THE INFLUENCE OF CORPORATE GOVERNANCE ON FIRM PERFORMANCE: A COMPARISON BETWEEN BANKS AND INSURANCE COMPANIES

LOH YUNN CINN

MASTER OF BUSINESS ADMINISTRATION
(CORPORATE GOVERNANCE)

UNIVERSITI TUNKU ABDUL RAHMAN

FACULTY OF ACCOUNTANCY AND MANAGEMENT

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Loh Yunn Cinn

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By

Loh Yunn Cinn

This research project is supervised by:

Dr Lee Hui Shan
Assistant Professor
Department of Economics
Faculty of Accountancy and Management

DECLARATION

I hereby declare that:

(1) This Research Project is the end result of my own work and that due acknowledgement has been given in the references to all sources of information be they printed, electronic, or personal.

(2) No portion of this research project has been submitted in support of any application for any other degree or qualification of this or any other university, or other institutes of learning.

(3) The word count of this research report is 19,458.

Name of Student: Loh Yunn Cinn

Student ID: 2004179

Signature: 

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ASEAN	Association of Southeast Asian Nations
AudComSize	Audit Committee Size
BANK	Sample of Banks
BLUE	Best Linear Unbiased Estimator
BMeet	Board Meeting
BSize	Board Size
CG	Corporate Governance
DA	Debt to Asset Ratio
FEM	Fixed Effects Model
FgnSH	Foreign Ownership
GMM	Generalized Method of Moment
IND	Number of Independent Directors
INS	Sample of Insurance Companies
InsiderOwn	Insider Ownership
InstSH	Institutional Shareholding
LA	Loan to Asset Ratio
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Square
POLS	Pooled Ordinary Least Square
REM	Random Effects Model
TA	Total Assets
UK	United Kingdom
US	United States
VIF	Variance Inflation Factor

PREFACE

Following the 1997 Asian Financial Crisis and 2008 Global Financial Crisis, the unexpected collapse of major financial institutions has revealed several weaknesses in corporate governance mechanisms in different countries. Corporate governance issues have received considerable attention from shareholders and all types of stakeholders. Many scholars have drawn to a conclusion that excessive risk taking is one of the factors that contributed to the fragilities of the financial market. Plus, a competitive business sphere that drives corporations to undertake more risks over time to win over their rivalries. Sound corporate governance practices would help companies in preventing misconduct of management, corporate fraud and corporate scandals. Globally, the implementation of corporate governance practices has an increasing trend but continuous efforts should be made to sustain a robust and stable economic growth. Besides, the risk management of the financial industry plays a vital role in facilitating proper corporate conducts and adequate financial reporting and disclosure. The aim of conducting this research is to obtain greater understanding on the corporate governance elements that influence the financial services sector in terms of risk taking behaviour. By enhancing corporate governance, banks and insurance companies can safeguard their organisations and individuals from risks and increase the economy's resilience.

ABSTRACT

The purpose of this paper is to identify the relationships between corporate governance mechanisms and performance of the financial institutions in terms of risk management. The sample is based on a panel dataset of public listed banks and insurance companies in the context of 10 Asian countries over a five year period, from 2015 to 2019. By employing panel data analysis and stepwise regression, empirical results show that banks' performance is solely affected by ownership structure. Meanwhile, insurance companies' performance is affected by board characteristics (board independence and board meeting), audit committee size and ownership structure. Therefore, it can be concluded that banks' risk taking behaviour is not influenced by corporate governance mechanisms as much as insurance companies do as insurers are overall affected by the internal corporate governance variables and ownership structure. This study contributes to the existing literature and enriches the understanding of corporate governance in constraining risk taking behaviour in a sector with significantly complex context.

CHAPTER 1

INTRODUCTION

This chapter of the research is aimed to discuss about the background of the corporate governance practices in Asian countries and the relevant elements that affect corporate governance. A more detailed description of the condition is explained in the problem statement. Besides, the research objectives and research questions are depicted respectively. The significance of study is also elaborated in the following section.

1.1 Research Background

Corporate governance is far from new and more businesses are putting importance in strengthening corporate governance practices. Over the past decades, countries are establishing international standards of corporate governance and as for Asian countries, sustainability reporting has been a requirement for the long term success of a multinational corporation.

Corporate governance is a broad term that expresses the ways an organisation is governed. It acts as a mechanism for companies to manage the relationship among all relevant stakeholders. Previously, most firms were influenced by the traditional shareholder theory that was originally proposed by Milton Friedman. Corporations were guided to put emphasis on generating profits for their shareholders (Friedman, 2020). This had driven companies to concentrate solely on the interests of shareholders which lead to greater involvement in risk taking behaviours and neglect of other stakeholders' interests. In the contemporary era, corporations are taking on a more significant role in the society as they control vast amount of resources and their actions would give a powerful impact. This is when the

stakeholder approach comes in. Edward Freeman suggests that a firm is responsible not only to the shareholders, but also to a wider group of stakeholders that can influence the decisions of the firm or they are affected by the actions taken by the firm (Freeman, 1984). Theoretically, a firm shall address all matters that are brought up by the stakeholders, regardless of internal or external, and shall take efforts in balancing the benefits of various groups. Through a positive interaction with stakeholders, firms can attain more information in order to constantly pursue value creation and achieve business sustainability in the fast paced dynamic business environment. Both of these normative theories dictates what an organisation's role ought to be. Smith (2003) discusses that the two share similar intentions but stakeholder theory emphasises on a wider scope that is to achieve the balance to maximise profit for shareholders and ensure long term continuity of the firm. It suggests a governance structure that promotes disclosure of information which ultimately encourages the relationships between stakeholders in the long run. Henceforth, stakeholders serve as one of the vital part in maintaining effective corporate governance as they may exhibit an influence to the overall function of a corporation.

In general, many believe that adequate corporate governance signifies better management of resources and better allocative efficiency which further boost business performance. More regulatory requirements are enforced after the Asian financial crisis in 1997 as the general public presumed that such event is the consequences of lack of financial disclosure and proper corporate governance practices. Later on, the financial crisis of 2007-2008 revealed the loopholes in the financial system and the weaknesses in multiple corporate governance factors such as auditor independence and board's responsibilities.

International corporate governance principles have been expressed in multiple documentations since 1990 such as the Cadbury Report (UK, 1992), the Sarbanes-Oxley Act of 2002 (US, 2002) and the Principles of Corporate Governance (OECD, 1999, 2004 and 2015). The most recognisable CG guidelines is the G20/OECD Principles of Corporate Governance. It is established by OECD in 1999 to set as an international benchmark as part of the basis of a well-functioning corporate

governance system which was then modified, revised and endorsed by the G20 throughout the years.

OECD (2014) denotes that risk management was often disregarded in the process of implementing corporate strategies and boards were found to be ignorant of the risk associated with the firms which resulted in poor risk oversight and governance practices, even when they are recognised as highly sophisticated financial institutions. It is recommended that risk factors should be understood and managed by the regulators as well as the alignment of corporate strategy with risk tolerance reviewed attentively by the board.

The crises have drawn much attention in banks' risk taking behaviour and their instability (Al-Khouri & Arouri, 2016). Due to the interdependence of the economy, other sectors that rely on bank credit were impacted by the credit crunch in 2008. DeYoung and Torna (2013) mention that part of the global financial crisis was caused by the increased risk taking and diversification of bank financial products. With continuous financial liberalisation in the Asian market, the banking industry makes its contribution in promoting business activities by providing financial assistance in loans to fund investment projects and regular transactions. Like other industries, with the implementation of good governance policies, the risk exposure of financial institutions can be controlled and managed without decreasing shareholders' value (Stulz, 2015). In response to the financial crises, government authorities in different countries have constantly modified their corporate governance related regulatory requirements, however it can be observed that some developing economies are still weak in the field (Mehmood et al., 2019).

Insurance companies serve as a major function in stabilising the financial system of the economy. Insurance companies offer risk mitigation services which policyholders pay premiums to insurance risk carriers on a regular basis in exchange for a contractual commitment to meet future claims on risk events. Normally, there are a wide range of insurance products available such as life, disability, medical, health insurance, motor vehicle, fire, mortgage, labour compensation etc. Insurance markets are typically complex and opaque as its transactions involves a number of assumptions from mortality rates, interval and discontinuance percentages, future investment yields etc. (Adams & Jiang, 2016). The turmoil of the insurance

conglomerate, American International Group (AIG), was detected with weak governance practices and excessive risk taking which caused it to request assistance from the U.S. federal government to prevent bankruptcy in the beginning of the 2008 global financial crisis (Boubakri, 2011).

Although the insurance industry performed steadier than banks during economic distress, adequate governance and high standards of accounting and financial reporting remain crucial to a robust financial system and to boost economy's resilience. By facilitating better governance, insurance firms can provide protection to businesses and individuals from risks (Adams & Jiang, 2016). As such, proper corporate governance aids in actively managing the insurance companies and ensure risks are well balanced for all contracting constituents involving investors, managers, and policyholders (Mayers, Shivdasani & Smith, 1997). The ownership construction and risk management feature of different insurance companies make it interesting to explore the impact of corporate governance mechanisms on insurer's willingness to take risk (Cheng et al., 2011). The importance of corporate governance in financial institutions has again highlighted by the financial crisis of 2007-2008.

Sound corporate governance is able to minimise the principal-agent problem as the separation of power and control is the main determinant of organisational inefficiency (Jensen & Meckling, 1976). Interests among the stakeholders, especially the shareholders and the management can be addressed appropriately with the presence of effective corporate governance. In order to do so, organisations are to define the distinction between ownership and control clearly and foster positive work attitude in all levels of management to mitigate the risks brought by agency problems.

OECD Principles of Corporate Governance is internationally applied as the benchmark for most corporate governance assessments. The ASEAN Corporate Governance Scorecard is created based on the benchmark which initiated by ASEAN Capital Markets Forum and the Asian Development Bank. Based on the recent report, among the six participating countries (Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam), Thailand scored the highest from 2012 to 2015 then followed by Singapore and Malaysia (Asian Development Bank,

2017). This might be due the listed companies in Thailand do not only stressed the importance in form but also in substance such as anticorruption programs, strict application of code of ethics and board performance evaluation.

At the market level, government authorities should continue to support corporate governance codes and regulations. Based on EY (2019), Philippines has made significant improvements in focusing on disclosure and transparency, and board responsibilities in the recent years. For instance, the Philippine government released its Philippine Code of Corporate Governance Blueprint in 2015 and its new Code of Corporate Governance for Publicly Listed Companies in 2016. In 2018, SEC Oversight Assurance Review Inspection program was also developed to promote higher quality of business reporting and to improve market confidence.

On top of that, policies and regulations should not only focus on listed large companies but should also include the small and medium enterprises (SMEs). For example, most economies in Malaysia are supported by around 97-99% of SMEs. With the free flow of goods and services brought by the integration, SMEs will require further improvements in terms of corporate governance practices to ensure international standards are incorporated and public confidence is enhanced.

Apart from that, another relevant topic that links corporate governance and organisational behaviour is corporate social responsibility (CSR). It has merged together with public relations and business communications. CSR contributes as a sign for company image, values and brand. It is undeniable that corporate ethics is a major element of building up a trustworthy business sphere where unscrupulous corporate practices are seen as risky and deteriorative to a company's brand. Good corporate governance is viewed as a strength as creditors and investors prefer enterprises that have implemented proper internal controls and risk management. It is proven based on the Global Investor Opinion Survey, more than 60 per cent of investors revealed that governance practices is a key factor in making their investment decisions as well as they are willing to pay for a premium for a well-governed firm (McKinsey & Company, 2002). Consistent implementation of corporate governance does not only aid competitive companies to set a foot in the financial markets but also to boost the economies as a whole.

A robust corporate governance framework generally includes board competence, audit independence, proper assessment and disclosure of risk factors. Relevant information act as a base for all stakeholders including investors to access and evaluate business transactions and financial performance. Due to its importance, the international standards integrate numerous rules and regulations from time to time for companies to comply with timely and reliable disclosure of corporate information. Today, underground activities such as corruption are a result of lack of comprehensive and proactive firm monitoring. Corporate governance has become more complex and dynamic to meet the demand from shareholders and all relevant stakeholders. Board of directors and auditors have increased responsibilities in evaluating and appraising business transactions. Level of transparency determines the level of market confidence and accessibility of capital financing. With investors being more aware, companies are accountable to present themselves as transparent as possible to every stakeholder by adhering to corporate governance standards. Henceforth, given the importance of CG, this study aims to analyse the association between the financial services sector's CG environment and their risk bearing behaviour.

1.2 Problem Statement

Asian financial crisis in 1997 and the global financial crisis in 2008 have adversely influenced the economies from all around the world. One of the main reasons for such events is the lack of proper corporate governance practices (Mohammed et al., 2006). These economic impacts serve as a wake-up call to the need for better corporate governance practices among Asian countries and others. The collapse of major multinational companies such as Enron and Worldcom have sent a crucial signal to the business world that most corporate failures are a result of inappropriate corporate governance practices. The history of global accounting scandals has prompted government authorities to evaluate the wide-ranging impact of poor corporate governance on a country's economy through the volatile stock markets. As such, public confidence is highly responsive to the comprehensiveness and reliability of business reporting.

Recent corporate scandals in Asian countries such as the Satyam scandal in India (Chen, Li, & Shapiro, 2010), and the 1Malaysia Development Berhad scandal (US Department of Justice, 2017) point out the need for corporate governance mechanisms in the Asian business sphere as these may potentially hinder the opportunities from foreign countries to invest in Asia (Globerman, Peng, & Shapiro, 2011). With loopholes in the corporate governance system, moral hazard is yet to occur as some parties would take advantage of such situation at the expense of others. Thus, many researchers agree that improvements in corporate governance can help in lessen the occurrence of such moral hazard (Aguilera, Florackis, & Kim, 2016). Other than that, the institutional environment in Asia is more diverse and dynamic as compared to the western countries which make it unique to look into the Asian context. In the financial services sector, it can be observed that banks are heavily impacted from economic crises as compared to insurance companies.

The main concern for insurance companies is in regards to the premium collections and providing financial guarantee insurance during times of recession. Due to the change in spending patterns, consumers may not perceive a high coverage insurance package as a necessity, therefore the investment returns that the insurers expect will decrease. Moreover, insurers' business activities such as underwriting, investments and risk transfer are negatively influenced but generally, insurance companies have

been bystanders during financial crisis. To view it from a wider perspective, insurance companies do not directly influence the overall economic condition of a country like the banking industry. As highlighted by OECD (2011), most insurance companies are impacted by the knock-on effects like the fall in interest rates, creditworthiness and so on. Arguably, they even act as a supporting factor by stabilising the pressures in the financial markets by promoting longer-term investments and more conservative financial products.

As for banks, they are heavily regulated and they gain from loans in which they play as a role to provide funds and capital to individual consumers and corporations. The financial banks work closely with the government as the rules and regulations are enforced by them, creating a potential issue of being "too big to fail". Back in 2008, the global financial crisis affected the Wall Street banks drastically and the US government was in fear of the disastrous chain reaction that could potentially resulted from the meltdown of major financial institutions. The concept of "too big to fail" is introduced as a doctrine that hypothesises certain financial intermediaries might be too large or interconnected that their failure would bring detrimental impacts to the overall economic system. As a result, moral hazard may arise as the government wants to step in to provide assistance in the already liquidity-stressed environment but banks might take advantage of such situation by having lesser incentives to monitor their risk taking behaviour.

In development literature, a virtuous paradigm has been suggested wherein resources dedicated to developing more comprehensive corporate governance standards provide benefits as it has the potential to monitor business risk taking behaviour thus increase transactional efficiency. There are also positive externalities such as facilitating an unbiased business environment and improving stakeholders' confidence. In developed countries like OECD, the field of corporate governance has received more attention than those in emerging countries. The process by which corporate governance practices is essential to improve an insight of how the public interest in the Asian countries can be emphasised.

1.3 Research Objectives

General Objective:

To investigate the relevant factors that are influencing firm performance in the context of corporate governance.

Specific Objectives:

1. To analyse the relationships between the corporate governance mechanisms and firm performance in banks.

2. To analyse the relationships between the corporate governance mechanisms and firm performance in insurance companies.

3. To compare the banks and insurance companies regarding to the impacts of corporate governance on firm performance.

1.4 Research Questions

Research questions represent the questions that this research is purposed to discover.

1. What are the relationships between the corporate governance mechanisms and firm performance in banks?

2. What are the relationships between the corporate governance mechanisms and firm performance in insurance companies?

3. Do the impacts of corporate governance affect more on the performance of banks or insurance companies?

1.5 Significance of Study

The key intention of this research is to investigate the possible corporate governance mechanisms that are influencing firm performance in terms of risk taking in the regions of Asia. The findings provide a greater understanding of the corporate governance, taking into account that sustainability is one of the essential elements that supports businesses today.

Corporate governance practices also act as a mechanism in driving businesses to be more comprehensive and plan strategies for long term success. Most studies researched individual companies in the context of corporate governance so it can be helpful to further investigate the topic on a region-wide scale. Due to the complexity and diversity of the Asian financial institutions, this study is intended to shed more light into the vague components of corporate governance that influence risk taking behaviour of the Asian banks and insurance companies. There has been a considerable number of literature published regarding on topics of corporate governance and risk taking but the study for the banking and insurance sector in the regions of Asia remains scarce. This study varies from the literature in the sense that it expands on the scant literature that look into the relationship between firm performance and the corporate governance mechanisms in banks and insurance companies in Asia. Due to the scarcity of such published work for a specific sector like financial services sector, future researchers can further explore more aspects regarding the corporate governance practices of other services sectors and the possible limitations of this research. This study is able to contribute to future research analysis and as a sample reference for researchers and scholars. In particular, the research is hoping to contribute to the existing literature by providing empirical findings on the influence of board characteristics such as board size, independence and many more on risk taking.

As for other emerging countries, policymakers and economists can also further analyse problems relating to compliance of corporate governance laws and regulations. As of recent, more and more scrutiny has been placed by both institutional and retail investors regarding risk taking behaviour of companies where corporate governance is concerned. Therefore, this study also serves to raise awareness on the up-and-coming regulatory requirement that will be in place in the

corporate landscape which benefit relevant authorities by assisting in improving policies and political implication on imposing the most appropriate corporate sustainability strategies.

Apart from that, this study can benefit the overall society in terms of understanding the importance of sound corporate governance practices in contributing to the health of the financial services sector and the nation's economic development. Board characteristics cannot be ignored as they have a major impact on the mentality of companies in making decisions to comply with laws and regulations. In essence, the effort to understand and improve relevant corporate governance policies begins much earlier by first understanding the positive impacts that proper CG practices may bring upon. Therefore, a comprehensive study in the corporate governance field in Asian countries will open up a lot of opportunities to understand the different socioeconomic aspects and quality of firm performance.

1.6 Conclusion

This chapter presents basic knowledge of the research and the overall purpose of this study. Additional information regarding this research field can be gained from the review of literature which is expressed in the following chapter.

CHAPTER 2

LITERATURE REVIEW

This section comprises a broad review of published information about corporate governance variables that are retrieved from credible secondary sources. Literature review is able to help in identifying the relevant determinants as other relevant researches provide a better understanding of the chosen research field which could build a concrete theoretical framework. The literature review proposes that board characteristics, CEO duality, audit committee and ownership structure are the relevant factors affecting firm performance in the financial services sector. Thus, they are involved in the research to determine its importance in the field of corporate governance.

2.1 Review of Literature

2.1.1 Board Characteristics

Human capital theory was first popularised by Becker (1964) and it suggested individuals are able to improve their job prospects and earn higher income through investment in education and medical care. Human capital can be expressed as productive investments possessed by individuals which include skills, capabilities, knowledge, behaviours, and personality attributes. In terms of corporate governance standards, an adequate board size that is filled with unique human capital is seen as a key resource for a firm.

The most common management theory that are cited for corporate governance is known to be the agency theory. Agency theory emphasises on understanding the relationships between agents and principals as well as the consequences brought by

asymmetric information (Jensen & Meckling, 1976). In the case where managers (agents) and shareholders (principals) do not have similar objectives, the interest of shareholders might be neglected. The management plays a crucial role in disseminating accurate information to the shareholders and to successfully foster the alignment of objectives, monitoring of managers is put into importance as there is a separation between control and ownership (Fama & Jensen, 1983). Weaker governance leads to greater agency problems as it allows the management to take actions for personal benefits and firm performance will be worsen thus indicating a need for improved corporate governance for business sustainability (Core et al., 1999). Organisations are required to efficiently control assets and to balance the interests of all stakeholders of the firm by assessing the difference between ownership and control from various perspectives. Based on various literature, there are some indicators that are used to evaluate the degree of information asymmetry such as number of board committees, frequency of board meetings, number of board members with particular experience and tenure period of each board members (Ararat, Aksu, & Tansel Cetin, 2015; Nguyen, Locke & Reddy, 2015; Ntim, 2015).

2.1.1.1 Board Size

Considering from the perspective of the agency theory, Fama (1980) argued that the management and the shareholders of public companies have conflicting interest in terms of risk taking. As agents of the owners, the directors prefer not to venture into risky projects for job security while the shareholders prefer to take risks to increase the chance of maximising their profits. Jensen (1993) elaborates that the costs involved in settling the agency problems of a larger board devastate the potential benefits from having more decision makers which referring to the directors, it therefore leads to lower firm performance. It can be assumed that board size is negatively related to corporate performance. If a board expands into a larger group, both the agency problem and group communication would not progress as effectively as it is with a smaller board size. With a larger board size, board meetings are relatively more difficult to be arranged and decisions are made slower as it is harder for all board members to reach a consensus. Slowing down the decision process is not the only downside, a large board would need more

negotiation and have higher level of agreeableness in order to reach a final resolution. This leads to lower effectiveness in developing a solution which it tends to be neither very good nor very bad. In psychology terms, the phenomenon can be expressed as groupthink. It refers to the practice of making decisions as a group and having unified viewpoints to avoid disputes in which it would result in poorer decision making and less variable performance.

Furthermore, Cheng (2008) discusses that companies with larger boards would engage less in riskier business activities and findings show that those firms spend less in research and development, acquisition and restructuring, resulting in less significant corporate performance as these activities would require more compromises from the board. Larger board size might include more diversified opinions with individuals from different backgrounds and the decision made will reflect the different viewpoints. As a result, a larger group might have a higher chance of being risk averse and it would reject risky projects because the project must be considered profitable by majority of the members to be accepted (Sah & Stiglitz, 1991). Based on a sample of U.S. bank holding companies, Pathan (2009) indicates that a less restrictive board with less number of members are more effective at representing the bank shareholders' interest which positively affects banks' risk taking behaviour. This is also supported by Rachdi and Ameur (2011) who found that Tunisian banks with smaller boards are associated with more bank risk taking activities.

In the context of developed countries, it has been known that board size is inversely associated with risk taking behaviour. Based on a sample of New Zealand firms, Koerniadi et al. (2014) explain that companies with smaller boards would give more pressure on the management to take risks, thus they are related with higher future risk. Same goes with Chinese firms, there is lesser variability in future performance for firms with larger boards as they prefer not to pursue riskier investment policies (Huang & Wang, 2015; Wang, 2012). Haider and Fang (2016) investigated companies listed on the Shanghai and the Shenzhen stock exchanges with the application of fixed effects regression and the generalized method of moments (GMM) from 2008 to 2013 and found that board size reacts negatively to the volatility in future stock prices and future cash flows. Besides that, Elamer et al.

(2018) analyse all insurance companies listed on FT350 from 2005 to 2014 and their results indicate that both board size and board meetings are significant factors to risk taking. The two variables give a negative effect on risk taking.

2.1.1.2 Board Independence

In addition, another governance concept that is relevant is the resource dependency theory which was founded by Pfeffer and Salancik (2003). It specifies that business's organisational behaviour is impacted by the availability of the external resources that are used. A diverse board would ultimately facilitate more effective use of resources. A well-managed diversity would provide advantages to the companies in terms of (1) giving advices and counsel, (2) strong interconnection between the company and environmental contingencies, (3) preferential access to resources, and (4) legitimacy. A board that is filled with a proper mix of independent and executive directors may help in providing different perspectives for better decision-making which further indicate a positive impact on the overall product and labour market (Hillman et al., 2000).

The presence of independent directors is expected to monitor the top management and to balance the overall board to act in ways that satisfies shareholders' expectations. In most cases, the independent directors are entrusted by the shareholders to maintain adequate oversight over the firm's management as they want to build their reputation in directorship market as expert monitors (Fama, 1980; Fama & Jensen, 1983). With the evolution of the stakeholder approach, Pathan (2009) concluded that the percentage of independent directors has a negative relation with bank risk taking as they do not only take care of shareholders' interest but also consider other stakeholders' interest. The number of inside directors is positively related to risk bearing behaviour. Coles, Daniel, and Naveen (2006) argue the inside directors may have initiatives to increase risk by taking on financing and investment strategies that amplify risk.

Wang and Hsu (2013) investigates the impacts of board composition on the probability of operational risk events of financial intermediaries from 1996 to 2010. Results indicate that companies with a higher percentage of independent directors

have lower likelihood of suffering from fraud or failure to meet their obligations to clients. This is in line with the findings of Aebi et al. (2012) and Faleye and Krishnan (2017) which state that board independence has the ability to lower a bank's riskiness. Some studies highlighted that data that is based on crisis period and post-crisis period can result in a contrasting evidence. During crisis, Erkens et al. (2012) note that higher number of independent directors has no relationship with stock return volatility, hence stock performance has nothing to do with a firm's risk taking behaviour. As for post-crisis research, board independence is found to be negatively correlated to risk taking (Beltratti & Stulz, 2012; Erkens et al., 2012).

Besides, Yeh et al. (2011) analyse the impact of having more independent directors in board committees of financial institutions based on the G8 countries during the 2007-2008 financial crisis. Empirical results suggest that committee independence has a positive relation with the financial institutions' performance, particularly for those with excessive risk taking behaviours. On the contrary, Bhagat and Black (2002) found that greater board independence does not necessarily result in higher performance as there is no significant correlation between both variables. As for Elamer et al. (2018), they examine the impact of board independence on insurance companies' risk taking by incorporating multivariate regression techniques. Results show that board independence is statistically irrelevant but negatively associated with risk taking.

2.1.1.3 Board Meeting

Other than that, Vafeas (1999) identifies that the frequency of board meetings serves as one of the elements of board monitoring and it has been used as a metric to evaluate board operations in other studies. He analyses a sample of 307 companies from 1990 to 1994 and result presents that active board activities foster better governance. Brick and Chidambaran (2010) extend the relevant researches by exploring the significance of meetings based on a period from 1999 to 2005. They note that higher number of board meetings are held when a firm participates in riskier corporate activities like merger or acquisition which then contributes to increased firm value. Likewise, Adams et al. (2005) incorporates number of board and committee meetings as a variable to quantify the level of board vigilance. He

argues that improvements in governance practices are driven by poor prior performance as boards might find greater need to monitor and communicate to obtain satisfactory future performance, thus his findings support a negative relationship between board meetings and past performance. Literature suggests that a board acts an advising role and the number of board meetings may increase with its need of strategic advices on its growth/ investment opportunities and discussion on relevant corporate matters (Barros et al., 2013).

Generally, the number of board meetings implies the board's efforts in monitoring managers to recognise internal misconducts or excessive risk taking activities (Conger et al., 1998). Therefore, Vafeas (1999) denotes that increasing the frequency of board meetings may be seen as a governance practice for board members to deliberate occurring strategic plans and risks which ultimately associates with firm performance and its policies. However, Jensen (1993) proposes that firm operations and the necessity of a meeting should be taken into account when deciding board meeting frequency because such monitoring efforts can be costly in terms of time, meetings fees, allowances and other expenses.

2.1.2 CEO Duality

In corporate governance, the separation of a chairperson of the board and a chief executive officer (CEO) is heavily discussed as it signifies a company's discipline and its actions in dividing the duties and power that are given upon the management. In the early days, there were lots of companies combining both titles which resulted in lack of monitoring on the management. Some researchers have indicated that firms with separate individuals holding the title of chairman and CEO tend to outperform firms with CEO duality (Brickley et al., 1997; Conyon & Peck,1998). The power that a CEO has may be equivalent to a board member as executive positions have the ability to disseminate information to the board in which they have gained from involving directly in the company's operations. Subsequently, CEO duality could cause asymmetric information and reduce the independence of the board in monitoring the management (Fama & Jensen, 1983). As supported by Mallette and Fowler (1992), if an individual holds both positions, he/she would

have the sole authority to make decisions on the firm's affairs which may result in a concentration of power that contradicts with the purpose of having a board that is competent in keeping an eye on the management.

Prior literature has analysed the importance in separating the responsibilities between the chairperson and the CEO and the agency theory suggests that one who holds two essential positions in a company may violate the principle of dividing management and control (Daily & Dalton, 1994; Jensen, 1993; Mallette & Fowler, 1992). Given the differences in organisational culture, previous findings about the impacts of CEO duality are somehow mixed. In the context of Malaysia, Abdullah (2006) found that CEO duality does not associate with the propensity of financial distress. According to Amihud and Lev (1981) and Bertrand and Mullainathan (2003), they mention that powerful managers have lower risk appetite and have higher tendency in engaging in diversification activities. From the perspective of agency theory, the separation of ownership from control would create agency problem as the managers of a firm may not always act in the best interests of the owners. In the scenario where managers' risk taking behaviour is compensated through fixed wages and salaries, they would have lower risk appetite. This is due to the fact that managers have little to gain if the financial institutions are achieving abnormal returns but will probably lose their jobs if the risky project fails (Cornett & Saunders, 2006). Therefore, shareholders have preferences for projects that would yield positive returns regardless of risks associated, however the management would go for safe but value-reducing projects (Guay, 1999; May, 1995).

In general, it is recognised that leadership structure matters as firms with a dual leadership structure has higher probability of achieving better performance in the long run than those with combined leadership (Kim et al., 2009). When a CEO has too much power, it increases the tendency of appointing a board member who does not meet the qualification of being genuinely independent (Ashbaugh-Skaife et al., 2006; Imhoff, 2003). However, if the interests of CEO and shareholders are aligned, Finkelstein and D'aveni (1994) revealed that executive chaired boards have better firm performance. Altunbas et al. (2020) suggest that powerful CEOs and institutional investors in banks normally have similar risk preferences and CEOs

have the power to influence board decisions toward pursuing risky policies. CEO duality is positively related to a firm's risk taking behaviour as there is a higher chance of one with the sole authority can be overconfident, allowing underestimation of uncertainties, thereby proceeding to lead the firm to incline towards pursuing idealistic plans (Li & Tang, 2010). Likewise, Malmendier and Tate (2008) stated that there is a greater likelihood that the firm would accept value decreasing investment plans which in turn increase the overall risk.

2.1.3 Audit Committee

Other than that, audit is one of the essential elements that influence corporate performance as the society expects organisations to present themselves with credible financial information with adequate corporate governance practices that emphasises on transparent business reporting (Beatty, 1989). Prior literature proposes that setting up a strong audit committee in a particular corporation sends a sign of effort in increasing board effectiveness and efficiency (Adams & Jiang, 2016).

Based on agency theory, independent auditors act as the intermediary to represent as principals to keep track of agents' activities therefore reduce probability of private benefits from withholding information. Independence enhances the effectiveness and efficiency of the board in keeping track of the financial reporting process of a company as it delegates the relevant responsibilities to internal auditors and external qualified auditors to ensure its business reporting meets audit standards (DeFond & Jiambalvo, 1993).

Firms with good reputation would face more pressure in producing higher quality of audit as compared to lower profiles firms as value loss from reputation damage is not easily recovered if the reports have lack of clarity and transparency. Larger corporations would have more inputs and capital to facilitate independence of audit and management which implies that the quality of audit and types of audit firm are closely related. They have higher tendency to hire external qualified auditors to review financial reports more frequently as they have more wealth at stake (Barako

et al. 2006; Ho & Wong, 2001; Sloan, 2001). Mixed findings were found from multiple previous sources.

As cited by Jermias and Gani (2014), agency theory presumes that audit committee members with adequate knowledge and qualifications have greater likelihood in contributing to the efforts of monitoring and controlling directors' behaviour. They act as agents who assess and review firms' management strategies as well as to take care of the public's interests. Regular meeting within the members of the audit committee can ensure independence in assessing financial information, audit processes and internal control systems as well as less involvement in high risk projects. It can be seen that continuous communication between the audit committee and external auditors brings better corporate performance and higher degree of transparency (Rashidah & Fairuzana, 2006).

In addition, agency theory also denotes that the establishment of a strong audit committee could provide support in terms of differentiating themselves from others through greater risk taking behaviour (Connelly et al., 2011). Based on a sample of insurance companies in Thailand, Hsu and Petchsakulwong (2010) indicate that audit committee size exert a negative impact on risk taking behaviour. Similar findings were found by Jermias and Gani (2014). They concluded that the existence of negative relationship between audit committee and risk taking. Also, Elamer et al. (2018) investigate listed insurance companies from 2005 to 2014 and their results demonstrate that audit committee size has a negative link with risk taking. On the flip side, Adams and Jiang (2016) failed to discover any connection between audit committee and risk-taking.

2.1.4 Ownership Structure

Ownership structure is highlighted as one of the governance mechanisms that relates to a firm's risk taking behaviour. The structure of ownership has been a salient issue for all types of stakeholders. It does not only concerns the internal managers and shareholders but also becoming a relevant topic to the policymakers and regulators. The impact of ownership plays an importance in an organisation's

decisions in which many papers have documented that the improvement of corporate governance are resulted from corporations' change in risk taking.

According to Hill and Snell (1989), large shareholders can demotivate companies from embarking on unrelated diversification strategies which makes those with higher ownership concentration more focused. Consequently, those companies are associated with higher financial performance and higher risk. Nguyen (2011) analysed Japanese firms and provided findings which prove that ownership concentration is positively associated with firm specific risk. In a similar vein, Shleifer and Vishny (1986) denote that substantial shareholders such as the institutional shareholders have the means to steer firms towards high-risk and high return projects as they have greater power to influence firm managers to increase risk taking in order to reap additional advantage at low cost. In addition, Hill and Snell (1988) claim that companies with higher risk bearing are often linked with increased insider ownership. This is in accordance with empirical findings provided by Johnson et al. (1993) who express that restructuring activities are internally prompted with higher degree of insider ownership. Nevertheless, Wright et al. (1996) propose that risk taking behaviour would initially rise and then fall as insider ownership grows due to the different attributes of the insiders such as their direct and indirect advantages and costs that derived from their job positions or their portfolios which would affect their perceptions towards risk taking.

On top of that, Claessens and Djankov (1999) argue that the concentrated ownership plays a part in board vigilance that persuades against behavioural biases and influence managers to take on higher risk that would generate more competitive advantages for the firm. In a comparison between Islamic and conventional banks, Srairi (2013) examines the risk taking behaviours of different categories of shareholders. He documents that government-owned banks take on greater risks and have higher percentage of non-performing loans as compared to family-owned banks. The overall empirical result shows ownership concentration is inversely related to risk. Likewise, García-Marco and Robles-Fernandez (2008) report that the Spanish commercial banks portray similar result. If the shareholders are highly concentrated, it is assumed that the shareholders will exhibit stricter control over managers which leads to a negative influence on the level of risk that the firm is

willing to take. In accordance with the evidence provided by Cheng et al. (2011), they investigated a sample of life health insurers and found that the institutional ownership stability is linked with the firms' total risk but the presence of institutional shareholders does not result in a risk increasing effect.

Findings by Sullivan and Spong (2007) demonstrate that ownership structure is highly related to risk taking behaviour of financial institutions. As stated by Cole et al. (2011), the suboptimal diversification hypothesis proves that such that lower risk taking is induced by higher concentration in ownership. This is consistent with the agency theory as risk taking behaviour is affected by the managers' concentration of wealth. In a case where the management has their wealth concentrated in a firm, they would be risk averse as their wealth is at stake. For instance, owners may come up with employee stock ownership plan to encourage the management to be in line with shareholders' risk preferences. Hence, ownership structure is able to determine the level and type of risk that the financial institution is willing to take. As mentioned previously, non-owner managers is assumed to be risk averse and will be reluctant to select risky business strategies while the shareholders would prefer risky investments in order to maximise their wealth (Cole et al., 2011). This rationale applies to a research performed by Cummins and Sommer (1996). They found that public companies have lower risk as there is a higher level of separation of ownership and control as compared to closely held companies.

Institutional shareholders and insider ownership are studied as factors that associate with more risk, especially during crisis period 2008 (IMF, 2014). The underlying reason is that if most of the ownership is held by institutional investors or insiders, they would prompt the management to be more risk averse as they have more to lose which is totally different when compared with the perspective of managers (the ones who are in control) who have lesser to lose. On the contrary, Hoskisson and Turk (1990) express that the negative association between ownership structure and company diversification (risk bearing behaviour) implies that the greater portion of institutional shareholders enhances active monitoring of the agents which is the management. In line with the monitoring hypothesis, the higher economic shareholdings by institutional owners play an essential role to have control on

managerial opportunistic behaviour and restrict executives from pursuing self-benefiting interests in regard to risk taking behaviour (Boyd et al., 2005).

If a firm has a great number of foreign shareholders, the firm is bound to have more restructuring activities which would increase the volatility of earnings, equivalent to the level of risk associated (Djankov & Murrell, 2002; Estrin et al., 2009). Many researchers have drawn to a similar conclusion that the presence of foreign investors as large shareholders would result in enhanced firm value and more involvement in risky investments and projects (Boubakri et al., 2013; Denis & McConnell, 2003). Apart from that, cross-ownership acts a disciplining factor that also prompts improvement in global corporate governance practices (Gillan & Starks, 2003). Vo (2016) implies that foreign ownership is inversely correlated to corporate risk taking activities in the context of Vietnamese companies and the foreign investors put importance on long term firm performance instead of short term gains. Similarly, Ferreira and Matos (2008) agree that foreign investors are likely to be more active in terms of facilitating internal corporate governance than the local investors do and this may have an impact on a company's investment policy. This is in accordance with Stulz (1999) and John et al. (2008) as they stated that the improvement in internal governance practices and managerial risk taking activities are strongly influenced by the increase in foreign ownership. In other words, corporations have higher willingness to take risks if they are in countries with better quality of corporate governance, thus the relationship between foreign ownership and risk taking behaviour is more significant in environments that promote appropriate governance (John et al., 2008).

To note, there is no solid consensus in regards to the effects of ownership structure/ ownership concentration on a firm's performance in terms of risk taking. Past studies have concluded that these two factors have positive association (Saunders, Strock, & Travlos, 1990) as well as negative association (Burkart, Gromb, & Panunzi, 1997; Iannotta et al., 2007). A non-linear relationship between ownership concentration and risk taking was also evidenced by Anderson and Fraser (2000). Adopting the style of Barry et al. (2011) and Srairi (2013), this research is going to classify ownership structure into three categories of continuous variables that represent the proportion of shares held by each category of shareholders.

2.2 Review of Theoretical Framework

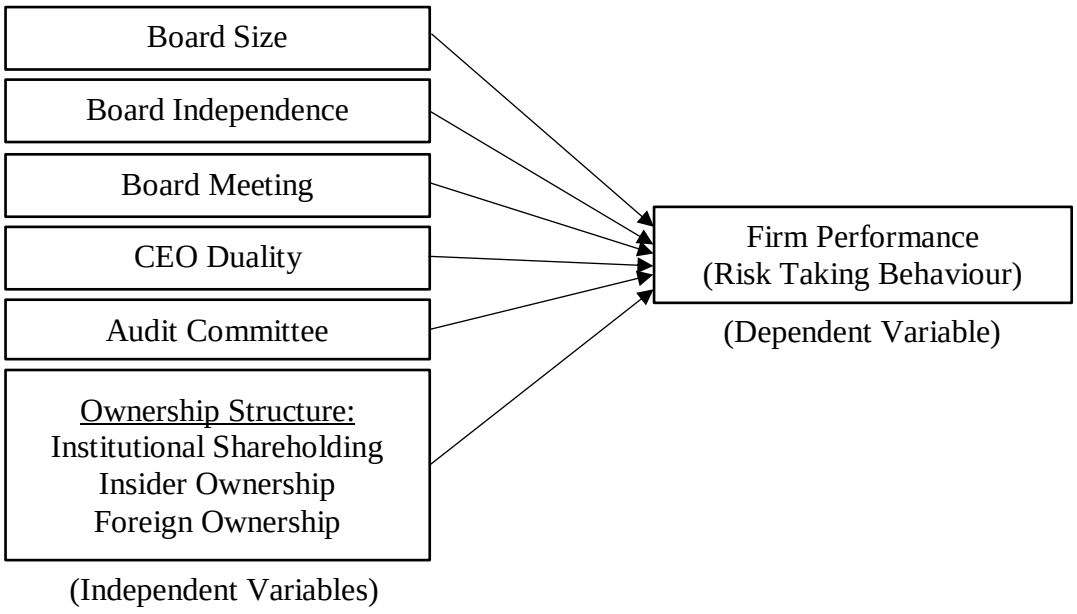
Table 1: Review of Concepts and Theoretical Framework

Concepts	Author	Definition
Human Capital Theory	Becker (1964)	It suggests education, training, skills, experience, or productive capability of any individual is beneficial for the firm.
Stakeholder Theory	Freeman (1984)	It asserts the importance of balancing the interests of all stakeholders of the corporation, not only maximising profits for shareholders.
Agency Theory	Jensen and Meckling (1976)	It is to understand the relationships between agents and principals as well as to address the agency problem.
Resource Dependency Theory	Pfeffer and Salancik (2003)	It specifies that business's organisational behaviour is impacted by the availability of the external resources that are used.

2.3 Proposed Conceptual Framework

Figure 1 shows the proposed framework of this study. The figure of conceptual framework is shown below for the relationship between explanatory variables and dependent variable. The reliant variable (dependent) for this research is firm performance. In the interim, the variable is affected by autonomous factors. In this manner, there are eight explanatory variables that identified with the reliant variable which are board size, board independence, board meeting, CEO duality, audit committee and ownership structure (institutional shareholding, insider ownership and foreign ownership).

Figure 1: Framework of this Study



2.4 Hypotheses of Study

Hypotheses are formed from the understanding of the previous studies and reasonable assumptions are incorporated to construct each hypothesis.

2.4.1 Board Size

H_0: Board size and firm performance have no significant negative relationship.

H_A: Board size and firm performance have significant negative relationship.

2.4.2 Board Meeting

H_0: Board meeting and firm performance have no significant negative relationship.

H_A: Board meeting and firm performance have significant negative relationship.

2.4.3 Board Independence

H_0: Board independence and firm performance have no significant negative relationship.

H_A: Board independence and firm performance has significant negative relationship.

2.4.4 CEO Duality

H_0: CEO duality and firm performance have no significant positive relationship.

H_A: CEO duality and firm performance have significant positive relationship.

2.4.5 Audit Committee

H_0: Audit committee and firm performance have no significant negative relationship.

H_A: Audit committee and firm performance have significant negative relationship.

2.4.6 Ownership Structure

H_0: Ownership structure and firm performance have no significant negative relationship.

H_A: Ownership structure and firm performance have significant negative relationship.

2.5 Conclusion

In conclusion of Chapter 2, the findings from past researchers can provide more insights about the nature of relationship between the chosen variables. The next chapter elaborates more on the selected research method for this analysis.

CHAPTER 3

RESEARCH METHOD

The aim of this paper is to explore the determinants of company performance in the context of corporate governance. Therefore, a research methodology is needed to provide a clearer picture of planned procedures. This section basically introduces the preliminary process of analysing the collected data which consists of research design, research framework, model specification, data collection method and data analysis methods. This chapter serves as a blueprint to better address the research objectives and questions in a systematic way.

3.1 Research Design

Through step-by-step process, the information gained from this study tries to fulfill the specific objective which is to investigate the relationship between the corporate governance mechanisms and firm performance for Asian banks and insurance companies. The data selected is based on 10 Asian countries which are Hong Kong, Singapore, Malaysia, Taiwan, Thailand, Japan, India, Korea, China and Philippines. The selected countries were ranked as the top 10 countries in the Corporate Governance Watch 2018 (ACGA & CLSA Limited, 2018). With empirical testing, the nature of relationship between the variables can be defined. There might be other factors affecting company performance but the focus of this study is in the context of corporate governance.

Panel data is chosen as it includes both time series and cross sectional data. By analysing the set of obtained data, we can see the relevance of variables. Panel data is able to provide more data distinction, more precise predictions with additional degrees of freedom (Hsiao, 1985). This can refine the efficiency of statistical estimates. Researchers can study more complex and more accurate behavioural models with panel data instead of applying only time series data or cross sectional data (Larsen, 2006).

As the variables involved in this research are quantifiable, the statistics of the variables are retrieved from credible sources including Bloomberg Database and annual reports of the chosen banks and insurance companies. The public data sources are widely known in producing reliable statistical data which researchers can easily access. With the available secondary data, it is manageable to research this explanatory study through quantitative approach. A set of statistical methods is used to quantify the data, thus it empirically measure to reality while for a qualitative approach is more towards describing and explaining the collected data based on theories or involvement in actual experiences (Williams, 2011). Quantitative approach is able to provide empirical evidences which could deliver a more solid answer to the research topic with the application of research methods. The collected data will be tested with the application of STATA statistical software.

3.2 Data Collection

The secondary panel data for the model are collected from Bloomberg Database and Annual Reports.

Table 2: Variables

	Variable	Abbreviation	Description
Dependent	Firm Performance (Risk taking behaviour)	ZSCORE	Z-score (Return on assets plus equity-to-assets ratio divided by standard deviation of ROA)
Independent	1. Board Size	BSize	Number of board members
	2. Board Independence	IND	Percentage of independent directors
	3. Board Meeting	BMeet	Number of board meetings per year
	4. CEO Duality	CEO_Duality	Dummy variable taking the value 1 if CEO = chairman, otherwise 0.
	5. Audit committee	AudComSize	Size of audit committee

	6. Ownership structure	lnInstSH	Natural log of number of institutional shareholders
		InsiderOwn	Proportion of shares owned by insiders
		FgnSH	Proportion of shares owned by foreigners
Control	1. Firm Size	lnTA	Natural log of total assets
	2. Leverage	DA	Debt-to-asset ratio
	3. Liquidity	LA	Loan-to-asset ratio (applicable to banks only)
	4. Investment/ Growth opportunities	TobinQ	Tobin's Q

3.3 Sampling Design

The targeted populations for data collection are from banks and insurance companies in Asia. However, due to unavailability of data, only 78 public listed insurance companies and 243 public listed banks are selected from the chosen 10 Asian countries, ranging from 2015 to 2019.

3.4 Data Analysis

3.4.1 Descriptive Analysis

Descriptive statistics presents simple summaries about the basic features of the collected raw data. The two types of measures are i) central tendency and ii) dispersion or variability. Measure of central tendency includes calculation of mean, median and mode which helps in identifying the distribution of the observations. Measure of dispersion refers to minimum, maximum value, standard deviation, kurtosis and skewness which helps in understanding the spread of the data (Vetter, 2017). Under unbalanced panel data, the outcomes can be in the forms of overall (cross-sectional and time-series), within (time-series), and between (cross-sectional).

3.4.2 Pearson Correlation

Correlation determines the strength and direction of the relationship between a pair of variables. It presents a clear picture of the relevance of each chosen variables. In terms of strength of relationship, the range of the correlation coefficient value is between +1 and -1. A result of ± 1 shows a perfect degree of association between the two variables. If the value of correlation coefficient goes towards 0, it indicates that the connection between the two variables will be weaker. As for the direction of relationship, a positive sign of the coefficient shows a positive relationship while a negative sign of the coefficient shows an inverse relationship (Bewick, Cheek & Ball, 2003).

The assumptions of the Pearson correlation coefficient are stated as below (Gujarati & Porter, 2009).

1) Observations are in pairs
2) Linear relationship between two tested variables
3) All selected variables are continuous in terms of level of measurement
4) The values of the selected variables are normally distributed
5) Absence of heteroscedascity
6) Absence of outliers

3.4.3 Unbalanced Panel Data

Due to data limitations, unbalanced panel data approach is applied to investigate both cross-sectional and time series data. As mentioned by Biorn (2004), unbalanced panel data could help in reducing the loss of potential information collected as well as being able to analyse the effects that pure sectional or pure time-series data cannot detect. To elaborate, public listed insurance companies and banks in one individual country may not be sufficient to provide a comprehensive result to generalise the association between corporate governance mechanisms and firm performance.

Smith (2015) denotes that panel data approach is able to solve the heterogeneity bias that is often caused by uncaptured variable in the proposed model. As stated earlier, panel data method allows for more variations, less collinearity with higher degrees of freedom which makes it suitable for more complex models with large observations such as this research having up to 1605 observations from the selected sample (Baltagi, 2021).

3.4.4 Model Specification

3.4.4.1 Pooled Ordinary Least Square Regression

Pooled Ordinary Least Square (POLS) is used to estimate the multivariate regression model. The general multivariate model with K explanatory variables is showed in equation [1]. In this case, there are eight independent variables and three control variables with one dependent variables. The regression of the model is then estimated with the use of pooled OLS, as shown in equation [2]. POLS regression is also named as Constant Coefficient model. It is appropriate to apply when the groups of data are comparatively homogenous which the constant intercepts across the cross sectional data, the selected countries (Podestà, 2002). If the model for this study is applicable, it is going to satisfy the assumption of linear, unbiased result and consistency which makes pooled OLS the best model that has no serial correlation, no multicollinearity, and no heteroscedasticity issue. In addition, the model also has the assumptions that the error term has zero mean and constant variance.

$$Y_{i,t} = \beta_0 + \Sigma\, \beta_k X_{k,i,t} + e_{i,t} \qquad [1]$$

Whereby,

i = 1,2,….; refers to a cross-sectional unit;

t = 1,2,….; refers to a time period and

k = 1,2,….; refers to a particular independent variable.

Refer respectively to dependent and independent variables for unit i and time t; and is a random error and refer to the constant intercept and the slope parameters respectively.

The equation [1] substituted in equation [2] and as follows:

$$\begin{aligned} ZSCORE_{i,t} = {} & \beta_0 + \beta_1 BSize_{i,t} + \beta_2 IND_{i,t} + \beta_3 BMeet_{i,t} + \beta_4 CEO\_Duality_{i,t} + \\ & \beta_5 AudComSize_{i,t} + \beta_6 lnInstSH_{i,t} + \beta_7 InsiderOwn_{i,t} + \beta_8 FgnSH_{i,t} + \\ & \beta_9 lnTA_{i,t} + \beta_{10} DA_{i,t} + \beta_{11} TobinQ_{i,t} + e_{i,t} \end{aligned} \qquad [2]$$

β_0 = constant slope intercept

β_{1-11} = beta coefficient

i = selected company

t = Time trend, annual data range from 2015 to 2019

e = error term

The six assumptions need to be achieved under Pooled OLS regression

1. Correct Model. The regression model needs to be linear, correctly specified and has an addictive error term.
2. Exogeneity. All explanatory variables are uncorrelated with the error term.
3. Homoscedasticity. There is no heteroskedasticity in the model, the error term must have a constant variance.
4. Serial independent. There is no serial correlation in the model, observations of the error term are uncorrelated with each other's.
5. Normality. The error term is normally distributed.
6. No incidental parameters. There is no perfect multicollinearity in the model, no explanatory variable is a perfect linear function of any other explanatory variable.

3.4.4.2 Random Effects Model (REM)

REM is also named as error components model (ECM). The assumption of REM is intercept for each cross-sectional unit is take away from a distribution. Therefore, the error term in REM are not correlated with any specific explanatory variable. One of the advantages of using REM is it allows time invariant variable. REM assumes that the error term is not associated with the predictors which allows time invariant variable to be included in the model as an independent variable.

The model of REM is as below:

$$Y_{it} = \alpha_i + \beta_1 X_{it} + u_{it} + e_{it}$$

Where,

Y_{it} = Dependent Variable where i = entity and t = time

X_{it} = Independent Variable

α_i = Unknown intercept for each entity

β_1 = Coefficient of Independent Variable

u_{it} = Within entity error term

e_{it} = Between- entity error term

3.4.4.3 Fixed effects model (FEM)

The term "fixed effects" is due to each entity's intercept in FEM are secure overtime. FEM solely includes time-invariant variable as independent variable in the model. Although, the intercept is allowed to differ across subject. Hence, FEM assumes that the coefficients of the regressors do not change with the individuals and time factors.

The model of FEM is as below:

$Y_{it} = (\beta_0 + \lambda_i) + \beta_1 X_{it} + u_{it}$

Where,
Y_{it} = Dependent Variable where i = entity and t = time
X_{it} = Independent Variable
λ_i = Unknown intercept for each entity
β_1 = Coefficient of Independent Variable
u_{it} = error term

3.4.4.4 Breusch and Pagan Lagrangian Multiplier (BP-LM) Test

BP-LM test is a common statistical technique to examine heterogeneity and it helps to select the most suitable model between POLS and REM regression (Torres-Reyna, 2007). The hypotheses are as shown below.

H_0: $\sigma_\lambda^2 = 0$ (Homogeneity, POLS is preferred)
H_A: $\sigma_\lambda^2 \neq 0$ (Heterogeneity, REM is preferred)

LM is distributed as chi-squared with 1 degree of freedom under H_0. The H_0 for BP-LM test assumes that variances of error term are 0, meaning homoscedasticity. It fulfils the general assumption of OLS which is constant variances of error term. Whereas the alternative hypothesis (H_A) assumes the variances of error term are not equal to zero, meaning there is a presence of country-specific heterogeneity thus REM is preferred over POLS.

3.4.4.8 Hausman Test

Hausman test is applied to choose between FEM and REM on which model is the most suitable for this study. The correlation between intercept and independent variable is analysed with Hausman Test. Hausman test shows the regressor efficient in FEM and REM are statically different from each other (Gujarati & Porter, 2009). If they are different, FEM is preferred in this study whereas vice versa, if they are not different, REM is ideal for this research.

The hypotheses for Hausman test is as follows:
H_0: REM is preferred. The error term and independent variables are not correlated.
H_A: FEM is preferred. The error term and independent variables are correlated.

If the probability value (p-value) of Hausman test is lower than the significance level 0.05, it means the result is significant, H_0 will be rejected and thus FEM is preferred over REM whereas, if the p-value is higher than significance level, REM is preferred, H_0 will not be rejected.

3.5 Inferential Analysis

3.5.1 Stepwise Regression

Due to the extensive number of variables, stepwise regression is used to investigate the significance of each explanatory variables. It is a step-by-step iterative approach which involves the process of adding and removing the independent factors through repeated rounds or cycles of testing to find the most suitable model to have the desired outcomes (Efroymson, 1960). It can done through including the variable one at a time to assess its significance, or including all at a time and then removing those that are not relevant.

3.6 Diagnostic Testing

Diagnostic tests were used to enhance the accuracy of the proposed model. In the event of model containing econometric problems such as error terms are not normally distributed, have multicollinearity and have serial correlation, the final empirical results will be biased, inconsistent and inaccurate. Hence, the purpose of diagnostic checking is to recognise the unseen issues regarding on the model.

3.6.1 Multicollinearity Test

Multicollinearity refers to a situation which the explanatory variables are highly correlated with each other and this will cause the high estimated coefficient values. Multicollinearity exists in almost every model because the variables are theoretically related to some extent so variance inflation factor (VIF) formula is used to calculate the degree of multicollinearity. If the result of VIF falls within acceptable range, the model is considered not violating the assumption of a classical linear regression.

$$\text{VIF} = \frac{1}{(1 - \text{R}^2)}$$

Table 3.1: Decision Rule for Multicollinearity Test

Diagnostic Test	Hypothesis	Decision Rule
Multicollinearity test	H_0: No multicollinearity among the variables H_A: There is multicollinearity among the variables	$1 < VIF < 10$ H_0 is not rejected. H_A is rejected.

3.6.2 Serial Correlation

Serial correlation also known as autocorrelation refers to the degree of correlation between the same variables (current and lagged value) across different observations within the data set (Gujarati & Porter, 2009). Wooldridge test is used to detect if there is any presence of serial correlation. It is common for time series data to experience serial correlation which results in inefficient estimators.

Table 3.2: Decision Rule for Serial Correlation Test

Diagnostic Test	Hypothesis	Decision Rule
Wooldridge test	H_0: No autocorrelation among the variables H_A: There is autocorrelation among the variables	p-value > 0.05 H_0 is not rejected. H_A is rejected.

3.6.3 Heteroscedasticity

Heteroscedasticity describes a model that has error terms with inconstant variances. It indicates that the standard errors are biased and there might have errors in specifications (Gujarati, 2004). The Breusch-Pagan/Cook-Weisberg test is applied in STATA to determine if there is a presence of heteroscedasticity issue

Table 3.3: Decision Rule for Heteroscedasticity Test

Diagnostic Test	Hypothesis	Decision Rule
Breusch-Pagan/Cook-Weisberg test	H_0: Variances are constant. (Homoscedasticity) H_A: Variances are not constant. (Heteroscedasticity)	p-value > 0.05 H_0 is not rejected. H_A is rejected.

3.6.4 Cluster Test

Suggested by Hoechle (2007), if the two diagnostic tests resulted in heteroscedasticity and autocorrelation problem, a cluster analysis in STATA can be applied to rectify the problems. The results reported in this study are rectified.

3.7 Conclusion

To conclude, this methodology section is able to demonstrate the overall strategy to identify and evaluate the behaviour of the variables through the development of econometric models. Besides, the validity and reliability of this research can be verified by recognising the potential operational problems and common mistakes in applied econometrics.

CHAPTER 4

RESEARCH RESULT

This section entailed the analysis and interpretations of results obtained from the tests for both panels, insurance companies (INS) and banks (BANK). The first part describes about the descriptive analysis followed by Pearson's correlation of the raw data. Next, a best model is selected from the interpretation of results and the stepwise regression to assess the significance of the variables. After that, diagnostic checking is conducted to check if there is any statistical issues with the proposed model.

4.1 Descriptive Analysis

Table 4.1: Descriptive Analysis for INS

Variable	Mean	Std. Dev.	Min	Max	Observation
ZSCORE	61.8442	120.7019	-2.7635	844.7456	390
BSize	9.5940	3.7015	0	18	234
IND	45.0447	15.7410	18.182	90.909	224
BMeet	10.2658	4.4606	5	23	222
CEO_Duality	0.1634	0.3706	0	1	202
AudComSize	3.1295	1.6283	0	7	224
lnInstSH	18.8294	2.1619	13.0592	23.0476	379
InsiderOwn	8.0605	8.5138	0	52	380
FgnSH	18.3073	19.6538	0	84.87	193
lnTA	8.5546	3.0544	2.6019	14.8221	388
DA	3.8621	9.5282	0	75.4432	388
TobinQ	1.1585	0.5757	0.4552	7.1665	379

Table 4.1 presents the summary descriptive statistics for panel INS. Due to panel data approach, the output from STATA are categorized into overall (mix of cross sectional and time series), between (cross sectional) and within (time series). The "overall" outcomes will be discussed to evaluate the outcomes.

The average value of ZSCORE is 61.84, implying that the overall insurance companies will have lower likelihood of becoming insolvent while the range of ZSCORE is between -2.76 and 844.75. ZSCORE has the highest standard deviation with 120.70, which means the values of ZSCORE are widely spread around the true value. Taking into account that CEO_Duality is a dummy variable, TobinQ has the lowest standard deviation with 0.5757, indicating that the values of TobinQ are very close to the true mean. Looking at the number of observations, it is unbalanced, therefore BSize, AudComSize, InsiderOwn, FgnSH and DA have minimum value of zero which signifies that the inexistence of such data from specific firms.

Table 4.2: Descriptive Analysis for BANK

Variable	Mean	Std. Dev.	Min	Max	Observation
ZSCORE	104.7662	101.9699	0	724.7134	1215
BSize	10.90909	3.429367	0	20	957
IND	37.76969	16.52825	6.25	100	954
BMeet	12.77282	4.789358	2	31	964
CEO_Duality	0.110559	0.31378	0	1	805
AudComSize	3.044606	2.212276	0	8	964
lnInstSH	20.81826	2.103692	11.4294	25.9485	504
InsiderOwn	9.771127	10.66339	0	82	1136
FgnSH	20.07091	20.28762	0	97.1	396
lnTA	10.42165	2.033403	0.7883	15.2741	1211
DA	15.95571	16.72239	0	89.8928	1211
LA	58.3522	14.1416	0.9982	100.92	1169
TobinQ	1.017673	0.18265	0.4671	3.6267	1132

Table 4.2 presents the summary descriptive statistics for panel BANK. Due to panel data approach, the "overall" outcomes will be discussed to assess the raw data.

The average value of ZSCORE is 104.76, implying that on average, the banking industry will have a very low possibility of becoming insolvent while the range of ZSCORE is between zero and 724.71. Zero indicates that no data collected and the good thing is that there is no negative ZSCORE which means there is no bank facing insolvency risk. ZSCORE has the highest standard deviation with 101.97, which means the values of ZSCORE are not close to the true value. TobinQ has the lowest standard deviation with 0.1826, indicating that the values of TobinQ are very close to the true mean. Looking at the number of observations, it is unbalanced, therefore BSize, AudComSize, InsiderOwn, FgnSH and DA have minimum value of zero which signifies that the inexistence of such data from specific firms.

To observe both panels, they share similar descriptive statistics and FgnSH has the least number of observations while the ZSCORE has the most number of observations. To generalise, BSize, CEO_Duality, AudComSize, InsiderOwn, FgnSH and DA are the common elements that companies do not share to the public.

4.2 Pearson Correlation

Table 4.3 Pearson Correlation for INS

	ZSCORE
ZSCORE	1.0000
BSize	0.0838
IND	-0.1188
BMeet	0.1036
CEO_Duality	-0.0618
AudComSize	-0.3536
lnInstSH	0.0143
InsiderOwn	0.1558
FgnSH	0.0171
lnTA	0.1375
DA	-0.0110
TobinQ	-0.0696

Table 4.3 shows correlation analysis for INS. Considerably, ZSCORE has a no correlation with BSize whereby the value is 0.08. Same goes for CEO_Duality, lnInstSH, FgnSH, DA and TobinQ which have values of -0.06, 0.01, 0.02,-0.01 and -0.07 respectively. As for the relationship between IND and ZSCORE, both variables are weakly and negatively correlated. Conversely, none of the variables have strong correlation with ZSCORE. AudComSize also has a weak and negative correlation with ZSCORE, at -0.35. Those that have weak and positive correlation are BMeet, InsiderOwn and lnTA with values of 0.10, 0.16 and 0.14 respectively. In the case of very high correlation among the explanatory variables, it is safe to state that there is a lower chance of having multicollinearity issue and the VIF test for the model further reveals that the degree of redundancy in these variables is acceptable.

Table 4.4 Pearson Correlation for BANK

	ZSCORE
ZSCORE	1.0000
BSize	0.1382
IND	-0.1596
BMeet	-0.0195
CEO_Duality	-0.1617
AudComSize	-0.1360
lnInstSH	0.0237
InsiderOwn	0.1533
FgnSH	0.2103
lnTA	0.1094
DA	-0.1247
LA	-0.0199
TobinQ	-0.0810

Table 4.4 shows correlation analysis for BANK. BSize has a weak and positive correlation with ZSCORE with value of 0.14. This is the same scenario for InsiderOwn, FgnSH and lnTA whereby the values are 0.15, 0.21 and 0.11 respectively. As for weak and negative correlation with ZSCORE, there are IND,CEO_Duality, AudComSize and DA. In the situation where there is no correlation, variable BMeet, lnInstSH, LA and TobinQ do not correlate with ZSCORE. From the result, it can be observed that there is a very low possibility of the explanatory variables being highly correlated which affects the statistical power to assess the individual predictors.

To assess the two panels, the explanatory variables share different characteristics but somehow similar as none of them have high correlation with the dependent variable, ZSCORE. Only IND and AudComSize have weak and negative correlation with ZSCORE for INS while CEO_Duality and DA are additional factors that have weak and negative correlation with ZSCORE in panel BANK. As for positive correlation, INS have BMeet, InsiderOwn and lnTA while BANK have BSize, InsiderOwn, FgnSH and lnTA. They have common “no correlation” variables which are lnInstSH and TobinQ.

4.3 Model Estimation

4.3.1 POLS

Table 4.5 POLS for INS

Dependent Variable: ZSCORE			
Explanatory Variables	Coefficient	t-statistics	p-value
BSize	-3.1160	-2.55	0.013**
IND	-1.2404	-4.07	0.000***
BMeet	-1.4991	-2.55	0.013**
CEO_Duality	-5.9946	-0.94	0.351
AudComSize	5.9122	1.99	0.050**
lnInstSH	-5.7825	-2.87	0.005***
InsiderOwn	0.1854	0.95	0.345
FgnSH	0.0164	0.18	0.859
lnTA	7.2816	4.81	0.000***
DA	1.2664	5.76	0.000***
TobinQ	13.5789	1.32	0.190
Constant	143.7553	3.74	0.000***
R-squared: 0.5607			

Note:
* indicates the rejection of the null hypothesis at 10% significance level.
** indicates the rejection of the null hypothesis at 5% significance level.
*** indicates the rejection of the null hypothesis at 1% significance level.

$$ZSCORE_{i,t} = 143.7553 - 3.1160BSize_{i,t} - 1.2404IND_{i,t} - 1.4991BMeet_{i,t} - 5.9946CEO\_Duality_{i,t} + 5.9122AudComSize_{i,t} - 5.7825lnInstSH_{i,t} + 0.1854InsiderOwn_{i,t} + 0.0164FgnSH_{i,t} + 7.2816lnTA_{i,t} + 7.2816DA_{i,t} + 13.5789TobinQ_{i,t} + e_{i,t}$$

Table 4.5 presents POLS result for INS with R-squared at 0.5607, indicating about 56.07% of the variation in the ZSCORE equation was able to be explained by the independent variables. The interpret value of 143.7553 signifies that if all variables are held constant at 0, ZSCORE will rise by 143.7553 unit. The most important variables are IND, lnInstSH, lnTA and DA in ZSCORE equation which show 1%

significance while BSize, BMeet and AudComSize are significant at alpha level 0.05. However, other exogenous variables are insignificant.

Table 4.6 POLS for BANK

Dependent Variable: ZSCORE			
Explanatory Variables	Coefficient	t-statistics	p-value
BSize	8.1884	4.66	0.000***
IND	-0.9731	-1.97	0.050**
BMeet	0.1128	0.11	0.909
CEO_Duality	-69.2046	-2.94	0.004***
AudComSize	-24.8067	-3,00	0.003***
lnInstSH	-15.2665	-3.25	0.001***
InsiderOwn	0.6935	2.36	0.020**
FgnSH	0.3456	1.07	0.287
lnTA	36.5362	6.53	0.000***
DA	-1.4258	-1.96	0.052*
LA	-0.2689	-0.56	0.577
TobinQ	-373.1020	-3.36	0.001***
Constant	464.3656	3.55	0.001***
R-squared: 0.5158			

$$ZSCORE_{i,t} = 464.3656 + 8.1884BSize_{i,t} - 0.9731IND_{i,t} + 0.1128BMeet_{i,t} - 69.2046CEO\_Duality_{i,t} - 24.8067AudComSize_{i,t} - 15.2665lnInstSH_{i,t} + 0.6935InsiderOwn_{i,t} + 0.3456FgnSH_{i,t} + 36.5362lnTA_{i,t} - 1.4258DA_{i,t} - 0.2689LA_{i,t} - 373.1020TobinQ_{i,t} + e_{i,t}$$

Table 4.6 presents POLS result for BANK with R-squared at 0.5158, indicating about 51.58% of the variation in the ZSCORE equation was able to be explained by the independent variables. The constant value of 464.3656 signifies that if all variables are held constant at 0, ZSCORE will rise by 464.3656 unit. The most important variables are BSize, CEO_Duality, AudComSize, lnInstSH, lnTA and TobinQ in ZSCORE equation which show 1% significance while IND, InsiderOwn and are significant at alpha level 0.05. DA shows 10% significance whereas other exogenous variables are insignificant. Both panels contain different result and signs

for each exogenous variables but the overall fit for both POLS models are considered adequate.

4.3.2 REM

Table 4.7 REM for INS

Dependent Variable: ZSCORE			
Explanatory Variables	Coefficient	Z-statistics	p-value
BSize	-1.1742	-1.50	0.134
IND	-0.5197	-2.05	0.041**
BMeet	0.6702	1.66	0.098*
CEO_Duality	0.0989	0.03	0.980
AudComSize	5.7649	3.26	0.001***
lnInstSH	-1.4822	-0.46	0.644
InsiderOwn	0.1919	0.91	0.363
FgnSH	0.2451	3.02	0.003***
lnTA	0.0735	0.03	0.976
DA	1.4869	5.59	0.000***
TobinQ	-13.2515	-0.93	0.354
Constant	80.7936	1.51	0.132
R-squared: 0.4458			

Note:
* indicates the rejection of the null hypothesis at 10% significance level.
** indicates the rejection of the null hypothesis at 5% significance level.
*** indicates the rejection of the null hypothesis at 1% significance level.

$$ZSCORE_{i,t} = 80.7936 - 1.1742BSize_{i,t} - 0.5197IND_{i,t} + 0.6702BMeet_{i,t} + 0.0989CEO\_Duality_{i,t} + 5.7649AudComSize_{i,t} - 1.4822lnInstSH_{i,t} + 0.1919InsiderOwn_{i,t} + 0.2451FgnSH_{i,t} + 0.0735lnTA_{i,t} + 1.4869DA_{i,t} - 13.2515TobinQ_{i,t} + u_{i,t} + e_{i,t}$$

Table 4.7 shows the result of R-squared for REM INS is at 0.4458, indicating that about 44.58% of the variation in the ZSCORE equation was able to be explained by the explanatory variables. The constant value of 80.7936 signifies that if all variables are held constant at 0, ZSCORE will escalate by 80.7936 unit. The most important variables are AudComSize, FgnSH, and DA in ZSCORE equation which

show 1% significance while IND is significant at alpha level 0.05 and BMeet is significant at level 0.10. Others are insignificant in this REM for INS.

Table 4.8 REM for BANK

Dependent Variable: ZSCORE			
Explanatory Variables	Coefficient	Z-statistics	p-value
BSize	0.8186	0.91	0.364
IND	0.0862	0.48	0.629
BMeet	0.1818	0.48	0.630
CEO_Duality	-19.6843	-0.75	0.453
AudComSize	-2.1048	-0.89	0.374
lnInstSH	7.2144	2.49	0.013**
InsiderOwn	-0.0992	-0.63	0.529
FgnSH	-0.4265	-1.54	0.123
lnTA	-2.4307	-0.54	0.590
DA	0.0504	0.15	0.877
LA	-0.7071	-2.76	0.006***
TobinQ	-122.6068	-2.75	0.006***
Constant	161.6669	1.74	0.081*
R-squared: 0.2165			

$$ZSCORE_{i,t} = 161.6669 + 0.8186BSize_{i,t} + 0.0862IND_{i,t} + 0.1818BMeet_{i,t} - 19.6843CEO\_Duality_{i,t} - 2.1048AudComSize_{i,t} + 7.2144lnInstSH_{i,t} - 0.0992InsiderOwn_{i,t} - 0.4265FgnSH_{i,t} - 2.4307lnTA_{i,t} + 0.0504DA_{i,t} - 0.7071LA_{i,t} - 122.6068TobinQ_{i,t} + u_{i,t} + e_{i,t}$$

Table 4.7 shows the result of R-squared for REM BANK is at 0.2165, indicating that about 21.65% of the variation in the ZSCORE equation was able to be explained by the explanatory variables. The constant value of 161.6669 signifies that if all variables are held constant at 0, ZSCORE will escalate by 161.6669 unit. The most important variables are lnInstSH, LA and TobinQ in ZSCORE equation which show 1% significance and 5% significance whereas others are insignificant in this REM for BANK.

4.3.3 FEM

Table 4.9 FEM for INS

Dependent Variable: ZSCORE			
Explanatory Variables	Coefficient	t-statistics	p-value
BSize	-1.0243	-1.29	0.202
IND	-0.4637	-1.53	0.130
BMeet	0.7016	1.73	0.089*
CEO_Duality	0.4481	0.11	0.911
AudComSize	5.5467	3.09	0.003***
lnInstSH	5.3303	0.62	0.537
InsiderOwn	0.1001	0.43	0.672
FgnSH	0.2875	3.30	0.002***
lnTA	-10.5373	-1.86	0.068*
DA	0.9165	2.03	0.047**
TobinQ	-56.2057	-2.29	0.026**
Constant	97.7206	0.58	0.564
R-squared: 0.4952			

Note:
* indicates the rejection of the null hypothesis at 10% significance level.
** indicates the rejection of the null hypothesis at 5% significance level.
*** indicates the rejection of the null hypothesis at 1% significance level.

For the FEM model, both panels are under the Within-groups Fixed Effects. Both are focusing the within variation in the data only in which the model is manipulated in a way that the unobserved heterogeneity variable (λ_i) is eliminated. Therefore, the equation is as shown below.

$$ZSCORE_{i,t} - \overline{ZSCORE_{i,t}} = -1.0243(BSize_{i,t} - \overline{BSize_i}) - 0.4637(IND_{i,t} - \overline{IND_i}) + 0.7016(BMeet_{i,t} - \overline{BMeet_i}) + 0.4481(CEO\_Duality_{i,t} - \overline{CEO\_Duality_i}) + 5.5467(AudComSize_{i,t} - \overline{AudComSize_i}) + 5.3303(lnInstSH_{i,t} - \overline{lnInstSH_i}) + 0.1001(InsiderOwn_{i,t} - \overline{InsiderOwn_i}) + 0.2875(FgnSH_{i,t\,t} - \overline{FgnSH_i}) - 10.5373(lnTA_{i,t} - \overline{lnTA_i}) + 0.9165(DA_{i,t} - \overline{DA_i}) - 56.2057(TobinQ_{i,t} - \overline{TobinQ_i}) + u_{i,t}$$

Table 4.9 shows the R-squared taken for FEM INS under within-groups fixed effect is at 0.4952, indicating that about 49.52% of the variation in the ZSCORE equation was able to be explained by the explanatory variables. AudComSize and FgnSH are significant at alpha level 0.01 while DA and TobinQ are significant at alpha level 0.05. BMeet and lnTA show 10% significance. Other exogenous variables are not significant.

Table 4.10 FEM for BANK

Dependent Variable: ZSCORE			
Explanatory Variables	Coefficient	t-statistics	p-value
BSize	0.2182	0.25	0.800
IND	0.2034	1.22	0.225
BMeet	0.2777	0.78	0.437
AudComSize	-1.2432	-0.56	0.575
lnInstSH	7.3335	2.56	0.012**
InsiderOwn	-0.1647	-1.10	0.276
FgnSH	-0.1183	-0.40	0.687
lnTA	-8.4524	-1.82	0.072*
DA	0.1072	0.34	0.731
LA	-0.5472	-2.17	0.032**
TobinQ	-120.3915	-2.90	0.005***
Constant	193.3144	2.07	0.041**
R-squared: 0.2437			

$$ZSCORE_{i,t} - \overline{ZSCORE_{i,t}} = 0.2182(BSize_{i,t} - \overline{BSize_i}) + 0.2034(IND_{i,t} - \overline{IND_i}) + 0.2777(BMeet_{i,t} - \overline{BMeet_i}) - 1.2432(AudComSize_{i,t} - \overline{AudComSize_i}) + 7.3335(lnInstSH_{i,t} - \overline{lnInstSH_i}) - 0.1647(InsiderOwn_{i,t} - \overline{InsiderOwn_i}) - 0.1183(FgnSH_{i,t\,t} - \overline{FgnSH_i}) - 8.4524(lnTA_{i,t} - \overline{lnTA_i}) + 0.1072(DA_{i,t} - \overline{DA_i}) - 0.5472(LA_{i,t} - \overline{LA_i}) - 120.3915(TobinQ_{i,t} - \overline{TobinQ_i}) + u_{i,t}$$

Table 4.10 shows the R-squared taken for FEM BANK under within-groups fixed effect is at 0.2437, indicating that about 24.37% of the variation in the ZSCORE equation was able to be explained by the exogenous variables. TobinQ is significant at alpha level 0.01 while lnInstSH and LA are significant at alpha level 0.05. lnTA demonstrates 10% significance. Other exogenous variables are not significant and CEO_Duality was omitted due to collinearity for this model. Thus, more tests are required to identify the most suitable model in the following section.

4.4 Best Model Selection

4.4.1 Breusch and Pagan Lagrangian Multiplier (BP-LM) Test

Table 4.11 BP-LM Test for INS

Chi-square	p-value	Decision
33.15	0.0000***	Reject H_0. Proceed to Hausman Test

Table 4.12 BP-LM Test for BANK

Chi-square	p-value	Decision
168.33	0.0000***	Reject H_0. Proceed to Hausman Test

Note: *, **, *** represent significance at level of 10%, 5% and 1% accordingly.

BP-LM Test is employed for both panels in order to evaluate whether POLS or REM is more suitable for this research. The hypotheses are as follows.

H_0: $\sigma_\lambda^2 = 0$ (Homogeneity, POLS is preferred)

H_A: $\sigma_\lambda^2 \neq 0$ (Heterogeneity, REM is preferred)

Decision Rule: Reject H_0 if p-value is smaller than α 0.05; otherwise, do not reject H_0.

Based on Table 4.11 and Table 4.12, the chi-square for INS is 33.15 and for BANK is 168.33. Both present p-value of 0.0000 which signifies that the result is significant at alpha level 0.01. The decision for INS and BANK is to reject H_0.

Individual country-specific heterogeneity exists, hence REM is preferred as compared to POLS for both panels.

4.4.2 Hausman Test

Table 4.13 Hausman Test for INS

Chi-square	p-value	Decision
10.41	0.4937	H0 is not rejected. REM is preferred.

Table 4.14 Hausman Test for BANK

Chi-square	p-value	Decision
10.51	0.4853	H0 is not rejected. REM is preferred.

Note: *, **, *** represent significance at level of 10%, 5% and 1% accordingly.

Furthermore, Hausman test is employed for both panels in order to evaluate whether REM or FEM is more suitable for this research. The hypotheses are as follows.

H_0: REM is preferred. The error term and explanatory variables are not correlated.
H_A: FEM is preferred. The error term and explanatory variables are correlated.

Decision Rule: Reject H_0 if p-value is smaller than α 0.05; otherwise, do not reject H_0.

As presented in Table 4.13 and Table 4.14, both panels have same conclusion in which chi-square for INS is 10.41 and for BANK is 10.51. Both of their p-values are more 0.05 alpha level. Henceforth, the decision for both panels is to not reject H_0, REM is preferred over FEM. Also, the existing country-specific heterogeneity does not correlate with the explanatory variables.

4.5 Stepwise Regression

Table 4.15 Stepwise Regression Result for INS

	INS(1)	INS(2)	INS(3)	INS(4)	INS(5)
	ZSCORE	ZSCORE	ZSCORE	ZSCORE	ZSCORE
BSize	-0.1600				-1.1740
	(0.5618)				(0.7829)
IND	0.06120				-0.5200**
	(0.1082)				(0.2540)
BMeet	0.0763				0.6700*
	(0.3092)				(0.4047)
CEO_Duality		3.3530			0.0989
		(2.7602)			(0.9038)
AudComSize			0.3830		5.7650***
			(0.8945)		(1.7658)
lnInstSH				1.5750	-1.4820
				(1.2135)	(3.2057)
InsiderOwn				0.1550	0.1920
				(0.1897)	(0.2108)
FgnSH				0.2290***	0.2450***
				(0.0773)	(0.0812)
lnTA	-11.28***	-11.81***	-10.39***	-8.7820**	0.0735
	(2.9647)	(3.0216)	(2.8409)	(2.8115)	(2.4022)
DA	0.0264	0.0115	0.0332	1.2680***	1.4870***
	(0.1154)	(0.1168)	(0.1174)	(0.3298)	(0.2658)
TobinQ	-0.9470	0.3360	-0.9750	-1.2730	-13.250
	(3.0677)	(3.5865)	(3.114)	(3.1557)	(14.2882)
Constant	181.1***	187.8***	172.7***	90.5500*	80.7900
	(34.498)	(36.2571)	(33.2028)	(35.6566)	(53.6707)
N	219	199	219	192	92
R-squared	0.1362	0.1538	0.1340	0.2351	0.4458

Note: *, **, *** represent significance at level of 10%, 5% and 1% accordingly.
Standard errors are presented in brackets.

After running the previous tests, it can be concluded that REM model is used for INS. Each of the exogenous variables is added or removed to examine its significance. Table 4.15 displays the overall stepwise regression result for INS. For this research, BSize, IND and BMeet are categorised as board characteristics thus three of them are tested for the ZSCORE equation with the other three control variables namely, lnTA, DA and TobinQ in the first round. R-squared for INS(1) is 0.1362, indicating that around 13.62% of the variation in the ZSCORE equation was able to be explained by the explanatory variables but only lnTA show 1% significance.

Next, INS(2) has R-squared value of 0.1538. This round is testing solely CEO_Duality but it does contribute any significance in which its result is similar as INS(1). To observe the impact of AudComSize, INS(3) has R-squared value of 0.1340. Control variable, lnTA, remains as the only factor with 1% significance while others are not. This points out that INS(1), INS(2) and INS(3) are not preferable models.

As for ownership structure, INS(4) tests lnInstSH, InsiderOwn and FgnSH simultaneously and improvements can be seen. It has R-squared value of 0.2351, demonstrating that around 23.51% of the variation in the ZSCORE equation was able to be explained by the explanatory variables. lnTA show 5% significance while FgnSH and DA shows 1% significance.

To compare within panel INS, the ownership structure contributes a higher significance than board characteristics, CEO_Duality and AudComSize. AudComSize contributes the least in terms of "goodness of fit" which is interpreted by R-squared for ZSCORE equation. INS(5) has the highest R-squared value of 0.4458 when the relevant variables are included in the equation. About 44.58% of the variation in the ZSCORE equation was able to be explained by the explanatory variables. Control variable, DA is significant at 0.01 alpha level. Same goes for exogenous variables, AudComSize and FgnSH. IND and BMeet are significant at 0.05 alpha level and 0.10 alpha level respectively. Due to the unbalanced panel data approach and data limitation, the total number of observation (N) reduces to 92 observations for INS(5). INS(5) is further elaborated below.

The first variable that will be discussed is board size. Based on Table 4.15, there is no existence of linkage relationship between BSize and ZSCORE. Holding other variables constant, the coefficient of BSize, -1.1740 indicates that when BSize rises by 1 unit, insurance companies' risk taking will increase by 1.1740 unit, showing a positive effect (negative sign for ZSCORE). This is inconsistent with this research's expected relationship but other published researches also find similar results. Based on a study of Bahraini insurance companies, Najjar (2012) did not discover any statistically significant relationship between board size and risk taking. Likewise, board size is not associated with risk taking when analysing US firms (Brick & Chidambaran, 2010; Lewellyn & Muller-Kahle, 2012). As examined by Tao and Hutchinson (2013), the Australian financial sector did not present any relationship for these two variables. The insignificance might be due to the fact that it depends on the operations of the firm such as larger firms or those with more diverse business lines that require higher level of monitoring. Generally, some scholars suggest the ideal board size would range from 5 to 10 members as a small board does not incorporate sufficient board expertise and a large board might complicate the process of delegation of tasks and so on (Cole et al., 2008; Guest, 2009; Harris & Raviv, 2008).

Moreover, result shows that board independence is significantly and positively related to an insurer's performance in terms of taking care of all stakeholders' interests. Holding other variables constant, the coefficient of IND, -0.52 implies that when IND grows by 1 unit, insurance companies' risk taking will also grow by 0.52 unit, showing a downhill effect for ZSSCORE at 5% significance. This varies from previous findings and this research's expectations but Pathan (2009) argues that a positive link is expected for board independence and risk taking behaviour when the monitoring role is already established. Battaglia and Gallo (2017) propose that when the number of independent outside directors has become redundant, it could weaken the effectiveness of the advisory role that is bestowed to the boards because the excessive percentage of independent directors has prevented the relevant executives to participate the board. Inside directors who have spent more time in the organisation would have higher ability to provide insightful and valuable information that outside members do not normally possess. Thus, the rise in IND

could lead to higher firm's risk taking because the board might not have sufficient information to evaluate the relevant matters.

Apart from that, board meeting is found significant and it exerts a negative impact on firm performance at 10% significance (positive sign for ZSCORE). Holding other variables constant, the coefficient of BMeet, 0.67 signifies that when BMeet rises by 1 unit, ZSCORE will upsurge by 0.67 unit, showing an inverse effect between board meeting and firm performance. In a theoretical sense, board meetings are held to gather the members to discuss and review on issues faced by the organisations which then enhance the quality of managerial monitoring such as detecting misbehaviour like risk taking (Jensen & Meckling, 1976). Constancy in board meetings indicates that the board is proactive rather than reactive in keeping track on the management's behaviour which aligns with the stakeholders' interests, not engaging in risky events (Battaglia & Gallo, 2017). Therefore, this provides similar evidence with previous literature and the proposed hypothesis (Barros et al., 2013; Vafeas, 1999).

As for CEO duality, it does not possess any relation with the dependent variable, ZSCORE. However, if there is CEO duality, on average, it brings down the insurer's performance in terms of risk taking by 0.0989 unit, holding constant with other factors. Even though this outcome is not as expected, there are other scholars who have similar result. For instance, Jaikengkit (2004) analyses a sample of Thai companies and discovers that CEO duality is not related to risk taking. Abdullah (2006) who examines Malaysian firms, claims that companies with CEOs serving as board chairperson have lower propensity to go through financial distress than those that separate both positions. Besides, Sayari and Marcum (2018) express that the presence of Chinese firms in their international sample has caused CEO duality to have a disparate impact on risk due to its ethic policy and individual country's attributes. This could be the reason for the result of CEO duality is be different from what is expected.

Furthermore, the empirical findings present that there is a significant negative association between audit committee size and firm performance at 0.01 alpha level. Holding other variables constant, the coefficient of AudComSize, 5.7650 denotes that when AudComSize increases by 1 unit, ZSCORE will mount up by 5.7650

units. This is parallel with previous researches. According to Beasley et al. (2009) and Cohen et al. (2010), audit committee play an active part in supervising financial reports to meet standards and enforcing effective CG mechanisms. Prior studies have also claimed that the establishment of audit committee assists in solidifying board control and providing more incentives for risk aversion to mitigate market volatility (Cohen et al., 2010; Dionne et al., 2013; Sayari & Marcum, 2018). Consequently, this negative association between AudComSize and ZSCORE meets the expected relationship and previous empirical findings (Elamer et al., 2018; Jermias & Gani, 2014).

Next, institutional shareholding does not have any statistical association with ZSCORE but one unit rise in lnInstSH, on average, it reduces ZSCORE by 1.4820 unit, ceteris paribus. It implies a positive association between institutional shareholding and insurer's performance. As documented by Erkens et al. (2012) and Laeven and Levine (2009), institutional ownership is positively correlated with risk taking. This aligns with a concept in which it stipulates that a corporation with concentrated ownership would be induced by the large shareholders to engage in more risky business strategies as they have more authority and power to speak up. Likewise, Barry et al. (2011) express that when institutional investors obtain higher shareholdings, they are more likely to impose risky strategies. However, the presence of institutional shareholders does not influence the board's performance was studied by Beltratti and Stulz (2012). Thus, this insignificance result implies that insurance companies' behaviour is not influenced by institutional shareholding.

Results also demonstrate that insider ownership does not have any statistical linkage with ZSCORE but one unit rise in InsiderOwn, on average, ZSCORE will go up by 0.1920 unit, holding constant with other related variables. The negative association between insider ownership and firm performance (positive sign for ZSCORE) is within expectations of this research. Yet, the insignificance is similar with other studies in which Berger et al. (2016) claim that shareholdings of insiders do not have any direct influence on the likelihood of companies' failure. Barry et al. (2011) also argue that ownership structure does not pose an impact on risk taking for public listed financial intermediaries as market forces are stronger contributing factors in determining their risk appetite. Evidence provided by Himmelberg, Hubbard, and

Palia (1999) and Cho (1998) denote that the insignificance might be caused by the failure to control for the endogeneity of insider ownership or the simultaneous influence of other governance elements in the organisation. Therefore, other factors would have substituted or complemented the effect of insider ownership, allowing it to be not an important element to insurers' performance in taking care of the public's interests.

With regards to foreign ownership, it associates negatively with firm performance at 0.01 alpha level. Holding other factors constant, the coefficient of FgnSH, 0.2450 implies that when FgnSH grows by 1 unit, insurance companies' risk taking will decline by 0.2450 unit (positive sign for ZSCORE). There is an abundance of past studies that support that the presence of foreign ownership is inversely related to risk taking behaviour (Boubakri et al., 2013; Denis & McConnell, 2003; Vo, 2016). Ferreira and Matos (2008) highlight the importance of foreign ownership as they are more active in fostering internal CG mechanisms as compared to the local shareholders which is supported by Gillan and Starks (2003) who propose that cross-ownership plays a disciplining role. Henceforth, the negative relationship between these two variables meets this research's expectations.

Lastly, control variables are reported. Firm size represented by lnTA, has no statistical linkage with ZSCORE but one unit rise in lnTA, on average, ZSCORE will go up by 0.0735 unit, holding constant with other related variables whereas DA shows 1% significance. The coefficient of DA, 1.4870 indicates that when leverage ratio grows by 1 unit, insurance companies' risk taking will decline by 1.4870 unit, ceteris paribus. As for TobinQ, it is not significant with ZSCORE but one unit increase in TobinQ, on average, ZSCORE will go down by 13.25 unit, holding other factors constant.

Table 4.16 Stepwise Regression Result for BANK

	BK(1)	BK(2)	BK(3)	BK(4)	BK(5)
	ZSCORE	ZSCORE	ZSCORE	ZSCORE	ZSCORE
BSize	0.0136				0.8190
	(0.1898)				(0.9015)
IND	0.162***				0.0862
	(0.0466)				(0.1784)
BMeet	0.1570				0.1820
	(0.1379)				(0.3772)
CEO_Duality		0.9740			-19.6800
		(2.4636)			(26.2444)
AudComSize			0.2590		-2.1050
			(0.2813)		-2.3692
lnInstSH				2.2070*	7.214**
				(1.0819)	(2.8979)
InsiderOwn				-0.0204	-0.0992
				(0.1402)	(0.1575)
FgnSH				0.616***	-0.4270
				(0.1665)	(0.2767)
lnTA	-1.7680	-1.2360	-0.9270	-3.797	-2.4310
	(1.9047)	(1.9914)	(1.8627)	(3.6182)	(4.5127)
DA	-0.471***	-0.3670**	-0.432***	0.4860*	0.0504
	(0.1161)	(0.1222)	(0.1094)	(0.2453)	(0.3264)
LA	0.0489	0.0946	0.1060	-0.0441	-0.707***
	(0.0943)	(0.0999)	(0.0908)	(0.1100)	(0.2561)
TobinQ	-19.8400	-15.2500	-19.0900	-86.74**	-122.6***
	(12.8239)	(12.4481)	(12.7330)	(32.7449)	(44.5637)
Constant	144.0***	137.9***	137.8***	167.10**	161.7000*
	(26.4400)	(27.7003)	(26.0803)	(62.5452)	(92.6729)
N	891	785	934	205	153
R-squared	0.0497	0.0199	0.0295	0.2097	0.2165

Note: *, **, *** represent significance at level of 10%, 5% and 1% accordingly.

Standard errors are presented in brackets.

As mentioned earlier, the tests have stipulated that REM model is the most suitable for panel BANK, thus the stepwise regression is tested with each of the exogenous variables under REM. Table 4.16 displays the overall stepwise regression result for BANK.

Similarly, BSize, IND and BMeet are classified as board characteristics thus three of them are tested for the ZSCORE equation with the other three control variables namely, lnTA, DA, LA and TobinQ in the first round. BK(1) has R-squared value of 0.0497, indicating that around 4.97% of the variation in the ZSCORE equation was able to be explained by the explanatory variables. IND and DA are significant at 0.01 alpha level while others are insignificant.

When observing the effects of CEO_Duality, it is not significant in the BK(2) model with R-squared value of only 0.0199. As for AudComSize, the R-squared is very low at 0.0295. DA remains the only variable that is significant at 0.01 alpha level whereas others are insignificant for both BK(2) and BK(3). This points out that BK(1), BK(2) and BK(3) are not preferable models.

As for ownership structure, BK(4) tests lnInstSH, InsiderOwn and FgnSH simultaneously and improvements can be seen. It has R-squared value of 0.2097, demonstrating that around 20.97% of the variation in the ZSCORE equation was able to be explained by the explanatory variables. lnInstSH and FgnSH show 10% and 1% significance respectively while DA and TobinQ are significant at 0.10 and 0.05 alpha level accordingly.

To compare within the panel BANK, the ownership structure contributes a higher significance than board characteristics, CEO_Duality and AudComSize. CEO_Duality has the least impact on ZSCORE equation, followed by AudComSize. BK(5) has the highest R-squared value of 0.2165 when the relevant variables are included in the equation. About 21.65% of the variation in the ZSCORE equation was able to be explained by the exogenous variables. Only lnInstSH is significant at 0.10 alpha level. Control variables, LA and TobinQ are significant at 0.05 alpha level. Others are not significant. As not all banks have all the desired information, the total number of observation (N) reduces to 153 observations for BK(5) as compared to other models. BK(5) is further elaborated below.

The first variable that will be discussed is board size. Based on Table 4.16, there is no existence of linkage relationship between BSize and ZSCORE. Holding other variables constant, the coefficient of BSize, 0.8190 indicates that when BSize rises by 1 unit, the banks' risk taking will fall by 0.8190 unit, showing a negative effect (positive sign for ZSCORE). The negative effect has been documented by Adams and Jiang (2016), Haider and Fang (2016), Huang and Wang (2015) and Wang (2012) in which they reveal that a larger board with experienced board members are better in assessing risks hence they act as a moderating role on managerial conducts. However, the insignificance might be caused by the possible communication and coordination problems which further creates delays in decision-making and conflicts between the management and the board (Fama & Jensen, 1983). As highlighted earlier, Erkens et al. (2012) who investigate 296 financial institutions from 30 countries during the 2008 crisis, they find no evidence that board size is related to the bank risk behaviour. In a similar manner, Berger et al. (2012) claim that the size of board is not a contributing factor to a bank's stability in which they analyse it with the propensity to default.

Additionally, results also demonstrate that the board independence does not have any statistical linkage with firm performance in terms of risk taking but when IND was tested in BK(1) without the presence of other factors, it was significant at 0.01 alpha level. In BK(5), one unit rise in IND, on average, it increases ZSCORE by 0.0862 unit, holding constant with other related variables. Although the insignificant negative relationship between board independence and firm's risk taking performance in BK(5) does not support the designated hypothesis, previous literature demonstrates that the extensive risk taking behaviour is not related to board independence. Hermalin and Weisbach (2001) specify that the topic of board independence serves as a crucial element for particular board actions that occur during exceptional cases like crisis matter, not necessarily important on a daily basis, henceforth the insignificant relationship. Besides, Vafeas and Theodorou (1998) and Erkens et al. (2012) also claim that the number of independent directors does not have any relation to a firm's risk taking as well as stock return volatility. Evidence provided by Wang and Hsu (2013), financial institutions with majority of independent directors often do not associated with insolvency and fraud.

Next, there is no existence of linkage relationship between BMeet and ZSCORE. Holding other variables constant, the coefficient of BMeet, 0.1820 shows that when BMeet increases by 1 unit, banks' risk taking will decline by 0.1820 unit, showing a negative effect (positive sign for ZSCORE). Jensen (1993) and Vafeas (1999) brought up the issue of redundant meetings. The inconsistent findings might support that the number of board meetings does not necessarily equals to effective monitoring as prior literature argues that these board meetings might be spending too much efforts on routine tasks and not on specific risk taking matters. To illustrate, reports and presentations that are needed during meetings could be costly to the firm as it incurs expenses, time, and fees. The attendance of board members is a concern that is associated with the frequency of board meetings (Cornforth, 2001). Board meetings that are conducted without the full attendance of the relevant members do not automatically signifies the progress or the meaningfulness of the meeting. Henceforth, this might be the reason for the insignificance between BMeet and ZSCORE for panel BANK.

Aside from that, CEO duality does not possess any relation with the dependent variable, ZSCORE. Still, if there is an existence of CEO duality, it would enhance the bank's performance in terms of risk taking by 19.68 unit, holding other factors constant. Some prior literature has identical outcome. Based on Kim et al. (2009), the positive link between CEO duality and risk taking is affected adversely by the presence of the insider and institutional ownership. As stated previously, Sayari and Marcum (2018) express that the presence of Chinese firms in their international sample has caused CEO duality to have a contrasting effect on risk due to its ethic policy and individual country's attributes. Therefore, the variations in the collected data could influence the impacts of CEO duality on ZSCORE.

On top of that, audit committee does not relate to bank's risk bearing behaviour, represented by ZSCORE. The coefficient of AudComSize, -2.1050 shows that one unit increase in AudComSize, ZSCORE would decline by 2.1050 units (positive effect), ceteris paribus. Elamer et al. (2018) found that audit committee size does not influence a financial firm's risk bearing. Likewise, multiple researchers also analysed financial sector and concluded that there is a positive but insignificant link

between these two variables such as Adams and Jiang (2016), Hardwick et al. (2011) and Tornyeva and Wereko (2012).

With regards to institutional shareholders, it is statistically related with ZSCORE at 5% significance. One unit growth in lnInstSH, on average, it reduces banks' performance by 7.214 units, ceteris paribus. It implies an inverse association between institutional shareholders and insurer's performance. This is similar with the findings provided by Cheng et al. (2011), they found that the institutional ownership stability is linked with the firms' total risk but the presence of institutional shareholders does not result in a risk increasing effect. Besides, the negative link between concentrated ownership and bank risk is also found by Li and Song (2010). Similarly, Burkart et al. (1997) express that substantial shareholders exert a monitoring effect which helps to lessen managerial initiatives in obtaining benefits or taking excessive risks. Battaglia and Gallo (2017) state that institutional shareholders can exploit higher bargaining power over other shareholders and impose a direct impact on managers to acquire better insight into complex activities. Supported by Barry et al. (2011), the higher the shareholdings of the institutional investors in publicly listed banks, the lower the risk of experiencing default.

Apart from that, results reveal that insider ownership does not have any statistical linkage with ZSCORE but one unit rise in InsiderOwn, on average, ZSCORE will go down by 0.0992 unit, holding constant with other related variables. This insignificance is similar to INS. As revealed previously, the sample collected is public listed banks, so the influence of market forces might have weaken the influence of insider ownership in determining the banks' risk bearing (Barry et al., 2011). Besides, Berger et al. (2016) claim that the insolvency of banks is not induced by the shareholdings of banks' executives and directors. Using an international sample of financial intermediaries, Beltratti and Stulz (2012) figure out that greater insider ownership is positively related with stock volatility but it is not linked with better overall performance. Henceforth, the shareholdings of the insiders do not define a bank's performance as they are impacted more significantly by external market factors.

Results also exhibit that foreign ownership has a positive but insignificant link with firm performance in BK(5). However, in BK(4), FgnSH shows 1% significance

without the presence of other governance variables. Coming back to BK(5), holding other factors constant, the coefficient of FgnSH, 0.4270 implies that when FgnSH grows by 1 unit, banks' risk taking will increase by 0.4270 unit (negative sign for ZSCORE). This might be due to the individual country characteristics. John et al. (2008) express that the significance of association between foreign ownership and risk taking behaviour would only increase if the country itself foster strict corporate governance rules and practices. Thus, differences in country culture that relates to bank rules and regulations might cause the insignificance between these two variables.

Last but not least, control variables are reported. Firm size represented by lnTA, has no statistical linkage with ZSCORE but one unit increase in lnTA, on average, ZSCORE will decline by 2.4310 unit, holding other related variables constant. Similarly, DA is not significant to banks' risk taking. The coefficient of DA, 0.0504 presents that when banks apply more debt financing by 1 unit, ZSCORE will go up by 0.0504 unit, ceteris paribus. As for LA and TobinQ, both of these control variables are significant at 0.01 alpha level. One unit surge in liquidity would result in 0.707 unit fall in ZSCORE, holding all elements constant. Furthermore, one unit surge in TobinQ would lead to 122.6 unit fall in ZSCORE, holding other factors constant. A comparison between INS and BANK will be carried out in Chapter 5.

4.5 Diagnostic Checking

4.5.1 Multicollinearity

VIF is utilised to detect the multicollinearity problem. It requires the R-squared from the regression output from both panels.

Table 4.17 VIF test for INS and BANK

	R-squared	Result	Decision
INS	0.4458	VIF $= 1/ (1-R^2)$ $= 1/ (1-0.4458)$ $= 1.8044$	H_0 is not rejected. No multicollinearity.
BANK	0.2165	VIF $= 1/ (1-R^2)$ $= 1/ (1-0.2165)$ $= 1.2763$	H_0 is not rejected. No multicollinearity.

VIF test for both INS and BANK are presented in Table 4.17. Both values are within the range of 1 and 10 ($1 < VIF < 10$), indicating that multicollinearity issue does not exist for the models.

4.5.2 Serial Correlation

Table 4.18 Wooldridge test for INS and BANK

	F-statistics	p-value	Decision
INS	1.309	0.2693	H_0 is not rejected. No serial correlation.
BANK	20.812	0.0001	H_0 is rejected. Serial correlation exists.

Table 4.18 displays the Wooldridge test that is run in STATA for both panels. The decision for INS is to not reject H_0, signifying that there is no first order autocorrelation whereas the decision for BANK is to reject H_0, signifying the model has serial correlation and rectification is required.

4.5.3 Heteroscedasticity

Table 4.19 Breusch-Pagan/Cook-Weisberg test for INS and BANK

	Chi-square	p-value	Decision
INS	0.54	0.4614	H_0 is not rejected. Homoscedasticity exists.
BANK	14.93	0.0001	H_0 is rejected. Heteroscedasticity exists.

Table 4.18 displays the Breusch-Pagan/Cook-Weisberg test that is run in STATA for both panels. The decision for INS is to not reject H_0, signifying that homoscedasticity exists whereas the decision for BANK is to reject H_0, signifying the model has heteroscedasticity issue and rectification is required.

4.5.4 Cluster Test

Cluster test that is run in STATA is able to rectify the serial correlation and heteroscedasticity problems that is experienced by panel BANK (Hoechle, 2007). As the sample size might be too large, the REM result testing with cluster function remains the same.

4.6 Conclusion

To conclude this chapter, the empirical results from the data analysis show that the REM is the most suitable for both panels and they produce different outcomes. IND, BMeet, AudComSize, FgnSH and DA are associated with the firm's risk taking behaviour, represented by ZSCORE for INS. Other than that, lnInstSH, LA and TobinQ are the only contributing explanatory variables in the ZSCORE model for BANK. Although both of them are in the financial services sector, they have varying corporate governance elements that influence their risk taking behaviour. Additionally, it is also verified that the two proposed models have no econometrics issues after rectifications have been done. A brief overview of the conducted research, implications, limitations and recommendations will be deliberated in Chapter 5.

CHAPTER 5

DISCUSSION AND CONCLUSION

The overview of the result of this study is presented in this chapter with policy implications that can facilitate the development of corporate governance in the financial services sector. Limitations are also discussed as this study has its own shortcomings which could affect the validity and credibility of the research. For the benefit of future researchers on this topic, recommendations are highlighted in the following section.

5.1 Summary of Statistical Analyses

In Chapter 2, past literature were utilised to estimate the expected relationships for the variables. Hypotheses were set up to assess whether the obtained empirical results for this research are the same as the expected signs.

Table 5.1 Comparison of Hypotheses Developed and Statistical Outcomes for INS

	Explanatory Variables	Expected Sign (Theoretical)	Outcome
H1	Board Size	Negative	NS
H2	Board Independence	Negative	Positive
H3	Board Meeting	Negative	Negative
H4	CEO Duality	Positive	NS
H5	Audit Committee	Negative	Negative
H6	Ownership Structure	Negative	Negative

Note:

Ownerships structure is represented by lnInstSH, InsiderOwn and FgnSH. Only FgnSH is significant thus it is used to represent the outcome.

NS = Not significant

Table 5.1 presents the comparison of the hypotheses developed and the statistical outcomes for INS. Using the stepwise regression, it points out that only IND, BMeet, AudComSize and FgnSH have significant association with the dependent variable, firm performance, represented by ZSCORE. It can be concluded that hypotheses H3, H5 and H6 are in line with the expected signs. This implies that an insurer's performance in terms of risk taking is impacted negatively by a higher frequency of board meeting, a larger audit committee size and higher foreign ownership. As for board independence and institutional ownership, both were negatively related to firm performance when tested on its own but when it comes to testing a combination of CG related mechanisms, both changed to positively related and IND is significant while lnInstSH is not. Other than that, board size, CEO duality and insider ownership do not influence an insurer's performance.

To summarise the diagnostic tests for INS, there is no existence of serial correlation and heteroscedasticity issues. There is no multicollinearity among the variables which imply that there is no major econometrics problems presented in the model for INS.

Table 5.2 Comparison of Hypotheses Developed and Statistical Outcomes for BANK

	Explanatory Variables	Expected Sign (Theoretical)	Outcome
H1	Board Size	Negative	NS
H2	Board Independence	Negative	NS
H3	Board Meeting	Negative	NS
H4	CEO Duality	Positive	NS
H5	Audit Committee	Negative	NS
H6	Ownership Structure	Negative	Negative

Note:

Ownerships structure is represented by lnInstSH, InsiderOwn and FgnSH. Only lnInstSH is significant thus it is used to represent the outcome.

NS = Not significant

Table 5.2 presents the comparison of the hypotheses developed and the statistical outcomes for BANK. Using the stepwise regression, it points out that only lnInstSH has significant association with the dependent variable, firm performance, represented by ZSCORE. It can be concluded that hypothesis H6 is consistent with the expected signs. This implies that if a bank has a higher proportion of institutional shareholders, they are able to monitor a bank's risk taking behaviour (firm performance). Contrarily, other corporate governance factors do not pose any impact on banks' performance but it can be observed that IND and FgnSH were significant at 0.01 alpha level in the beginning when they were tested individually. Also, CEO duality and audit committee changed their signs from negative to positive after combining all the related variables.

To summarise the diagnostic tests for BANK, there is no existence of serial correlation and heteroscedasticity issues after running the cluster test. There is no multicollinearity among the variables which imply that there is no major econometrics problems presented in the model for BANK.

5.2 Discussion of Findings

This research aims to explore the association between corporate governance mechanisms and insurance and banking industry's performance in terms of risk taking. By employing unbalanced panel data analysis with stepwise regression, both panels exhibit varying results. Primarily, three models with different features namely POLS, REM and FEM are constructed. Subsequently, BP-LM and Hausman tests are used to select the best estimator for both panels. INS and BANK. Ultimately, REM is the most suitable to further test the variables. Diagnostic tests are conducted to testify the model's fitness.

Based on the sample of public listed insurance companies, there are four exogenous factors, particularly board independence, board meeting, audit committee and foreign ownership, have an impact on firm performance. As for a sample of public listed banks, only institutional shareholders play a part in influencing its risk taking. Even though both are in the same financial services sector, corporate governance variables do not influence banks' risk taking as much as insurance firms when the fitness of model, R-squared is observed. INS(5), 0.4458 is more than BK(5), 0.2165. Furthermore, when analysing individual effects which has been categorised into board characteristics, CEO duality, audit committee size and ownership structure, all of them show higher significance for the sample of insurance companies. This is probably due to the complex context of each industry. As discussed, the inconsistent empirical findings may be caused by the simultaneous effect of multiple variables pertaining to the industry's risk taking behaviour (Himmelberg, Hubbard & Palia, 1999). It can also be concluded that banks' risk taking behaviour does not depend on corporate governance mechanisms whereas insurers are overall affected by the internal CG practices and the types of ownership.

5.3 Implications of Study

For the betterment of corporate governance, there are some implications can be put importance by investors, managers, board members and policymakers in the financial services sector based on the outcomes of the analysis of this study. Theoretically, internal corporate governance mechanisms are helpful in developing expectations about the firm performance in regards to risk taking.

In the aspect of board independence, the result for insurance industry has suggested that a balance of inside and outside directors should be achieved in order to effectively manage risk. Generally, scholars have promoted more independent directors should be included but there is a possibility that they do not necessarily understand the true progress of the internal operations of a firm. Some studies have put importance in taking note of the role that is participated by the inside and outside directors. Excessive number of independent directors would heighten the chance of information asymmetry as inside directors who are often involved in the company's operations would have more insights to provide to the board. Dependent directors also have its meaningful functions to contribute to board's responsibilities. Therefore, assessing the business lines of the financial institutions helps in determining the number of inside and outside directors required.

The establishment of effective audit committee is no doubt provide support to oversee audit and internal controls. As a financial institution, sustainable and reliable financial reporting is seen as crucial in the eyes of the stakeholders. Employing knowledgeable experts can help in facilitating communication between the auditors, board of directors and the local regulators. Financial reports are seen as the most informative and accurate sources for the public to review thus meeting accounting and reporting standards are a must for the relevant stakeholders to evaluate a financial intermediary's risk taking behaviour. To strengthen credibility with the stakeholders, setting up a risk committee could help in assessing risk. Today, risk has divided into different types of risks that could affect a firm's functions, especially those caused by external market forces. Expanding the audit committee size or developing a trustable risk management committee could help in creating a more effective system for risk oversight and internal corporate governance.

In relation to ownership structure, the concentration of different shareholders in the financial institutions exhibit varying effects. To set as an example, the foreign ownership in some Asian countries like Malaysia does not pose any impact on the board's decision because major parts of banking industry are governed and regulated by the local authority which give little power to foreign shareholders. Plus, some countries have formulated their own policies which controls the concentration of shareholdings in the financial services sector, especially banks. The risk taking behaviour is fluctuated by the types of concentrated ownership. Substantial shareholders do not ultimately provide support in lowering risk but they do serve as an additional party with monitoring effect in which they have a voice in speak up if the organisation is taking excessive risk or should go for riskier policies to further enhance financial performance.

5.4 Limitations of Study

The first limitation that this research faced is pertaining to the availability of data. Some variables are not available for some firms even though they are public listed, especially the insurance industry which they do not publish as much information as banks do. This has made the data collection process more difficult, resulting an unbalanced panel data, as it is best to maximise the utilization of available information to draw a more accurate conclusion. Even though the sample size has exceeded the minimum standard, it would be better to increase sample size as a smaller sample size might lead to a biased and distorted result.

Moreover, this study has limited coverage as this research is based on a sample of 10 Asian countries listed on the CG Watch 2018, it might not be equivalent to other developing countries such as Indonesia, Vietnam, Cambodia and so on. Countries around Asia do not share similar traits in terms of economic development, education system, demography, culture and social norms. For illustration, China and Malaysia have a huge difference in local laws and regulations that governs the banking and insurance industry. Therefore, it can be hard to determine the relevance of the result to other Asian countries. Besides, the implications that are suggested have the tendency of being biased towards the countries with the available data.

Apart from that, the proposed model might not give a complete and dynamic insight of corporate governance factors that influence the firm performance in terms of risk taking behaviour at all aspects. There might be other related variables that are not tested. Without all the relevant factors, the validity of the model to apply to reality could be lacking. Yet again, it is challenging to identify all the variables as publicly available information is not perfect.

5.5 Recommendations for Future Research

Due to the unavailability of data, this study is not able to obtain a larger sample size. If future researchers are able to overcome this barrier, it is best to increase the sample size or time frame of this research in order to enhance the accuracy of the empirical results. Apart from that, it would be more informative to investigate the impact of corporate governance mechanisms of a specific sector of one individual country. As an illustration, findings could be more penetrative in regards to the progress of best CG practices/ standards if the sample is to compare with United Kingdom (UK), a country that developed code of corporate governance as early as in the 1990s. This could help in addressing the particular country's sector that requires improvements. In other words, it might be useful to compare across sectors or industries to understand the sustainability of specific industry and discover more unexpected trends.

On top of that, it is recommended for researchers to consider to include additional relevant independent variables. More realistic and accurate indicators are recommended to be used. Other boarder specific aspects such as audit quality, level of disclosure, timeliness of reporting, tenure of independent directors, remuneration committee, family-controlled business as well as governance index etc. The more relevant the model, the more effective it is for policymakers and managers to refer and make decisions to address the issues of risk management and corporate governance.

Furthermore, despite that secondary data could provide information such as calculated return on asset or return on equity, the utilisation of primary data may also enrich future research. Interviews conducted with the top management or board

members could help in constructing a more realistic model. Mixing the collection of primary and secondary data can increase the authenticity and reliability of the study as it is objective and collected directly from the original source.

5.6 Conclusion

In short, this chapter summarises the important details of the empirical result which relates the research objectives. Corporate governance mechanisms are more effective in influencing insurance companies' performance than banks in terms of risk taking. In particular, size of board and CEO duality do not concerns the risk appetite of the financial services sector. Other than that, future researchers could enhance this study by considering the implications, limitations and recommendations that are explored in this chapter.

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APPENDICES

Appendix A: Descriptive Analysis for INS

Variable		Mean	Std. Dev.	Min	Max	Observations
zscore	overall	61.84424	120.7019	-2.7635	844.7456	N = 390
	between		121.0017	.53998	828.5051	n = 78
	within		8.836316	-39.48794	112.7211	T = 5
bsize	overall	9.594017	3.701543	0	18	N = 234
	between		3.057848	4.6	16.2	n = 47
	within		2.114684	-3.005983	16.99402	T = 4.97872
ind	overall	45.04465	15.74098	18.182	90.909	N = 224
	between		14.80421	20.8574	86.101	n = 46
	within		5.307199	24.56825	70.99725	T-bar = 4.86957
bmeeting	overall	10.26577	4.460647	5	23	N = 222
	between		4.09176	5.2	21.8	n = 46
	within		1.756823	5.865766	19.06577	T-bar = 4.82609
ceo_du~y	overall	.1633663	.3706181	0	1	N = 202
	between		.3446529	0	1	n = 45
	within		.2052382	-.6366337	.9633663	T-bar = 4.48889
audcom~e	overall	3.129464	1.628289	0	7	N = 224
	between		1.521255	0	7	n = 46
	within		.6249664	.1294643	7.129464	T-bar = 4.86957
lninstsh	overall	18.82944	2.161934	13.0592	23.0476	N = 379
	between		2.123163	13.51328	22.96484	n = 78
	within		.4742053	15.47466	22.63606	T-bar = 4.85897
inside~n	overall	8.060526	8.51378	0	52	N = 380
	between		8.104097	0	44.2	n = 78
	within		2.780444	-15.93947	20.06053	T-bar = 4.87179
fgnsh	overall	18.30731	19.65376	0	84.87	N = 193
	between		18.48798	.044	81.916	n = 40
	within		6.619771	-26.85669	52.79331	T-bar = 4.825
lnta	overall	8.554629	3.054417	2.6019	14.8221	N = 388
	between		3.058174	3.02422	14.77162	n = 78
	within		.1915072	7.618229	9.383709	T-bar = 4.97436
da	overall	3.86208	9.528185	0	75.4432	N = 388
	between		8.550434	0	48.83316	n = 78
	within		4.253642	-21.35718	49.54432	T-bar = 4.97436
tobinq	overall	1.158454	.5756646	.4552	7.1665	N = 379
	between		.4579448	.62256	2.9128	n = 78
	within		.3584576	-.7794665	5.707234	T-bar = 4.85897

Appendix B: Descriptive Analysis for BANK

Variable		Mean	Std. Dev.	Min	Max	Observations
zscore	overall	104.7662	101.9699	0	724.7134	N = 1215
	between		101.7049	3.33316	692.0139	n = 243
	within		9.383836	-67.47718	161.8749	T = 5
bsize	overall	10.90909	3.429367	0	20	N = 957
	between		2.803354	4.4	17.6	n = 193
	within		1.996964	-3.290909	20.70909	T-bar = 4.95855
ind	overall	37.76969	16.52825	6.25	100	N = 954
	between		15.46279	14.381	81.601	n = 196
	within		5.644212	1.261494	79.03949	T-bar = 4.86735
bmeeting	overall	12.77282	4.789358	2	31	N = 964
	between		4.37636	4.2	26.6	n = 199
	within		1.915509	5.172822	26.97282	T-bar = 4.84422
ceo_du~y	overall	.110559	.3137802	0	1	N = 805
	between		.2892803	0	1	n = 178
	within		.1159001	-.689441	.910559	T-bar = 4.52247
audcom~e	overall	3.044606	2.212276	0	8	N = 964
	between		2.014058	0	7.6	n = 198
	within		.9046819	-1.755394	7.244606	T-bar = 4.86869
lninstsh	overall	20.81826	2.103692	11.4294	25.9485	N = 504
	between		2.059797	12.95394	25.92356	n = 111
	within		.4326854	18.21876	26.89202	T-bar = 4.54054
inside~n	overall	9.771127	10.66339	0	82	N = 1136
	between		10.03856	0	69	n = 238
	within		3.317862	-17.42887	43.57113	T-bar = 4.77311
fgnsh	overall	20.07091	20.28762	0	97.1	N = 396
	between		18.10283	0	96.904	n = 82
	within		9.431505	-25.09309	54.55691	T-bar = 4.82927
lnta	overall	10.42165	2.033403	.7883	15.2741	N = 1211
	between		2.029257	1.36068	15.15706	n = 243
	within		.1831481	9.060727	11.59817	T-bar = 4.98354
da	overall	15.95571	16.72239	0	89.8928	N = 1211
	between		16.29441	0	86.28386	n = 243
	within		4.112702	-15.30503	55.42089	T-bar = 4.98354
la	overall	58.35223	14.14164	.9982	100.92	N = 1169
	between		13.79141	1.85286	100.92	n = 235
	within		3.968996	23.22353	86.22633	T-bar = 4.97447
tobinq	overall	1.017673	.1826529	.4671	3.6267	N = 1132
	between		.1712966	.7257	2.62332	n = 239
	within		.0831568	-.0605468	2.466313	T-bar = 4.7364

Appendix C: Pearson Correlation for INS

	zscore	bsize	ind	bmeeting	ceo_du~y	audcom~e	lninstsh
zscore	1.0000						
bsize	0.0838	1.0000					
ind	-0.1188	-0.3732	1.0000				
bmeeting	0.1036	0.0055	-0.3040	1.0000			
ceo_duality	-0.0618	0.1524	0.0281	0.2066	1.0000		
audcomsize	-0.3536	0.1763	0.2545	-0.5112	0.1008	1.0000	
lninstsh	0.0143	0.5998	-0.0608	-0.1697	0.0551	0.3786	1.0000
insiderown	0.1558	0.2078	-0.2439	0.1514	0.0773	-0.1969	0.0678
fgnsh	0.0171	-0.1527	0.4283	-0.0734	-0.0111	-0.0568	0.2808
lnta	0.1375	0.3789	0.1965	-0.1002	0.2423	0.2612	0.6226
da	-0.0110	0.1854	-0.0260	-0.1261	0.0048	0.0584	0.1556
tobinq	-0.0696	-0.1798	-0.0167	0.3363	0.0073	-0.2459	-0.0859

	inside~n	fgnsh	lnta	da	tobinq
insiderown	1.0000				
fgnsh	0.0163	1.0000			
lnta	0.2060	0.4560	1.0000		
da	-0.0035	0.2174	0.1552	1.0000	
tobinq	-0.1393	-0.0433	-0.2752	0.0908	1.0000

Appendix D: Pearson Correlation for BANK

	zscore	bsize	ind	bmeeting	ceo_du~y	audcom~e	lninstsh
zscore	1.0000						
bsize	0.1382	1.0000					
ind	-0.1596	-0.1355	1.0000				
bmeeting	-0.0195	-0.0909	-0.2731	1.0000			
ceo_duality	-0.1617	-0.1235	0.1784	-0.0641	1.0000		
audcomsize	-0.1360	0.3645	0.4297	-0.2107	-0.0157	1.0000	
lninstsh	0.0237	0.3811	-0.2346	0.1767	-0.3660	0.4489	1.0000
insiderown	0.1533	0.0744	-0.1420	0.0177	-0.0563	-0.1849	-0.0930
fgnsh	0.2103	0.0754	0.2261	-0.0491	0.0449	-0.2716	0.3847
lnta	0.1094	0.3389	0.1157	-0.1171	0.1260	0.3461	0.6813
da	-0.1247	0.0287	0.2666	-0.3544	-0.0439	0.2013	0.0392
la	-0.0199	-0.1541	0.0854	0.1170	0.1006	-0.1791	-0.0773
tobinq	-0.0810	-0.0116	0.3356	-0.2648	-0.1326	0.1166	-0.0093

	inside~n	fgnsh	lnta	da	la	tobinq
insiderown	1.0000					
fgnsh	0.1285	1.0000				
lnta	0.0049	0.3429	1.0000			
da	-0.2029	-0.0058	-0.0791	1.0000		
la	0.0463	0.0088	-0.3264	-0.1482	1.0000	
tobinq	0.0126	-0.0020	-0.3298	0.1806	-0.0937	1.0000

Appendix D: POLS for INS

```
      Source |       SS           df       MS      Number of obs   =        92
-------------+----------------------------------   F(11, 80)       =      9.28
       Model |  23421.5982        11   2129.2362   Prob > F        =    0.0000
    Residual |  18350.0259        80  229.375324   R-squared       =    0.5607
-------------+----------------------------------   Adj R-squared   =    0.5003
       Total |  41771.6241        91  459.028836   Root MSE        =    15.145

------------------------------------------------------------------------------
      zscore |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       bsize |  -3.115951     1.2208    -2.55   0.013     -5.54542   -.6864823
         ind |  -1.240443   .3049611    -4.07   0.000    -1.847335   -.6335514
    bmeeting |  -1.499076   .5889339    -2.55   0.013    -2.671092   -.3270603
 ceo_duality |    -5.9946   6.385621    -0.94   0.351    -18.70239    6.713191
  audcomsize |   5.912247    2.96992     1.99   0.050     .0019177    11.82258
    lninstsh |  -5.782482   2.016613    -2.87   0.005    -9.795671   -1.769294
  insiderown |    .185376   .1951372     0.95   0.345    -.2029594    .5737114
       fgnsh |   .0164243   .0918766     0.18   0.859    -.1664159    .1992646
        lnta |   7.281573   1.514881     4.81   0.000     4.266863    10.29628
          da |   1.266449   .2199841     5.76   0.000     .8286666    1.704231
      tobinq |   13.57887   10.26932     1.32   0.190    -6.857732    34.01546
       _cons |   143.7553   38.44332     3.74   0.000     67.25066    220.2599
------------------------------------------------------------------------------
```

Appendix E: POLS for BANK

```
      Source |       SS           df       MS      Number of obs   =       153
-------------+----------------------------------   F(12, 140)      =     12.43
       Model |  303466.151        12  25288.8459   Prob > F        =    0.0000
    Residual |  284926.433       140  2035.18881   R-squared       =    0.5158
-------------+----------------------------------   Adj R-squared   =    0.4742
       Total |  588392.584       152  3871.00384   Root MSE        =    45.113

------------------------------------------------------------------------------
      zscore |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       bsize |   8.188367   1.756449     4.66   0.000     4.715773    11.66096
         ind |   -.973087   .4929807    -1.97   0.050    -1.947736    .0015624
    bmeeting |   .1127617   .9815294     0.11   0.909    -1.827775    2.053298
 ceo_duality |  -69.20462     23.508    -2.94   0.004    -115.6812   -22.72803
  audcomsize |  -24.80672   8.277029    -3.00   0.003    -41.17086   -8.442593
    lninstsh |  -15.26651   4.699178    -3.25   0.001    -24.55704   -5.975985
  insiderown |   .6934587   .2935834     2.36   0.020     .1130287    1.273889
       fgnsh |   .3455891   .3233594     1.07   0.287    -.2937098    .9848881
        lnta |   36.53618   5.597395     6.53   0.000     25.46983    47.60253
          da |  -1.425789    .728403    -1.96   0.052    -2.865881    .0143032
          la |  -.2688965   .4812705    -0.56   0.577    -1.220394    .6826012
      tobinq |  -373.1023   110.9443    -3.36   0.001    -592.4451   -153.7595
       _cons |   464.3656   130.7875     3.55   0.001     205.7916    722.9396
------------------------------------------------------------------------------
```

Appendix F: REM for INS

```
Random-effects GLS regression                   Number of obs     =         92
Group variable: c_id                            Number of groups  =         22

R-sq:                                           Obs per group:
     within  = 0.4458                                         min =          1
     between = 0.3151                                         avg =        4.2
     overall = 0.3589                                         max =          5

                                                Wald chi2(11)     =      55.65
corr(u_i, X)   = 0 (assumed)                    Prob > chi2       =     0.0000

------------------------------------------------------------------------------
      zscore |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       bsize |   -1.17417   .7829283    -1.50   0.134    -2.708682    .3603412
         ind |  -.5196703   .2539511    -2.05   0.041    -1.017405   -.0219353
    bmeeting |   .6702191    .404713     1.66   0.098    -.1230037    1.463442
 ceo_duality |   .0988582   3.903843     0.03   0.980    -7.552533    7.750249
  audcomsize |   5.764892     1.7658     3.26   0.001     2.303987    9.225797
    lninstsh |  -1.482168   3.205653    -0.46   0.644    -7.765133    4.800797
  insiderown |   .1918511   .2108162     0.91   0.363     -.221341    .6050431
       fgnsh |   .2450725   .0812049     3.02   0.003     .0859138    .4042312
        lnta |   .0735018   2.402246     0.03   0.976    -4.634814    4.781818
          da |   1.486871   .2658428     5.59   0.000     .9658292    2.007914
      tobinq |  -13.25148   14.28825    -0.93   0.354    -41.25593    14.75297
       _cons |   80.79356   53.67066     1.51   0.132    -24.39901    185.9861
-------------+----------------------------------------------------------------
     sigma_u |  16.158598
     sigma_e |  6.3642626
         rho |   .8657053   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

Appendix G: REM for BANK

```
Random-effects GLS regression                   Number of obs     =        153
Group variable: c_id                            Number of groups  =         32

R-sq:                                           Obs per group:
     within  = 0.2165                                         min =          1
     between = 0.1191                                         avg =        4.8
     overall = 0.1133                                         max =          5

                                                Wald chi2(12)     =      32.34
corr(u_i, X)   = 0 (assumed)                    Prob > chi2       =     0.0012

------------------------------------------------------------------------------
      zscore |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       bsize |   .8186047    .901454     0.91   0.364    -.9482128    2.585422
         ind |   .0862072   .1783927     0.48   0.629    -.2634361    .4358506
    bmeeting |   .1817584    .377177     0.48   0.630    -.5574949    .9210118
 ceo_duality |  -19.68425   26.24437    -0.75   0.453    -71.12227    31.75377
  audcomsize |  -2.104787   2.369189    -0.89   0.374    -6.748311    2.538737
    lninstsh |   7.214397   2.897866     2.49   0.013     1.534684    12.89411
  insiderown |  -.0992411   .1574534    -0.63   0.529    -.4078442     .209362
       fgnsh |  -.4265487   .2767233    -1.54   0.123    -.9689163     .115819
        lnta |  -2.430726   4.512743    -0.54   0.590    -11.27554    6.414087
          da |   .0503619   .3264132     0.15   0.877    -.5893962     .69012
          la |  -.7071187   .2560626    -2.76   0.006    -1.208992   -.2052453
      tobinq |  -122.6068   44.56368    -2.75   0.006      -209.95   -35.26354
       _cons |   161.6669    92.6729     1.74   0.081    -19.96864    343.3024
-------------+----------------------------------------------------------------
     sigma_u |  47.284887
     sigma_e |  8.5957263
         rho |    .968011   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

Appendix H: FEM for INS

```
Fixed-effects (within) regression               Number of obs     =         92
Group variable: c_id                            Number of groups  =         22

R-sq:                                           Obs per group:
     within  = 0.4952                                         min =          1
     between = 0.0002                                         avg =        4.2
     overall = 0.0000                                         max =          5

                                                F(11,59)          =       5.26
corr(u_i, Xb)  = -0.7177                        Prob > F          =     0.0000

------------------------------------------------------------------------------
      zscore |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       bsize |  -1.024313   .7931244    -1.29   0.202    -2.611351    .5627255
         ind |  -.4636736    .302141    -1.53   0.130    -1.068256    .1409091
    bmeeting |   .7016264   .4061226     1.73   0.089     -.111023    1.514276
 ceo_duality |   .4481096   3.992526     0.11   0.911    -7.540916    8.437136
  audcomsize |   5.546653    1.79498     3.09   0.003     1.954907    9.138399
    lninstsh |   5.330279   8.582769     0.62   0.537     -11.8438    22.50436
  insiderown |   .1001024    .234987     0.43   0.672    -.3701055    .5703104
       fgnsh |   .2875243   .0872173     3.30   0.002     .1130028    .4620458
        lnta |  -10.53733   5.658046    -1.86   0.068    -21.85905    .7843967
          da |   .9165023    .452474     2.03   0.047     .0111039    1.821901
      tobinq |   -56.2057   24.56698    -2.29   0.026    -105.3641   -7.04729
       _cons |   97.72064   168.3717     0.58   0.564    -239.1904    434.6317
-------------+----------------------------------------------------------------
     sigma_u |   29.73309
     sigma_e |  6.3642626
         rho |  .95619125   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(21, 59) = 18.76                     Prob > F = 0.0000
```

Appendix I: FEM for BANK

```
Fixed-effects (within) regression               Number of obs     =        153
Group variable: c_id                            Number of groups  =         32

R-sq:                                           Obs per group:
     within  = 0.2437                                         min =          1
     between = 0.0020                                         avg =        4.8
     overall = 0.0015                                         max =          5

                                                F(11,110)         =       3.22
corr(u_i, Xb)  = -0.2437                        Prob > F          =     0.0008

------------------------------------------------------------------------------
      zscore |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       bsize |   .2181502   .8582142     0.25   0.800    -1.482629    1.918929
         ind |   .2033646   .1668448     1.22   0.225    -.1272826    .5340118
    bmeeting |   .2776612   .3557765     0.78   0.437    -.4274042    .9827267
 ceo_duality |          0  (omitted)
  audcomsize |  -1.243174   2.208993    -0.56   0.575    -5.620879     3.13453
    lninstsh |   7.333543   2.867388     2.56   0.012     1.651053    13.01603
  insiderown |  -.1646774   .1503018    -1.10   0.276    -.4625403    .1331856
       fgnsh |  -.1183312   .2927761    -0.40   0.687    -.6985447    .4618822
        lnta |  -8.452378   4.650709    -1.82   0.072    -17.66899    .7642361
          da |   .1072063   .3108922     0.34   0.731    -.5089092    .7233217
          la |  -.5471663   .2516264    -2.17   0.032    -1.045831   -.0485018
      tobinq |  -120.3915   41.57822    -2.90   0.005    -202.7898   -37.99321
       _cons |   193.3144   93.46174     2.07   0.041     8.095166    378.5336
-------------+----------------------------------------------------------------
     sigma_u |  67.989006
     sigma_e |  8.5957263
         rho |  .98426739   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(31, 110) = 128.55                   Prob > F = 0.0000
```

Appendix J: BP-LM Test for INS

```
Breusch and Pagan Lagrangian multiplier test for random effects

        zscore[c_id,t] = Xb + u[c_id] + e[c_id,t]

        Estimated results:
                         |       Var     sd = sqrt(Var)
                ---------+------------------------------
                  zscore |   459.0288       21.42496
                       e |   40.50384       6.364263
                       u |   261.1003        16.1586

        Test:   Var(u) = 0
                             chibar2(01) =    33.15
                          Prob > chibar2 =   0.0000
```

Appendix K: BP-LM Test for BANK

```
Breusch and Pagan Lagrangian multiplier test for random effects

        zscore[c_id,t] = Xb + u[c_id] + e[c_id,t]

        Estimated results:
                         |       Var     sd = sqrt(Var)
                ---------+------------------------------
                  zscore |   3871.004       62.21739
                       e |   73.88651       8.595726
                       u |   2235.861       47.28489

        Test:   Var(u) = 0
                             chibar2(01) =   168.33
                          Prob > chibar2 =   0.0000
```

Appendix L: Hausman Test for INS

```
                 ---- Coefficients ----
             |      (b)          (B)            (b-B)     sqrt(diag(V_b-V_B))
             |       fe           re          Difference          S.E.
-------------+----------------------------------------------------------------
       bsize |   -1.024313     -1.17417        .1498574        .1267655
         ind |   -.4636736    -.5196703        .0559967         .163701
    bmeeting |    .7016264     .6702191        .0314073        .0338075
 ceo_duality |    .4481096     .0988582        .3492515        .8368254
  audcomsize |    5.546653     5.764892       -.2182391        .3223362
    lninstsh |    5.330279    -1.482168        6.812447         7.96164
  insiderown |    .1001024     .1918511       -.0917487        .1038049
       fgnsh |    .2875243     .2450725        .0424518        .0318218
        lnta |   -10.53733     .0735018       -10.61083        5.122762
          da |    .9165023     1.486871       -.5703692        .3661425
      tobinq |    -56.2057    -13.25148       -42.95422        19.98455
------------------------------------------------------------------------------
                           b = consistent under Ho and Ha; obtained from xtreg
            B = inconsistent under Ha, efficient under Ho; obtained from xtreg

    Test:  Ho:  difference in coefficients not systematic

                 chi2(11) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =       10.41
                Prob>chi2 =      0.4937
```

Appendix M: Hausman Test for BANK

```
                 ---- Coefficients ----
             |      (b)          (B)            (b-B)     sqrt(diag(V_b-V_B))
             |     fixed        random       Difference          S.E.
-------------+------------------------------------------------------------
       bsize |    .2181502     .8186047       -.6004545               .
         ind |    .2033646     .0862072        .1171573               .
    bmeeting |    .2776612     .1817584        .0959028               .
  audcomsize |   -1.243174    -2.104787        .8616123               .
    lninstsh |    7.333543     7.214397        .1191461               .
  insiderown |   -.1646774    -.0992411       -.0654363               .
       fgnsh |   -.1183312    -.4265487        .3082174        .0956141
        lnta |   -8.452378    -2.430726       -6.021651        1.124388
          da |    .1072063     .0503619        .0568444               .
          la |   -.5471663    -.7071187        .1599524               .
      tobinq |   -120.3915    -122.6068        2.215264               .
------------------------------------------------------------------------------
                           b = consistent under Ho and Ha; obtained from xtreg
            B = inconsistent under Ha, efficient under Ho; obtained from xtreg

    Test:  Ho:  difference in coefficients not systematic

                 chi2(11) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =       10.51
                Prob>chi2 =      0.4853
```

Appendix N: Stepwise Regression Result for INS

	(1) zscore	(2) zscore	(3) zscore	(4) zscore	(5) zscore
bsize	-0.160				-1.174
	(0.5618)				(0.7829)
ind	0.0612				-0.520**
	(0.1082)				(0.2540)
bmeeting	0.0763				0.670*
	(0.3092)				(0.4047)
lnta	-11.28***	-11.81***	-10.39***	-8.782**	0.0735
	(2.9647)	(3.0216)	(2.8409)	(2.8115)	(2.4022)
da	0.0264	0.0115	0.0332	1.268***	1.487***
	(0.1154)	(0.1168)	(0.1174)	(0.3298)	(0.2658)
tobinq	-0.947	0.336	-0.975	-1.273	-13.25
	(3.0677)	(3.5865)	(3.1140)	(3.1557)	(14.2882)
ceo_duality		3.353			0.0989
		(2.7602)			(3.9038)
audcomsize			0.383		5.765***
			(0.8945)		(1.7658)
lninstsh				1.575	-1.482
				(1.2135)	(3.2057)
insiderown				0.155	0.192
				(0.1897)	(0.2108)
fgnsh				0.229**	0.245***
				(0.0773)	(0.0812)
_cons	181.1***	187.8***	172.7***	90.55*	80.79
	(34.4980)	(36.2571)	(33.2028)	(35.6566)	(53.6707)
N	219	199	219	192	92
adj. R-sq					

Standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Appendix O: Stepwise Regression Result for BANK

	(1) zscore	(2) zscore	(3) zscore	(4) zscore	(5) zscore
bsize	0.0136				0.819
	(0.1898)				(0.9015)
ind	0.162***				0.0862
	(0.0466)				(0.1784)
bmeeting	0.157				0.182
	(0.1379)				(0.3772)
lnta	-1.768	-1.236	-0.927	-3.797	-2.431
	(1.9047)	(1.9914)	(1.8627)	(3.6182)	(4.5127)
da	-0.471***	-0.367**	-0.432***	0.486*	0.0504
	(0.1161)	(0.1222)	(0.1094)	(0.2453)	(0.3264)
la	0.0489	0.0946	0.106	-0.0441	-0.707**
	(0.0943)	(0.0999)	(0.0908)	(0.1100)	(0.2561)
tobinq	-19.84	-15.25	-19.09	-86.74**	-122.6**
	(12.8239)	(12.4481)	(12.7330)	(32.7449)	(44.5637)
ceo_duality		0.974			-19.68
		(2.4636)			(26.2444)
audcomsize			0.259		-2.105
			(0.2813)		(2.3692)
lninstsh				2.207*	7.214*
				(1.0819)	(2.8979)
insiderown				-0.0204	-0.0992
				(0.1402)	(0.1575)
fgnsh				0.616***	-0.427
				(0.1665)	(0.2767)
_cons	144.0***	137.9***	137.8***	167.1**	161.7
	(26.4400)	(27.7003)	(26.0803)	(62.5452)	(92.6729)
N	891	785	934	205	153
R-sq					

Standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Appendix P: Wooldridge test for INS

```
Wooldridge test for autocorrelation in panel data
H0: no first order autocorrelation
    F(  1,      16) =      1.309
           Prob > F =      0.2693
```

Appendix Q: Wooldridge test for BANK

```
Wooldridge test for autocorrelation in panel data
H0: no first order autocorrelation
    F(  1,      29) =     20.812
           Prob > F =      0.0001
```

Appendix R: Breusch-Pagan/Cook-Weisberg test for INS

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of zscore

         chi2(1)      =     0.54
         Prob > chi2  =   0.4614
```

Appendix S: Breusch-Pagan/Cook-Weisberg test for BANK

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of zscore

         chi2(1)      =    14.93
         Prob > chi2  =   0.0001
```

Appendix T: Cluster Test for BANK

```
Random-effects GLS regression                   Number of obs     =         153
Group variable: c_id                            Number of groups  =          32

R-sq:                                           Obs per group:
     within  = 0.2165                                         min =           1
     between = 0.1191                                         avg =         4.8
     overall = 0.1133                                         max =           5

                                                Wald chi2(12)     =       32.34
corr(u_i, X)   = 0 (assumed)                    Prob > chi2       =      0.0012

------------------------------------------------------------------------------
      zscore |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       bsize |   .8186047    .901454     0.91   0.364    -.9482128    2.585422
         ind |   .0862072   .1783927     0.48   0.629    -.2634361    .4358506
    bmeeting |   .1817584    .377177     0.48   0.630    -.5574949    .9210118
 ceo_duality |  -19.68425   26.24437    -0.75   0.453    -71.12227    31.75377
  audcomsize |  -2.104787   2.369189    -0.89   0.374    -6.748311    2.538737
    lninstsh |   7.214397   2.897866     2.49   0.013     1.534684    12.89411
  insiderown |  -.0992411   .1574534    -0.63   0.529    -.4078442     .209362
       fgnsh |  -.4265487   .2767233    -1.54   0.123    -.9689163     .115819
        lnta |  -2.430726   4.512743    -0.54   0.590    -11.27554    6.414087
          da |   .0503619   .3264132     0.15   0.877    -.5893962      .69012
          la |  -.7071187   .2560626    -2.76   0.006    -1.208992   -.2052453
      tobinq |  -122.6068   44.56368    -2.75   0.006      -209.95   -35.26354
       _cons |   161.6669    92.6729     1.74   0.081    -19.96864    343.3024
-------------+----------------------------------------------------------------
     sigma_u |  47.284887
     sigma_e |  8.5957263
         rho |    .968011   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```