from the year 2010 to 2015. This indicates that firms perform more profitably in the year when their common stocks are selected into the SRI fund.

But this seemingly higher profitability of SRI fund firms might be the result of their engagement in earnings management during the period. To examine this issue, this study empirically examined the association between SRI fund firm membership and the firm’s earnings management, based on the sample of 1,770 Korea Exchange (KOSPI)-listed firms whose stocks were included in an SRI fund during the six years from 2010 to 2015. The application of the Modified Jones and Kothari models for discretionary accruals produced virtually the same result: both models revealed that SRI fund firms tend to more engage in earnings management than non-SRI fund firms. This empirical evidence implies that management of SRI fund firms may focus on the trend of short-term earnings per financial statements rather than on long-term earnings sustainability.
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REFERENCES


