

# Corporate Governance, Earnings Quality and Firm Value: Evidence from Malaysia

by

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## **ABSTRACT**

### *The Issue*

Agency theory which states that the separation of managers and shareholders surrounding corporate organisations creates information asymmetric that can lead to agency problems in term of moral hazards and adverse selection problems which contribute to risk factors that can affect investors/shareholders expected cash flow, cost of capital and hence the firm value. Theoretically, corporate governance comes into place as a set of mechanisms to reduce agency problems in a way that managers' behaviours could be monitored and controlled to reduce information asymmetric which attributed to the risk factors and can lead to increased firm value. However, previous studies are not conclusive to establish a concrete stand on it.

### *Objectives*

The objective of this thesis is to gain an improved understanding on the exact nature of the relationships that exist between specific corporate governance mechanisms and firm value by considering multiple mediating factors of different attributes of earnings quality representing the risk factors that mediate the relationship between the elements of corporate governance mechanisms and firm value. Specifically, this thesis aimed to investigate whether the direct relationship between specific corporate governance mechanisms and firm value is more significant compared to the case when this relationship is based on the mediating effects of different earnings quality attributes, this will help firms in determining the importance of such mechanisms of corporate governance and attributes of earnings quality and how they are actually priced in the capital market.

### *Contributions*

This study's main contribution is to fill the gap in the existing literature: although a number of research focus on the issues of corporate governance, earnings quality and firm value, those issues are investigated in isolation in the existing studies, while this study

brings all the issues in one integrated model and tests the evidence on whether there is a direct link between structure of specific corporate governance mechanisms and firm value or there is an indirect link in which earnings quality attributes are the mediators that influence corporate governance mechanisms and which in turn affect the value of firm.

#### *Methodology, Data and Computer Program*

This study uses a set of 100 randomly selected sample of firms listed on Main Market of Bursa Malaysia covering a period of six years (2004-2009) across six different industry sectors. For the selected sample, a group of secondary data consisting of 600 firm-year observations for every variable have been extracted from *DataStream* and firms' annual reports. This study employs mediated regression modelling using *STATA 12*. It allows a mediation analysis of grouped data to be run and provides measures of validity and reliability of the models tested. In addition, it is also possible for each path analysis to be decomposed into specific analysis of links among variables, i.e. an analysis of direct effects and indirect effects.

#### *Findings and Implications*

In all cases, the direct link between corporate governance mechanisms and firm value is far more important than their indirect link through earning quality. The findings that the direct link between corporate governance mechanisms and firm value dominates the link mediated by earnings quality suggests that a good mechanism of corporate governance has a bigger payoff, by which it improves value of firm, than does increasing earnings quality. Moreover, the importance of the indirect path is insensitive to specific attributes of earnings quality and the indirect path that is mediated by accruals quality is more important than the path mediated by conservatism.

## **STUDENT DECLARATION**

“I, Anuar Sarun, declare that the PhD thesis entitled ‘Corporate Governance, Earnings Quality and Firm Value: Evidence from Malaysia’ is no more than 100,000 words in length including quotes and exclusive of tables, figures, appendices, bibliography, references and footnotes. This thesis contains no material that has been submitted previously, in whole or in part, for the award of any other academic degree or diploma. Except where otherwise indicated, this thesis is my own work”.

Signature: .....

Date: .....

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## **LIST OF MAJOR ABBREVIATIONS**

|        |                                                                             |
|--------|-----------------------------------------------------------------------------|
| AC     | Good structure of audit committee                                           |
| ACE    | Audit committee effectiveness                                               |
| AIMR   | Association for Investment Management and Research                          |
| AQ     | Auditor quality                                                             |
| ASX    | Australian Securities Exchange                                              |
| BC     | Good structure of board committees                                          |
| BD     | Good structure of board of directors                                        |
| BM     | Bursa Malaysia                                                              |
| BRC    | Blue Ribbon Committee                                                       |
| CCM    | Companies Commission of Malaysia                                            |
| CF     | Firm financing needs                                                        |
| CFO    | Cash flows from operating activities deflated by the market value of equity |
| CON    | Earnings conservatism                                                       |
| CPA    | Certified Public Accountant                                                 |
| DCE    | Direct custodian excellence                                                 |
| DDA    | Accruals quality                                                            |
| EP     | Firm earnings-price tied up                                                 |
| ERC    | Earnings response coefficients                                              |
| FASB   | Financial Accounting Standard Board                                         |
| FPLC   | Federation of Public Listed Companies                                       |
| FRF    | Financial Reporting Foundation                                              |
| FV     | Firm value                                                                  |
| GAAP   | Generally Accepted Accounting Principles                                    |
| GAAS   | Generally Accepted Auditing Standards                                       |
| GH     | General Hypothesis                                                          |
| GLC    | Government Linked Companies                                                 |
| GW     | Firm growth                                                                 |
| HLFC   | High Level Finance Committee                                                |
| IAS    | International Accounting Standards                                          |
| IFRS   | International Financial Reporting Standards                                 |
| IMS    | Industry market share                                                       |
| IPO    | Initial Public Offerings                                                    |
| LV     | Firm leverage                                                               |
| MACPA  | Malaysian Association of Certified Public Accountants                       |
| MAICSA | Malaysian Institute of Chartered Secretaries and Administrators             |
| MASB   | Malaysian Accounting Standards Board                                        |
| MIA    | Malaysian Institute of Accountants                                          |
| MICG   | Malaysian Institute of Corporate Governance                                 |
| MICPA  | Malaysian Institute of Certified Public accountants                         |
| MID    | Malaysian Institute of Directors                                            |
| MRQ    | Main Research Questions                                                     |
| MSQ    | Main Secondary Question                                                     |
| MTB    | Market-to-book value                                                        |

|      |                                              |
|------|----------------------------------------------|
| NAS  | Non-audit services                           |
| NYSE | New York Stock Exchange                      |
| OW   | Good ownership structure                     |
| PRC  | People's Republic of China                   |
| PRE  | Earnings predictability                      |
| PRQ  | Primary Research Question                    |
| PS   | Pooled-sample                                |
| RM   | Good structure of risk management mechanisms |
| ROA  | Return on Assets                             |
| SC   | The Securities Commission                    |
| SEC  | Securities and Exchange Commission           |
| SOX  | Sarbanes–Oxley Act                           |
| SZ   | Firm size                                    |
| UK   | United Kingdom                               |
| US   | United States                                |

# Chapter 1

## INTRODUCTION

---

### 1.1 Introduction

Agency theory acknowledges the significance and role of corporate governance in mitigating agency conflicts resulting from information asymmetry inherent within the shareholder-manager relationship (Berle & Means 1932; Fama, E F & Jensen 1983; Jensen & Meckling 1976) and its impact on corporate value (Cremers & Nair 2005; Gompers, P, Ishii & Metrick 2003). Good governance controls and monitors the managers' opportunistic behaviour and thereby reduces information asymmetry between shareholders and managers. Corporate governance is a set of mechanisms with several organs and it is difficult to determine which organ plays a more important role as opposed to the others (Larcker & Rusticus 2007). This becomes a major issue for a firm in an emerging market where compliance costs are high.

A firm's earnings information is a key indicator of its financial performance. Low information asymmetry signifies adequate, precise and reliable earnings (i.e. high quality of earnings) supplied by the firm to the capital market and tells about the true value of the firm. Earnings quality serves as a strong basis for valuation of a firm by investors and helps them make right decisions. Consequently, earnings are firm-specific information and hence a price risk factor. In a situation where investors do not have access to good quality information on the earnings of a firm, they tend to compensate the risk by charging high cost of capital that could ultimately affect the value of the firm as a whole (Easley & O'Hara 2004; Leuz, C. & Verrecchia 2004). Nevertheless, studies in the field of earnings quality are perplexing as each attribute of earnings quality represent different perspectives.

Previous studies undertaken to investigate the issues of corporate governance, earnings quality and firm value remain inconclusive, mostly because they are studied in isolation and focus mainly within the developed country contexts. Thus, for a comprehensive understanding there is a need to study the inter-relationships between governance, earnings quality and firm value collectively in a developing country context, while the firm-level factors relevant to an emerging market are controlled. The key research

questions examined in this thesis are: which mechanisms of corporate governance influence the attributes of earnings; to what extent; and how such corporate governance mechanisms and different attributes of earnings impact the value of a firm within the framework of an emerging market. For a better understanding of the exact nature of the relationship between corporate governance and firm value, the investigation is decomposed into direct relationship between corporate governance mechanisms and firm value and the indirect relationship mediated by the attributes of earnings quality. This chapter provides a brief discussion on the background of the study and the rationale for the choice of this particular topic. It presents the objectives of the study and highlights the academic and practical contributions. Further, it seeks to establish an association of the issues by providing a brief critical review of the theories from previous studies. It then outlines the research design, major findings and its implications. A brief description of each chapter of the thesis is presented at the end.

## **1.2 Research Background**

According to agency theory<sup>1</sup> the separation of ownership and control in an organisation, particularly in corporate firms, can create conflict where the shareholders and managers play distinctive roles. The conflict of interest between both parties is traditionally translated into amount of risk assumed by one party towards another (Hoque 2006). On one hand, managers' demands for compensation for the risk they bear as the actions chosen by them are not fully observed by the shareholders. On the other hand, shareholders bear higher risk if the managers are unable to deliver the expected results. . The differences between the risk preferences of both parties give rise to agency problem if they are not addressed prior to contract formation and the compensations are not clearly factored in by the managers (Hoque 2006). Apparently, agency problem is inherent in public listed firms where the shareholders are dispersed and the situation is exacerbated by information asymmetry.

The managers are involved in the firm's day-to-day operations and the information is directly supplied to them with no cost, while shareholders incur additional costs for the

---

<sup>1</sup> Agency theory applied in this thesis is mainly based on the interpretation offered by Berle & Means (1932), Jensen & Meckling (1976) and Fama & Jensen (1983). As cited by (Hoque 2006), both principle and agent are to maximize their own interests and both interest is difficult to be aligned.

information and for the assurance of the quality of the information provided to them. This leads to information asymmetry and provides managers with an incentive to behave opportunistically at the expense of the shareholders that can create moral hazard problems and, could also reduce investor's ability to assess the true economic value of the firm for decision making that can further lead to adverse selection problem. Insufficient, less precise and unreliable information can cause a greater information risk being exposed to the investors. As a trade-off, rational investors will price-protect against the risk which is translated into expected costs to be incurred due to inadequate firm's control over the problems and potentially charge a higher cost of capital that can lead to a lower value of firm (Gaio & Raposo 2011).

Literature shows evidence of relationship between structure of corporate governance and the agency problem. The governance structure is such that it monitors and controls the behaviours of managers so that they are aligned with the expectations of the shareholders. However, the results produced across studies are found inconsistent.

The quality of financial reporting is of interest to those who use financial reports for contracting purposes and for decision making process. The earnings of a firm reported in financial statements is a measure of a firm's performance and therefore key information item to the financial information users (Lev 1983). Capital markets rely on credible financial reporting and therefore, it's crucial that the earnings number reported in a firm's financial statements should be reliable, relevant and free from manipulation. Poor quality of earnings reporting can mislead the users, resulting in wrong decision making (Myers, Myers & Omer 2003).

The usefulness of earnings reporting depend on a number of factors that are of interest to researchers including - firm characteristics, governance and control, capital market incentives, financial reporting practices, auditors and external factors (Dechow, Patricia, Ge & Schrand 2010). A review of the determinants of earnings quality by Dechow, Patricia, Ge and Schrand (2010) assumed that the examined factors influencing earnings quality mitigate or motivate managers' behaviour towards earnings management. However, the factors are studied in isolation and are far from reality. Corporate governance plays an important role in producing high quality financial reports. The governance process is crucial in maintaining the credibility of the firm's financial

statements and safeguard them against earnings manipulation (Dechow, P, Sloan & Sweeney 1996). Conversely, weak governance structure provides opportunities for managers to engage in behaviour that would eventually result in a lower quality of reported earnings. Such deceptive practices have resulted from the agency conflict, in which managers maximise their personal wealth at the expense of the shareholders, provided that there is separation of ownership and control in a firm (Jensen & Meckling 1976). The compliance of firms with best practices of corporate governance can reduce the levels of agency problem that exist in the stakeholder-manager relationship and therefore counteract the negative effects on the quality of earnings.

Recent corporate collapses have taught us many lessons. Numerous initiatives have been proposed for improving corporate governance with significant emphasis placed on the role of risk management. An effective risk management system is seen to help the organisation achieve its business objectives, safeguard its reputation as well as enhance its financial reporting. Information and knowledge about an organisation's risk is not only important to management and shareholders, but also to other stakeholders. The information indicates the stability of the organisation's processes and expected results as well as its financial information credibility (Korošec & Horvat 2005).

While the study of the general concept and issue of corporate governance in Malaysia is not new, research in the context of its risk management role is at an infant stage. To date, Yatim (2009) has examined the issue of risk committee formation; Othman and Ameer (2009) have analysed the market risk disclosure; and Amran, Bin and Hassan (2009) have explored the risk management disclosure, but none of them have discussed the aspect of earnings quality as risk factor and corporate governance and earnings quality from an integrated perspective. The current doctoral study will address this particular research gap.

This study contributes to the literature particularly on examining possible relatedness of above mentioned factors (i.e. corporate governance and earnings quality) and firm value by employing a mediation model. It enhances the literature by including the variables that represent the influence of firm-specific factors as additional independent variables to the relationship.

The study is designed to answer the following research questions:

- i. Which mechanisms of corporate governance influence the level of earnings quality exposed to investors and to what extent?
- ii. Which perspective of earnings quality influences the value of firm and to what extent?
- iii. How do corporate governance mechanism and the level of earnings quality impact the value of the firm? Do the mechanisms of corporate governance impact firm value directly or indirectly?

### **1.3 Research Objectives**

The analysis of the data is based on two related streams of research on the relation between corporate governance and the firm value, and thus the objectives are defined according to the streams. The first stream contains analytical models which specify how either the mechanisms of corporate governance or the information risk (i.e. quality or precision of information) relates to the value of firm. Many studies specify a direct link between corporate governance and firm value and, in some circumstances, an indirect link that operates through earnings quality. Hence, the first objective of this study is to provide evidence on whether both links exist and if so, whether one is dominant.

The second stream of research which forms the foundation for the analysis provides empirical evidence on associations between individual mechanisms of corporate governance and measures of firm value and, separately, between attributes of earnings quality and measures of firm value. With regard to the latter, an empirical relation between firm value and earnings quality has been documented by, for instance Francis, J et al. (2005), Francis, J et al. (2004) and (Gaio & Raposo 2011). With regard to the former, Shleifer and Vishny (1997) and Stein (2003), among others, provide evidence that specific mechanisms of corporate governance are related to firm value. This study reports a statistically reliable and economically meaningful association between measures of earnings quality and measures of firm value. Thus, the second objective of this study is to shed light on the extent to which this attribution is confirmed by empirical analyses.

### **1.4 Academic Contribution**

This study attempts to be part of this endeavour by fulfilling the gaps in the literature, particularly in the aspects of:



1. The development of a mediation model that will collectively examine and justify the relatedness among variables of corporate governance, earnings quality and firm value;
2. The analysis is based on a set of panel data that varies with time. The data includes attributes of earnings quality and a number of firm-specific factors. This will make the model robust across different economic settings and dynamic environments;
3. Previous studies provide statistically significant evidence of associations between one or more earnings quality proxies and firm value, but it is difficult to compare the economic significance of the findings across studies and hence across proxies;
4. This study attempts to identify the distinct contributions of each proxy and aim to provide clear evidence to explain exactly how a mechanism of corporate governance affects earnings quality, and how that specific attribute of earnings quality has an effect on a firm's value;
5. Earnings quality may capture the effect of corporate governance on firm valuation. As financial accounting data is believed to be the primary source of information about the performance of managers and a key component of the corporate governance process, thus combining the elements of corporate governance, earnings quality and firm value in a single model will provide an in-depth understanding of each issue; and
6. Most research so far has been carried out using data from developed countries; instead this study will use data from an emerging market, which allows for an additional understanding of the economic consequences of each of the variable particularly the corporate governance practice.

### **1.5 Practical Contribution**

Corporate governance and financial reporting debacles continue to be a topic of discussion in both developing and developed countries. Developed countries have made considerable advances and the developing countries are considered far behind in this area (CLSA-ACGA 2005).

This study will offer inputs for the improvement of corporate governance and financial reporting environment in a developing market. The examination of relevant factors

attributed to earnings quality will provide a thorough understanding on the focused issues. This study provides recommendations on current policy for the purpose of preserving high quality financial reporting. It tends to promote effective and efficient risk management role played by the mechanisms of corporate governance. Furthermore, this study identifies and reveals strategies in mitigating possible barriers that would impair the efforts of achieving high quality financial reports of public companies that is beneficial in term of an increase in value as a whole. Additionally, this research original contribution is that it examines a set of variables collectively.

## **1.6 Brief Literature Review**

### **1.6.1 Risk Management Role of Corporate Governance**

Sir Adrian Cadbury in his speech in the Global Corporate Governance Forum stated that, “The corporate governance framework is there to encourage the efficient use of resources and equally to require accountability for the stewardship of those resources. The aim is to align as nearly as possible the interests of individuals, corporations and society” (Cadbury 2000). In line with agency theory, separation of ownership and control provide potential for conflict of interest between owners and agents who manage daily operation of a corporation. For the purpose of deterrence of such problem, it is crucial for an organisation to establish a comprehensive structure of control that could encourage efficient performance and responsible behaviour within the organisation.

Cohen, J, Krishnamoorthy and Wright (2002) believe that one of the most important roles of corporate governance is to ensure a high quality of financial reporting process, thus, the effective oversight of the financial reporting process by the monitoring mechanisms is thought to improve the accuracy of what is reported to shareholders. Spira and Page (2003) suggest a reinvention of firm risk management endeavour, as internal control and internal audit could play a vital role in risk management strategies.

### **1.6.2 Corporate Governance in Malaysian Setting**

Malaysian business environment offers a unique environment for assessing the impact of corporate governance mechanisms and information risk exposure on firm value. Malaysian firms, unlike those of Indonesia or Japan, have board structures and mechanisms which are typically Anglo-Saxon in design. Malaysian market for corporate

control is not as active as in the USA, the UK and Australia, and its effectiveness in inducing boards to monitor closely and take corrective action in cases of failure, might not be comparable. This makes the role of internal governance mechanisms such as independent boards and audit committees more important. Recent corporate collapses and financial reporting scandals experienced by Malaysia are relatively smaller in magnitude than those in developed nations (Rashidah 2006). But they have prompted policy makers to tighten the financial reporting, corporate governance and securities market regulations.

As of 2012, Malaysia has undergone three major milestones of corporate governance framework development. Based on the Anglo-Saxon design, Malaysian market adopted the hybrid approach for optimal implementation of corporate governance code and principle for public firms across the reforms.

The initiative started with the establishment of Finance Committee on Corporate Governance in 1998 that consists of both government and industry. Recognition of corporate governance in Malaysia was significantly evidenced by the released of the Malaysian Code on Corporate Governance by the Committee in March 2000. The principles underlying the report focus on four areas including: board of directors, director's remuneration, shareholders and accountability and audit. The code is hybrid in nature, which is similar to the Combined Code on Corporate Governance (United Kingdom). Under the approach, the companies in Malaysia should apply the broad principles of good corporate governance sets out by the code flexibly and with common sense to the varying circumstances of individual companies.

Complementing the reforms is the introduction of Capital Market Master Plan (CMP) by the Securities Commission to chart the direction of the Malaysian capital market for the next ten years. It was initially announced by the Second Finance Minister and Chairman of Securities Commission in 6 August 1999 and subsequently approved by the Minister of Finance in December 2000 before it's launching in February 2001. The efficient mobilisation and allocation of funds together with high degree of confidence to market participants are the visions outline by the CMP. Corporate governance is a key strategic thrust of the CMP as the Securities Commission considers good corporate governance among public listed companies is vital to achieve the objective of promoting a more conducive environment for investors in the Malaysian capital market. One of the

recommendations by the CMP is a mandatory disclosure on the state of compliance with the Malaysian Code on Corporate Governance which were issued in the revamped exchange listing requirements on 22 January 2001 to listed companies.

Financial Sector Master Plan (FSMP) was launched in March 2001 by the Bank Negara Malaysia to chart the future direction of the financial sector over the next ten years. It has the objective of developing a more resilient, competitive and dynamic financial systems that contributes to the economic growth and technology driven. Elements of corporate governance that are recommended by the master plan would include promoting shareholders' and consumers' activisms, regulatory control and priority sector financing. Some of the specific recommendations to the banking sector indicated the requirement of having board committees to further improve corporate governance, the implementation of a transparent and clearly structured early warning system for weak banking institutions, encourage mergers between banking institutions and establish a deposit insurance funds.

### **1.6.3 Information Asymmetry, Earnings Quality and Firm Value**

The relationship between information risk and cost of capital can be rationalised based on Bushman and Smith (2001) arguments. Bushman and Smith (2001) argue that cost of the capital can be affected by accounting information in three ways, i.e. (1) financial accounting should provide useful information, both directly to managers and investors about investment opportunities and indirectly through its contribution to the determination of stock prices, which should reduce estimation risk and thereby cost of capital; (2) financial information as a direct input of corporate control mechanisms can reduce expropriation risk and thereby cost of capital, and; (3) financial information can reduce information asymmetry among diverse investors that can reduce liquidity risk and thereby cost of capital.

Information asymmetry can cause two major problems: Firstly, it provides managers with incentive to behave for their own interest at the expense of the shareholders which create moral hazard problem; and secondly, it reduces investor's ability to assess the true economic value of the firm for decision making which creates adverse selection problem.

The effect of quality and quantity of information on cost of equity capital has been documented by the theoretical models, where it is argued that information risk is a firm

risk-factor that should be priced. Easley and O'Hara (2004) show that the quantity and quality of information affects asset prices and that investors demand compensation for the information risk induced by greater private information (relative to public information) and less precise information (of both private and public). Leuz, C. and Verrecchia (2004) show that better quality information (precision) improves the coordination between firms and investors by reducing information risk and thus cost of capital.

Chorafas (2008) argues that material anomalies in the financial statements should be considered by auditors in drawing conclusions on the truthfulness of a company's financial statements. It is believed that such anomalies are perceived as risk by the stakeholders and other users of financial statements resulting in distortion of stakeholders' decision making.

Material misstatements of financial reports may be classified further accordingly to the intention of preparers of such reports and compliance to the Generally Accepted Accounting Principles (GAAP) (Golden, Skalak & Clayton 2006). Usually an error is referred to as an unintentional non-compliance misstatement. On the other hand, fraud and earnings management are both intentionally done; but the difference is that earnings management is practiced within GAAP whilst fraud attempt is beyond the stipulated accounting principles. Most studies have examined each of the elements separately, for instance, DeFond and Jiambalvo (1991) and Effendi, Srivastava and Swanson (2007) on errors; Persons (2005) on fraudulent financial reporting; and Mohd-Saleh, Mohd-Iskandar and Rahmat (2007) on earnings management. While previous studies emphasise on errors, earnings management, and fraudulent financial reporting in isolation, the current study is trying to combine the three elements in one single definition and interpret them from the perspective of risk literature.

Financial reports are the most important output of an accounting system. The purpose of financial reporting is to provide the information which can be useful for business (Schipper & Vincent 2003). The most significant accounting item prepared and presented in financial reports is the "earnings". Earnings is considered as a key factor in determining the dividend policy; serves as a guideline for investment and decision

making; is a core measure of a firm's performance; is an effective criterion in the stock pricing; and serves as an instrument for future predictions.

According to Dechow, Patricia, Ge and Schrand (2010), earnings quality provide information about the features of a firm's financial performance that are relevant to a specific decision made by a specific decision maker. The definition includes three features: (1) earning quality is conditional on the decision-relevance of the information; (2) the quality of the reported earnings number depends on whether it is informative about the firm's financial performance; and (3) earnings quality is determined by the relevance of underlying financial performance to the decision and by the ability of the accounting system to measure performance.

In addition, the definition is consistent with the arguments of previous review papers on earnings quality (Dechow, Patricia & Schrand 2004; Francis, J, Olsson & Schipper 2006; Imhoff, E & Lobo 1992). The concept is aligned with the decision usefulness approach on the role of financial reporting, which focus on providing information that is relevant and reliable for specific needs of decision makers (Scott, W 2006).

#### **1.6.4 Corporate Governance and Information Risk**

Corporate governance literature on the structure of governance mechanisms reveal agency theory as the dominant paradigm used by prior studies. Agency theory provides a rich theoretical premise for understanding organisational processes and designs from the principal-agent perspective (Subramaniam 2006). The separation of ownership and control gives rise to information asymmetries that managers could use to exploit outside shareholders (Jensen & Meckling 1976). Shareholders demand financial reporting from managers in order to evaluate the performance of managers. However, in the absence of strong monitoring mechanisms on managerial behaviour, managers could mislead outsiders by providing financial information which does not portray the true underlying performance of the business. In such cases, accounting information is of little use in valuing companies and no association between market price and accounting information would be expected. Corporate mechanisms are assumed to provide platform for better monitoring of financial reporting process and consequently to make accounting information more credible and relevant to users.

As shareholders play a substantial role in supplying the necessary capital to firms and because the outlay of personally monitoring companies' actions would be too costly for individual investors, it is important that oversight of the fiduciary duty owed to these investors is competently performed by corporate governance structure, as Hermanson (2006) points out that an effective structure is crucial for investor confidence in the capital markets.

#### **1.6.5 Corporate Governance, Earning Quality and Firm Value**

Corporate governance and financial reporting is an extensively researched area in the literature of accounting (Cohen, J, Krishnamoorthy & Wright 2004). However, the impact of corporate governance coupled with the elements of risk on earnings quality remains unexplored. Agency theory supports the view that better structured governance mechanisms result in quality financial reporting by the firm and that the issue of information risk should not be ignored.

Financial accounting data is the primary source of information on the performance of managers and a key component of corporate governance process (Bushman & Smith 2001). Firm valuation is positively related to several corporate governance mechanisms (Aggarwal et al. 2010; Durnev & Kim 2005; Klapper & Love 2004). Earnings quality is valued by investors beyond the effect of corporate governance, and similarly earnings quality is valued by investors beyond the effects of enhanced analyst coverage (Gaio & Raposo 2011).

According to the agency theory, firms might minimize agency costs by establishing appropriate monitoring systems to effectively supervise managers (Fama, E F & Jensen 1983). Charreaux and Desbrieres (2001) described the corporate governance system as the mechanisms that govern managers' behaviour and delineate the managers' discretionary decision. Corporate governance has also been referred to the ways in which suppliers of finance to corporations assure themselves of getting a return on their investments (Shleifer & Vishny 1997). According to Persons, OS (2006), one scenario which greatly cast doubt on whether stockholders will be able to receive reasonable return, is when a corporation is engaged in fraudulent conduct. Accordingly, corporate governance is used to provide high value of corporate information to the shareholders;

however the potential incidence that would impair the truthfulness of the information has cast doubt on the purpose.

## **1.7 Approach and Methodology**

### **1.7.1 Sample Selection and the Period of Study**

This study uses a set of 100 randomly selected sample of firms listed on Main Market of Bursa Malaysia covering a period of six years (2004-2009) across six different industry sectors. Initially, finance related companies are excluded from the population of 834 listed firms because of their unique characteristics and considering the fact that they operate in a different compliance and regulatory environment. Also the PN4/PN17 classified firms which fall under the distressed firm category and which are given time and opportunity to regularise their financial position to the minimum of a public listed firms are also excluded to avoid the influence of their financial condition on the results of this study. Additionally, firms that changed their financial year during the sample period, firms that have undergone significant merger or reconstruction and those with unavailable online annual reports are also excluded from the population. For the selected sample, a group of secondary data consisting of 600 firm-year observations for every variable have been extracted from *DataStream* and firms' annual reports.

### **1.7.2 Variables and Measurements**

This study employs measures of firm value and earnings quality following prior studies. The variables Tobin's Q (*FV*), return on assets (*ROA*), enterprise value (*EV*) and market capitalisation (*MC*) are used separately to measure the firm value. Each measure signifies three distinctive models of this study.

Three earnings quality attributes are employed to represent information risk, viz., accruals quality (*DDA*) (i.e. the level of abnormal accrual content in the current reported earnings measured based on discretionary accruals model developed by Dechow, Patricia M. and Dichev (2002), earnings predictability (*PRE*) (i.e. the ability of current reported earnings to predict future earnings measured as the residuals of current earnings-past earnings regression model following Lipe (1990) and conservatism (*CON*) (i.e. the ability of current reported earnings to recognise bad news measured as the accrual-based conservatism following Basu (1997)). Despite the arguments to put these attributes under



the umbrella of earnings quality, these three attributes hold different perspectives of earnings quality and should be analysed as three distinguishable variables.

Corporate governance mechanisms are measured using the corporate governance index which has been developed based on the ranking technique (Khanchel 2007). Size (*SZ*), growth (*GW*), leverage (*LV*), price-earnings tied up (*EP*) and financing needs (*CF*) are the control variables included in the models to capture the firm-level characteristics of firms in a developing market.

### **1.7.3 Corporate Governance Rank Index**

According to Khanchel (2007), the mechanisms of corporate governance are measured using percentile rank index of 15 components categorised into five sub-organs of good governance namely., good structure of board of directors (*BD*), good structure of audit committee (*AC*), good structure of board committees (*BC*), good structure of risk management mechanisms (*RM*) and good structure of firm ownership (*OW*). The components are determined based on previous studies, the requirements by the pronounced codes of corporate governance and recommendations made applicable to firms listed on the Main Market of *Bursa Malaysia* (MCCG and CGG in particular).

### **1.7.4 Data Analysis**

This study employs mediated regression modelling using *STATA 12*. It allows a mediation analysis of grouped data to be run and provides measures of validity and reliability of the models tested. In addition, it is also possible for each path analysis to be decomposed into specific analysis of links among variables, i.e. an analysis of direct effects and indirect effects.

## **1.8 Major Findings and Implications**

Using four separate regressions models based on the measures of firm value i.e. *FV* and *ROA*, the results confirm that the total effects of individual mechanisms of corporate governance i.e. *AC*, *BD*, *BC*, *RM* and *OW* measured using rank index on firm value across all measures are consistent with previous research.

The mediation analysis is used to decompose the association into a direct path from corporate governance to firm value and indirect path that is mediated by earnings quality.

The results are broadly consistent across four measures of firm value, in that it is found statistically reliable evidence of both a direct path and indirect path, mediated by earnings quality and between corporate governance and firm value.

In all cases, the direct path is far more important than the indirect path(s). Results are also consistent for all other measures of earnings quality with an exception. The importance of the indirect path is sensitive to specific measure of earnings quality, although it is still dominated by the direct path. The indirect path that is mediated by the earnings quality measure based on conservatism is more important than the path mediated by accruals quality. This result signifies a support on the prediction of the analytical models which posit both a direct path and mediated path from the mechanisms of corporate governance to firm value. It can also be concluded that the attribution of the association between mechanisms of corporate governance and firm value to the corporate governance-information risk-firm value made by the previous studies are incomplete.

The analysis has provided two major implications. First, this study provides empirical evidence for the nature of the relation between corporate governance mechanisms and firm value. The existence of such a relation is predicted by analytical models, but the models do not show the magnitude of the associations or the possibility that both direct and indirect relations can exist. Second, the findings that the direct link between corporate governance and firm value dominates the link mediated by earnings quality suggests that a good mechanism of corporate governance has a bigger payoff, in terms of improved firm operating performance, than does reducing information risk.

### **1.9 Structure of the Thesis**

This thesis has seven chapters starting with the introduction chapter as seen above. Chapter 2 reviews previous literature on corporate governance and its mechanisms, earnings quality and firm value. The review includes discussion on unresolved controversies surrounding the studies related to agent-principle relationship and how this current study contributes to this research gap in the literature. Chapter 3 presents the conceptual framework employed for this research and the development of hypotheses. Chapter 4 presents the methodology and research design. It discusses in detail, the sample selection process, measurement of variables and the data analysis technique. Chapter 5

presents the descriptive analysis and the findings. Chapter 6 presents the discussions and implications of the findings. Chapter 7 presents the conclusions, limitations of the study and future research areas.

#### **1.10 Summary**

This chapter provides an overview of the roles of corporate governance and its mechanisms within the framework of principle-agent relationship. The specific relationship between each of the mechanisms and the aspects of earnings quality and value of firm are also considered which have been overlooked by the previous studies. The remaining of the chapter briefly presents an overview of the objectives, motivations and significance of the study.

## **Chapter 2**

# **LITERATURE REVIEW**

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### **2.1 Introduction**

This chapter presents a critical review of literature on corporate governance and its role in improving the value of a firm. The review highlights the limitations of the existing literature and the research gaps. Current literature shows no empirical evidence that links risk management aspects of corporate governance and value of a firm with earnings quality as an important mediating factor in the relationship.

### **2.2 Theoretical Background**

#### **2.2.1 Agency Theory**

Agency theory deals with the contractual relationship between agent and principal under which shareholders delegate responsibilities to the manager to run the business. It evolved from the concept of separation of ownership from management in modern firms (Berle & Means 1932). Berle and Means (1932) highlight the potential conflict between shareholders and management when ownership is distributed widely among shareholders.

The theory argues that when both parties are expected to maximise their utility, there is good reason to believe that the agent may engage in opportunistic behaviour at the expense of the principal's interest (Jensen & Meckling 1976). Jensen and Meckling (1976) and Fama, E F and Jensen (1983) modelled this condition as an agency relationship where the inability of the principal to directly observe the agent's action could lead to moral hazard, thus increasing agency cost.

The most frequently cited example of an agency relationship is between shareholder and corporate management. The shareholders objective is to maximise their wealth by ensuring an increase in firm value. Corporate management, on the other hand, aims to maximise personal rewards and benefits from the firm. Agency costs are incurred by the principle due to the need to monitor the behaviour of the agent who is being delegated the responsibility of managing the firm's assets and whose interests are not parallel to the interests of the principle (Deegan 2009). Monitoring costs may include the need to engage an external audit function (Gaffikin 2008).

Apart from the cost of monitoring the conflicts associated with the agent/principle relationship, other costs may be incurred, including bonding costs, residual loss costs and political costs (Gaffikin 2008). In principle, the various costs stemming from conflicts within the agent/principle relationship arise from opportunistic behaviour of corporate management. Within an agency theory setting, corporate governance structures are mechanisms to overcome agency problems and prevent opportunistic behaviour. Burton (2000) believes that agency costs are best controlled by limiting management discretion through the establishment of structures to monitor and control management behaviour. Such structures include an independent board of directors, independent chairperson and independent board sub-committee such as the audit committee (Dalton et al. 1998).

Corporate governance studies were motivated from the agency perspective whereby firms employed governance mechanisms to mitigate agency conflict in firms. Audit committee, board of directors, board committee, ownership structure and firms' reporting mechanisms are internal governance organs developed to meet this purpose. Additionally, empirical studies showed that firm good governance not only important in reducing the conflict of agency and managers opportunistic behaviour, but also mitigating risk exposures and thus increasing firm value.

Most studies in corporate governance and earnings quality use agency theory as the underlying basis of research propositions, among others, Ahmed, Anwer S. and Duellman (2007); Lara, Osma and Penalva (2007); and Ruddock, Taylor and Taylor (2006).

### **2.2.2 Stakeholder Theory**

Stakeholder theories consider the firm from a broader perspective, whereby shareholders are only one of many potential stakeholders. Other stakeholders include creditors, employees, suppliers, government authorities and public as a whole. Stakeholder theorists argue stakeholders are affected by and also affect the firm. The premise is that since society provides the social structure and framework in which firms can prosper, to ignore society is to threaten the equilibrium that it (the public) provides.

Stakeholder theory has been viewed by a number of theorists as a more valid and morally acceptable framework in which to assess corporate governance issues. Freeman (1984) one of the earliest stakeholder theorists, states that a stakeholder is a group of individuals

or individual who can affect or be affected by the achievements of a firm's objectives. Freeman (1984) further conceptualised the stakeholder model as a map in which the firm is the hub of a wheel and stakeholders are the ends of the spokes around the wheel. He suggests that a firm intending to achieve its goal can only do so with a full and detailed understanding of the relationship it holds with different stakeholder groups.

Based on another point of view, Clarkson (1994) provides a more vivacious explanation of stakeholder theory and focuses on the fact that stakeholder theory is important in assisting a firm in achieving its goals. He considers that a firm is a system of stakeholders operating within the larger system of the host society that provides the necessary legal and market infrastructure for the firm's activities. The purpose of a firm is to create wealth and value for its stakeholders by converting stakes into goods and services (Clarkson 1994). Additionally, Donaldson and Preston (1995) argue that the firm is an entity through which numerous and diverse participants accomplish multiple purposes. According to Psaros (2009), the central core of stakeholder theory asserts that managers and other agents act as if all stakeholders' interests have intrinsic value, but not necessarily equal value.

Beside the contending perspectives of stakeholder theory, two competing views arise, i.e. the ethical branch and the managerial branch. The ethical branch focuses on issues associated with rights to information, and what rights should be met regardless of the power of the stakeholders involved. In regard to this view, disclosures are considered to be responsibility driven (Cupido 2008). On the other hand, the managerial branch views stakeholder theory in terms of the stakeholder's power and how a stakeholder's relative power affects the ability to intimidate the firm into complying with the stakeholder's expectations (Deegan 2009). The managerial branch of stakeholder theory predicts that a firm will tend to satisfy the information demands of those stakeholders who are important to the firm's ongoing survival. Whether a particular stakeholder receives information, will be dependent upon how powerful they are perceived to be and the extent to which they control the scarce resources (Cupido 2008).

### **2.2.3 Institutional Theory**

Institutional theory explores how (at a broader level) particular formal structures might be adopted in order to bring legitimacy to a firm (Deegan 2009). According to Carpenter

and Feroz (2001), institutional theory provides another lens through which to view economic dependency incentives' impact on accounting rule choice.

In an attempt to apply institutional theory to a corporate governance context, Meyer and Rowan (1977) suggest that organisational structures play a vital role as symbolic displays of conformity and social accountability.

Institutional theorists argue that numerous aspects of formal organisational structure, policies and procedures result from prevailing societal attitudes of what comprises an acceptable practice and the views of important constituents (Bealing, Dirsmith & Fogarty 1996; Scott, WR 1987). Firms obey rules and regulations, not just on efficiency grounds, but also to enhance legitimacy, resources and survival capacities (DiMaggio & Powell 1983). Institutional pressures operate in conjunction with other forces such as completion to effect ecological influences (Meyer & Rowan 1977).

The supporters of institutional theory argue that the real functioning of a firm is accomplished by internal operating processes. Consequently, firms with appropriate structures in place avoid detailed investigations of key internal operating activities by external parties (Meyer & Rowan 1977). Meyer and Rowan (1977, p. 346) classify firms as “dramatic enactments of the rationalized myths pervading modern societies”. Firms are subjected to rules and regulations to ensure legitimacy, access to resources and survival (DiMaggio & Powell 1983). Together, rules, accreditation processes and public opinion make it essential for firms to adopt new structures to conform. By developing a formal configuration (including the structure of corporate governance) that adheres to prescriptions of the institutional environment, a firm displays that it is operating on communally valued principles (O'Connell 2006). Conversely, firms that exclude environmentally justifiable components of structure, lack acceptable legitimate records of operations. Such firms are, therefore, susceptible to allegations that the firms are neglectful, irrational or redundant and risk forfeiting stakeholder patronage (O'Connell 2006). As a result, the pressures to achieve legitimacy help initiate isomorphism, a process that forces one unit in a population to resemble other units that face the same set of environmental conditions (Deegan 2009; DiMaggio & Powell 1983).

Institutional theorists have identified two major isomorphism forms: (1) competitive and (2) institutional. Competitive isomorphism assumes a system of competitive markets and robustness measures and is often used to explain how firms develop bureaucracies and respond to new innovations (DiMaggio & Powell 1983).

Three mechanisms of institutional isomorphic change were identified: (1) coercive; (2) mimetic; and (3) normative. Coercive isomorphism emanates from stresses applied on firms by other firms and by cultural expectations in society as a whole. Mimetic isomorphism reflects a standard response to ambiguity. Firms will follow other firms when faced with an uncertain outside environment. Normative isomorphism pressures stem from professionalization. While diverse type of professionals within a firm may vary from one another, the professionals display many identical characteristics to the equivalents in other firms (Deegan 2009; DiMaggio & Powell 1983; Psaros 2009). Institutional isomorphism promotes the success and survival of firms (Meyer & Rowan 1977). Isomorphic firm functioning in a mode comparable to competitors may lessen the risk of performing poorly when compared to other firms (Kondra & Hinings 1998).

In the context of corporate governance, institutional theory applies to a wide variety of situations including the choice of accounting methods Fogarty (1993). For instance, the FASB's standard-setting process shows that institutionalisation, through the basis of separated procedures and the formal characteristics of assessment enable the board of directors to achieve tolerable decisional freedom. Fogarty (1993, p. 331) further noted that "the visibility of a firm's processes and the consequences of outcomes contributed to the critical dependency on legitimacy". Fogarty (1993) analysed the peer reviewed process of accounting firms, as a mechanism utilised by the US accounting firms seeking to legitimise a largely self-regulatory industry. Finally, Bealing, Dirsmith and Fogarty (1996) studied the historical development of the SEC, specifically the form, content and the rhetoric of early regulatory actions, as an example of a firm attempting to justify its existence and role in the financial reporting process.

#### **2.2.4 Resource Dependence Theory**

Resource dependence theory was originally formulated to justify the relationship among firms and can also be applied to discuss the relationship of structures within a firm.



Corporate governance in this sense is referred to suggest the effective mechanisms of corporate governance which can lead to the generation of resources.

Board of directors, for instance, contribute to firm through expertise and linkages to other firms and institutions and promote a better value of firm through reputation. The board can be a key source of human and social capital. Human capital includes the director's advice and expertise and social capital covers resources such as legitimacy and linkages to other firms. These resources can be referred to as the board capital. Previous studies provide evidence for the relationship between board capital and firm performance and value (Dalton et al. 1998; Pfeffer 1972).

In addition, the foundation of this theory brings the idea that the various elements of corporate governance can also act as critical resources for the firm (Psaros 2009). Supporters of this theory argue that a firm's level of success is contingent upon the liability to control external resources. Firms must cope with great uncertainty in order to survive. This uncertainty undermines the firm's control of resources and strategic choices leading to inefficiencies in the operations of the firm. The board of directors provide the crucial link to external resources for a firm when seeking to achieve the firm's stated goals and objectives. In a resource dependency role, directors serve to connect the firm with external factors which reduce environmental uncertainties and external dependencies (Hillman & Dalziel 2003; Pfeffer 1972).

Furthermore, the directors also add value to the firm in a number of other ways. For instance, directors bring other resources to the firm including unique skills, specialist information and access to key constituents (e.g. suppliers, environmental groups, educators and the policy makers). The extent to which directors add value to a firm depends on the skills and resource base of those directors. The members of a board may also bring an enhanced reputation to the firm by virtue of personal reputation.

### **2.2.5 Positive Accounting Theory**

As presented by agency theory, the firm is considered as a 'nexus of contracts' (Jensen & Meckling 1976), where it has a contractual relationship with various groups of people such as employees, creditors, government and public, who are simply referred to as the stakeholders. Positive accounting theory is associated with the contractual view of the

firm where accounting is used as a tool to facilitate the formation and performance of the contract by mitigating the contractual costs that may arise from the agency conflict.

In contrast to normative theory that seeks to determine the appropriate structure of manager's incentives to reduce the agency conflict, positive accounting theory predicts and explains actual accounting practices and focuses on analysing the agency costs arising from the contractual arrangement between owners and top management of the firm (Jensen & Meckling 1976). This theory posits that managers make accounting choices tailored to their needs to increase their wealth through compensation incentives, to avoid violation of debt contract or to minimise political cost. Positive accounting theory thus suggests that accounting choices such as conservatism are desirable to limit managers' opportunistic behaviour, without which managers are able to extract firm's wealth for their private benefit.

#### **2.2.6 Comparison among Theories**

According to Donaldson and Preston (1995), competing theories have different purposes and therefore, validity criteria and implications are different. As highlighted in the previous subsections there are a range of competing theories explaining the phenomena of corporate governance. Each theoretical perspective offers respective benefits and insights. In this thesis, it is believed that agency theory forms the underlying theoretical perspective. Agency theory underpinned this thesis because the focus is on investigating how specific key corporate governance mechanisms influence financial accounting issues associated with corporate management's behaviour that leads to determination of firm value.

Since agency theory focuses equally on addressing such relationships, it provides a common theoretical perspective. In addition, in aiming to generalise results to the broader Malaysian and international capital markets, agency theory provides more universally applicable theoretical framework. Eventually, the application of agency theory to corporate governance issues and earnings quality fits within the Malaysian context.

Due to prior historical relationships and current business ties, Malaysia's underlying business environment model has increasingly followed the Anglo-American approach. Furthermore, pressures of economic and capital market growth in Malaysia have

prompted a gradual shift towards a greater reliance on corporate management and wider dispersion of ownership structures particularly amongst listed firms. Prior research (Ball, Ray, Robin & Wu 2003), indicates Malaysian firms plagued by weak financial structure, overleveraging and poor transparency. It is concluded that Malaysia is increasingly providing fertile ground for agency relationship conflicts. Thus, this context supports the application of agency theory as the underlying theoretical framework for this study.

## **2.3 Corporate Governance and Risk Management**

### **2.3.1 Corporate Governance in Malaysia**

Corporate governance has been defined in a number of ways by regulators, corporate governance advocates and scholars. In general terms, corporate governance can be defined as a set of rules, processes, customs, policies and incentives by which a firm is directed and controlled. The High Level Finance Committee (HLFC) Report in Malaysia defines corporate governance as ‘the process and structure used to direct and manage the business affairs of the company towards enhancing prosperity and corporate accountability with the ultimate objective of realizing long-term shareholder value whilst taking into account the interest of other stakeholder’ (*High Level Finance Committee Report* 1999, p. 10).

As of other countries in Asia region, investor confidence in Malaysia was severely affected during the 1997-1998 financial crises. Policy makers learnt valuable lessons and focused their attention, amongst others, on the need to raise corporate governance standards. Securities Commission (SC) undertook numerous initiatives including the issuance of the Malaysian Code of Corporate Governance (MCCG) in March 2000 to strengthen the corporate governance framework.

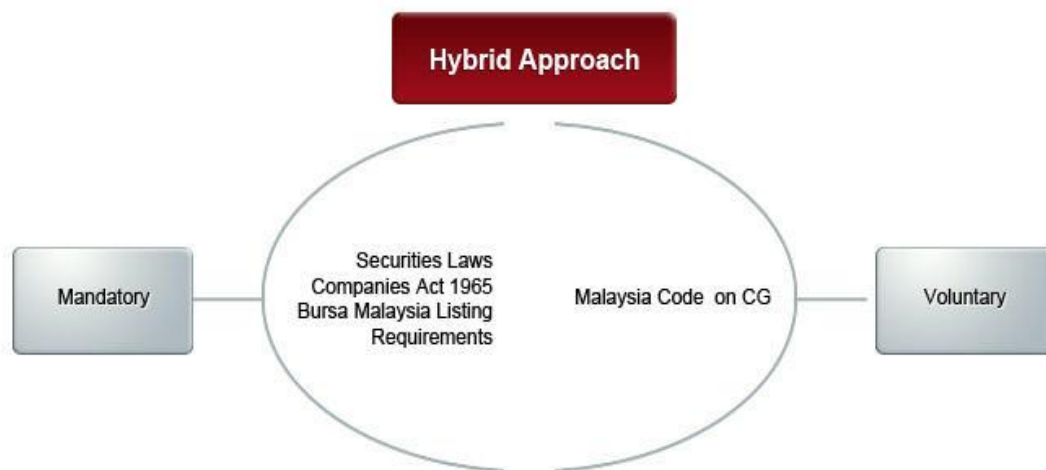
Since then, efforts to improve the framework continue. The MCCG was revised in 2007 (later known as the MCCG 2007) in line with the amendment of Malaysian securities and companies laws.

Recently, in 2011, SC issued the Corporate Governance Blueprint 2011 (CG Blueprint 2011) which outlines strategic initiatives aimed at reinforcing self and market discipline. The new Malaysian Code on Corporate Governance (MCCG 2012) was introduced in

2012 and is a key deliverable of the Blueprint. The MCCG 2012 is consistent with the CG Blueprint 2011, retains the definition of corporate governance as set out in the High Level Finance Committee Report 1999. The code supersedes the MCCG 2007. It sets out the broad principles and specific recommendations on structures and processes which a company should adopt in order to make good corporate governance an integral part of their business dealings and culture.

Parallel to other corporate governance codes of other jurisdictions, US and Australia for instance, the code supports the adoption of standards that go beyond the minimum prescribed by regulation, by which the companies adherence of the MCCG 2012 is voluntary, yet disclosure of their compliance with the code is necessarily be made in the annual report. In addition, the focus of the code is also on clarifying the role of the board in providing leadership, enhancing board effectiveness through strengthening its composition and reinforcing its independence. The code also encourages companies to put in place corporate disclosure policies that embody principles of good disclosure.

**Figure 2-1 Malaysian Corporate Governance Regulatory Framework**



Source: Bursa Malaysia. [www.bursamalaysia.com](http://www.bursamalaysia.com)

### **2.3.2 Corporate Governance as a Risk Management Mechanism**

According to Gramling et al. (2004) 'Corporate governance comprises of the procedures and activities employed by the representatives of an organisation's stakeholders to provide oversight of risk and control processes administered by management. Effective corporate governance helps to ensure accurate management reporting (e.g. reporting on

internal controls and financial results) and effective internal controls' (Gramling et al. 2004, p. 195). Recent events in financial institutions and markets around the world have highlighted the primacy of risk management to effective corporate governance. Spira and Page (2003) have suggested for a reinvention of firm risk management endeavour where internal control and internal audit play a vital role in risk management strategies.

During the last decade an implicit conceptual framework for internal control and corporate risk management has risen from risk management practice and policy within UK (Solomon et al. 2000). An explicit conceptual framework for risk management is now emerging and is expressed in the Turnbull Report (ICAEW 1999). The framework which combines the internal control, risk management and risk disclosure has considered the recent practical and policy developments in the disclosure of risk-related information in order to establish the current state of art of corporate risk management.

A survey made by Solomon et al. (2000) suggests that institutional investors do not generally favour a regulated environment for corporate risk disclosure or a general statement of business risk. The respondents agreed that increased risk disclosure would help them in their portfolio investment decisions. However, for other aspects of the risk disclosure issue they are more neutral in attitude. Further, it finds that the variation in the attitudes of institutional investors appear to be associated with the characteristics of the funds they manage as well as with their investment horizons. It also found that institutional investors' perceptions of corporate governance are related to their investment horizons, among other factors.

Beretta and Bozzolan (2004) proposes a framework for the analysis of risk communication and an index to measure the quality of risk disclosure. Mainstream literature on voluntary disclosure has emphasised that quantity can be used as a sound proxy for quality. However, it contends that, in the analysis of disclosure of risks made by public companies, attention has to be paid not only to how much (quantity) is disclosed but also to what is disclosed and how (density, depth and outlook profile). The methodology is the most interesting part of this study. The regression shows that the index of disclosure quantity is not influenced either by the size or industry. Thus, the synthetic measure can be used to rank the quality of the risk disclosure.

Linsley and Shrives (2006) examined a firm's risk reporting practices through a content analysis of annual reports of UK companies. The study found a significant association between the number of risk disclosures and company size. Similarly, a significant association was found between the number of risk disclosures and level of environmental risk. However, no association is found between the number of risk disclosures and five other measures; gearing ratio, asset cover, qui score, book to market value of equity and beta factor. The study also discusses the nature of the risk disclosures made by sample companies specifically examining their time orientation, whether they are monetarily quantified and if good or bad risk news is disclosed. It was uncommon to find monetary assessments of risk information, but companies did exhibit a willingness to disclose forward-looking risk information. Overall the dominance of statements of general risk management policy and a lack of coherence in risk narratives implies that a risk information gap exists and consequently stakeholders are unable to adequately assess the risk profile of a company.

In Malaysia, Amran, Bin and Hassan (2009) explored the availability of risk disclosures in the annual reports of Malaysian companies by focusing on the non-financial section of the reports. In addition, the study aimed to empirically test the sampled companies' characteristics and to compare the levels of risk faced by the companies with the disclosure made. The study found that the total number of sentences dedicated for discussion of risk information by the sample is considerably lesser than that compared to Linsley and Shrives (2006) study in UK. A regression analysis confirmed that the size of a company does matter and is explained by the stakeholder theory. The study is a replication of Linsley and Shrives (2006) study.

Othman and Ameer (2009) investigated the market risk disclosure practices among Malaysian listed firms. The aim of the study was to examine the level of compliance with FRS 132: Financial Instrument – Disclosure and Presentation for financial periods beginning from 2006. The study found that although a large number of companies have shown compliance with FRS 132 in relation to disclosing the financial risk management policy, there are systematic differences across companies in terms of level of details (i.e. qualitative and quantitative) disclosure. Interest rate disclosure was the most mentioned category and the credit risk was the least mentioned category of market risk. There is

evidence that most Malaysian firms did not engage in hedging any type of market risk over the reporting period of 2006-2007.

Talha, Sallehuddin and Mohammad (2007) seek to investigate the level of competitive disadvantage experienced by Malaysian listed firms by disclosing segmental information as required by the new accounting standard on segments disclosure by Malaysian Accounting Standards Board (MASB). The outcomes of the study indicate that competitive disadvantage exists by disclosing segments information but it is not significant. In addition it was found that larger companies experience greater competitive disadvantage than smaller companies, more extensive segment disclosure standards leads to less competitive disadvantage and the state of competitive advantage is greater when geographical segment is disclosed as the primary segment.

## **2.4 The Associations among Corporate Governance, Earnings Quality and Firm Value**

### **2.4.1 Good Structure of Board of Directors**

#### ***Board of Directors and Earnings Quality***

Some studies provide inconsistent results in explaining the relationship between certain characteristics of board of directors with firms financial reporting. However, literature shows ample evidence to conclude that a strong board of directors can urge firms to prepare good quality financial reports. A strong board of directors is characterised by adequate representation of independent directors, small membership size and separation of CEO-chairman roles.

Independent judgements by independent directors with diverse backgrounds and experience are vital to control the discretion of managers and can reduce the event of misleading financial statements (Beasley 1996) and earnings management (Peasnell, Pope & Young 2006), thus improving the quality of financial reports. In addition, it was found that independent board of directors enhance the quality of financial reports, such that they promote earnings conservatism and earnings predictability (Ahmed, Anwer S. & Duellman 2007).

Even though a larger board is presumed to have a broader pool of knowledge that perhaps can increase its capability to monitor the behaviour of managers and the quality of financial reports, yet many studies found contradictory evidence. Rahman and Ali (2006) and Ahmed, K, Hossain and Adams (2006), for instance, found that large size of board does not improve the quality of reported earnings, particularly, those associated with lower earnings management. A board with large membership suffers from free rider problems, inefficient decision making and reluctance to criticize managers (Lipton & Lorsch 1992). Moreover, it is difficult to coordinate a large number of members and their participation in strategic decision making might decrease (Forbes & Milliken 1999).

For a board of directors to be effective, particularly in a market where majority of a firm's shares are substantially owned by an insider (e.g. in Malaysia), the separation of the CEO and chairman roles is a good practice to constraint full control of the controlling owners over the decision made by the board. In addition, studies found that the practice of CEO-chairman combined role can also reduce board effectiveness (Abdul Rahman & Haniffa 2005; Dechow, P.M., Sloan & Sweeney 1995; Klein 2002).

#### **2.4.2 Good Structure of Audit Committee**

##### ***Audit Committee and Earnings Quality***

According to DeZoort et al. (2002), the determinants of a good structure of an audit committee can be summarised into four broad categories, namely; arrangement (i.e. independence, size and duality), resources (i.e. financial expertise and experience), authority (i.e. power enshrined in the audit committee) and diligence (i.e. frequency of audit committee meeting). Nevertheless, due to various pragmatic constraints, the characteristic of a good structure of audit committee in this thesis are aggregated based on its size, independence, competency and commitment. An audit committee with such character is believed to be able to reduce information asymmetry and mitigate the information risk through the supply of reported earnings which are highly predictable, conservative and have high accruals quality.

Literature shows that generally independent directors in audit committee are able to improve the overall governance practices within a firm (Beasley & Salterio 2001; Klein 2002). Independent directors are able to resolve conflicts among internal managers (Fama, E F & Jensen 1983) and issues related to internal audit function (Zain



&Subramaniam 2007) and external audit function (Abbott, L.J., Park & Parker 2000; Abbott, L.J. et al. 2007). Vafeas (2010) and Xie, Davidson and DaDalt (2003) found that an audit committee consisting of majority or entirely independent directors can improve the quality of reported earnings. Additionally, the presence of independent directors in audit committee is also found associated with lower reporting problems (McMullen & Raghunandan 1996) and earnings management (Mohd-Saleh, Mohd-Iskandar & Rahmat 2007). Thus, the presence of independent directors in an audit committee leads to better reporting process as a result of a lower agency conflicts.

Financial expertise is indeed vital for audit committee members to deal with reporting issues as the business environment and transactions become more sophisticated and complex. Hence their roles are expanding with stakeholders higher expectations which require wider responsibilities (Millstein 1998). A firm with poor earnings quality is characterised by an audit committee with less number of financial experts as members (McMullen & Raghunandan 1996). In addition, financial expertise in audit committee is also found to reduce aggressive earnings management (Bedard & Johnstone 2004), prevent the occurrence of financial misstatements (Abbott, Lawrence J., Parker & F.Peters 2004) and increase accruals quality (Dhaliwal, Naiker & Navissi 2010).

According to DeZoort et al. (2002), audit committee diligence is the willingness of the members to work together in dealing with any issues related to the management, internal and external auditors and other constituents. It is common to quantify audit committee diligence based on the number of meetings held during a financial year, as shown in most studies including McMullen and Raghunandan (1996), Xie, Davidson and DaDalt (2003) and Vafeas (2010). These studies found positive relationship between number of audit committee meetings held and the quality of reported earnings. In addition, Abbott, L.J., Park and Parker (2000) and Abbott, Lawrence J., Parker and F.Peters (2004) have stated that audit committee meeting held at least twice in a financial year leads to lower SEC sanctioned for financial reporting problems. Moreover, regular audit committee meeting can also reduce the occurrence of earnings mismanagement (Vafeas 2010; Xie, Davidson & DaDalt 2003), financial restatement (Beasley et al. 2000) and fraud (Farber 2005).

### 2.4.3 Good Structure of Risk Management Mechanisms

#### ***Risk Management Mechanisms and Earnings Quality***

External auditor is widely recognised as one of the chief corporate governance mechanisms for ensuring greater principal-agent alignment of interests by providing external verification of the reliability of the firm's financial statements (Ferguson, Francis & Stokes 2003; Leftwich 1980). Whilst it is in the explicit interests of the shareholders to engage an external auditor, it is argued by agency theorists that it is also in the interests of corporate management. (Firth 1997) argues that corporate management's abilities will be hampered without the engagement of an external auditor because of the lack of a credible external audit. A less credible external auditor is likely to increase cost of capital, restrict access to capital and impose severe restrictions on management. External auditors also play an important role in influencing disclosure policies and practices, both at the firm level and regulator level (Apostolou & Nanopoulos 2009; Owusu-Ansah 1998).

The external auditor's value and role has become firmly embedded in key legislative statutes of the majority of nations worldwide. For example, in the US the need for an external audit is mandated in the US Securities Act. Whilst the role of the external auditor is widely acknowledged in formal legislative statutes, Imhoff, E. (2003), amongst others, notes that, of late there have been a number of instances where the auditor and/or audit committees were not effective and a number of cases of fraud, material errors or misstatements, material omission (non-compliance with mandatory disclosure) have been observed. This view highlights a growing recognition that the quality of the external auditor is a pivotal property in determining the overall value of reporting mechanism of a firm.

Auditor quality has been one of the most important issues affecting the auditing profession. Further, it is also a service and attribute which is highly valued by equity market participants (Franz, Crawford & Johnson 1998; Moreland 1995). It is perceived that high auditor quality reduces the uncertainty associated with financial statements in the eyes of other contracting parties not involved in the preparation of such statements (Wallace 2004). In addition, contractual costs will also fall as auditing quality increases (Vanstraelen 2000).

Though a range of definitions of audit quality have been proposed, that of (DeAngelo 1981) has become widely recognised and is generally accepted as the seminal characterisation encapsulating auditor quality. (DeAngelo 1981) suggests that auditor quality is the probability that an auditor both discovers and reports any material misstatements and accounting system breaches that affect the contract between corporate management and investors. Based on the definition provided by DeAngelo (1981), auditor quality is perceived as a function of the auditor's competence (i.e. the ability to discover material misstatements and accounting system breaches) and independence (i.e. the ability to report material misstatements and accounting breaches).

Whilst there is a general consensus surrounding the definition of auditor quality in the literature, there remains intense debate over the underlying determinants of this construct. Theoretical models consistent with the definition of DeAngelo (1981) and agency theory usually embody either a 'reputation hypothesis' or a 'deep pockets hypothesis' perspective towards external auditor quality (Dye 1993; Lennox 1999).

The reputation hypothesis perspective implies that there is a greater incentive for audit firms with higher reputation capital at risk to provide superior audits. Reputation hypothesis advocates suggest that due to greater political visibility, larger audit firms have a higher proportion of reputational capital at risk than smaller counterparts (Beatty, RP 1989; Lennox 1999). Meanwhile, deep pockets hypothesis supporters argue that audit firms with higher substantial economic wealth have a greater incentive to provide enhanced audits to minimise litigation risk (Dye 1993). The underlying rationale of the deep pockets hypothesis is external parties (e.g. shareholders and special interest group) are likely to target larger audit firms for litigation due to perception that larger audit firms have more resources to make restitution on any legal damages awarded.

Reputation capital as defined by brand name has been assumed to be the key component underlying auditor quality. Advocates of both the reputation hypothesis and deep pockets hypothesis perspectives of audit quality have suggested audit firms recognised as major brand leaders within the industry will have better incentives to ensure higher auditing standards (DeAngelo 1981; Dye 1993). For illustration, it is suggested an audit firm with a highly recognised brand name will be the subject of increased litigation risk because a litigating party may perceive such an audit firm will be more willing to settle to avoid

damaging political costs that impair reputation capital (this view is consistent with the tenets of the reputation hypothesis perspective). Further, it may be thought, such an audit firm is financially more successful and therefore, will have greater resources to draw upon to settle legal actions (consistent with the tenets of the deep pocket hypothesis).

A number of studies have been done to investigate the possible linkage between brand name and key financial accounting issues such as earnings quality. Becker, Connie L et al. (1998) examine whether earnings management of firms audited by Big5 audit firms (proxy for high brand name audit firms) were significantly different from firms audited by Non-Big5 audit firms. Results presented by Becker, Connie L et al. (1998) show that income increasing discretionary accruals were significantly higher amongst firms audited by Non-Big5 audit firms. Additionally, Becker, Connie L et al. (1998) also report that clients of Non-Big5 audit firms with incentives to smooth earnings downwards (or upwards) report significantly higher income-decreasing (or increasing) discretionary accruals relative to clients of Big 5 audit firms. Finally, brand name auditors are more likely to defend reputation capital by being less willing to accept questionable accounting methods and report errors and irregularities (Becker, Connie L et al. 1998). Findings of Becker, Connie L et al. (1998) are consistent with subsequent research. Reynolds and Francis (2000) among others, found auditors with prominent brand names were better able to detect earnings management due to superior knowledge. Chen, Lin and Zhou (2005) found that high quality auditors (Big5 versus No-Big5) constrained the opportunistic behaviour of corporate management more significantly than low quality auditors.

Furthermore, studies also suggest that whilst big brand name audit firms have incentives to constrain earnings management, firms have an incentive to engage such audit firms to prevent opportunistic behaviour by corporate management (Behn, Choi & Kang 2008; Reynolds & Francis 2000). Francis, Jere R, Maydew and Sparks (1999) argue that a high-accrual firm which is subject to great opportunistic mismanagement behaviour by corporate management would potentially hire a high brand name audit firms as the reputation capital of engaging a brand name identity provides a better assurance (perceived) that earnings reported were credible. Francis, Jere R, Maydew and Sparks

(1999) also state that firms reporting high-accruals often engaged with Big5 auditors rather than firms reporting low-accruals which prefer to engage with Non-Big5 auditors.

Even though Davidson, Goodwin-Stewart and Kent (2005) found that the presence of internal audit function does not have any impact on level of earnings management, Schneider and Wilner (1990) and Asare, Davidson and Gramling (2008) found evidence on the association between the quality of internal audit function and deterrence of financial reporting irregularities. Prawitt, Smith and Wood (2009) criticize Davidson's dichotomous measure of internal audit function as a noisy measure. According to Prawitt, Smith and Wood (2009) it cannot be generalised to publicly traded firms where internal audit functions are commonly in place regardless of whether it is outsourced or formally established in-house. They further argue that the measure does not capture the quality of internal audit which vary among firms with different needs and use of such function. Experimental studies Schneider and Wilner (1990) show that the effectiveness of internal audit has a parallel to deterrence impact of external audit on financial reporting irregularities. Additionally, Asare, Davidson and Gramling (2008) found that internal auditors have the ability to detect misreporting behaviour of managers.

In Malaysia, Yatim (2009) explores the association between audit committee characteristics and the establishment of a risk management committee by Malaysian listed firms. The study predicts that a firm with more independent, expert and diligent audit committees are likely to establish stand-alone risk management committees. It is also expected that audit committees with more members are also likely to support the establishment of risk management committee. The study finds a strong support for an association between the establishment of risk management committee and audit committee independence, size and diligence. The results show that the establishment of a risk management committee is positively and significantly associated with firm-specific variables such as size, complexity of operations and the use of Big Four audit firms.

In Australia, Subramaniam, McManus and Zhang (2009) examine how a risk management committee (RMC), as a newly evolving sub-committee of the board of directors, functions as a key governance support mechanism in the oversight of an organisation's risk management strategies, policies and processes. However empirical evidence on the factors associated with the existence and the type of RMCs remains scant.

The result based on logistic regression analysis indicates that RMCs tend to exist in companies with an independent board chairman and larger boards. Further, the results also indicate that in comparison to companies with combined RMC and audit committee, those with a separate RMC are more likely to have larger boards, higher financial reporting risk and lower organisational complexity.

#### **2.4.4 Good Ownership Structure**

##### ***Ownership Structure and Earnings Quality***

Generally, shareholders with substantial amount of ownership of a firm are better able to get access to the firms' private information that can reduce the agency conflict. It is believed that in a situation where the information gap is reducing, firm is less pressured to produce high quality of financial reports due to low demand.

Managers who themselves are the owner have better access to the internal affairs of a firm, thus reducing agency conflict. They are not merely depending on the financial reports, instead necessitate internally circulated reports. Directors of a company holding substantial shares are less dependent on financial reports and hence conservative financial reports are certainly not important for their decision making (Dargenidou, McLeay & Raonic 2007).

On the other hand, outside investors, who enjoy substantial indirect influences over the firm requires a better quality of reports which are transparent, reliable and relevant for decision making. High quality financial reports indicate that the reports disclosure is adequate and less influenced by the opportunistic discretion of managers, and hence increase the demand of outside shareholders for financial reports with this feature (Yeo et al. 2003).

The interpretation of good ownership structure of a firm employed for this thesis is based on the firm concentration of ownership. Based on literature review, it is believed that a firm's preference towards the preparation of their financial reports is influenced by the extent of inside ownership and substantial outside ownership. In that sense, firms with good ownership structure are the ones with high portion of concentrated outside shareholders and less portion of concentrated inside shareholders.

Since the demand for financial report attributes varies among firms with different shareholders concentration, i.e. firms with different levels of good ownership structure are driven differently in their preference to the supply of financial reports; the proposed relationships are separated according to the attributes of earning quality.

#### **2.4.5 Good Structure of Board Committees**

##### ***Board Committees and Earnings Quality***

The establishment of specific task force of board of directors focusing on several issues of governance is believed to increase the reliability and relevance of financial reporting. In recent corporate environment, a good structure of corporate governance is considered as a set of monitoring mechanisms consists of an adequately functioning audit committee, considerately composed board of directors, balanced ownership structure and an independent and vigilant external auditor. Moreover, the establishment of monitoring board committees such as risk management, nominating and remuneration committee is likely to enhance corporate accountability by providing a mechanism for independent oversight of corporate activities, thus promoting corporate legitimacy (Harrison 1987).

The common foundation of argument on corporate governance efforts towards board-committees is presumed to be the legitimacy theory. Legitimation has been defined as “the process whereby an organisation justifies to a peer or super-ordinate system its right to exist, i.e. to continue to import, transform and export energy, material or information”(Maurer 1971, p. 361). Legitimacy theory is another common perspective that has been adopted to understand organisational forms and structures based on the assumption that a corporation has to maintain its legitimacy for survival (Meyer & Rowan 1977). The adoption of monitoring board-committees may be viewed as one strategy for maintaining corporate legitimacy. Thus, it is believed that the establishment of board-committees signals the effort of firms towards providing better quality of corporate information particularly the earnings figure.

Remuneration committee assesses the performance and determines the remuneration of corporate executives. An effective compensation committee that is able to promote good reporting quality is believed to be independent of the executives. Klein (2002) found that firms with low independence compensation committee (when CEO becomes part of the member) have higher level of abnormal accruals. In addition, compensation committee is

better able to act on behalf of the shareholders if the composition is sufficiently independent (Klein 1998).

Nomination committee's task is to identify and choose the appropriate nominees for the board of directors. In order to better perform its function, nomination committee has to be completely independent from the management. Uzun, Szewczyk and Varma (2004) document the importance of independent nomination process of new directors and board members in corporate fraud deterrence. In addition, Persons, O (2005) evidence low likelihood of financial statement fraud if the nomination committee is solely comprised of independent directors. Low independent nomination committee could also impair the independence of board of directors and audit committee. Shivdasani and Yermack (2002) found that there is a possibility that if the CEO is appointed as part of the nomination committee more 'grey' directors and non-independent directors are included as the members of the board and the board of directors become less independent. Klein Klein (1998) suggests that the possibility of audit committee independence being influenced by the independence of nomination committee. It is concluded that in order to ensure optimal oversight is achieved by those monitoring mechanisms they all need to work mutually and in conjunction with the supports of board-committees.

## **2.5 Information Risk, Earnings Quality and Firm Value**

### **2.5.1 The Concept of Risk and Information Risk**

Every business organisation faces different kinds of risks and the prioritisation on those risks is an essential part of the risk management process (ICAEW 1998). Risks are the uncertainties about events or outcomes that could have a material effect on the goals of an organisation (Selim, Georges & McNamee, David 1999).

According to Lupton (1999), risk is used in lieu of hazard, threat or harm. Watson and Head (1998) refer 'risk' to a set of outcomes arising from a decision that can be assigned probabilities, whereas 'uncertainty' arises when probabilities cannot be assigned to the set of outcome. These definitions of risk and uncertainty reflect events that have occurred during the modern era (Reddy 1996). Pre-modern ideas of risk, however, were connected to the occurrence of natural events, e.g. natural disaster (Lupton 1999). The development of probability calculations and the insurance industry during the industrial revolution



impacted upon ideas of risk. The chances of outcomes then become susceptible to mathematical calculations and compensation could be paid out when a negative outcome occurred (Ewald 1991 ).

Therefore, the definition of risk is derived mainly from modernist ideas of risk, with the economists developing the idea of uncertainty to deal with situations where probabilities were not available (Reddy 1996). The modernist view of risk incorporates both the positive and negative outcomes of events. This contrasts with the pre-modern era where risks were solely considered to be bad. Current analyses of risk are dominated by the notion of Beck (1992) that the recent risk society is more concerned about the risk impact upon nature than the impact of nature upon the risk. Beck (1992) refers to these risks as ‘manufactured uncertainties’ and observes that it is inconsistent that they can arise out of desire to reduce risk.

For the purpose of this study, risk is defined as any opportunity or prospect, or of any hazard, danger, harm, threat or exposure, that has already impacted upon the firm or may impact upon the firm in the future or of the management of any such opportunity, prospect, hazard, harm, threat or exposure. This is a broad definition of risk and embraces ‘good’ and ‘bad’ ‘risks’ and ‘uncertainties’. The rationale for the adoption of this definition is that it accords with Lupton (1999) discussion of how risk is most widely understood.

### **2.5.2 Market Pricing of Information**

Generally, theory suggests that the high quality of information is linked with a lower cost of capital that can lead to higher firm value. It is based on a notion stating that the quality information can reduce individual firms’ cost of capital in two ways viz., through increased market liquidity or through reduced level of uncertainty in estimation. High quality information can increase market liquidity in a way that it reduces transaction costs or increase the demand for the securities (Amihud & Mendelson 1986; Diamond & Verrecchia 1991). The level of uncertainty influences the perceived unconditional rate of return distribution upon which investors make their investment decisions i.e. an increase in the quality of information allows investors to better estimate asset returns than can reduce the required rate of return.

Related to the above, low quality of information gives rise to information risk which is priced and cannot be diversified away. Since decisions made by rational investors depend on the quality and quantity of information available to them, investors will compensate the information inadequacy that can cause them a higher exposure to risk by charging higher cost of equity capital.

Easley and O'Hara (2004) developed a model that differentiates the effect of private and public information on cost of capital. The differences in the proportion of private and public information available in the market distinguish the ability of informed and uninformed investors to decide their effective fund allocation (Easley & O'Hara 2004). They found that investors require higher return on shares which require high private information and vice versa. Private information increases the risk (i.e. the information risk) to the uninformed investors since informed investors are better able to modify their portfolio corresponding to any new information available to them. Diversification does not benefit the uninformed investors, holding more shares with high private information cannot remove the risk because the uninformed investors remain in the situation where the decisions they made are wrong. Since individual firms are unable to supply the market with more public information (or less private information), uninformed investors will require higher return as a compensation for the non-diversifiable risk exposed to them.

As compared to Easley and O'Hara (2004), Leuz, C. and Verrecchia (2004) take a different approach where information risk is attributable to, in the context of capital investment, the coordination of information between investors and the firm. Inadequate, less transparent and less precise reporting made by firms deteriorates the coordination between the firms and their investors. This can increase the uncertainty in the decisions made for the firms' capital allocation, and hence create information risk that can lead to an increase in expected return. The model they developed captures the role of firm reports in coordinating the conducts of managers and investors based on the notion that share markets play a role in capital allocation and the direction of firms' investment choices.

Therefore, broadly, it can be said that cost of capital is determined by the level of non-diversifiable risk associated to the firm. Low quality and insufficient information supplied by the firm is firm-specific information risk which is priced in the share market. By considering that market value of firms is an unbiased present value of expected current

and future cash flows discounted at the risk-adjusted cost of capital, low cost of capital indicates a better value of firm (Gaio & Raposo 2011).

### **2.5.3 Market Pricing of Financial Information**

Low quality financial information increases the risk of inefficient allocation of funds. Financial information, particularly the earnings information, is affected mostly by the uncertainty in accounting measurements and valuations and the occurrence of earnings manipulation by the managers. Conversely, earnings with low uncertainty is considered as high quality earnings which serves as an informative signal about the pay-off structure that can reduce the cost of capital.

Francis, J et al. (2004) found that there is an association between several attributes of earning and cost of capital. They predict an inverse relationship between the attributes of earnings and cost of capital, with a belief that earnings figure is the most crucial source of firm-specific information. This information can affect cost of equity capital and thus it is priced. The investigation is made up for accounting-based attributes (i.e. accrual quality, persistence, predictability, smoothness) and market-based attributes (i.e. value relevance, timeliness and conservatism). Broadly, the prediction is supported and high quality earnings reduce cost of capital. Specifically, the results signify that accounting-based earnings attribute proxy for the uncertainty in earnings as an informative signal to investors about the pay-off structure and the market-based earnings attribute proxy for the investors' perception of that uncertainty.

Francis, J et al. (2005) particularly refer information risk as a non-diversifiable risk factor and the likelihood that firm-specific information that is pertinent to investor pricing decisions is of poor quality. They recognised accruals quality as a measure of information risk, which is associated with accounting earnings and priced in both cost of debt and equity capital. For additional analysis, they decomposed the component of information risk (i.e. accruals quality) into innate (i.e. the fundamental component of accruals) and discretionary (i.e. the component of accruals derived based on decisions of the managers). Their findings is that poor accruals quality firm is to have both higher cost of equity and cost of debt and a manager's long-term discretion on reporting (represented by innate discretionary accruals) is the predominant factor that determines firm cost of capital.

Cohen, DA (2008) investigated the impact of a firm's financial reporting choices on the firm's cost of capital. He found that information asymmetry is reduced when firms are able to produce high quality financial reports that can lead to a decreased cost of capital. Though, firms are not motivated to maximise reporting quality due to the proprietary nature of many disclosures. He again found no evidence that high reporting quality firms enjoy lower cost of capital once endogenous nature of the reporting choices is taken into consideration.

Within the aspect of reporting transparency, Barth, Konchitchki and Landsman (2011) examined the association between financial reporting transparency and cost of capital. They measured financial statement transparency (FST) as the extent to which earnings and change in earnings co-vary contemporaneously with stock returns. Specifically, FST is the sum of  $R^2$ s from industry commonality regression component (FSTI) and industry neutral component (FSTIN). Expected cost of equity capital (ECC) is measured using Fama, Eugene F and French (1993) three-factor model and using 48,326 firm-year observations (1974 to 2000). The findings generally show that transparency is inversely related to subsequent returns and expected cost of capital, and conclude that the three-factor model do not reflect all of the pricing effects associated with financial statements transparency. Additionally, it is found that FSTIN has stronger negative relation with ECC than FSTI.

Hribar and Jenkins (2004) use implied cost of capital to investigate the impact of restatement on firm's cost of capital. Loss of firm value is due to increase in cost of capital that is caused by the revisions of the expected earnings. The revisions made due to non-existence of past earnings, revisions in expected growth rates, uncertainty regarding managerial competence and integrity and the perceptions about overall earnings quality. Some of these factors have direct effect on discount rates that are linked to the expected future cash flows. An increase in estimated cost of capital is reported by Hribar and Jenkins (2004) after the restatement announcements.

Armstrong et al. (2010) looks firm as a nexus of contracts among various factors of production. Accounting system plays a role in reducing the information-related agency costs that arise among managers, directors and capital providers. It is believed that formal and informal contracts govern the relationships among firms' contracting parties.

Informal contracts, empirically, require time-series (or panel) data to estimate the equilibrium behaviour of contracting parties. Further, the interrelationship among various governance characteristics and that accounting system could enhance the existing governance mechanisms. The governance mechanisms is what managers use to disguise the extent of firm's agency problem.

#### **2.5.4 Market Pricing of Earnings Quality**

Earnings numbers as indicators of firm performance are of tremendous importance for the users of financial statements. Different types of stakeholders are interested in their timely and accurate presentation. A correct assessment of firm's performance depends to a large degree on the level of accounting information quality, specifically, the quality of earnings information provided to the decision makers.

Earnings quality is an abstract concept as quality cannot be directly observed. Current accounting research has not arrived at a consensus what exactly characterises 'high quality' earnings. Most definitions are conceptually different from each other. They depend on certain properties of accounting earnings that are desirable outcomes of financial reporting from the view of, for instance, researchers, standard setters, investors or analysts. As the desired outcomes are not necessarily related, the definitions and metrics or earnings quality vary. As there is no single definition of earnings quality it will be defined here depending on the perspective from which the quality is assessed. For instance, from the perspective of economic income, sometimes referred to as true income, the representation of earnings quality is the extent to which reported earnings faithfully represent 'Hicksian' income (Schipper & Vincent 2003). Low quality is in this case, poor correspondence between observable accounting earnings and unobservable economic earnings (Bhattacharya, Daouk & Welker 2003, p. 642). However, from a valuation perspective, earnings is of good quality if it is a good indicator of future earnings (Penman & Zhang 2002). Subsequently, earnings that are more persistent are viewed as higher quality earnings (Richardson, Scott A 2003).

Some of the earnings quality concepts can be viewed from several perspectives. As the latter vary, the same earnings quality metric can indicate both high and low quality of earnings. For example, smoothed earnings are desire outcome of the accounting process from valuation perspective. However, from an economic perspective, income smoothing

deteriorates earnings quality. Earnings quality concepts may be divided into two categories depending on the measure used. These are either market-based or accounting-based measures. Market-based measures are constructed using the association of market and accounting data. Accounting-based measures are solely constructed with the help of data from companies' financial statements.

Information risk is considered to be associated with the level of imprecision and uncertainty or reported earnings and assume that each of the earnings quality attributes particularly accruals quality, predictability and conservatism is directly referred to as information risk (Gaio & Raposo 2011).

### ***Earnings Predictability***

The concepts of earnings quality under this property are related to the distinct properties of time-series behaviour of earnings number. Two concepts are to be reviewed, i.e. earnings persistence and earnings predictability.

From the perspective of time-series, earnings can be split into two components, i.e. a permanent part (i.e. sustainable or core earnings) and a transitory part. Permanent earnings are generated by business transactions that produce innovations (or earnings shocks) that remain in future earnings realisations. Transitory components represent non-recurring items reported on the income statement. Persistence and predictability relate to the time-series behaviour of earnings innovations. Persistence is defined as the extent to which current period remain in the earnings series. Predictability is defined as the ability of past earnings to predict future earnings (Lipe 1990) and is negatively related to the variance of innovations.

Predictability is a desired outcome of financial reporting from the valuation perspective. Earnings that are highly predictable can enter into valuation models without any adjustments. Both the theoretical and empirical literature show that the predictable earnings are more value relevant, i.e. increase the association of earnings and stock prices (Easton & Zmijewski 1989; Kormendi & Lipe 1987; Lipe 1990) .

### ***Earnings Conservatism***

A timely recognition of all elements of economic income in financial statements makes them more useful to the users (Ball, Ray & Shivakumar forthcoming ). Timely

incorporation of economic income in accounting earnings is achieved through the timely recognition of economic gains and losses or in terms of 'good' and 'bad' news (Basu 1997). While the timely incorporation of both good and bad news is crucial for earnings quality, there is a higher demand for and supply of timely information on the economic losses. The demand for and supply of a timely recognition of economic losses results in accountants requiring a higher degree of verification for the good news than for the bad news (Basu 1997). This asymmetry in the recognition practices is referred to as accounting conservatism (Basu 1997).

There is a demand for conservatism because timely loss recognition mitigates agency problems associated with investment decision (Ball, R. & Shivakumar 2005). Conservatism reduces the likelihood that managers will take negative net present value and overstate earnings (Watts, Ross L 2003). Overstated earnings are not desired because they may lead to paying higher dividends and management bonus at the expense of debt holders and shareholders. In the case of negative net present value projects, conservatism has a signalling role. Conservatism makes it easier for shareholders to trace inefficient investment projects as the bad news are captured in earnings on more timely basis (Watts, Ross L 2003). Therefore, timely loss recognition enhances earnings quality.

Conservatism can also be viewed from the perspective of the market. Market-based measures of earnings conservatism include regression parameters from event study regressions and earnings-stock returns associations. By the same probability of occurrence of economic gains and losses, only the latter are incorporated into accounting earnings under conservatism. As only losses are recorded, the net assets of the firm will be understated. Under the assumption of efficient markets, however, both the good and the bad news will be priced as they become publicly known. Smaller book-to-market ratios indicate earnings conservatism. Another way to assess the extent of undervaluation of net assets is to use a residual income model. For example, Myers (1999) notes that a positive intercept in the regression of stock prices on book value of equity and residual income implies accounting conservatism.

Recently, the reverse value relevance regression has become a very popular technique to test for earnings conservatism. Stock returns are treated as changes in the prospects of the company with positive returns indicating reception of good news and negative returns

indication reception of bad news. Basu (1997) first performs a regression of earnings changes on market value changes, a dummy variable that assumes its value according to the sign of the market value changes and then the product of both. Under conservatism, bad news will be reflected in prices and earnings simultaneously. However, good news will be incorporated in accounting earnings with some time lag compared to their appearance in the market prices. The coefficient on the interaction variable is then predicted to be negative. Higher value of the coefficient (higher significance level) indicates timelier loss recognition and earnings of higher quality.

### ***Accruals Quality***

Accruals are all accounting entries that modify cash flows for financial reporting purposes to arrive at a summary measure of firm performance for a finite period. Accruals arise as a result of accounting process. They are an unavoidable part of every accounting system. The role of accruals in financial reporting has been addressed in numerous studies. From the positive perspective the accrual accounting process is superior to the more simple cash accounting as earnings predict future cash flows better. In the case of direct measurement of future cash flows, earnings were shown to be able to predict observed cash flows pattern of the next period better.

Dechow, Patricia M. and Dichev (2002) provide evidence of current period earnings being a better predictor of future cash flows than current period cash flows. In the case of indirect measurements of future cash flows, earnings were shown to have a better association with the firm value or in other words with the present value of expected net cash flows. Dechow, Patricia M. and Dichev (2002) also show that earnings explain a larger part of stock returns than cash flows. As the difference between earnings and cash flows are accounting accruals, an increase in explanatory power can be attributed to them.

The discussion shows that accounting research found several justifications for accrual accounting. However, accrual accounting introduces a number of problems. It is complicated as it requires making judgements about the cash flows over time. These judgements can be wrong either because errors due to the complexity of the business environment and managerial mistakes or, due to the incentive to show a desirable profit figure. These errors reduce the quality of accruals and therefore reported earnings.



Financial analysts argue that the earnings which has smaller accrual component is a desired outcome of the accounting process (Francis, J et al. 2005; Francis, J et al. 2004). As noted above, accrual accounting attempts to recognise future cash flows in current earnings to arrive at a better measure of firm performance. The process involves accruing expected future cash flows and deferring the cash flows of the past periods, which requires a lot of judgement. Therefore, accruals are a trade-off between relevance and reliability.

Relevance is attained through the information content in accruals about future cash flows. However, errors in judgements make accruals less reliable than cash flows. Sloan (1996) shows, for example, that the accrual component of earnings is less persistent than cash flow component as the errors in accruals tend to reverse. As earnings quality is viewed by Sloan as earnings persistence, the magnitude of accruals is an inverse measure of earnings quality. The same notion can be found in Leuz, Christian, Nanda and Wysocki (2003). Their measure is a firm-specific magnitude of total accruals that is obtained by dividing accounting accruals by operating cash flows. A similar measure, the ratio of cash flow from operations to earnings, can also be found in Penman (2007). Intentional errors in financial reporting increases the ratio and are an indicator of low quality earnings (Leuz, Christian, Nanda & Wysocki 2003).

### ***Earnings management as accrual management***

Operationally, earnings management can be defined as the use of accrual management for the purpose of obtaining private benefits. The general approach for estimating discretionary accruals is to regress total accruals on variables that proxy for normal accrual. Unexpected accruals or discretionary accruals are considered to be unexplained components of total accruals. Discretionary accruals are probably the most commonly used empirical construct to measure earnings quality. The concept sets forth that accruals can be split into two components; discretionary and nondiscretionary accruals. Nondiscretionary accruals are the 'normal part' of earnings that results from the neutral application of accounting rules. On the other hand, discretionary accruals are those caused by conservative or aggressive accounting policy choice. Neither discretionary nor non-discretionary accruals are directly observable and have to be estimated using accounting data. The models that split accruals into their components are manifold. The initial approach was developed by McNichols and Wilson (1988). The estimation technique employed by them is a regression of total accruals on accounting fundamentals that are

supposed to drive the accrual process. Jones (1991) was the first to use this approach. Kaplan (1985) argues that accruals depend on firm specific circumstances that used changes in revenue and property plant and equipment as a proxy. The unexplained part of the variation in total accruals or in other words the forecast error is a discretionary accrual component. Therefore, some authors refer to discretionary accruals as abnormal accruals because they are a part of variation in accounting accruals that cannot be explained. The explained part of the variation in total accruals is nondiscretionary accruals. An estimate of discretionary accruals is an inverse measure of earnings quality. Earnings have low quality if their estimated discretionary component is relatively large.

Dechow, Patricia M. and Dichev (2002) assess the extent to which working capital accruals map into the realisations of operating cash flows. The authors show that the current period working capital accruals can be empirically related to the cash flows from operations of the preceding, the current and the next period. The accrual estimation error is the part of the variation in working capital accruals that cannot be explained by the realisations of cash flows. High accrual and earnings quality is inversely related to the magnitude of the accrual estimation error that can result both from intentional and unintentional mistakes in judgements about cash flow realisations. The analysis is performed by a regression of the working capital accruals on lagged, current and next-period operating cash flows. The measure of quality is then either the absolute value of regression residuals or the standard deviation of regression residuals. Residuals are calculated from cross-sectional or time-series model specifications.

**Table 2-1 Summary of Discretionary Accruals Models**

| Model           | Author                              | Description                                                                                                                                                                                                                                                                             |
|-----------------|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| De Angelo Model | DeAngelo (1986),<br>DeAngelo (1988) | <p>The non-discretionary accrual is the last period's total accruals scaled by lagged total assets. The model is summarised as follow:</p> $NDA_t = TA_{t-1}/A_{t-1}$ <p>Where,</p> <p><math>NDA_t</math> = non-discretionary accruals in the year t scaled by lagged total assets;</p> |

|             |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             |              | <p><math>TA</math> = total accruals;</p> <p><math>A</math> = total assets.</p> <p>The discretionary portion of accruals is the difference between total accruals in the event year scaled by total assets and non-discretionary accruals. This model follows a random walk process.</p>                                                                                                                                                                                                                                                                                                                                                                                                                   |
|             |              | <p>Non-discretionary accruals are the mean of total accruals, scaled by lagged total assets from the estimation period. The estimation is made using the following equation:</p> $NDA_t = 1/n \sum_{\gamma} (TA_{\gamma}/A_{\gamma-1})$ <p>Where,</p> <p><math>NDA_t</math> = non-discretionary accruals in the year <math>t</math> scaled by lagged total assets;</p> <p><math>\gamma</math> = year subscript for years <math>(t-n, t-n+1, \dots, t-1)</math> included in the estimation period;</p> <p>The discretionary portion is the difference between the total accruals in the event year scaled by <math>A_{t-1}</math> and <math>NDA_t</math>. This model follows a mean reverting process.</p> |
| Healy Model | Healy (1985) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|             |              | <p>The non-discretionary accruals in the estimation period (<math>NDA_t</math>) is computed as follow:</p> $NDA_t = \alpha_1(1/A_{t-1}) + \alpha_2(\Delta REV_t/A_{t-1}) + \alpha_3(PPE_t/A_{t-1})$ <p>Where,</p> <p><math>NDA_t</math> = non-discretionary accruals in year <math>t</math> scaled by lagged total assets;</p>                                                                                                                                                                                                                                                                                                                                                                            |
| Jones Model | Jones (1991) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

|                       |                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       |                                                | <p><math>\Delta REV_t</math> = revenue in the year <math>t</math> less revenues in year <math>t-1</math>;</p> <p><math>PPE_t</math> = gross property plant and equipment at the end of year <math>t</math>;</p> <p><math>A_{t-1}</math> = total assets at the end of year <math>t-1</math>;</p> <p><math>\alpha_1, \alpha_2</math> and <math>\alpha_3</math> = firm-specific parameters.</p> <p>The firm-specific parameters is derived from the following regression model:</p> $TA_t/A_{t-1} = \alpha_1(1/A_{t-1}) + \alpha_2(\Delta REV_t/A_{t-1}) + \alpha_3(PPE_t/A_{t-1}) + E_t$ <p>Where,</p> <p><math>\alpha_1, \alpha_2</math> and <math>\alpha_3</math> = firm-specific parameters of <math>\alpha_1, \alpha_2</math> and <math>\alpha_3</math>;</p> <p><math>E_t</math> = residual = firm-specific discretionary accruals.</p> |
| Modified Jones Model  | Dechow, P.M., Sloan and Sweeney (1995)         | <p>The nondiscretionary accruals in the estimation period (<math>NDA_t</math>) is computed as follow:</p> $NDA_t = \alpha_1(1/A_{t-1}) + \alpha_2[(\Delta REV_t - \Delta REC_t)/A_{t-1}] + \alpha_3(PPE_t/A_{t-1})$ <p>Where,</p> <p><math>\Delta REC_t</math> = net receivables in year <math>t</math> less net receivables in year <math>t-1</math>;</p> <p>Other variables equivalent to Jones Model; Parameters <math>\alpha_1, \alpha_2</math> and <math>\alpha_3</math> and nondiscretionary accruals is also derived from Jones Model.</p>                                                                                                                                                                                                                                                                                         |
| Forward-looking Model | Dechow, Patricia M, Richardson and Tuna (2003) | <p>The following equation summarises the cross-sectional forward looking model to estimate nondiscretionary accruals (<math>NDA</math>):</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

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$$TACC_{it} = \alpha + \beta_1((1 + k)\Delta Sales - \Delta AR) \\ + \beta_2 PPE + \beta_3 TACC_{it-1} \\ + \beta_4 GR\_sales_{it+1}$$

Where,

$TACC_{it}$  = firm  $i$ 's total accruals in the current year, scaled by year  $t-1$  total assets;

$k$  = the slope coefficient from a regression of  $\Delta AR$  on  $\Delta Sales$ ;

$\Delta Sales$  = the change in sales, scaled by year  $t-1$  total assets;

$\Delta AR$  = the change in accounts receivables, scaled by  $t-1$  total assets;

$PPE$  = property, plant and equipment;

$TACC_{it-1}$  = firm  $i$ 's total accruals from the prior year, scaled by year  $t-2$  total assets;

$GR\_sales_{it+1}$  = the change in firm  $i$ 's sales from year  $t$  to  $t+1$ , scaled by year  $t$  sales.

---

The Competing-  
Components  
Model (Kang and  
Sivaramakrishnan  
Sivaramakrishnan  
Model)

Kang and  
Sivaramakrishnan  
(1995)

The estimation of managed accruals utilising these alternative approaches: using the level rather than change of current assets and current liabilities, cost of goods sold and other expenses are included and uncontaminated regression is not required.

The following model is employed for estimation:

$$AB_{i,t} = \phi_0 + \phi_1[\delta_{1,i}REV_{i,t}] + \phi_2[\delta_2EXP_{i,t}] \\ + \phi_3[\delta_3GPPE_{i,t}] + u_{i,t}$$

Where,

$AB_{i,t}$  = accrual balance

$$= AR_{i,t} = INV_{i,t} + OCA_{i,t} - CL_{i,t} - DEP_{i,t}$$

$AR_{i,t}$  = receivables, excluding tax refunds;

$INV_{i,t}$  = inventory;

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|                           |                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                           |                                       | <p><math>OCA_{i,t}</math> = other current assets than cash, receivables and inventory;</p> <p><math>CL_{i,t}</math> = current liabilities excluding taxes and current maturities of long term debt;</p> <p><math>DEP_{i,t}</math> = depreciation and amortisation;</p> <p><math>EXP_{i,t}</math> = operating expenses (cost of goods sold, selling and administrative expenses before depreciation);</p> <p><math>GPPE_{i,t}</math> = gross property plant and equipment;</p> <p><math>NTA_{i,t}</math> = net total assets;</p> $\delta_{1,i} = \frac{AR_{i,t} - 1}{REV_{i,t} - 1}$ $\delta_{2,i} = \frac{NV_{i,t-1} + OCA_{i,t-1} - CL_{i,t-1}}{EXP_{i,t-1}}$ $\delta_{3,i} = \frac{DEP_{i,t} - 1}{GPPE_{i,t} - 1}$ <p>The parameters <math>\delta_1, \delta_2</math> and <math>\delta_3</math> are turnover ratios correspond to firm-specificity and compensate for the fact that the equation is estimated from a pooled sample.</p> |
| The Cash-flow Jones Model | Dechow, Patricia M. and Dichev (2002) | <p>The following firm-level time-series regression is employed:</p> $\Delta WC_t = \beta_0 + \beta_1 CF_{t-1} + \beta_2 CF_t + \beta_3 CF_{t+1} + \varepsilon_t$ <p>Where,</p> <p><math>\Delta WC_t</math> = change in working capital</p> $= \Delta REC_t + \Delta INV_t - \Delta AP_t - \Delta TAX_t + \Delta NET_t$ <p><math>\Delta REC</math> = change in accounts receivable, scaled by average assets;</p> <p><math>\Delta INV</math> = change in inventory, scaled by average assets;</p>                                                                                                                                                                                                                                                                                                                                                                                                                                         |

|                                      |                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------------------------|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                      |                                           | <p><math>\Delta AP</math> = change in accounts payable, scaled by average assets;</p> <p><math>\Delta TAX</math> = change in tax payable, scaled by average assets;</p> <p><math>\Delta NET</math> = change in other net assets or net liabilities, scaled by average assets;</p> <p><math>CF_t</math> = cash flows from operations;</p> <p><math>\varepsilon</math> = an error term that is used to measure the quality of earnings.</p>                                                                                                                                  |
| The Linear Performance-matched Model | Kothari, Sagar P, Leone and Wasley (2005) | $NDA_{i,p}/A_{i,p-1} = \alpha_0 + \hat{\alpha}_i[1/A_{i,p-1}]$ $+ \hat{\beta}_{1i}[\Delta REV_{i,p} - \Delta AR_{i,p}/A_{i,p-1}]$ $+ \hat{\beta}_{2i}[PPE_{ip}/A_{i,p-1}]$ $+ \delta_1 ROA_{i,p-1}$ <p>Where,</p> <p><math>\alpha_0</math> = constant</p> <p><math>ROA_{i,p-1}</math> = lagged rate of return on assets</p>                                                                                                                                                                                                                                                |
| The Synthesis Model                  | Ye (2007)                                 | $TA_{i,t}$ $= INT$ $+ (\beta_0 + \beta_1 \Delta REV_{i,t} + \beta_2 PPE_{i,t})/A_{i,t-1} + \beta_3 ROA_{i,t}$ $+ \beta_4 NCWC_{i,t-1} - \beta_5 \overline{NCWC}_{i,t} + \beta_6 NCWC_{i,t-1}$ $* \Delta REV_{i,t} + \beta_7 DEP_{i,t-1} + \beta_8 DEP_{i,t-1} PPE_{i,t}$ <p>Where,</p> <p><math>TA</math> = total accruals;</p> <p><math>INT</math> = intercept;</p> <p><math>\Delta REV</math> = change in revenue;</p> <p><math>PPE</math> = property plant and equipment;</p> <p><math>A</math> = total assets;</p> <p><math>ROA</math> = rate of return on assets;</p> |

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$NCWC$  = non-cash working capital (current assets minus current liabilities, excluding the current portion of long-term debt, and cash) deflated by lagged assets;

$\overline{NCWC}$  = normal non-cash working capital,

$$\overline{NCWC}_{i,t} = \frac{1}{3} \sum_{k=2}^4 NCWC_{i,t-k}$$

$DEP$  = depreciation rate: depreciation expenses divided by  $PPE$ ;

$i, t$  = indexes,  $i$  for firm and  $t$  for year.

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## 2.6 Limitations of the Existing Literature and Motivations of this Study

Based on the previous studies and literature in the area related to corporate governance, earnings quality and firm value, there are a number of limitations that create research gaps and offer opportunities for this thesis to fill in.

Previous studies highlight the relationships among variables in isolation, none is found to develop a comprehensive model that particularly explains the exact nature of relationships among corporate governance, earnings quality and firm value. The model offers in this thesis will collectively examine and justify the relatedness among all of the variables.

The analysis will be based on a set of panel data, capturing the time varying level of earnings quality as well as a number of firm-specific factors. In this way, it will analyse whether the models are robust across different economic settings and are able to accommodate dynamic environments.

Previous studies provide statistically significant evidence of associations between one or more earnings quality proxies and firm value, but it is difficult to compare the economic significance of the findings across studies and hence across proxies.



Francis, J et al. (2004) run more than one proxies of earnings quality and found that, among all measures, accrual quality has the largest effect on the implied cost of equity, but it is still not clear whether it should be the largest and how much larger it should be.

While number of papers that particularly examine the factors that determine the choice of corporate governance mechanism, an argument made by Wintoki, Linck & Netter (2012) agrees on the difficulty in determining the parameter estimates that can relate a reverse causation (e.g. performance influences governance choices) or corporate governance is a symptom of an underlying unobservable factor. Despite board structure is determined by past performance, they could not find causal relation between board size or independence, and firm performance.

This study attempts to identify the distinct contributions of each proxy and aim to provide clear evidence to explain exactly how a mechanism of corporate governance affects earnings quality, and how that specific attribute of earnings quality has an effect on a firms' value.

Earnings quality may capture the effect of corporate governance on firm valuation as financial accounting data is believed to be the primary source of information about the performance of managers and a key component of the corporate governance process. Thus combining the elements of corporate governance, earnings quality and firm value in a single model will provide an in-depth understanding of each issue.

Previous studies suffer limitations in term of the variables being tested. The accrual approach, for instance, has been shown to have low earnings management detection capability. In addition, fair value accounting approach can complicate the use of accruals models. This thesis emphasis on addressing the limitations of the variables and the fair value issues in the adoption of IFRS in the emerging markets.

Most research so far has been carried out using data from developed countries. This study will use data from an emerging market, which allows for an additional understanding of the economic consequences of each of the variable, particularly the corporate governance practice.

## **2.7 Summary**

The existing evidence on the relationship between the mechanisms of corporate governance, i.e. audit committee, board of directors, board committees and risk management and ownership structure is scarce, despite many empirical studies documenting the merits of their relation to agency relationship. Further, those studies that examined earnings quality and corporate governance were mostly conducted in developed countries. In order to understand and to assess the role of these governance mechanisms on earnings quality and firm value, the effectiveness of those mechanisms are reviewed based on other aspects of financial reporting that commonly exist in the literature.

## **Chapter 3**

# **CONCEPTUAL FRAMEWORK AND HYPOTHESES DEVELOPMENT**

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### **3.1 Introduction**

The purpose of this chapter is to explain the theoretical framework of the thesis and presents hypotheses to be tested. There are four groups of hypotheses; where three of them are related to the direct effects of corporate governance mechanisms on earnings quality attributes, earnings quality attributes on firm value and corporate governance mechanisms on firm value; and one group of hypotheses are related to the indirect effect of corporate governance mechanisms on firm value mediated by the attributes of earnings quality.

First, section 3.2 presents and deliberates the conceptual framework employed for the thesis. Next, section 3.3 discusses the development of each of the hypothesis, presented according to the proposed relationships that may exist among the variables, i.e. directly between corporate governance and earnings quality, between earnings quality and firm value and corporate governance and firm value; and indirectly between corporate governance and firm value mediated by earning quality. Finally, section 3.4 summarises the chapter.

### **3.2 Conceptual Framework**

According to agency theory, a good structure of corporate governance is believed to mitigate the agency conflict, as it reduces information asymmetry among diverse stakeholders and managers. Governance is part of monitoring strategies to control the behaviour of managers. In line with the theory, other corporate governance theories<sup>2</sup> and the literature, this thesis attempts to integrate the relationships that may exist among corporate governance mechanisms, the attributes of earnings quality and firm value; particularly, the relationship between corporate governance mechanisms and firm value is expected to behave in two directions, i.e. direct and indirect (mediated by the effects of earnings quality attributes). Prior to that, direct relationship between corporate

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<sup>2</sup> This thesis mainly makes a reference to relevant corporate governance theories including agency theory, resource dependency theory and stakeholder theory which has been discussed in Chapter 2.

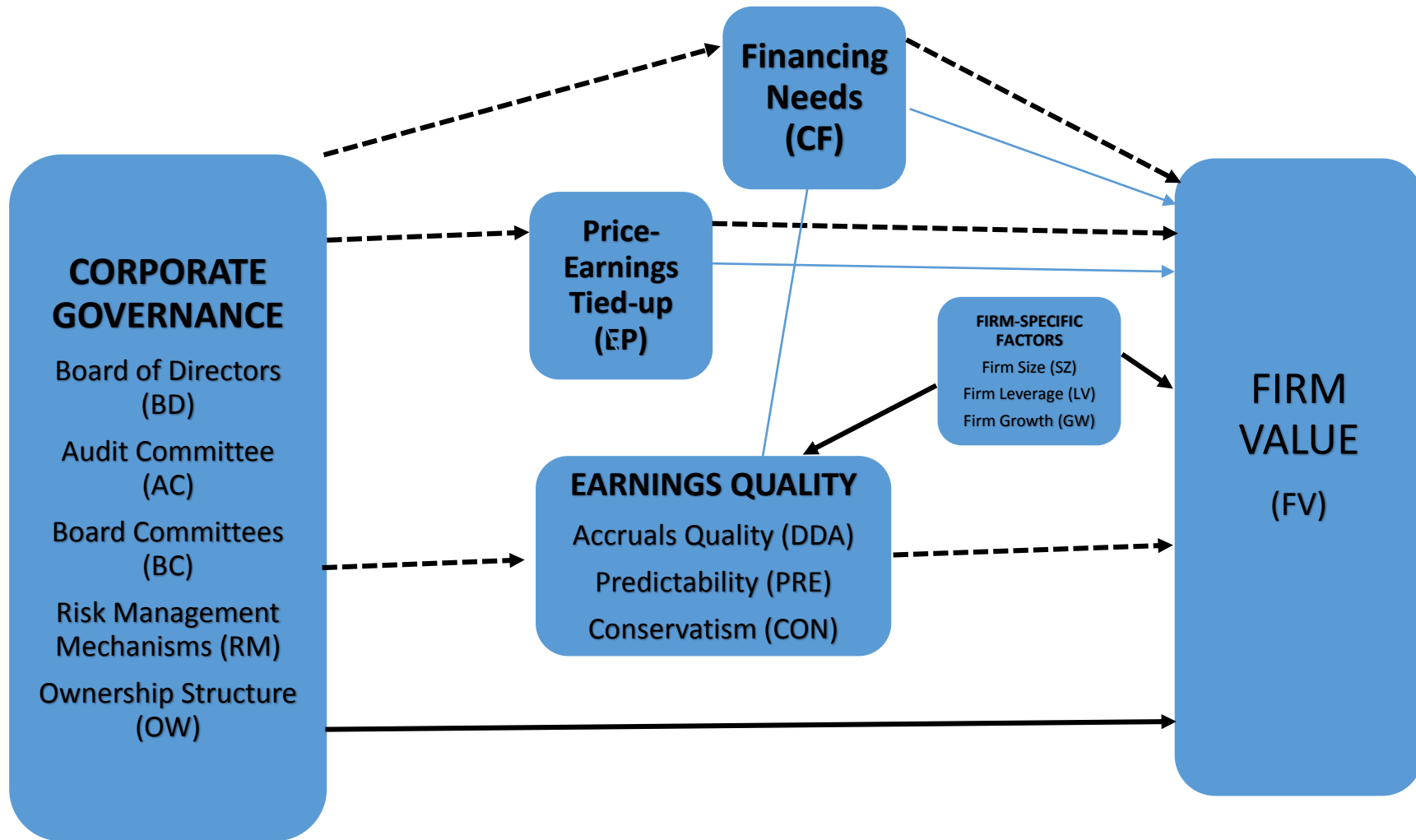
governance mechanisms and earnings quality attributes and direct relationship between earnings quality attributes and firm value will also be tested.

It is proposed that corporate governance mechanisms effects directly on firm value across different measures. The mechanisms of corporate governance improve managers' efficient decision that can promote a better firm operating performance where corporate governance mechanisms could align their interests with the interests of the shareholders, in a way that the mechanisms are better able to reduce managers' opportunistic behaviour, i.e. the moral hazard problem.

In another way round, the effects of corporate governance mechanisms on the firm value can also be indirect where the relationships between the variables are believed to be mediated by the quality of information supplied to the investors. The problem that become a concern in the capital markets is adverse selection i.e. when the investors claim for higher cost of capital as a trade-off for firm's inability to provide the markets with adequate quality and quantity of information for the purpose of price determination that can cause a reduction in firm value and corporate governance come into place to mitigate the problem. Figure 3-1 depicts the conceptual framework underpinning this thesis.

The subsections that follow will discuss and justify the proposed direct relationships that may exists between each of the corporate governance mechanisms (i.e. board of directors, audit committee, board committees, reporting mechanisms and ownership structure) and the measures of firm value (i.e. Tobin's Q, return on assets, enterprise value and market capitalisation); indirect relationship that may exist between them mediated by the earnings quality; as well as the proposed direct relationships that may be observed between the attributes of earnings quality (i.e. accrual quality, predictability and conservatism) and the corporate governance mechanisms.

Figure 3-1 Conceptual Framework



### **3.3 Hypotheses Development**

Generally, it is believed that a good structure of internal mechanism of corporate governance will enhance a good quality of reported earnings and the value of firm. In particular, a good governance structure may be viewed in term of the best attributes of audit committee, board of directors, board committees, reporting mechanisms and ownership. The next section of this paragraph is presented to explain the possible direct impacts of each of corporate governance components on the attributes earnings quality and direct impacts of the attributes on firm value, as well as direct and indirect of corporate governance mechanisms on firm value. At the end of each subsection, a statement of alternate hypothesis is presented to summarise the proposed relationship.

#### **3.3.1 Good Structure of Corporate Governance and Earnings Quality**

As of Ball, Ray, Kothari and Robin (2000), it is believed that the institutional structures are the drivers that determine the nature of reported accounting numbers attributes of firms. The whole mechanisms of corporate governance represent some part of the structures that are considered to provide great influence on how firms provide their financial information to the users, particularly the capital markets participants.

##### ***Link between Good Structure of Audit Committee and Earnings Quality***

According to DeZoort et al. (2002), the determinants of a good structure of an audit committee can be summarised into four broad categories, namely; arrangement (i.e. independence, size and duality), resources (i.e. financial expertise and experience), authority (i.e. power enshrined in the audit committee) and diligence (i.e. frequency of audit committee meeting). Nevertheless, due to various pragmatic constraints, the characteristic of a good structure of audit committee in this thesis are aggregated based on its size, independence, competency and commitment. An audit committee with such character is believed to be able to reduce information asymmetric and mitigate the information risk through the supply of reported earnings which are with high accruals quality, highly predictable and conservative.

Generally, studies found that independent directors in audit committee are able to improve the whole governance practices within a firm (Beasley & Salterio 2001; Klein 2002). Independent directors are able to resolve conflicts among internal managers (Fama, E F

& Jensen 1983) and issues related to internal audit function (Zain & Subramaniam 2007) and external audit function (Abbott, L.J., Park & Parker 2000; Abbott, L.J. et al. 2007). The studies argue that higher proportion of independent directors in an audit committee offers The relationship between audit committee independent and financial reporting quality has been examined in many studies, among others, Vafeas (2010) and Xie, Davidson and DaDalt (2003) found that the composition of audit committee with majority or entirely independent directors can improve the quality of reported earnings. Additionally, the presence of independent directors in audit committee is also found associated with lower reporting problems (McMullen & Raghunandan 1996) and earnings management (Mohd-Saleh, Mohd-Iskandar & Rahmat 2007). Thus, the composition of independent directors on audit committee is related to an improvement of the committee and governance as of its ability to promote a better reporting process as a result of a lower agency conflicts which can lead to an increase quality of reported earnings.

Financial expertise is indeed vital for audit committee members to deal with reporting issues as the business environment and transactions become more sophisticated and complex, and hence their roles are expanding alongside stakeholders higher expectations which require wider responsibilities (Millstein 1998). A poor earnings quality firm is characterised by an audit committee without or less number of financial expert being appointed as member (McMullen & Raghunandan 1996). In addition, financial expertise in audit committee is also found can reduce aggressive earnings management (Bedard & Johnstone 2004), prevent the occurrence of financial misstatements (Abbott, Lawrence J., Parker & F.Peters 2004) and increase accruals quality (Dhaliwal, Naiker & Navissi 2010).

According to DeZoort et al. (2002), audit committee diligence is the willingness of the members to work together as needed and necessary in dealing with any issues related to the management, internal and external auditors and other constituents. It is common to quantify audit committee diligence based on the number of meeting held during a financial year, as what has been done in most studies including McMullen and Raghunandan (1996), Xie, Davidson and DaDalt (2003) and Vafeas (2010). In those studies, positive relationship is found between number of audit committee meeting held and the quality of reported earnings. In addition, Abbott, L.J., Park and Parker (2000) and

Abbott, Lawrence J., Parker and F.Peters (2004) have documented that frequency of audit committee meeting held of at least twice in a financial year is related to lower SEC sanctioned for financial reporting problems. Moreover, regular audit committee meeting can also reduce the occurrence of earnings management (Vafeas 2010; Xie, Davidson & DaDalt 2003), financial restatement (Beasley et al. 2000) and fraud (Farber 2005).

For this thesis, audit committee size, independent, expertise and diligence are combined as a single measure to signify a good structure of audit committee. Such committee is expected to increase firm earning quality in a way that it can increase accruals quality, predictability and conservatism..

### ***Link between Good Structure of Board of Directors and Earnings Quality***

Some studies provide inconsistent result in explaining the relationship between certain characteristics of board of director with firms financial reporting, however, there is quite a number of evidence that can be relied upon to conclude on the characteristics of a strong board of directors that can urge firms to prepare good quality of financial reports. Strong board of directors is related to the adequate representation of independent directors, small size membership and separation of CEO-chairman roles; hence, good structure of board of directors defined for this thesis is a combination of these characteristics.

Independent judgements supplied by independent directors who with diverse background and experience are vital for board efficient decision making particularly to control the discretion of managers that can reduce the event of misleading financial statements (Beasley 1996) and earnings management (Peasnell, Pope & Young 2006), and thus improve the quality of financial reports. Additionally, it is also found that independent board of directors enhance the quality of financial reports in a way that they promote earnings conservatism (Ahmed, Anwer S. & Duellman 2007) and earnings predictability.

Even though a larger board is presumed to have a broader pool of knowledge that perhaps can increase its capability to monitor the behaviour of managers and the quality of financial reports, yet many studies found different evidence. Rahman and Ali (2006) and Ahmed, K, Hossain and Adams (2006), for instance, found that large size board does not improve the quality of reported earnings, particularly, it does not associated with lower earnings management. The risk of having board with large membership is that it cause free rider problems, inefficient decision making and reluctant to criticize managers



(Lipton & Lorsch 1992). Moreover, to coordinate a large number of members can be troublesome as members may less participate in strategic decision making (Forbes & Milliken 1999).

For a board of directors to be an effective monitoring mechanism, particularly in the market where majority of firms shares are substantially owned by insider (e.g. in Malaysia), the separation of CEO and chairman roles is indeed a good practice to constraint full control of the controlling owners over the decision made by the board. In addition, studies found that the practice of CEO-chairman combined role can also reduce board effectiveness (Abdul Rahman & Haniffa 2005; Dechow, P.M., Sloan & Sweeney 1995; Klein 2002).

Thus, a good structure of board of directors represented by adequate composition of independent directors, smaller size and separated role of CEO and chairman is believed to enhance a high quality of reported earnings.

#### ***Link between Good Structure of Board Committees and Earnings Quality***

The establishment of specific task force of board of directors focusing on several issue of governance is believed to increase the reliability and relevant of financial reporting. Remuneration committee assesses the performance and determines the remuneration of corporate executives. An effective compensation committee that is able to promote good reporting quality is believed to be independence from the executives. Klein Klein (2002) found that firms with low independence compensation committee (when CEO become part of the member) have higher level of abnormal accruals. In addition, compensation committee is better able to act on behalf of the shareholders if the composition is sufficiently independent (Klein 1998).

Nomination committee's task is to identify and choose the appropriate nominees for the board of directors. In order to perform the function at its best, nomination committee has to be completely independent from the management. Uzun, Szewczyk and Varma (2004) document how important the independent nomination process of new directors and board members is in corporate fraud deterrence. In addition, Persons, O (2005) evidence low likelihood of financial statement fraud if the nomination committee is solely comprise of independent directors. Low independent nomination committee could also impair the independent of board of directors and audit committee. Shivdasani and Yermack

(2002) found that there is a possibility that the board of directors become less independent as more 'gray' directors and non-independent directors will be sitting as the member of the board if CEO is appointed as part of the nomination committee. Klein (1998) suggest the possibility of audit committee independent is influenced by the independence of nomination committee. The consideration is that because of the independent board of directors is resulted from the nomination process initiated by the committee.

### ***Link between Good Ownership Structure and Earnings Quality***

Generally, shareholders with substantial amount of ownership of a firm are better able to get access to the firms' private information that can reduce the agency conflict. It is believed that in a situation where the information gap is getting closer, firm is less pressured to produce high quality of financial reports due to low demand.

Managers who themselves are the owner have better access to the internal affairs of a firm, thus reducing agency conflict. They are not merely depending on the financial reports, instead necessitate internally circulated reports. Inside directors holding substantial shares are less dependence on financial reports and hence conservative financial reports are certainly not important for their decision making (Dargenidou, McLeay & Raonic 2007).

Substantial outside investors, in other case, who enjoy substantial indirect influences over the firm requires a better quality of reports which are transparent, reliable and relevant for decision making. High quality financial reports indicate that the reports disclosure are adequate and less influenced by the opportunistic discretion of managers, and hence increase the demand of outside shareholders for financial reports with this feature (Yeo et al. 2003).

The interpretation of firm good ownership structure employed for this thesis is based on the firm concentration of ownership. Based on literature, it is believed that substantial shareholders that give much influence on how firms behave or firms preference towards the preparation of their financial reports, by which both substantial inside ownership and substantial outside ownership are taken into consideration. In that sense, firms with good ownership structure is firm with high portion of concentrated outside shareholders and less portion of concentrated inside shareholders.

The identity of firms' ownership that determines how the market react has documented by past studies. Gul et al. (2010), among others, found that stock price synchronicity (proxies for the amount of firm-specific information incorporated into the stock price), is a concave function of the largest percentage shareholding with an inflexion point approximately 50%. The examination of the identity of large shareholders since they are likely to differ in their corporate objectives, power and access to financing. Thus, I believe the demand for financial reports attributes is varied among firms with different shareholders' concentration.

Since the demand for financial reports attributes is varies among firms with different shareholders concentration, i.e. firms with different level of good ownership structure are driven differently in their preference to the supply of financial reports, the proposed relationships are separated according to the attributes of earning quality.

#### ***Link between Good Structure of Risk Management Mechanisms and Earnings Quality***

Risk management approach to strategy by top management and a desire to view it in an integrated way is a motivation towards integration of external and internal audit, internal control and risk management committee. Following Spira and Page (2003), good structure of risk management mechanisms for this thesis is a combination of the elements of quality of external and internal audit, internal control efficiency and formal establishment of risk management committee. Based on the believe that each element risk management will not effectively work on its own, the combination of the elements mentioned above represents a mutual role of risk management within corporate governance structure of a firm that can improve financial reporting quality and thus reduce investors information risk exposure.

Previous studies show that managers' representations can be less biased if the bias is transparent to others. Rogers and Stocken (2005) found that management's forecasts are more biased when their misrepresentation is relatively difficult to detect and that management's communication are more likely to be biased when they are not verified by a third party (Schwartz & Young 2002). External and internal audit function come into this point to provide greater transparency on biased judgements made by managers as of to reduce the misleading behaviours and thus increase the quality of information provided

by them. Asare, Davidson and Gramling (2008) found that internal and external audit functions are both have the ability to detect misreporting behaviour of managers, as the auditors are more sensitive on managers' incentives to mislead.

Brown and Pinello (2007) state that the audit works done by external auditors mitigate earnings management by which they control opportunistic behaviour of managers to manage earnings, and internal audit function provide an additional monitoring mechanisms of the manager's actions (Prawitt, Smith & Wood 2009). Additionally, Schneider and Wilner (1990) document that the effectiveness of internal audit has a parallel deterrence impact as the effectiveness of external audit on financial reporting irregularities. External and internal audit functions should be working side by side to monitor managers' behaviours that could lead to a better quality of financial reporting.

The degree of deterrence effect of both functions is depending on their effectiveness rather than merely their presence. Competency and independence of both external internal auditors provides more meaningful evidence that justify their deterrence impacts on misleading behaviour of managers. An insignificant relationship found in Davidson, Goodwin-Stewart and Kent (2005) has been criticized for its dichotomous measure of internal audit function impacts on misleading financial reports is merely based on the existence (presence or absence) of the function within a firm which is not well-generalised among public listed firms and unable to capture the variation of nature and focus of firm in establishing such function (Prawitt, Smith & Wood 2009).

At one hand, the move to outsource internal audit is one of the driving forces for a better change of the quality of the internal audit function. Abbott, L.J. et al. (2007) documents that non-routine tasks of an internal audit function (e.g. EDP) require specialised knowledge that are difficult or cost-ineffective to obtain in-house rather than through outsourcing. Outsourced internal audit can also increase audit quality, in a way that it is outsourced to an external auditor, then there may be significant financial statement audit synergies in both cost and audit scope (Simunic 1984). On the other hand, big brand external auditors are perceived to be a strong mechanism, as the previous studies show that they are able to provide quality audit service through higher qualified opinion in the case of earnings management detection (Becker, C.L. et al. 2010; Juhl, Jubb & Houghton

2007) and earnings forecast errors (Ahmad-Zaluki & Wan-Hussin 2010; Lee, Taylor & Taylor 2006).

Within a risk-based approach framework, the establishment of risk management committee signals firms' awareness of the importance of risk management and control (Hermanson 2006; Selim, G & McNamee, D 1999). However, risk management committee established within a firm is normally combined with other functions especially with audit committee. The combination does not promise its efficiency as Alles, Datar and Friedland (2005) and Harrison (1987) claim that this role expansion of audit committee gives rise to various doubts and critics. They argue that when the responsibility of financial reporting and risk management are burden in the shoulder of audit committee, it will increase workload pressure that could lead to inefficiencies. In addition, specific oversight on risk management requires adequate understanding of evolving organisation complex structures and processes and relevant risks associated to such complexity, thus it is believed that a formal establishment of a stand-alone risk management committee separated from audit committee would be more efficient (Collier 1993; Ruigrok et al. 2006; Turpin & DeZoort 1998).

Bringing all the elements into one single risk management endeavour, information risk could be reduced and hence the following hypotheses are to predict the relationship between the structure of risk management mechanisms and the quality of reported earnings in the senses of accrual quality, predictability and conservatism.

### **3.3.2 Earnings Quality and Firm Value**

Literature in finance conceives that the quality of financial information affects individual firms' cost of equity capital in two ways, i.e. through market liquidity or investor's information risk exposure. In one hand, high quality information can increase market liquidity in a way it reduce transaction costs or increase the demand for the securities (Amihud & Mendelson 1986; Diamond & Verrecchia 1991). On the other hand, as the decisions made by rationale investors are mainly depending on the quality and quantity of information available to them, investors will compensate the information inadequacy that can cause them a higher exposure on risk by charging higher cost of equity capital (Easley & O'Hara 2004; Leuz, C. & Verrecchia 2004).

Cost of capital is determined by the level of non-diversifiable risk associated to the firm; low quality and insufficient information supplied by the firm is firm-specific information risk which is priced in the share market. Information risk is attributable to, in the context of capital investment, the coordination of information between investors and the firm (Leuz, C. & Verrecchia 2004); and the differences in the proportion of private and public information available in the market which distinguish the ability of informed and informed investors to decide their effective fund allocation (Easley & O'Hara 2004).

Information risk for this case is referred to the possibility that investors' decisions are uncertain as it is made based upon inadequate and less transparent firm-specific information that can cause the investors additional cost of investing. If the uncertainty is low, the lower the investors anticipate for the cost of capital. By considering that market value of firms is an unbiased present value of expected current and future cash flows discounted at the risk-adjusted cost of capital, low cost of capital indicates a better value of firm (Gaio & Raposo 2011).

The following subsections present the discussion on the possible relationships and testable hypotheses are to summarise the relationships corresponds to the specific earnings quality attributes, i.e. accruals quality, predictability and conservatism.

#### ***Link between Accruals Quality and Firm Value***

Accruals quality represents the content of abnormal accrual embedded the whole structure of firm's reported earnings. Abnormal accrual is commonly used to justify earnings management activities which embody the manager's opportunistic behaviour. The lower the content of abnormal accrual indicates that reported earnings are derived with less managers' discretion and more presentable as a true value.

Reported earnings with high discretionary accruals are presumed to be of poor quality and less reliable and become one of the factors attributed to investor's uncertainty condition particularly for the pricing decision. Since earnings information is relevant for the decision to be made, accruals quality can simply be considered as firm-specific non-diversifiable information risk that affects individual firm cost of capital. Consistently, the notion is depicted in Francis, J et al. (2005, p. 296) as they state that "By information risk, we mean the likelihood that firm-specific information that is pertinent to investor pricing decisions is of poor quality". As cash is the primitive element that investors price, poor

quality of accruals indicates that the information about the transformation stream of earnings into cash provided to the investors is unclear, this can cause an increase in information risk and thus firm cost of capital (Francis, J et al. 2005).

In considering that market value of firms is referred as the unbiased present value of expected current and future cash flows discounted at the risk-adjusted cost of capital, low cost of capital indicates a better value of firm (Gaio & Raposo 2011). Consistent with the previous studies discussed above, it is expected that there is a positive relationship between accruals quality and firm value across difference measures.

Provided below are the hypotheses to be tested to examine the direct effect of accruals quality on each of the measures of firm value:

#### ***Link between Predictability and Firm Value***

Following Lipe (1990) and Francis, J et al. (2004), predictability for this thesis is referred to the ability of current reported earnings to predict the future earnings. This particular earnings attributes is considered as a desirable attributes by standard setter and an important component for firm valuation by analysts (Francis, J et al. 2004).

A few studies evidence the relevance of earnings predictability in capital market, Imhoff, E and Lobo (1992) and Pincus (1983), among others, document an association between earnings predictability and market response to an earnings announcement. Additionally, Crabtree and Maher (2005) found positive association between earnings predictability and firm's bond rating, besides a negative association between earnings predictability and cost of debt capital. Further, related to firm actual cost of equity capital, Affleck-Graves, Callahan and Chipalkatti (2002) found the influence of earnings predictability on bid-ask spread (a measure of cost of equity capital). They argue that low earnings predictability increases information asymmetry and increase trading opportunities for inform trader that can lead to an increase in adverse selection cost, and hence conclude that cost of capital is low for firm with high predictability earnings.

In considering that market value of firms is referred as the unbiased present value of expected current and future cash flows discounted at the risk-adjusted cost of capital, low cost of capital indicates a better value of firm (Gaio & Raposo 2011). Consistent with the

previous studies discussed above, it is expected that there is a positive relationship between earnings predictability and firm value across difference measures.

The following hypotheses are tested to examine the direct relationship between earnings predictability and the measures of firm value:

### ***Link between Conservatism and Firm Value***

Despite the oppositions made by capital market regulators, standard setter and academia on the important attribute of conservatism in accounting<sup>3</sup>, this thesis proposes its relevance on firm valuation based on previous literature which highlights on the *ex-ante* motivations for conservative accounting. Watts, Ross L (2003), for instance, particularly posits that contracting benefits, asymmetric shareholder litigation costs, taxation benefits and political pressures are factors which justify the significance of conservatism in accounting, and Kothari, S. P., Ramanna and Skinner (2010) has documented the significance of accounting conservatism in mitigating agency conflicts of shareholder and the managers.

Agency problems that is inherent in the relationship between shareholders and managers in public firms are potentially reduced by the practice of conservative accounting. Kothari et al. (2010) argue that accounting conservatism diminish agency problem in three ways. First, since managers' compensation are linked directly to firm performance, it is common that managers are unwilling to disclose bad news to avoid bad impact on their current compensation, but conservative accounting provides them an obligation to recognise and disclose the bad news in timely manner. Second, in situation where managers delay the disclosure of bad news, managers tend to undertake risky investment with anticipation that it will be traded-off with other indicator within pool performance. Conservative accounting then provide shareholders with timely signals and urge them to take proper actions to avoid manager to make such bad decision. Third, conservative accounting also prevents shareholders to overly compensate the managers, as managers may potentially compensate themselves by the delay in bad news recognition.

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<sup>3</sup> FASB and IASB question on the importance of conservatism in accounting, as they state that "Financial information needs to be neutral – free from bias intended to influence a decision or outcome. To that end, the common conceptual framework should not include conservatism or prudence among desirable qualitative characteristics of accounting information. However, the framework should not the continuing need to be careful in the face of uncertainty." (FASB and IASB Board Meeting, 2005)



As of the above arguments presented by Kothari (2010) and reliance on finance literature, which argues that the quality of financial information has a direct impact in reducing individual firm's cost of capital (Easley & O'Hara 2004; Leuz, C. & Verrecchia 2004), specifically, accounting conservatism reduce cost of capital and hence increase firm value in two ways. First, conservative accounting reduces the costs of agency conflict and provide better future cash flow available to the shareholders that can reduce cost of equity (Watts, Ross L 2003). Second, conservatism also reduces information asymmetry which is exist within shareholders-managers relationship, as shareholders may require high cost of capital for low conservative firm as a compensation for the less transparent information available for them (Ball, Ray, Kothari & Robin 2000; LaFond & Watts 2008).

In considering that market value of firms is referred as the unbiased present value of expected current and future cash flows discounted at the risk-adjusted cost of capital, low cost of capital indicates a better value of firm (Gaio & Raposo 2011). Consistent with the previous studies discussed above, it is expected that there is a positive relationship between conservatism and firm value across difference measures.

### **3.3.3 Corporate Governance and Firm Value**

Most corporate governance studies found significant impact of corporate governance and firm value. Gompers et al. (2003), for instance, found strong relationship between corporate governance and firm value as they utilised a governance index which is constructed based on shareholders right and measured firm value using Tobin's Q. Similar to Gompers et al. (2003) approach, Bauer, Guenster and Otten (2004) construct two "governance portfolios" which are used to distinguish between firms with high and low corporate governance ratings. Consistent with Gompers, P, Ishii and Metrick (2003), the results indicate that strong governance firms have a better value than the firms with weak governance. However, different findings found in the situation where country difference were taken into account, the results show that governance standard is associated negatively with the earnings based performance ratios.

Epps and Cereola (2008) investigate the relationship between corporate governance quotient and operating performance, measured by return on assets and return on equity. The findings are unable to justify any significant association between corporate governance quotient and operating performance. Black, Jang and KIm (2006) using the

unique features of Korea's governance rules as the basis to construct a governance index, and found strong connection between board composition and share price. Yet, no significant findings found to justify that corporate governance and firm's profitability or dividend payout are associated. To a certain extent, investors only acknowledge well-governed firms with persistence earnings which are manifested by a lower charge of cost of capital.

Despite inconsistent results found in previous studies on corporate governance and firm value, this study continues to anticipate that well-structured governance mechanisms have a better impact on firm value. It is believed that firms with high market values may practice good governance rather than firm with low market values and the adoption of good governance practice provide a signal to the market that the management is well-behaved, as the market reactions and share prices move based on the signal and not the actual practice.

#### **3.3.4 Corporate Governance, Earnings Quality and Firm Value**

In the sense of corporate accountability, corporate governance mechanisms play the role of achieving high value of firm through providing reliable and precise information that are capable to reduce investors exposure on information risk. Investors are believed to appreciate firms which are able to establish a good structure of governance that serves this purpose. In this case, it is assumed that for firm to achieve better value, corporate governance mechanisms should at the first place provide the markets with high quality of information. These relationships can be examined by testing the indirect relationship that integrates the mechanisms of corporate governance, earnings quality and firm value. The following sections discuss the hypotheses that represent the details of the proposed mediated relationships:

##### ***Associations among Good Corporate Governance Structure and Firm Value and Accruals Quality***

The following hypotheses are tested to determine the direct and indirect effect of good structure of corporate governance on firm value, mediated by accruals quality:

**Table 3-1 Hypothesis Summary: Accruals Quality as a Mediator**

| Hypothesis |                                                                                                         |
|------------|---------------------------------------------------------------------------------------------------------|
| H-1        | There is firm value effect of good structure of audit committee mediated by accruals quality.           |
| H-2        | There is firm value effect of good structure of board of directors mediated by accruals quality.        |
| H-3        | There is firm value effect of good structure of board committee mediated by accruals quality.           |
| H-4        | There is firm value effect of good structure of risk management mechanism mediated by accruals quality. |
| H-5        | There is firm value effect of good ownership structure mediated by accruals quality.                    |

***Associations among Good Corporate Governance Structure and Firm Value and Earnings Predictability***

The following hypotheses are tested to determine the indirect influence of good structure of corporate governance on firm value, mediated by earnings predictability:

**Table 3-2 Hypothesis Summary: Predictability as a Mediator**

| Hypothesis |                                                                                                              |
|------------|--------------------------------------------------------------------------------------------------------------|
| H-6        | The firm value effect of good structure of audit committee is mediated by earnings predictability.           |
| H-7        | The firm value effect of good structure of board of directors is mediated by earnings predictability.        |
| H-8        | The firm value effect of good structure of board committee is mediated by earnings predictability.           |
| H-9        | The firm value effect of good structure of risk management mechanism is mediated by earnings predictability. |
| H-10       | The firm value effect of good ownership structure is mediated by earnings predictability.                    |

### ***Associations among Good Corporate Governance Structure and Firm Value and Earnings Conservatism***

The following hypotheses are tested to determine the indirect influence of good structure of corporate governance on firm value, mediated by earnings conservatism:

**Table 3-3 Hypothesis Summary: Conservatism as a Mediator**

| Hypothesis |                                                                                                            |
|------------|------------------------------------------------------------------------------------------------------------|
| H-11       | The firm value effect of good structure of audit committee is mediated by earnings conservatism.           |
| H-12       | The firm value effect of good structure of board of directors is mediated by earnings conservatism.        |
| H-13       | The firm value effect of good structure of board committee is mediated by earnings conservatism.           |
| H-14       | The firm value effect of good structure of risk management mechanism is mediated by earnings conservatism. |
| H-15       | The firm value effect of good ownership structure is mediated by earnings conservatism.                    |

### **3.4 Summary**

This chapter has provided discussions on potential relationships that may exist among corporate governance mechanisms, earnings quality and firm value which can be used to explain the governance phenomena surrounding public listed firms based on the belief on agency theory. A set of testable hypotheses has been formulated to represent direct relationships between each of corporate governance mechanisms and firm value measures and indirect relationship between them mediated by earnings quality attributes. Prior to that, another set of hypotheses has also been presented to justify direct relationship between the corporate governance mechanisms and earnings quality attributes, as well as direct relationships between the earnings quality attributes and firm value measures. The overall picture of the relationships among all variables was figured out at the beginning of the chapter in the form of a conceptual schema.

## Chapter 4

# METHODOLOGY

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### 4.1 Introduction

This chapter provides the explanation relating to the data used in this quantitative study; particularly on the sources and analysis techniques. Sampling method and sources of the data are explained in the next section, followed by discussion on operationalization and measurement of variables. The remaining sections provide explanations on the designs of the analysis employed to investigate the issues concerned in this thesis, particularly the mediation analysis approach, for the inferences to be drawn about the existence and relative importance of the direct link versus the indirect link (mediated by the earnings quality attributes) between corporate governance mechanisms and the firm value.

### 4.2 Sample Selection

Malaysia, or Malaysian firms in particular are chosen mainly because the milestones that gone through by the firms that can represent the environment of emerging markets. In specific, this thesis considers the following justifications that can make the Malaysia as a worth case to study. Firstly, Malaysia jurisdiction through Companies Act (1965) and guidelines issued by Security Commission and Bursa Malaysia require publicly listed firms to make accurate, timely disclosure of material information to the public and investors. Secondly, quality of earnings report that particularly concerns on the timeliness has been brought about by the implementation of the Malaysian Code of Corporate Governance (MCCG) in 2001, which became an integral part of the revamped listing requirements of Bursa Malaysia. The implementation and integration of MCCG into the Bursa listing requirements provide a natural experiment to test whether the associated improvement in corporate financial disclosure affects the quality of earning reported to the market.

The sample companies were extracted from the population of all companies listed on the Main Market of *Bursa Malaysia* using random sampling technique. A list of companies obtained from the *Bursa Malaysia*'s website is used as a reference to extract the respective firm's financial data from DataStream.

Finance related companies were excluded from the population because they fell under the provisions of the Banking and Financial Institutions Act of 1989 (BAFIA), which possess unique characteristics and operate in different compliance and regulatory environment. PN4/PN17 classified firms, which are distressed firms which were given time and opportunity to regularise their financial position to the minimum of a public listed firms, were also excluded to avoid the influence of their financial condition on the results of this study. Firms that changed their financial year during the sample period were also excluded. Also, excluded were firms that had undergone significant merger or reconstruction and those with unavailable online annual reports.

The sample being used for analysis is a group of 100 randomly selected firms from the population of 834 firms listed on the Main Market of *Bursa Malaysia* (Malaysian Stock Exchange) during the period of six years, commencing on 1 January 2004. The process of sample selection was made by considering four criteria to exclude a number of firms from the initial population; (1) firms under liquidation, delisted and suspended, (2) firms in the financial sector, (3) recently listed firms, and (4) firms under restructuring scheme. This was done to disregard several issues which are considered not relevant to the focus of this study. Data pertaining to the firms should be available throughout the years from 2004 to 2009. In addition, to avoid any missing data, firms with no data available online or with incomplete data were excluded from the population list. Eventually, 421 firms were available to be selected as sample firms.

Corporate governance data were collected manually from the sample firms' annual reports and account data were extracted from *DataStream*. Initially, 600 firm-year observations were available. However, only 471 final observations were used to run the models after allowing for elimination of the effects of 129 outliers. Outliers were detected using *hadimvo* command of *STATA*. The summary of sample selection process is presented in Table 4.1.

**Table 4-1 Derivation of Sample and Observation**

| <b>Descriptions</b>                                                     | <b><i>N</i></b> |
|-------------------------------------------------------------------------|-----------------|
| Total number of firms listed on Main Market Bursa Malaysia <sup>4</sup> | 834             |
| Financial related firms                                                 | (54)            |
| Problematic firms <sup>5</sup>                                          | (208)           |
| Firms that change financial year end                                    | (22)            |
| Firms under restructuring scheme                                        | (5)             |
| Firms IPO in 2004                                                       | (28)            |
| Firms with unavailable/incomplete online data                           | (96)            |
| Initial number of firms available for random selection                  | 421             |
| Randomly selected firm sample                                           | 100             |
| Initial firm-year observation <sup>6</sup>                              | 600             |
| Outliers                                                                | (129)           |
| <b>Final firm-year observations</b>                                     | <b>471</b>      |

<sup>4</sup> Firms are those listed during the whole six year period of this study commencing on 1 January 2004 until 31 December 2009.

<sup>5</sup> Problematic firms are firms found to have triggered the requirements of Practice Note No. 4 (PN4) or/and the requirements of Practice Note No. 17 (PN17) of Bursa Malaysia. PN4 and PN17 are no longer being separated since 3 January 2005, but have become a single PN17 classification.

<sup>6</sup> Total number of initial firm-year observations is computed as 100 firms sample multiplied by six (6) years period of time.

Table 5-2 and 5-3 respectively provides the summary of 471 final usable data breakdown into calendar year and major industry classification made by Bursa Malaysia. With regards to Table 5-2, for each of the six calendar years, there was no full firm observation (100 observations for each year) available. Out of the total 471 observations, the highest was 82 (17.41%) observations which were available in 2006 and 2007 and the lowest was 76 (16.14%) observations which were available in 2005, 2008 and 2009. Among all the sample firms, there is no obvious difference in the number of observations across the six-year period.

Referring to Table 5-3, the highest observations were firms in the industrial product industry, represented by 185 firm-year observations or 39.28% of the 471 total observations, followed by firms in the trading and services industry (24.63%) and the consumer product industry (19.32%). The lowest observations were 14 (2.97%), which were firms in the construction industry.

**Table 4-2 Firm-year Observations Breakdown into Calendar Year**

| <b>Year</b>  | <b><i>N</i></b> | <b>%</b>   |
|--------------|-----------------|------------|
| 2004         | 79              | 16.77      |
| 2005         | 76              | 16.14      |
| 2006         | 82              | 17.41      |
| 2007         | 82              | 17.41      |
| 2008         | 76              | 16.14      |
| 2009         | 76              | 16.14      |
| <b>Total</b> | <b>471</b>      | <b>100</b> |

**Table 4-3 Firm-year Observations Breakdown into Industry**

| <b>Industry</b>    | <b><i>N</i></b> | <b>%</b>   |
|--------------------|-----------------|------------|
| Industrial Product | 185             | 39.28      |
| Construction       | 14              | 2.97       |
| Technology         | 38              | 8.07       |
| Consumer Product   | 91              | 19.32      |
| Trading/Services   | 116             | 24.63      |
| Plantation         | 27              | 5.73       |
| <b>Total</b>       | <b>471</b>      | <b>100</b> |



### 4.3 Sources of Data

Data are collected from two separate sources; *DataStream* and firms' annual reports. Financial data, including market values of firms are obtained from *DataStream*. Any figures that are missing in the *DataStream* are acquired from the annual reports. Annual reports of firms are retrieved from the Bursa Malaysia website ([www.bursamalaysia.com](http://www.bursamalaysia.com)). Non-financial data are manually extracted from these annual reports. All relevant data are collected for the period from 2004 to 2009, except those used to compute certain measures of variables that required additional figures from 2003 to 2010.

The sample period of this study commences from 2004 to take into consideration the impact of the implementation of IFRS adoption into MASB regime. Furthermore, Malaysian listed firms are required to make mandatory disclosure of the extent of compliance (or non-compliance) with the MCCG which first came into effect in 2000. The period is chosen to ensure availability of the governance data in the annual reports and to ensure uniformity of corporate governance practices of all Malaysian firms.

### 4.4 Measurement, Conceptualisation and Operationalization of the Variables

The investigation was made using mediation analysis, by which the inferences are to be drawn about the existence and relative importance of the direct link versus the indirect link (mediated by the earnings quality attributes) between corporate governance mechanisms and the firm value.

#### 4.4.1 Measuring Firm Value

##### *Market-based Firm Value as Measured by Tobin's Q (FV)*

Despite its inherent limitations<sup>7</sup>, Tobin's Q is widely used as a valuation proxy in studies of corporate governance, e.g. by Klapper and Love (2004) and Durnev and Kim (2005); and earnings quality (Rountree, Weston & Allayannis 2008). Tobin's Q is a measure of market valuation premiums, defined as the ratio of market value to replacement value of a firm's assets. A value higher than one indicates that the firm is using its resources efficiently and thereby is creating economic rents. Looking forward, Tobin's Q can be

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<sup>7</sup>Gompers *et al.* (2010) highlight several problems with using Tobin's Q in ordinary least squares pooled data regressions. Discussion of the problems and their relevance for this thesis is presented in the later chapter.

interpreted as the market's expectation of the economic return generated by the firm's assets, hence it can be used as a measure of the market's long-run valuation of the firm (Bitner & Dolan 1996). Because of the difficulty in estimating the market value of debt and replacement costs, the following is the equation used to measure Tobin's Q for this thesis:

$$TQ_{it} = (BVA_{it} + MVE_{it} - BVE_{it})/BVA_{it} \quad (4.1)$$

Where  $FV_{it}$  is the Tobin's Q value of firm  $i$  in year  $t$ ;  $BVA_{it}$  is the book value of total assets of firm  $i$  in year  $t$ ;  $MVE_{it}$  is the market value of common equity of firm  $i$  (computed as stock price times the number of common shares outstanding) in year  $t$ ; and  $BVE_{it}$  is the book value of equity of firm  $i$  in year  $t$ .

#### **4.4.2 Measuring Earnings Quality**

Information risk for this thesis is represented by three different measures of earnings quality, i.e. predictability, accruals quality and conservatism.

##### ***Earnings Quality as Measured by Predictability (PRE)***

Current earnings are usually regressed on the lagged earnings to assess earnings predictability and earnings persistence, for instance by Ali and Zarowin (1992) and Lev Lev (1983). In this specification, the autoregressive coefficient on lagged earnings measures the extent to which earnings realisations persist in future earnings. The values of the autoregressive coefficient vary between zero and one. A value of zero indicates fully transitory earnings and a value of one indicates fully persistent earnings. The nearer the coefficient is to one, the higher is the quality of earnings. The residuals from the autoregressive model are earnings shocks. The predictability of earnings is then measured as the variance of these shocks (Lipe 1990). If the variance of residuals is zero then the past earnings realisations perfectly predict current earnings realisations. Increasing values of variance indicate deteriorating earnings quality.

##### ***Earnings Quality as Measured by Accrual Quality (DDA)***

For this thesis, the widely used measures of earnings management are employed to represent the accruals quality, i.e. the cash-flow model (Dechow, Patricia M. & Dichev 2002) (hereafter referred to as DDA).

The DDA model is based on the extent to which working capital accruals map into cash flow realisations, where a poor match means highly risky (which indicates high information risk and hence low earnings quality). Thus, working capital accrual is regressed on prior, current and future cash flow from operations. The accruals quality for this model is measured as the standard deviation of residuals ( $\varepsilon_{i,t}$ ) obtained from the following regression model:

$$WCA_{i,t} = \beta_{0,i} + \beta_{1,i}CFO_{i,(t-1)} + \beta_{2,i}CFO_{i,t} + \beta_{3,i}CFO_{i,(t+1)} + \varepsilon_{i,t} \quad (4.2)$$

Where  $WCA_{i,t}$  is the working capital accruals for firm  $i$  in year  $t$ ;  $CFO_{i,t}$ ,  $CFO_{i,(t-1)}$  and  $CFO_{i,(t+1)}$  represent the cash flow from operations for firm  $i$  in year  $t$  (current year),  $t-1$  (prior year) and  $t+1$  (future year) respectively. All variables are scaled by total assets at the beginning of the year.

Working capital accruals for year  $t$ ,  $WCA_{i,t}$  is computed using the following equation:

$$WCA_{i,t} = \Delta CA_{i,t} - \Delta CL_{i,t} - \Delta CASH_{i,t} + \Delta DEBT_{i,t} \quad (4.3)$$

Where  $\Delta CA_{i,t}$  is the change in current assets of firm  $i$  between year  $t$  and  $t-1$ ,  $\Delta CL_{i,t}$  is the change in current liabilities of firm  $i$  between year  $t$  and  $t-1$ ,  $\Delta CASH_{i,t}$  is the change in cash of firm  $i$  between year  $t$  and  $t-1$  and  $\Delta DEBT_{i,t}$  is the change in debt in current liabilities of firm  $i$  between year  $t$  and  $t-1$ .

Cash flow from operations for year  $t$ ,  $CFO_{i,t}$  is computed using the following equation:

$$CFO_{i,t} = NI_{i,t} - (\Delta CA_{i,t} - \Delta CL_{i,t} - \Delta CASH_{i,t} + \Delta DEBT_{i,t} - DEP_{i,t}) \quad (4.4)$$

Where  $NI_{i,t}$  is net income before extraordinary items of firm  $i$  in year  $t$ , and  $DEP_{i,t}$  is depreciation and amortisation expenses of firm  $i$  in year  $t$ . The remaining items are similar to those in Equation (3) above.

A higher value of DDA indicates poorer accruals quality because less of the variation in current accruals is explained by operating cash flow realisations. As earnings are the sum of accruals and cash flow and the cash flow component is normally considered to be objective and not manipulated, the quality of earnings depends on the quality of accruals. Poorer accruals quality implies a lower level of earnings quality.

The arguments made in this thesis is based on income smoothing theories instead of theories of directional earnings management, as such, the magnitude is more interesting than the direction of the accruals quality. For these reasons, the analysis is made based on absolute value of DDA to represent accruals quality.

### ***Earnings Quality as Measured by Conservatism (CON)***

Prior studies found that the concept of conservatism can be interpreted in different ways such as how it is being measured. This thesis uses the measure of conservatism developed by Givoly and Hayn (2000).

Reverse pattern of accruals occur when periods in which net income exceeds (falls below) cash flow from operations, is expected to be followed by periods with negative (positive) accruals (Givoly & Hayn 2000). Firms with a steady state are expected to realise accruals in previous periods to cash flow from operations in the subsequent periods. Therefore, a consistent predominance of negative accruals across firms over a period of time is an indication of conservatism.

The accrual-based measure of conservatism is computed as income before extraordinary items plus depreciation expenses minus cash flow from operations and deflated by total assets. The accrual value is averaged over a three-year period centred at year  $t$  and multiplied by (-1). The computation of the measure can be simplified by the following equation:

$$ACC_{i,t} = \left[ \frac{(NI_{i,(t-1)} + DEP_{i,(t-1)} - CFO_{i,(t-1)})}{TA_{t-2}} \right] + \left[ \frac{(NI_{i,t} + DEP_{i,t} - CFO_{i,t})}{TA_{t-1}} \right] + \left[ \frac{(NI_{i,(t+1)} + DEP_{i,(t+1)} - CFO_{i,(t+1)})}{TA_t} \right] \quad (4.5)$$

Hence, the value of conservatism for firm  $i$  in year  $t$  is as follow:

$$CON_{i,t} = (ACC_{i,t}/3) * (-1)$$

(4.6)

Averaging over a number of years will mitigate the effects of any temporary large accruals, since accruals are likely to be reversed within one to two years (Richardson, Scott A. et al. 2005). The  $CON_{i,t}$  value above is multiplied by (-1), such that a higher value indicates more conservatism. Zhang (2008) noted that the accruals conservatism measured using this technique is a non-operating accruals that summarises the actual recording of bad news and captures the asymmetric verification requirements as reflected in earnings.

Despite the limitations highlighted by researchers, an approach to measuring conservatism which was developed by Basu (1997) has been applied extensively in the literature and become the primary measure of accounting conservatism.

#### **4.4.3 Measuring Good Structure of Corporate Governance Mechanisms**

This section provides the operational definitions of the mechanism of corporate governance which is considered as the independent variables examined in this study. In this study the measurement for each of the corporate governance mechanisms is developed based on the corporate governance information provided in the annual reports of listed firms. Corporate governance information will be assessed accordingly following the requirements and recommendation made by MCCG, *Bursa Malaysia* Corporate Governance Guidelines (CGG) and evidence from the previous studies.

There are 15 components of corporate governance that will be measured to represent the level of corporate governance practice of listed firms. The components are categorised into five mechanisms of good governance structure; i.e. good structure of audit committee, good structure of board of directors, good structure of board committees, good ownership structure and good structure of reporting mechanisms. The literature states that each of the good structure of corporate governance mechanisms serves its specific role in promoting high quality financial reporting and increasing value of firms.

Aggregate measure is used to determine the effectiveness of each of the five governance mechanisms as it is the approach that has been employed in a number of previous studies, among which are those by Krishnan and Visvanathan (2008), Khanchel (2007) and Lara,

Osma and Penalva (2007). Additionally, the aggregate approach is employed for this study since it is also considered to account for the overall effectiveness of each mechanism exercised in a particular firm (Cohen, J, Krishnamoorthy & Wright 2004; Lara, Osma & Penalva 2007).

Following the technique employed by Khanchel (2007), percentile ranking is used to obtain the aggregate value of each corporate governance mechanism. Basically, two procedures are undertaken. Firstly, the components for each mechanism are ranked individually from the bottom to the top, i.e. a small value is ranked at the bottom and a high value is ranked at the top. Firms which are ranked with the highest score represent the highest value of good practice of corporate governance. The procedures are run using STATA 12 statistical software, particularly employing the *egen rank* syntax. Secondly, the ranked score of the components for each mechanism are summed up and divided by the number of components of the mechanism and assigned as the average ranked score for that particular mechanism. The average score is used to compute percentile rank based on the following equation:

$$CG_{it} = RANK_{it}/N \quad (4.7)$$

Where  $CG_{it}$  represents the percentile rank of each of the corporate governance mechanisms (i.e.  $AC_{it}$ ,  $BOD_{it}$ ,  $BC_{it}$ ,  $REP_{it}$  and  $OWN_{it}$ ) for firm  $i$  in year  $t$ ,  $RANK_{it}$  is the average rank score of each mechanism for firm  $i$  in year  $t$  and  $N$  is the number of observations of each mechanism.

The following subsections discuss the measurement of the individual components of each of the good structure of corporate governance mechanisms employed in this thesis.

#### ***Good Structure of Audit Committee (AC)***

Audit committee plays a major role in assuring that good quality of financial reports are supplied to the users. For this study, a good structure of audit committee is measured based on four characteristics, i.e. capacity, composition, competency and commitment.

Audit committee composition is measured based on the proportion of independent directors appointed as members. The audit committee composition is determined by

dividing the number of independent directors with the total number of audit committee members appointed for a particular year, which is consistent with the measures used by Krishnan and Visvanathan (2008) and Zalailah, Jenny and Stuart (2006).

The competency of audit committee is determined based on the proportion of accounting professionals appointed as members. The MCCG recommends that at least one of the directors appointed as audit committee member must be a holder of professional accounting qualification. However, as evidenced by the literature, a larger number of professionals involved in an audit committee would increase a firm's concern on financial reporting issues and hence enhance the quality of its reports. For this thesis, the proportion of the number of directors with professional accounting qualifications over the total number of directors appointed as the audit committee members would determine the competency of an audit committee.

Audit committee commitment is measured as the number of audit committee meetings held during the year, a similar measure used in previous studies to capture the diligence aspect of the committee (Krishnan & Visvanathan 2008; Raghunandan & Rama 2007).

### ***Good Structure of Board of Directors (BD)***

The BOD is the main organ of corporate governance of a firm. Thus it is crucial to analyse a BOD's structure as it quantifies the other part of governance body. A good structure of a BOD for this thesis is measured based on three components of the basic characteristics of BOD as per the provisions of MCCG, CGG and the literature, i.e. the composition (independence), the capacity and the chairman's dual role.

The board capacity is quantified as the natural logarithm of total number of board members, following the previous studies, including those by Ahmed, Anwer S. and Duellman (2007), Krishnan and Visvanathan (2008) and Lam and Lee (2008).

The composition of a BOD is measured based on the proportion of independent directors on the board. Based on the definition provided by *Bursa Malaysia*, independent directors are those who are independent of the management and free from any business or other relationship that could influence the exercise of independent judgement or the ability to act in the best interest of the stakeholders. For this thesis, the proportion of independent directors over the total number of members of the board is used to determine the value of

BOD composition following that of previous studies (Abdullah 2004; Klein 2002; Peasnell, Pope & Young 2006).

Chairman dual role is determined based on the occurrence or non-occurrence of appointment of chairman as the CEO. The combination of these roles does not provide any positive impact on firm value as well as the quality of financial reporting; hence as evidenced by the literature, chairman duality role is quantified inversely i.e. a score of one (1) in the situation where a firm does not practice such appointment during the year or otherwise a score of zero (0) will be assigned to that particular firm.

#### ***Good Structure of Risk Management Mechanisms (RM)***

External audit function plays an important role as part of the reporting mechanisms of a firm as it provides an independent assessment on the financial reports. According to the best practice guidelines, audit committee members are required to have a close collaboration with the auditor to resolve any matter surrounding the audit works. Since the auditor is regarded as an active participant in the reporting process and governance (Cohen, J, Krishnamoorthy & Wright 2004), an audit committee may not be able to monitor the management effectively without its support.

The big brand auditors (the Big-5/the Big-4) are perceived to be a strong mechanism, as previous studies had shown that they are able to provide quality audit services through higher qualified opinion in the case of earnings management detection (Becker, C.L. et al. 2010; Francis, J.R. & Krishnan 1999; Juhl, Jubb & Houghton 2007), earnings forecast errors (Ahmad-Zaluki & Wan-Hussin 2010; Lee, Taylor & Taylor 2006) and influence firms to disclose internal audit reports mandatorily and led to frequent audit committee meetings (Haron, Jeyaraman & Chye 2010).

Relative to small and medium size audit firms, big firms are more likely to be exposed to the loss of reputation or legal action in the case of audit failure. Small audit firms are less likely to be sued because their ability to settle lawsuits may be insufficient to cover the costs incurred by shareholders or creditors. For this thesis, the quality of external audit is determined according to the brand name, whereby a firm that engaged a Big-4 firm is assigned a score of one (1); whereas a firm that engaged a non-Big4 firm is assigned a score of zero (0).



The degree of deterrence effect of both functions (external and internal audit) is dependent on their effectiveness rather than merely their presence. Experimental studies had shown that the effectiveness of external and internal audit functions provides more meaningful evidence that justify their deterrence impacts on misleading behaviour of managers. Asare, Davidson and Gramling (2008) found that an effective internal audit function has the ability to detect misreporting behaviour of managers, as the auditors are more sensitive to managers' incentives to mislead.

### ***Good Ownership Structure (OW)***

Ownership structure is measured by the percentage of a firm's outstanding shares held by substantial shareholders. For this study, substantial shareholders are classified into substantial managerial ownership (inside managerial ownership) and substantial shareholders other than managerial shareholders, who are individuals or institutions (or firms) that are independent from the management (outside block holder ownership). The measures of these two types of ownership are the percentage of a firm's outstanding shares held by the directors involved in the management (for managerial ownership) and the percentage of a firm's outstanding shares held by the substantial outside shareholders (for outside block holder ownership).

The measurement employed in this thesis is consistent with the provision of Section 69D of Malaysian Companies Act 1965, which defines substantial shareholder as a person who holds not less than five per cent of the aggregate of the nominal amounts of all the voting shares in the company. The substantial shareholding disclosures in the annual reports indicate the shareholder's direct interest and indirect interest. Direct interest refers to shares directly purchased from the firm under the shareholder's own name whilst indirect interest refers to the interest of individual shareholders (or firms) through shares owned in another linked company and/or through shareholdings by the shareholder's family members.

Previous studies had measured the ownership structure by looking at the concentration based on the top largest group of shareholding as the proxy. However, for this thesis, a firm's ownership will be measured according to the percentage of shareholdings since most of Malaysian public listed firms are controlled by certain parties via nominees and in order to remain anonymous (Chu & Cheah 2006; Singam 2003). The identification of

the top largest shareholdings as the proxy for ownership structure may not be as accurate as using the exact percentage of ownership because the list of the 30 largest shareholders in the annual reports does not aggregate the different securities accounts belonging to the same person or institution. The substantial ownership, however account for total ownerships with five per cent and more regardless of whether the shares and other securities are acquired directly or indirectly.

**Table 4-4 Components of Good Structure of Corporate Governance Mechanisms Rank Index and Measurements**

|                                                          |                                                                                                                 |
|----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| <b>Good structure of Audit Committee (AC)</b>            |                                                                                                                 |
| Audit committee capacity                                 | Score one (1) if audit committee comprising of three to eight members during year <i>t</i> .                    |
| Audit Committee independent                              | Score one (1) if audit committee's composition of independent directors is equal to 100%.                       |
| Audit committee competency                               | Score one (1) if audit committee consists of at least one director with professional accounting qualification.  |
| Audit Committee commitment                               | Score one (1) if the number of audit committee meetings held during the financial year is more than four times. |
| <b>Good Structure of Board of Directors (BD)</b>         |                                                                                                                 |
| Size of board of directors                               | Score one (1) if board of directors comprising of five to 12 members.                                           |
| Independent board of directors                           | Score of 1 if the board of directors' composition of independent directors is between 50% and 85%.              |
| Dual role of board of directors' chair                   | Score one (1) if the chairman does not hold the CEO position.                                                   |
| <b>Good Structure of Board Committee (BC)</b>            |                                                                                                                 |
| Independent Nominating Committee                         | Ratio of firm's nominating committee composition of independent directors.                                      |
| Independent Remuneration Committee                       | Ratio of remuneration committee composition of independent directors.                                           |
| <b>Good Structure of Risk Management Mechanisms (RM)</b> |                                                                                                                 |

|                                            |                                                                                                                          |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| External audit quality                     | Score of one (1) for firm whose financial statements are audited by any of the Big4 audit firms.                         |
| Internal control efficiency                | Score one (1) if external auditor is retained.                                                                           |
| Internal audit quality                     | Score of one (1) for firm whose internal audit function is outsourced.                                                   |
| Establishment of Risk Management Committee | Score of one (1) for firm whose risk management committee is formally established separately from other board committee. |
| <hr/> <b>Good Ownership Structure (OW)</b> |                                                                                                                          |
| Managerial ownership                       | Ratio of firm's issued share capital owned by inside directors.                                                          |
| Block holder ownership                     | Ratio of firm's issued share capital owned by outside block holder.                                                      |

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#### **4.4.4 Measuring Firm-specific Factors**

##### ***Firm Size (SZ)***

Firm size is measured using natural logarithm of total assets. Similar measurement was employed in the studies by Rahman and Ali (2006) and Krishnan and Visvanathan (2008). According to Watts, R.L. and Zimmerman (1978), large firms that are exposed to more political costs will adopt more accounting conservatism. However, these political costs could be subject to the information asymmetry effects and the aggregation effects. LaFond & Watts (2008) view that larger firms experience less information asymmetry because they produce more public information. This is supported by the findings by Givoly, Hayn and Natarajan (2007) where asymmetric timeliness of earnings of large firms is significantly smaller than that of small firms. Thus, large firms with lesser information asymmetry may be exposed to lower political costs and tend to adopt lower conservatism. A negative association is expected between firm size and earnings quality, but positively related to firm value.

##### ***Firm Leverage (LV)***

Leverage of a firm is measured as the total non-current liabilities divided by total assets, as previously applied in the studies by Ahmed, Anwer S. and Duellman (2007) and Krishnan and Visvanathan (2008). As the demand for earnings quality is partly from debt contracting, particularly, it is argued that highly leveraged firms may employ more

conservative accounting in order to reduce the conflict between shareholders and debt holders. Ahmed, A.S. et al. (2002) reported that firms employed accounting conservatism and dividend policy to mitigate the debt holder-shareholders conflict, which in turn reduce the cost of debt. Similarly, Lafond and Roychowdhury (2008) state that highly leveraged firms employed more conservatism. Beatty, A, Weber and Yu (2008) mention that debt holders demanded conservative financial reports even though they had the ability to specify the financial numbers in the debt contract. A positive association is expected between leverage and earnings quality and firm value.

### ***Firm Growth (GW)***

Growth is measured as a percentage of annual growth to total sales. Growth is included in the model as Ahmed, A.S. et al. (2002) argue that growth in sales is likely to affect earnings quality, particularly conservatism measure due to several reasons. Firstly, growth affects accruals items such as inventories and receivables, and in turn affects conservatism. Secondly, conservatism is a poor measure of earnings quality for firm facing declining sales. A negative association is expected between sales growth and accrual-based conservatism because higher sales growth will increase current accruals, which in turn reduces the level of conservatism.

This hypothesis is to be determined based on the knowledge that firms reporting quality may be manipulated to hide diminishing performance. Returns on assets and cash sales are generally declining for firms engaging in manipulation (Dechow, Patricia M et al. 2011). It is anticipated that firms would boost sales by overstating credit sales. Misstating firms tend to be growing their capital bases and increasing the scale of their business operations. A greater scale of operations should lead to increases in both cash and credit sales. Beside, many firms were found to misstate sales through transaction management, for instance, by encouraging sales to customers with return provisions that violate the definition of sales, selling goods to related parties or forcing goods onto customers at the end of each quarter.

### ***Firm Financing Needs (CF)***

Market incentives are important reason for engaging in earnings management (Dechow, P.M., Sloan & Sweeney 1995). Teoh, Welch and Wong (1998) provide corroborating evidence that accruals are usually high at the time of equity issuance. However, the

evidence of Beneish's (1999) suggests that leverage and stock issuances do not motivate misstatements. Nonetheless, it is believed that low quality of reported earnings is meant for firms which are actively raising financing relative to the broad population of firms. In addition, firms are believed to actively raise financing before and during the manipulation period, as what has been found in Dechow, Patricia M et al. (2011). Price-earnings and market to book ratios are high for misstatement firms compared to other firms, suggesting that investors are optimistic about the future growth opportunities of the firms. Managers are engaging in aggressive techniques, hoping to avoid disappointing investors and losing their high valuations (Skinner & Sloan 2002).

**Table 4-5 Summary of Variable Measurement**

| <b><i>Dependent Variable</i></b>   |                                              |                                                                                                                                                                                                                                                     |
|------------------------------------|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>FV</i>                          | Tobin's Q                                    | Tobin's Q                                                                                                                                                                                                                                           |
| <b><i>Independent Variable</i></b> |                                              |                                                                                                                                                                                                                                                     |
| <i>BD</i>                          | Good Structure of board of directors         | Rank index based on components specified in Table 4.4                                                                                                                                                                                               |
| <i>AC</i>                          | Good Structure of audit committee            | Rank index based on components specified in Table 4.4                                                                                                                                                                                               |
| <i>BC</i>                          | Good Structure of Board Committees           | Rank index based on components specified in Table 4.4                                                                                                                                                                                               |
| <i>RM</i>                          | Good Structure of Risk Management Mechanisms | Rank index based on components specified in Table 4.4                                                                                                                                                                                               |
| <i>OW</i>                          | Good ownership structure                     | Rank index based on components specified in Table 4.4                                                                                                                                                                                               |
| <b><i>Mediating Variables</i></b>  |                                              |                                                                                                                                                                                                                                                     |
| <i>DDA</i>                         | Accruals quality                             | Discretionary accrual measured as standard deviation of the residuals from the cross sectional regression of total current assets against operating cash flow over the current period, plus change in sales and gross property plant and equipment. |

|                                 |                         |                                                                                         |
|---------------------------------|-------------------------|-----------------------------------------------------------------------------------------|
| <i>PRE</i>                      | Earnings predictability | Standard deviation of residuals from a regression of current earnings on past earnings. |
| <i>CON</i>                      | Earnings conservatism   | Accrual-based conservatism measure.                                                     |
| <b><i>Control Variables</i></b> |                         |                                                                                         |
| <i>SZ</i>                       | Firm size               | Natural logarithm of firm total assets.                                                 |
| <i>LV</i>                       | Firm leverage           | Non-current liabilities divided by total assets.                                        |
| <i>GW</i>                       | Firm growth             | Annual percentage change in sales.                                                      |
| <i>EP</i>                       | Earning-Price tied up   | Ratio of earnings to share price for year <i>t</i> .                                    |
| <i>CF</i>                       | Financing needs         | Cash flow from financing-raised during year <i>t</i> .                                  |

#### **4.5 Data Analysis**

Econometric model is used to test the relationship between corporate governance and firm value and the influence of earnings quality in the relationship. For this study, earnings quality is viewed from three different perspectives, i.e. accruals quality, predictability and conservatism. Four different models are to be tested, representing the three different constructs of earnings quality and a combined model. The data in this study was analysed using STATA software version 12 with appropriate syntax to run the tests for the panel data.

##### **4.5.1 Mediation Analysis**

In order to examine the influence of earnings quality on the relationship between corporate governance and firm value, this study employed mediating regression model. Earnings quality variables (accruals quality, predictability and conservatism) are considered as the mediators of the relationship.

In general, mediating variables are used to explain how or why two variables are related. A modern application of mediating variables is in treatment and prevention research,

where interventions are designed to change mediating variables, such as norms, which are hypothesised to be causally related to a dependent variable.

Mediation analysis is chosen to be applied in this thesis as it can identify fundamental processes underlying one particular issue that is relevant across contexts. Once a true mediating process is identified, then more efficient and powerful interventions can be developed because these interventions can focus on variables in the mediating process (MacKinnon & Fairchild 2009).

Generally, in every mediation regression model, an antecedent variable affects a mediator variable and the mediator variable affects a dependent variable, thus forming a chain of relations among three variables (Baron & Kenny 1986). The chain of relations among the variables is called an indirect or mediated effect of the antecedent variable on the dependent variable. An effect that is not mediated this way is called a direct effect. Following MacKinnon (2008), a single-mediator model can be illustrated by the following three equations:

$$Y = i_1 + cX + e_1 \quad (4.8)$$

$$Y = i_2 + \acute{c}X + bM + e_2 \quad (4.9)$$

$$M = i_3 + aX + e_3 \quad (4.10)$$

Where  $Y$  is the dependent variable,  $X$  is the independent variable and  $M$  is the mediating variable. The coefficient  $c$  represents how strongly  $X$  predicts  $Y$ ;  $\acute{c}$  represents the strength of prediction of  $Y$  from  $X$ , with the strength of the  $M$ -to- $Y$  relation removed;  $b$  is the coefficient for the strength of the relation between  $M$  and  $Y$  with the strength of the  $X$ -to- $Y$  relation removed; and  $a$  is the coefficient representing the strength of the relationship

between  $X$  and  $M$ . The intercepts in each equation, i.e.  $i_1$ ,  $i_2$  and  $i_3$ , represent the average score of each variable; and  $e_1$ ,  $e_2$  and  $e_3$  represent the error.

Several different effects are represented in the model. Firstly, a direct effect relating  $X$  to  $Y$  with the strength of mediator relation removed, quantified by  $c'$ ; secondly, a mediated or indirect effect of  $X$  to  $Y$  transmitted through the mediating variable, quantified by  $ab$  (the numerical values of the mediated effect may be computed in one of two ways; as either the difference in coefficients  $c$  minus  $c'$  or as the product of coefficients  $ab$ ); and finally, a total effect of  $X$  on  $Y$  that is computed by the addition of these two parts (MacKinnon, David P & Dawyer 1993).

For this thesis, the relationships among variables will be represented by simultaneous mediation design, a mediation model which involves multiple mediators. The following additional set of equations is applicable for a multiple-mediator regression model:

$$Y = i_2 + c'X + b_1M_1 + b_2M_2 + e_2 \quad (4.11)$$

$$M_1 = i_3 + a_1X + e_3 \quad (4.12)$$

$$M_2 = i_4 + a_2X + e_4 \quad (4.13)$$

Equation (4.10) illustrates a multiple mediation model with two mediators, i.e.  $M_1$  and  $M_2$ . The equation represents both the direct effect of  $X$  on  $Y$  (coefficient  $c'$ ) and the indirect effects of  $X$  on  $Y$  via both mediators. The specific indirect effect of  $X$  on  $Y$  via a particular mediator is defined as the product of the two unstandardized path linking  $X$  to  $Y$  via that particular mediator (for example, the specific indirect effect of  $X$  on  $Y$  through  $M_1$  is quantified as  $a_1b_1$ ). Equation (4.11) and Equation (4.12) represent direct relationship between independent variable  $X$  and each of the mediators ( $M_1$  and  $M_2$ ). The total indirect effect of  $X$  on  $Y$  is the sum of the specific indirect effects presented as follow:

$$\text{Total indirect effects} = \sum_j (a_j b_j), j = 1 \text{ to } k$$



(4.14)

Where product of coefficient  $a$  and coefficient  $b$ ,  $(a_j b_j)$  in Equation (4.13) is the indirect effect of  $j$  mediator for  $k$  number of mediators. The total effect of  $X$  on  $Y$  is the sum of the direct effect and all  $k$  of the specific indirect effects, represented in Equation (4.14) below:

$$\text{Total effects} = c = c' + \sum_j (a_j b_j), j = 1 \text{ to } k.$$

(4.15)

The multiple mediation design is chosen as it premises on several advantages. Firstly, testing the total indirect effect of  $X$  on  $Y$  is similar to conducting a regression analysis with several predictors, with the aim of determining whether an overall effect exists. If the mediation effect is found, it can be concluded that the set of  $k$  variables mediates the effect of  $X$  on  $Y$ . Secondly, it is possible to determine as to what extent specific  $M$  variables mediate the effect of  $X$  on  $Y$ , conditional on the presence of other mediators in the model. Thirdly, when multiple presumed mediators are diverted in a multiple mediation model, the likelihood of parameter bias due to omitted variables is reduced. As highlighted by Judd and Kenny (1981), contrary to multiple mediation, when several simple mediation hypotheses are each tested with simple mediator model, these separate models may suffer from the omitted problem, which can lead to biased parameter estimates. Finally, including several mediators in one model allows the researcher to determine the relative magnitudes of the specific indirect effects associated with all mediators, to dig deeply into competing theories against one another within a single model.

Assessing multiple mediations involves not only deciding whether or not an indirect effect exists, but also deciding on how to tear apart individual mediating effects often attributed to several potential mediators that may overlap in content (West & Aiken 1997).

Several methods have been implemented in this study to assess whether the mediated effect of earnings quality is large enough to be considered important in the relationships between the mechanisms of corporate governance and firm value. As suggested in

statistical literature, there are four major groups of tests for mediation, i.e. causal steps approach, difference in coefficients test, product of coefficients test and bootstrapped confidence interval. Based on the accuracy of Type I error and statistical power, MacKinnon et al. (2002), found that among 14 widely used methods in mediation research, the most balance method (reasonably accurate Type I error and high statistical power) is the joint significance test.

### ***Causal-Steps Approach***

Although there are many methods available for testing hypotheses pertaining to mediation effects, the most widely used method is the causal-steps approach popularised by Baron and Kenny (1986) and Judd and Kenny (1981). MacKinnon et al. (2002), and Fritz and MacKinnon (2007), among others, discovered that this method is most frequently being employed in mediation studies due to its convenience, despite its low statistical power. This approach requires the researcher to estimate each of the paths in the model and then ascertain whether a variable functions as a mediator meets certain statistical criteria. The method entails separate significant tests of the strength of the overall relationship between  $X$  and  $Y$ , the strength of the relationship between  $X$  and  $M$ , the strength of the relationship between  $M$  and  $Y$  adjusted for  $X$  and visual inspection of whether coefficient  $c$  is greater than the coefficient  $c'$ .

The requirement of a significant overall relationship between  $X$  and  $Y$  is the central difference between the causal steps approach and other methods for testing mediation (Hayes 2009). Some researchers have treated this test of overall relationship between  $X$  and  $Y$  as a perfect test of the relationship, failing to recognise that it is an inadequate statistical test that is subject to error and arguing that if there is no significant overall effect then mediation should not be examined. Even though the requirement that  $X$  is significantly related to  $Y$  is an important test in any research study, however, in most social science research, partial mediation is more realistic by which mediation can exist even in the absence of such a significant relationship (Baron & Kenny 1986).

Several scenarios had illustrated that although significant mediation exists but the overall effect of  $X$  on  $Y$  is not significant. Consider a case of mediation in which there are subgroups of individuals for whom the mediated effect is of opposite sign (i.e. positive versus negative), such that a test of the  $X$ -to- $Y$  relationship for the pooled data would be

zero even though mediation exists in the data. Considering another case in which the sign of mediated effects ( $ab$ ) differs from the sign of the direct effect ( $c'$ ), causing the overall relationship of  $X$  and  $Y$  ( $c$ ) to be zero (such cases are known as inconsistent-mediation analysis).

Despite it being widely used in substantive research, there are several limitations to the causal-steps approach. Hayes (2009) and MacKinnon, David P and Fairchild (2009) highlight the critiques on the approach. Firstly, they found that simulation studies have shown that among the methods for testing intervening variables effects, the causal steps is among the lowest in statistical power. Secondly, they argued that the method is not based on a quantification of the strength of the mediated effect. Finally, they are concerned with the fact that the test requires that there be a significant overall relationship between  $X$  and  $Y$  for mediation to exist.

#### ***Difference in Coefficients Tests***

As described by MacKinnon et al. (2002), this approach does not call for a significant of total effect of  $X$  on  $Y$ , coefficient  $c$ . The variation of Baron and Kenny's (1986) causal steps approach ignores the significance of  $c$  but requires  $a$  and  $b$  coefficients to be significant for the mediation to exist and to be further analysed. It considers the variability of difference in coefficients  $c$  minus  $c'$  and for the product of coefficients  $ab$  (MacKinnon et al. 2002), basically the difference between the regression coefficients before and after adjusted for the mediating variable.

#### ***Sobel First Order (Product of Coefficients) Test***

This approach has its origin in sociology and is based on the product of coefficients involving paths in a path model (i.e. the indirect effect) (Sobel 1982). This approach is to test the significance of the mediating variables effect by dividing the estimate of the mediating variable by its standard error and comparing this value to a standard normal distribution.

#### ***Bootstrapped Confidence Intervals Method***

In addition to testing the mediated effect,  $ab$  (or  $c$  minus  $c'$ ), for significance, limits for the true value of  $ab$  can also be constructed. The confidence limits for the mediated effect provide information on the reliability or accuracy of the estimate of the mediated effect. Recent research has shown that confidence limits and significance testing for the

mediated effect based on the normal distribution are often inaccurate and are likely to find a real mediated effect in a sample of data (MacKinnon et al. 2002). Asymmetric confidence limits based on the distribution of the product,  $ab$ , and methods based on repeatedly sampling the original data are more accurate. These tests capture the non-normal shape of the mediated-effect sampling distribution (which occurs because the strength of the mediated effect is the product of two coefficients and does not always have a normal distribution), thus improving statistical power (MacKinnon, David P & Fairchild 2009). Resampling methods are among options to handle the non-normality in the distribution of the mediated effect (Shrout & Bolger 2002).

Bootstrapping is one such resampling method that has been widely applied to cases in which classical methods do not perform well. Bootstrapping involves drawing a larger number of samples with replacement from the original sample. Sampling with replacement means the bootstrap samples, although all are of the same size as the original sample, but can exclude some cases from the original sample and include duplicates of others. The model of interest is estimated in each bootstrap sample as in the original data. The distribution of sample statistics estimated in each bootstrap sample can be used to perform significance tests or to form confidence intervals (Taylor, MacKinnon & Tein 2008).

For this thesis, regression models are first estimated for the original data to find the coefficients. A large number of bootstrap samples are drawn, the same models are estimated for each bootstrap sample, and the estimates (coefficients) from each bootstrap sample are used to form the bootstrap distribution. The limits of a percentile bootstrap confidence interval are simply the values of the coefficients ( $\beta_1$ ,  $\beta_2$  and  $\beta_3$ ) at the  $\alpha/2$  and  $1 - \alpha/2$  percentiles of the bootstrap distribution, where  $\alpha$  is the nominal Type I error rate. As an example, for the typical  $\alpha = 0.05$ , the limits are the 2.5<sup>th</sup> and 97.5<sup>th</sup> percentiles of the distribution. The bias corrected confidence interval limits are also taken from the bootstrap distribution, but they are adjusted if the bootstrap distribution fails to centre at the sample estimate of the mediated effect. Results and discussions on bootstrap procedures implemented for this thesis is presented in Chapter 5, and the procedures are run using *bootstrap* syntax of STATA 12.

#### 4.5.2 Panel Data Analysis

This study employed panel data methodology to examine the direct and indirect relationships between corporate governance mechanisms and firm value, and the indirect relationships between corporate governance mechanisms and firm value mediated by earnings attributes.

Longitudinal data or panel data refers to data on the same subjects observed over several years. Greene (2008) noted that some issues could be studied purely by cross sectional or time series data; firms' reporting quality, particularly the quality of reported earnings can be better captured if firms are examined for longer period. This study examined a sample of 100 public firms listed on *Bursa Malaysia* stock exchange over six years.

Panel data suggest that the subjects under study are heterogeneous. It means that although some variables vary across subject and time, there are many other variables that may be subject-invariant or time-invariant. Subject-invariant refers to factors that influence all subjects but varies across time. Time-invariant refers to factors that are time constants as they are unique to the subjects. It is important to include these type of variables (subject or/and time-invariant) in the model equation; otherwise it would lead to bias in the resulting estimates. The panel data methodology provides a solution to control these invariant factors that are not controlled for either in cross sectional or time series studies. Moreover, a further motivation for using panel data is to solve the omitted variables problems (Wooldridge 2002).

Panel data provide a richer source of information as it accounts for multiple observations on cross sectional units. Thus, it offers more variability and is more efficient in the estimation of parameters. The informative data also provide more reliable estimates and tests a more sophisticated behavioural model with less restrictive assumptions.

For pure time series data, multicollinearity problem appears among the independent variable ( $X$ ); where the current period independent variables ( $X_t$ ) are highly correlated with those of the previous period ( $X_{t-1}$ ). Hence, for panel data, differences in the  $X$  across cross sectional unit can be used to reduce the collinearity. This is due to the fact that the pooling of cross sectional and time series data increases variability that can be decomposed into variation between subjects and variation within subjects.

Individual heterogeneity is controlled in panel data. The panel data model resolves or reduces the problem of omitted variables, due to mismeasurement or no observed items that correlate with the included independent variables in the model.

Panel data allow the researcher to study the complex issues of dynamic behaviour because it can identify and estimate effects that are simply not detectable in either pure cross section or time series data. Panel data enable the researcher to identify an otherwise unidentified model which under usual circumstances may be undetectable due to measurement errors.

The simple OLS regression assumes that the sample firms were homogeneous, thus do not account for heterogeneity unlike in the panel regression technique. Jager (2008) investigated whether panel data, analysed using a simple OLS regression technique would produce a different result than if analysed using panel data techniques. The results generated from the two techniques are substantially different; implying that adopting OLS technique on panel data leads to incorrect inference.

Panel data observations cannot be assumed as independently distributed across time due to individual unique factors that remained constant over time (Baddeley & Barrowclough 2009; Wooldridge 2002). Therefore, a simple regression (also known as pooled OLS) applied in pure cross-sectional or time series analysis, which assumes homogeneity, if estimated on panel data may lead to misleading inference (Baddeley & Barrowclough 2009). In simple pooling on panel data no adjustment is made for firm specific factors, resulting in autocorrelation, because for each year under study, the firm unique factor was left in the residual. Additionally, it also results in heterogeneity bias in terms of omitted variables bias because the firm unique factor is not included in the deterministic part of the model (Baddeley & Barrowclough 2009).

Panel data regression models control the heterogeneity effect in panel data by using either a fixed effects model or random effects model. The main difference between the two methods is whether the unobserved effects (the error term) are correlated with included independent variables (Wooldridge 2002).

### ***Fixed Effects Model***

Each entity has its own individual attributes, which are constant across time that may or may not affect the dependent variables. Fixed effects, which investigate the relationship between dependent and independent variables within an entity, control for these unobserved unique attributes (the time-invariant factor) within the entity may affect or bias against the dependent variables. Following the assumptions underlying the use of a fixed effects method that the error term is correlated with the independent variables; this method removes the effect of unobserved time-invariant characteristics from the independent variables so that the net effect of the independent variables is assessable. Therefore, the fixed effects method is unbiased as it controls for unobserved time-invariant factors but it may be inefficient if the correlation that it assumes is really zero (Allison 2009).

The fixed effects method can be implemented either by dummy variables or through the mean deviation method. A dummy variable is implemented by creating a set of dummy variables for each entity in the data set. The coefficient of an entity's dummy variable produced upon analysis represents an estimate of the unobserved time-invariant factors. However, Wooldridge (2002) suggested that this method is not practical for data sets with many cross sectional observations. Allison (2009) points out that this method imposes difficulty as it may be beyond the capacity of the accounting software.

The mean deviation method is an alternative to estimate fixed effects regression which is simple to perform using accounting software. The mean deviation method implies that mean values for all time-varying variables is identified for each entity. Subsequently, these entity's specific means are subtracted from the observed value for each variable. In this method, estimate coefficients for the time-invariant independent variables are not given, since their values are constant for each entity; subtracting the entity-specific mean of time-invariant variables from the individual values yield a value of zero for all entities. Accordingly, the time-invariant independent variables are dropped out of the equation, nevertheless their effect has been controlled (Allison 2009).

### ***Random Effects Model***

The advantage of a random effects model over the fixed effects model is that time-constant independent variables are allowed and can be examined in a regression model.

This results from the assumption that the unobserved effect is not correlated with the independent variables, whether or not they are fixed over time.

Accordingly, a random effects model allows for time-constant independent variables and does not drop them out of the regression model. However, if it violates the assumption that fixed effects are not correlated with the disturbances reflected in the between-effects, it may produce biased results.

### ***Panel Effect Test***

Poolability refers to the calculation of a common slope and a common intercept across all cross-sections. The more restrictive definition of poolability is that all coefficients are the same across time and cross-sections. In the unrestrictive model, slope and intercept coefficients are allowed to vary across time and cross sections (Jager 2008).

Breush-Pagan Lagrange Multiplier (*LM Test*) is commonly used to test the poolability. The null hypothesis is that the variances across entities are zero or there is no significant difference across the unit and thus no pooling effect. Where the pooling effect is not observed, simple pooled OLS is merely appropriate. Otherwise, in the situation where the null hypothesis is rejected, random effect model or fixed effect model may be applicable and Hausman specification test is due to be run to determine which model is superior to the another.

### ***Hausman Specification Test***

According to Greene (2008), the assumption in the random effects model that individual effects are uncorrelated with the other regressor has little justification. Thus, it may suffer inconsistency should this correlation exist. As noted earlier, the main factor that distinguishes fixed effects from the random effects is whether the error term correlated with the included independent variables. Hence, in order to choose between the fixed effects method and random effects method of panel data regression, the *Hausman* specification test is used to determine the existence of the correlation.

As may be recalled, the fixed effects model assumes that the independent variables are correlated with the error term whilst the random effects model does not. Thus, the following hypotheses are to be tested:

$$H_0: \quad \text{Unobserved effect is uncorrelated with explanatory variables}$$



$H_A$ : *Unobserved effect is correlated with explanatory variables*

The null hypothesis predicts the use of random effects and the alternative as fixed effects. To test whether there is any correlation between the error term and the explanatory variables; the Hausman specification test is performed upon running the fixed effects and random effects regression models (Baltagi 2008). If the *Hausman* test produces a significant *p-value*, the null hypothesis is rejected; hence the fixed effects model is appropriate.

#### **4.6 Diagnostic Tests**

This section explains the diagnostic tests being performed on the data employed in this study. First, the diagnostic tests on the data distributions in term of normality, extreme outliers and multicollinearity are discussed. Secondly, diagnostic tests specifically for the panel data are presented, namely contemporaneous correlation, heteroskedasticity and autocorrelation.

##### **Normality**

Normality refers to the shape of data distributions for an individual quantitative data variable and it corresponds with normal distributions. Normality is a fundamental assumption in multivariate analysis, such that a sufficiently large deviation from normality will lead to invalid statistical results (Hair, Black, Babin, Anderson & Tatham 2006). In multivariate analysis, the residual, which is the difference between the observed and predicted values, is assumed to be independent and normally distributed. Accordingly, the residual is assessed for normality testing. Should the examination of residual meet the assumption, it is necessary to check the normality of individual variables (Tabachnick & Fidell 2007).

Skewness and kurtosis are among the most common statistical tests for normality. Skewness reflects the balance of the distribution, with the skewness of non-normal distribution shifted to one side (left or right). Kurtosis refers to “peakedness” or “flatness” of the distribution compared to normal distribution. Tabachnick and Fidell (2007) claimed that the use of skewness and kurtosis statistical tests are sensitive in a large data set. A variable within significant skewness or kurtosis often does not deviate enough from

normality to make any significant difference to the analysis. They suggest looking at the shape of the distribution graph.

The distributions of the residual based on standardized normal probability plots (*pnorm*), which are sensitive to non-normality in the middle range of the data, was observed. Further, as recommended by Miller (1997), the residual was observed against the quartiles of a normal distribution (*qnorm*), which is sensitive to non-normality near the tails. Hair et al (2006) stated that the normal probability plot is a reliable approach as actual data values are compared with the cumulative distribution of normal distribution. A line representing the actual data that closely follows the diagonal line (normal distribution) indicated normality.

### **Outliers**

Transformation is one of the options to solve a normality problem caused by the outliers. However, some authors have argued against it. Grissom (2000) argued that the means of transformed data can occasionally reverse the difference of means of the original data. Tabachnick and Fidell (2007) highlighted that data transformations are not usually recommended, although they are feasible as a remedy for outliers and for the failures of normality.

This thesis detected multivariate outliers using a method developed by Hadi (1992, 1994). The procedure was conducted using the *hadimvo* syntax, a method which is more robust than the classical Mahalanobis Distance (Hadi, 1992). Extreme points identified were further investigated to ensure that they were not due to data entry error. Upon deletion of the outliers, the total number of observations was reduced to 471 firm-year observations.

### **Multicollinearity**

According to Tabachnick and Fidell (2007) and Hair et al. (2006), a multicollinearity problem exists if the correlation between independent variables exceeds 0.9. The Pearson and Spearman correlations shown in Table 5-8 indicate that the highest correlation is between DDA and GW (0.378).

In addition to the correlation values, the test on the variance inflation factor (VIF) is performed since multicollinearity cannot necessarily be detected or ruled out by examining the matrix of the correlations between variables (Hamilton, 2009). VIF is an

indicator of the effect that the other independent variables have on the standard error of the regression coefficient. VIF that exceeds 10 suggests collinearity problems. The VIF test ran on the independent variable used in this thesis showed that the highest VIF was 5.67. The above correlation and VIF values suggest that there is no multicollinearity problem among independent variables; hence these variables can be fitted into one regression model.

### **Contemporaneous Correlation**

Contemporaneous correlation, also known as cross sectional dependence refers to the correlation of the unobserved factor across units. This cross-sectional dependence is more likely to occur for a sample with cross section units (Wooldridge, 2003). Hoyos and Sarafidis (2006) suggested that strong interdependencies between cross-sectional units can plausibly follow from the economic and financial factors that are integrated in country and financial entities. Thus, a similar response could have been experienced by individuals as explained by genuinely interdependent preferences, neighbourhood effects, herd behaviours and social norms. Ignoring its presence will cause bias in the standard error estimation. The test on cross sectional dependence in STATA was performed using *xtcds*, *pesaran* syntax which is valid for panel data that has large  $N$  and small  $T$  (Hoyos & Sarafidis, 2006). This procedure implements a parametric testing procedure proposed by Pesaran (2004).

### **Heteroskedasticity**

Homoskedasticity is where the error process is independently and identically distributed. Although the error process may be homoskedastic within cross-section units, its variance may differ across units: a condition known as group wise heteroskedasticity (Baum, 2001). According to Baltagi (2008), assuming homoskedasticity regression disturbances of panel data model is a restrictive assumption because every unit has its own individual characteristics or heterogeneity which remains constant over time.

Baltagi (2008) further stated that ignoring the presence of heteroskedasticity produced consistent but inefficient estimates of the regression coefficients, and the standard errors of these estimates would be biased. Heteroskedasticity of the error term is tested based on modified Wald statistic (Baltagi 2008). This test was performed using *xttest* syntax in STATA.

### **Autocorrelation**

Autocorrelation, which is also known as serial correlation refers to the correlation of error components across time periods. This condition violates the classical assumption of regression analysis but it is a reasonable characteristic of the error term in time series analysis (Wooldridge, 2003). Autocorrelation is likely to have a more substantial influence on the estimated covariance matrix of the least square estimator than is heteroskedasticity (Greene, 2008).

The test to detect the presence of autocorrelation was carried out using *xtserial* syntax in STATA, which implements a test for serial correlation in the idiosyncratic errors of a linear panel data model, as discussed by Wooldridge (2002). The tests on all the models did not indicate the presence of autocorrelation problem.

### **Robust Standard Error**

According to Sarafidis, Yamagata and Robertson (2009), time dummy is a popular approach undertaken by researchers to overcome the cross sectional dependence problem. However, Sarafidis et al. (2009) claimed that the time dummy is not effective if all pairs of cross section units do not have identical cross section dependence, which is commonly the case. Researchers generally make this assumption such that time dummies in the model purged the cross section dependence (Hoechle, 2007). Petersen (2009) explained that time dummy will remove the cross sectional dependence completely, only if the time effect is fixed. If the time effect is not fixed, the cross sectional dependence will remain and a robust standard error clustered by the firm can be biased. Accordingly, this corrected the cross sectional dependence by employing the fixed effects panel regression estimates based on Driscoll and Kraay's (1998) standard errors. Driscoll and Kraay's standard error is a nonparametric covariance matrix estimator that is robust to cross sectional dependence, heteroskedasticity and autocorrelation (Hoechle, 2007). This procedure was performed using *xtscc* syntax in STATA.

### **4.7 Goodness-of-fit**

STATA 12 provides a specific command to identify the goodness-of-fit of a mediated regression model, namely the *estat gof* syntax. As with the structural equation model (SEM), the goodness-of-fit in this case (mediated regression model) is a measure of how

well the observed moments are fit, which is the covariance between all pairs of relationship. Goodness-of-fit statistics are of far less interest when all variables in the model are observed (StataCorp, 2012). However, the reported goodness-of-fit results can be overly influenced by sample size, correlations, variance unrelated to the model and multivariate non-normality (Kline 2011).

Based on the reported results, under the likelihood ratio, *estat gof* provides results of two tests. The first is the  $X^2$  (model versus saturated) test reported at the bottom of the SEM output. The saturated model is the model that fits the covariance perfectly. It can be said that the null hypothesis can be rejected at the 5% level (or any other level) and hence it can be concluded that the model fits as well as the saturated model. The second test is a baseline versus saturated comparison. The baseline model includes the mean and variances of all observed variables plus the covariance of all observed exogenous variables. It can be said that the null hypothesis can be rejected at the 5% level (or any other level) and thus it can be concluded that the baseline model fits as well as the saturated model.

Under population error, the RMSEA value reported along with the lower and upper bounds of its 90% confidence interval. Most interpreters would check whether the lower bound is below 0.05 or the upper bound is above 0.10. If the lower bound is below 0.05, then it can be said that the hypothesis is not rejected and it can be concluded that the fit is close. If the upper bound is above 0.10, the hypothesis would not be rejected and it can be concluded that the fit is poor. The logic is to perform one test on each end of the 90% confidence interval and thus have 95% confidence in the result. *Pclose*, a commonly used word in reference to this test, is the probability that the RMSEA value is less than 0.05, and interpreted as the probability that the predicted moments are close to the moments in the population.

Under the information criteria, reported AIC and BIC contains little information by themselves, but are often used to compare models, when smaller values are considered better. Under the baseline comparison, reported CFI and TLI are indices that a value close to 1 (one) indicates a good fit. TLI is also known as the non-normed fit index.

Under size of residual, the results of standardized root mean squared residual (SRMR) and the coefficient of determination (CD) are reported. A perfect fit corresponds to an SRMR of 0 (zero) and a good fit corresponds to a “small” value, considered by some to be limited to 0.08. The CD is like an  $R^2$  for the whole model. A value close to 1 (one) indicates a good fit.

#### **4.8 Summary**

This chapter discusses the research method applied in this thesis. In order to meet the objectives of this thesis, accounting data and corporate governance data were retrieved from *Datastream* and firms’ annual reports. A sample of 100 firms has been selected from a population of 834 firms listed on the Main Market of *Bursa Malaysia* using random sampling method. This thesis adopted three constructs of earnings quality; accruals quality (DAC & DDA), predictability (PRE) and conservatism (CON), from which, four mediated regression models were developed to determine the relationships between dependent variables and several numbers of independent variables and the effects of mediating variables on the relationships. Corporate governance structures, firm value and information risk were the main focus beside firm-specific characteristics as the control variables. Good corporate governance structures include the attributes of the audit committee, board of directors, board committee, ownership structure and reporting initiatives. Information risk, on the other hand, was manifested by the constructs of earnings quality. Firm value is determined using Tobin’s Q (FV). Diagnostic tests on the data in respect to normality, outliers and multicollinearity were also being run. In addition, specific diagnostic test for panel data were executed to observe the problems of contemporaneous correlation, heteroskedasticity and autocorrelation. Several remedies have been undertaken to encounter the problems, including generating robust standard errors for the model with the identified problems. Causal-steps approach and Sobel Test were employed to test the significance of mediation effects on the main relationship. Bootstrapping method was employed to resample the non-normal data in order to gain a better accuracy of the results. Next, the results of the regression models and their implications will be presented and discussed further in Chapter 5.

## **Chapter 5**

# **RESULTS AND EMPIRICAL FINDINGS**

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### **5.1 Introduction**

This chapter reports the results of the statistical tests and findings based on the design highlighted in the previous chapter. The sections in this chapter are organised as follows: Section 5.2 presents the descriptive statistics of all variables employed for the mediation models examined in this study. Section 5.3 reports the findings which correspond with the focused issues of this study. Finally, Section 5.4 summarises the overall findings.

### **5.2 Descriptive Statistics**

Tables 5.1 to 5.4 report the descriptive statistics of the 471 firm-year observations. The analysis is classified into four broad categories of variables employed for this study, namely: (1) firm value measures; (2) corporate governance mechanisms; (3) earnings quality measures; and (4) firm-specific factors.

#### **5.2.1 Firm Value Measure**

Table 5-1 provides the summary of descriptive statistics for firm value measure employed for this study, i.e. Tobin's Q (FV). In general, a good score for each of the measures represents a better capital market appreciation on an individual firm resulting from a reliable signal of good financial performance. As has been stated by Gaio and Raposo (2011) and for this thesis, firm value is believed to be inferred from how the market participants determine the cost of capital, where a lower cost of capital indicates a better value of firm.

Out of the total 471 observations, it can be seen that FV for all years is averaged at 0.807; with the highest value, lowest value and standard deviation of 3.633, 0.204 and 0.525 respectively (Panel A of Table 5-4). During the six calendar years, out of the 79 firm-year observations, the highest mean value of FV is found in 2004, with a maximum value of 2.926, minimum value of 0.241 and standard deviation of 0.502 (Panel B of Table 5-4). The lowest average value of FV is 0.674 that is found in 2008 (Panel F of Table 5-4). The maximum value of FV in 2008 is 2.554 and the minimum is 0.249. The standard deviation for the 76 observations of FV in 2008 is 0.419.

**Table 5-1 Descriptive Statistics for Firm Value Measure**

|           | <b>Mean</b> | <b>Std. Dev.</b> | <b>Min</b> | <b>Max</b> | <b>N</b> |
|-----------|-------------|------------------|------------|------------|----------|
| <i>FV</i> | 0.807       | 0.525            | 0.204      | 3.633      | 471      |

**Legend:** *FV* = firm value measured by Tobin's Q

### 5.2.2 Good Corporate Governance Mechanisms Index

Table 5-2 provides the descriptive statistics of rank index for good structure of five corporate governance mechanisms, i.e. board of directors (BD), board committees (BC), risk management (RM), ownership (OW) and audit committee (AC). Following Khanchel (2007), for each of the governance mechanisms, a higher index value shows a better structure that can possibly lead to better governance mechanisms effectiveness.

The BD value for the 471 pooled data shows an average of 0.496, with a maximum value of 0.812 and a minimum of 0.100. The standard deviation for the data is 0.155. Among all the calendar years, the highest mean value for BD is found in 2007 and 2009, where both years share a mean of 0.518. In 2007, for a group of 82 observations, the maximum BD value is 0.812 and minimum is 0.180 with a standard deviation of 0.157. Meanwhile in 2009, for the 76 observations, the maximum value is 0.812 and the minimum is 0.100 with a standard deviation of 0.167. The lowest BD mean for all years is observed in 2005 at a value of 0.470. The maximum value of the 76 observations in 2005 is 0.812 and the minimum is 0.180. Apparently, firms' commitment to improve the structure of board of directors has increased since the first revision of MCCG undertaken in 2007, which highlighted on the proper establishment of board of directors, as the duty and responsibility grant to them is expanding, yet the overall commitment of BD does not show any good signal for the market.

Regarding the BC value, for the 471 pooled data, the mean value is 0.496. Across all observations for the six year period, the standard deviation is 0.150 with the highest value reaching 0.893 and the lowest is 0.160. By individual year, the highest mean value of BC is found in 2009, i.e. the average for 76 observations during the year is 0.509, with the maximum (minimum) of 0.893 (0.160) and standard deviation of 0.172. Meanwhile, the lowest mean is found in 2004, where the average value for 79 observations is 0.482, and maximum and minimum value is 0.763 and 0.160 respectively. Standard deviation of BC



value in 2004 is 0.147. The findings show a gradual improvement in BC value of firms from 2004 to 2009 which signifies the establishment of good structure of board committees, particularly for the integrity and transparency of remuneration and nomination committee become a concern of listed firms in recent years.

As indicated in Panel A of Table 5-2, the mean value for pooled data of RM is 0.502, where the highest among all observations is 0.678 and the lowest is 0.178, and standard deviation is 0.118. Across all individual years, the highest mean is found in 2005 (0.512); where the maximum value for that year is 0.678, minimum is 0.345 and standard deviation is 0.115. The smallest mean value of RM is observed in 2007, where the RM value is averaged at 0.495 for that year. The maximum value in 2007 is 0.678, minimum is 0.178 and standard deviation is 0.125. Based on the premise documented by Spira and Page (2003) that the risk management role embedded within corporate governance structure is indeed attributed to internal control and internal audit functions, the encouragement to establish a specific task-force on risk management (the risk management committee) in recent years does not promise adequate signal of the whole good risk management effort to the market.

With respect to OW, the mean value for pooled data is 0.498 with a standard deviation of 0.201 for 471 observations. The maximum value and minimum value are stated as 0.951 and 0.021 respectively. Meanwhile, across individual years, the highest mean observed is in 2004, with a standard deviation of 0.210 and maximum (minimum) value of 0.907 (0.094). The lowest mean value of OW is found in 2009, stated at 0.483 with a standard deviation of 0.193. The maximum and minimum value of OW for that year is 0.908 and 0.073 respectively.

The average of AC for the 471 pooled data shows a value of 0.492, with a standard deviation of 0.128, maximum value of 0.839 and minimum value of 0.072. For individual calendar year, the mean value of 0.536 stated in 2009 is the highest among all. The maximum value and minimum of AC for that year is found to be 0.839 and 0.281 respectively, with a standard deviation of 0.127. The mean value of 0.451 in 2005 is considered to be the lowest across all the six individual years. A maximum of 0.822 is reached during that year, and a minimum of 0.258 is recorded. The standard deviation of AC for the 76 observations in 2005 is 0.117. Apparently, there is a gradual increase of

AC value from 2004 to 2009, which signifies continuous commitment of firms to fulfil the recommendations on proper establishment of audit committee as provided by the authorities, i.e. the Securities Commission and Bursa Malaysia.

**Table 5-2 Descriptive Statistics for Good Corporate Governance Mechanisms Index**

|           | <b>Mean</b> | <b>Std. Dev.</b> | <b>Min</b> | <b>Max</b> | <b>N</b> |
|-----------|-------------|------------------|------------|------------|----------|
| <i>BD</i> | 0.496       | 0.155            | 0.100      | 0.812      | 471      |
| <i>BC</i> | 0.496       | 0.150            | 0.160      | 0.893      | 471      |
| <i>RM</i> | 0.502       | 0.118            | 0.178      | 0.678      | 471      |
| <i>OW</i> | 0.498       | 0.201            | 0.021      | 0.951      | 471      |
| <i>AC</i> | 0.492       | 0.128            | 0.072      | 0.839      | 471      |

**Legend:** *BD* = rank index measure of good structure of board of directors, *BC* = rank index measure of good structure of board committees, *RM* = rank index measure of good structure of risk management mechanisms, *OW* = rank index measure of good ownership structure, and *AC* = rank index measure of good structure of audit committee.

### 5.2.3 Earnings Quality Measures

Table 5-3 provides the descriptive statistics for four measures of earnings quality employed in this study. Earnings quality is defined in this thesis as a manifestation of information risk which is a type of firm-specific non-diversifiable risk which is a function of individual firm cost of capital. Three measures of earnings quality are employed in this thesis to capture different attributes of reported earnings, i.e. accruals quality (DDA), predictability (PRE) and conservatism (CON). Accruals quality represents the level of abnormal accrual component of a reported earnings figure, where a higher value of DDA indicates a lower accruals quality for the content of abnormal accrual is high. Predictability is defined as the ability of current reported earnings figure to predict the future earnings, a higher value of PRE signifies higher residual which is derived from current and previous earnings regression, and thus it indicates a lower predictability power. Conservatism, on the other hand, is referred to as the ability of the reported earnings to recognise bad news in a timely manner; where a lower value of CON measured implies highly conservative earnings, which means that they are able to recognise bad news in a timely manner.

With respect to DDA, accruals quality is measured based on discretionary accruals model developed by Dechow, Patricia M. and Dichev (2002). As observed in Panel A of Table

5-6, the mean value of DDA for all the 471 observations is estimated at 0.089. The maximum value is 1.816 and the minimum is -1.452 of the pooled data, with a standard deviation of 0.378. Based on individual year statistic, it is found that the highest mean for DDA is 0.175 which is in 2004. The maximum DDA for that year is 1.816 and the minimum is -1.014, with a standard deviation of 0.367. The lowest mean is found in 2009, where the average value is -0.035. The maximum value, minimum value and standard deviation for that year are respectively 1.703, -0.837 and 0.338.

For PRE, the mean value of PRE for the 471 pooled data across the six-year period is 0.004 and the standard deviation is 0.888. The maximum value and minimum value across all observations is found to be 1.962 and -2.024 respectively. Among all individual calendar years, the highest mean (0.238) and the lowest mean (-.258) is observed in year 2007 and 2005 respectively. In 2007, the maximum (minimum) value is 1.892 (-1.672) and standard deviation is 0.928. Whereas in 2005, the maximum (minimum) value is 1.552 (-1.902) and the standard deviation is 0.844.

With regards to CON, the mean value of CON for pooled data is -0.034, with a maximum (minimum) value of 0.148 (-0.220) and standard deviation of 0.046. Among all individual years, the highest mean is found in 2009, where the CON average value is -0.024, with a maximum (minimum) value of 0.109 (-0.151) and standard deviation of 0.043. Meanwhile, the lowest mean among all individual years is in 2005, where the mean value is -0.040 with maximum (minimum) value of 0.037 (-0.204) and standard deviation of 0.040).

**Table 5-3 Descriptive Statistics for Earnings Quality Measures**

|            | <b>Mean</b> | <b>Std. Dev.</b> | <b>Min</b> | <b>Max</b> | <b>N</b> |
|------------|-------------|------------------|------------|------------|----------|
| <i>DDA</i> | 0.089       | 0.378            | 1.452      | 1.816      | 471      |
| <i>PRE</i> | 0.004       | 0.888            | -2.024     | 1.962      | 471      |
| <i>CON</i> | -0.034      | 0.046            | -0.220     | 0.148      | 471      |

**Legend:** *DDA* = accruals quality measured as discretionary accruals based on Dechow, Patricia M. and Dichev (2002) (DD Model), *PRE* = predictability, and *CON* = conservatism.

#### 5.2.4 Firm-specific Variables

Five characteristics of firms are employed as the control variables. Table 5-4 presents the descriptive statistics for each of the variables.

**Table 5-4 Descriptive Statistics for Firm-specific Variables**

|           | Mean   | Std. Dev. | Min    | Max   | N   |
|-----------|--------|-----------|--------|-------|-----|
| <i>GW</i> | 0.094  | 0.246     | -0.596 | 1.131 | 471 |
| <i>SZ</i> | 5.396  | 0.445     | 4.465  | 6.955 | 471 |
| <i>LV</i> | 0.195  | 0.158     | 0.000  | 0.776 | 471 |
| <i>CF</i> | -0.012 | 0.076     | -0.278 | 0.393 | 471 |
| <i>EP</i> | 0.131  | 0.162     | -0.587 | 0.744 | 471 |

**Legend:** *GW* = firm growth (sales growth), *SZ* = firm size (natural logarithm of firm total assets), *LV* = firm leverage (debt to equity ratio), *CF* = firm financing needs (cash flow from financing), and *EP* = firm's earnings to share price tied-up (earnings to share price ratio)

### **5.3 Empirical Results: Mediated Regression Models**

At this stage, four major groups of mediated regression models have been run to test a group of hypotheses outlined in Chapter 3. Each group represents four different firm value outcomes which can possibly be explained by the direct and indirect influence of five groups of corporate governance mechanisms and the mediators, i.e. the earnings attributes. These groups of models are categorised based on four different firm value measures (FV), i.e. (1) firm value measured as Tobin's Q (FV) and (2) firm value measured as return on assets (ROA).

For all the models, the focus is to investigate the following relationships: (1) direct relationship between the corporate governance mechanisms and the attributes of earnings; (2) direct relationship between the earnings attributes and firm value outcomes; (3) direct relationship between the corporate governance mechanisms and firm value outcomes; and (4) indirect relationship between the corporate governance mechanisms and firm value outcomes mediated by the attributes of earnings quality. The analyses for each relationship are made for 471 firm-year pooled observations.

#### **5.3.1 Corporate Governance Mechanisms, Earnings Quality and Firm Value**

Four sets of regression models representing the effects of four measures of earnings quality and corporate governance were employed to test the hypotheses of this study. Firstly, the regression model using accruals quality measures (DDA) is explained, followed by conservatism (CON) and predictability (PRE). Table 5-5 summarises the results of the four regression models, offered in three columns representing the distinguishable effects of DDA, PRE and CON.

The research question of this thesis is mainly concerned with the existence and relative importance of direct and mediated paths between a set of corporate governance (CG) mechanisms and firm value. A set of three equations presented below is employed to examine the mediated relationship between corporate governance and firm value without the inclusion of any control variable, where Equation (5-1) determines the total effects of corporate governance mechanisms on firm value, Equation (5-2) is used to estimate the direct effect of corporate governance mechanisms on earnings quality and Equation (5-3)

is used to estimate the direct effects of corporate governance mechanisms on firm value in considering the effect of earnings quality as the mediator.

$$FV = i_1 + c_1AC + c_2BD + c_3BC + c_4RM + c_5OW + e_1 \quad (5-1)$$

$$EQ = i_2 + a_1AC + a_2BD + a_3BC + a_4RM + a_5OW + e_2 \quad (5-2)$$

$$FV = i_3 + c'_1AC + c'_2BD + c'_3BC + c'_4RM + c'_5OW + b_1EQ + e_3 \quad (5-3)$$

Where FV is a general symbol that denotes firm value which represents two different firm value measures employed in this thesis, i.e. firm value measured as Tobin's Q (FV) and return on assets (ROA); AC is the rank index for good audit committee structure; BD is the rank index for good board of directors structure; RM is the rank index for good risk management mechanisms structure; OW is the rank index for good ownership structure; and EQ denotes an earnings quality general symbol which is used to represent three different attributes of earnings quality, i.e. the level of accruals quality derived using DD Model (DDA), predictability (PRE) and conservatism (CON). Parameter c relates to the CG mechanisms and FV in Equation (5-1); in Equation (5-2), parameter a denotes the coefficient of the relationships between CG mechanisms and the attributes of EQ; in Equation (5-3), parameter c' is the parameter relating CG mechanisms to FV adjusted for the EQ attributes and parameter b is the parameter relating one particular attribute of EQ to the FV adjusted for CG mechanisms; e represents error variability; and, i is the intercept.

#### ***Direct and Mediated Firm Value Effects of Corporate Governance Mechanisms***

Table 5-5 presents the results of a path analysis with five (5) mechanisms of corporate governance, i.e. AC, BD, BC, RM and OW as source variables and firm value as measured by Tobin's Q as dependent variable. Panel A, B and C present the results for the three different mediators, the earnings quality attributes, DDA, PRE and CON respectively.

The results presented in Panel A of Table 5-5, using accruals quality as a mediated variable, starting with the path coefficient  $c[CG, FV]$  between CG mechanisms and FV representing the total effect of CG mechanisms on FV in the absence of any mediation effect. The coefficients for BD, BC, RM and OW are about 0.60, 0.41, 0.35 and 0.32, statistically significant at least at 90% confidence level, although the coefficient for total effect of AC on FV is found to be insignificant.

The direct and mediated effects decomposed these relationships into the portion attributable to the direct link between each of the corporate governance mechanisms and market-based firm value and the indirect link, mediated by accruals quality. The coefficient  $p[CG, FV]$  is the direct path coefficient; the ratio of this path coefficient to the total effect coefficient (labelled as percentage in the table) is the portion of the total effects of corporate governance mechanisms and firm value that is attributable to the direct effects. In the same manner,  $a[CG, DDA]$  and  $b[DDA, FV]$  are the path coefficients between corporate governance mechanisms and accruals quality and between accruals quality and firm value respectively. The mediated path is the product of  $a[CG, DDA]$  and  $b[DDA, FV]$ . The ratio of the mediated path to the total effect (labelled as percentage in the table) captures the portion of the total effects of corporate governance mechanisms on firm value that is attributable to the mediated effects.

The results presented in Panel A of Table 5-5, using DDA as a mediating variable shows that no DDA mediation effects is found to be significant in the relationships between each of the CG mechanisms and FV except for RM and AC, which is significant with a coefficient of total mediated effect of 0.0848. The direct effect of RM on FV is enhanced by 24% from the total effect upon a consideration made for the mediation effect of DDA. DDA's mediation effect dominates the direct effects between AC and FV as 51% of the total effect of AC on FV is attributable to the indirect effect (total mediated coefficient of 0.0589) which is significant at 90% confidence level. Insignificant mediation effect is found for BD, BC and OW: the total effect of AC on FV is 98% attributable to a direct effect of AC on FV and only 2% attributable to the mediated effect. Similarly, the total effect of BC on FV is 98% attributable to a direct effect of BD on FV and only 2% attributable to the mediated effect; the total effect OW; and the total effect of OW on FV

is 96% attributable to a direct effect of OW on FV and only 4% attributable to the mediated effect.

The results presented in Panel B of Table 5-5, using PRE as a mediating variable, suggest that PRE does not have any significant mediation effect on the relationships of any of the mechanisms of corporate governance and market based value of firm. Thus, the direct effect fully dominates the total corporate governance mechanisms effects on firm value when PRE is taken as the mediator.

The results presented in Panel C of Table 5-5, using CON as a mediating variable, reveal that CON has significant mediation effects on the relationships between BD, BC and firm value measured as FV, though insignificant in respect of the relationship between firm value (FV) and other CG mechanisms (AC, RM and OW). The total effects of BD is 86% attributable to a direct effect and 14% attributable to the mediated effect (the coefficient of total mediation effect is 0.0840 and significant at 95% confidence level); and the total effect of BC is 83% attributable to a direct effect and 17% attributable to the mediated effect (the coefficient of total mediation effect is 0.0711 and significant at 90% confidence level).



**Table 5-5 Direct and Mediated Firm Value Effects of Corporate Governance Mechanisms**

**Panel A: Earnings Quality Measured as Accruals Quality**

|                      | Corporate Governance Mechanisms |                 |                   |              |                   |              |                   |              |                   |              |
|----------------------|---------------------------------|-----------------|-------------------|--------------|-------------------|--------------|-------------------|--------------|-------------------|--------------|
|                      | AC                              |                 | BD                |              | BC                |              | RM                |              | OW                |              |
|                      | Coef.                           | t-stat.         | Coef.             | t-stat.      | Coef.             | t-stat.      | Coef.             | t-stat.      | Coef.             | t-stat.      |
| <b>Total Effect</b>  |                                 |                 |                   |              |                   |              |                   |              |                   |              |
| <i>r</i> [CG, FV]    | 0.1161                          | 0.63            | <b>0.5991***</b>  | <b>3.76</b>  | <b>0.4100**</b>   | <b>2.32</b>  | <b>0.3485*</b>    | <b>1.73</b>  | <b>0.3178***</b>  | <b>2.68</b>  |
| <b>Direct Path</b>   |                                 |                 |                   |              |                   |              |                   |              |                   |              |
| <i>p</i> [CG, FV]    | 0.0572                          | 0.31            | <b>0.5861***</b>  | <b>3.70</b>  | <b>0.4002**</b>   | <b>2.28</b>  | <b>0.2637**</b>   | <b>2.14</b>  | <b>0.3046***</b>  | <b>2.59</b>  |
| <i>percentage</i>    | 49.27%                          |                 | 97.83%            |              | 97.61%            |              | 75.67%            |              | 95.85%            |              |
| <b>Mediated Path</b> |                                 |                 |                   |              |                   |              |                   |              |                   |              |
| <i>p</i> [CG, DDA]   | <b>-0.2745</b>                  | <b>-2.57***</b> | -0.0604           | -0.65        | -0.0460           | -0.45        | <b>-0.3951***</b> | <b>-3.37</b> | -0.0614           | -0.89        |
| <i>p</i> [DDA, FV]   | <b>-0.2147</b>                  | <b>2.73***</b>  | <b>-0.2147***</b> | <b>-2.73</b> | <b>-0.2147***</b> | <b>-2.73</b> | <b>-0.2147***</b> | <b>-2.73</b> | <b>-0.2147***</b> | <b>-2.73</b> |
| Total Mediated Path  | <b>0.0589</b>                   | <b>1.87*</b>    | 0.0130            | 0.63         | 0.0099            | 0.44         | <b>0.0848**</b>   | <b>2.12</b>  | 0.0132            | 0.85         |
| <i>percentage</i>    | 50.73%                          |                 | 2.17%             |              | 2.41%             |              | 24.33%            |              | 4.15%             |              |

Table 5-5 *continued*

## Panel B: Earnings Quality Measured as Predictability

|                      | Corporate Governance Mechanisms |         |           |         |          |         |         |         |           |         |
|----------------------|---------------------------------|---------|-----------|---------|----------|---------|---------|---------|-----------|---------|
|                      | AC                              |         | BD        |         | BC       |         | RM      |         | OW        |         |
|                      | Coef.                           | t-stat. | Coef.     | t-stat. | Coef.    | t-stat. | Coef.   | t-stat. | Coef.     | t-stat. |
| <b>Total Effect</b>  |                                 |         |           |         |          |         |         |         |           |         |
| <i>r</i> [CG, FV]    | 0.1161                          | 0.63    | 0.5991*** | 3.76    | 0.4100** | 2.32    | 0.3485* | 1.73    | 0.3178*** | 2.68    |
| <b>Direct Path</b>   |                                 |         |           |         |          |         |         |         |           |         |
| <i>p</i> [CG, FV]    | 0.1130                          | 0.62    | 0.5957*** | 3.78    | 0.4054** | 2.30    | 0.3418* | 1.76    | 0.3156*** | 2.70    |
| <i>percentage</i>    | 97.33%                          |         | 99.43%    |         | 98.88%   |         | 98.08%  |         | 99.31%    |         |
| <b>Mediated Path</b> |                                 |         |           |         |          |         |         |         |           |         |
| <i>p</i> [CG, PRE]   | -0.0594                         | -0.32   | -0.0659   | -0.41   | -0.0882  | -0.49   | -0.1284 | -0.63   | -0.0424   | -0.35   |
| <i>p</i> [PRE, FV]   | -0.0523                         | -1.15   | -0.0523   | -1.15   | -0.0523  | -1.15   | -0.0523 | -1.15   | -0.0523   | -1.15   |
| Total Mediated Path  | 0.0031                          | 0.31    | 0.0034    | 0.38    | 0.0046   | 0.45    | 0.0067  | 0.55    | 0.0022    | 0.34    |
| <i>percentage</i>    | 2.67%                           |         | 0.57%     |         | 1.12%    |         | 1.92%   |         | 0.69%     |         |

Table 5-5 *continued***Panel C: Earnings Quality Measured as Conservatism**

|                      | <b>Corporate Governance Mechanisms</b> |             |                  |             |                  |             |                  |             |                  |             |
|----------------------|----------------------------------------|-------------|------------------|-------------|------------------|-------------|------------------|-------------|------------------|-------------|
|                      | <b>AC</b>                              |             | <b>BD</b>        |             | <b>BC</b>        |             | <b>RM</b>        |             | <b>OW</b>        |             |
|                      | Coef.                                  | t-stat.     | Coef.            | t-stat.     | Coef.            | t-stat.     | Coef.            | t-stat.     | Coef.            | t-stat.     |
| <b>Total Effect</b>  |                                        |             |                  |             |                  |             |                  |             |                  |             |
| <i>r</i> [CG, FV]    | 0.1161                                 | 0.63        | <b>0.5991***</b> | <b>3.76</b> | <b>0.4100**</b>  | <b>2.32</b> | <b>0.3485*</b>   | <b>1.73</b> | <b>0.3178***</b> | <b>2.68</b> |
| <b>Direct Path</b>   |                                        |             |                  |             |                  |             |                  |             |                  |             |
| <i>p</i> [CG, FV]    | 0.0743                                 | 0.42        | <b>0.5151***</b> | <b>3.29</b> | <b>0.3389**</b>  | <b>1.96</b> | <b>0.2982*</b>   | <b>1.52</b> | <b>0.2919***</b> | <b>2.97</b> |
| <i>percentage</i>    | 64.00%                                 |             | 85.98%           |             | 82.66%           |             | 85.57%           |             | 91.85%           |             |
| <b>Mediated Path</b> |                                        |             |                  |             |                  |             |                  |             |                  |             |
| <i>p</i> [CG, CON]   | 0.0171                                 | 1.03        | <b>0.0343**</b>  | <b>2.39</b> | <b>0.0291*</b>   | <b>1.82</b> | 0.0206           | 1.13        | 0.0106           | 0.99        |
| <i>p</i> [CON, FV]   | <b>2.4463***</b>                       | <b>4.91</b> | <b>2.4463***</b> | <b>4.91</b> | <b>2.4463***</b> | <b>4.91</b> | <b>2.4463***</b> | <b>4.91</b> | <b>2.4463***</b> | <b>4.91</b> |
| Total Mediated Path  | 0.0418                                 | 1.01        | <b>0.0840**</b>  | <b>2.15</b> | <b>0.0711*</b>   | <b>1.71</b> | 0.0503           | 1.10        | 0.0259           | 0.97        |
| <i>percentage</i>    | 36.00%                                 |             | 14.02%           |             | 17.34%           |             | 14.43%           |             | 8.15%            |             |

The table presents the path analyses of the links between corporate governance mechanisms (AC, BD, BC, RM and OW), a direct link and a link mediated by earnings quality (DDA, PRE and CON). Parameter *r* and *p* respectively indicate the coefficients of total effect and direct effect; and \*\*\*, \*\* and \* respectively indicates statistical significance at the 0.01, 0.05 and 0.10 confidence levels. Variables definitions: FV = firm value as measured by Tobin's Q; DDA = accruals quality; PRE = predictability; CON = conservatisms; AC = rank index of good audit committee structure; BD = rank index of good board of directors structure; BC = rank index of good board committees structure; RM = rank index of good risk management mechanisms structure; OW = rank index of good ownership structure; and CG = general symbol of corporate governance mechanisms.

### 5.3.2 Corporate Governance Mechanisms, Earnings Quality and Firm Value: Three-Factor Regime

The results presented in the previous section do not incorporate control for other factor known to affect the firm value. As the research question of this thesis is also concerned with the influence of firm-specific factors on the existence and relative importance of direct and mediated paths between a set of corporate CG mechanisms and firm value, firm-specific factors is added to the model in order to estimate its relative importance. A set of three equations presented below is employed to examine the mediated relationship between corporate governance and firm value with the inclusion of three firm-specific control variables which are known to have influence on firm value, i.e. firm size (SZ), firm leverage (LV) and firm growth (GW). Equation (5-4) determines the total effects of corporate governance mechanisms on firm value, Equation (5-5) is used to estimate the direct effect of corporate governance mechanisms on earnings quality and Equation (5-6) is used to estimate the direct effects of corporate governance mechanisms on firm value in considering the effect of earnings quality as the mediator.

$$FV = i_1 + c_1AC + c_2BD + c_3BC + c_4RM + c_5OW + c_6SZ + c_7LV + c_8GW + e_1 \quad (5-4)$$

$$EQ = i_2 + a_1AC + a_2BD + a_3BC + a_4RM + a_5OW + e_2 \quad (5-5)$$

$$FV = i_3 + c'_1AC + c'_2BD + c'_3BC + c'_4RM + c'_5OW + c_6SZ + c_7LV + c_8GW + b_1EQ + e_3 \quad (5-6)$$

As in Equations (5-1), (5-2) and (5-3), FV stated in the above equations is a general symbol that denotes firm value which represents two different firm value measures employed in this thesis, i.e. firm value measured as Tobin's Q (FV) and return on assets (ROA); AC is the rank index for good audit committee structure; BD is the rank index for good board of directors structure; RM is the rank index for good risk management mechanisms structure; OW is the rank index for good ownership structure; EQ denotes an earnings quality general symbol which is used to represent three different attributes of

earnings quality, i.e. the level of accruals quality derived using DD Model (DDA), predictability (PRE) and conservatism (CON); SZ is firm size measured as natural logarithm of firm total assets; LV is firm leverage measured as firms debt to equity ratio; and GW is firm growth measured as firm sales growth.

***Direct and Mediated Firm Value Effects of Corporate Governance Mechanisms and Three-factor Regime***

Table 5-6 repeats the analyses of the results reported in Table 5-5, and presents the results of a path analysis with five (5) CG mechanisms, i.e. AC, BD, BC, RM and OW as source variables and FV as a dependent variable and includes SZ, LV and GW that is postulated to have a direct path to FV and hence act as the control variables in the regression. Panel A, B and C present the results for three different mediators, the earnings quality attributes, representing DDA, PRE and CON respectively.

The results presented in Panel A of Table 5-6, using accruals quality as a mediated variable, starting with the path coefficient  $c[CG, FV]$  that relates CG mechanisms and FV representing the total effects of CG mechanisms on FV in the absence of mediation effect. The coefficients for BD, BC and RM are respectively 0.5393, 0.41, 0.3742 and 0.3344, which are statistically significant at least at 90% confidence level. Yet, the coefficient for total effect of AC and OW on FV is found to be insignificant.

In relation to Panel A of Table 5-5, the direct and mediated effects shown in Table 5-6 (Panel A) decomposed the total effects into the portion attributable to the direct link between each of the CG mechanisms and FV and the indirect link, mediated by DDA. The coefficient  $c'[CG, FV]$  is the direct path coefficient; the ratio of this path coefficient to the total effect coefficient (labelled as percentage in the table) is the portion of the total effects of CG mechanisms and FV that is attributable to the direct effects. Similarly,  $a[CG, DDA]$  and  $b[DDA, FV]$  are the path coefficients between CG mechanisms and DDA and between DDA and FV respectively. The mediated path is the product of  $a[CG, DDA]$  and  $b[DDA, FV]$ . The ratio of the mediated path to the total effect (labelled as percentage in the table) captures the portion of the total effects of corporate governance mechanisms on firm value that is attributable to the mediated effects. The decomposition of total effects of CG mechanisms on FV is also applicable to Panel B and Panel C of Table 5-6, corresponding to the respective mediators.

Further, the results in Panel A of Table 5-6, using DDA as a mediating variable show that no significant mediation effects is found except for the relationship between RM and FV. The total mediation effect enhances 18.54% of the total effects of RM on FV with a coefficient of 0.062 which is statistically significant at 90% confidence level. A highly statistically significant coefficient of 0.3951 (significant at 99% confidence interval) effect of RM on DDA contributes the most to the total mediated path in the RM-DDA-FV causal relationship. Regarding the direct effects of control variables on FV. Both LV and GW coefficients (0.4992 and 0.1930 respectively) are significant at least at 95% confidence level, though SZ has insignificant relationship with FV in this case.

The results presented in Panel B of Table 5-6, using PRE as a mediating variable, indicate that the coefficients for total effects of BD, BC and RM on FV (0.5365, 0.3771 and 0.3644 respectively) are significant at least at 90% confidence level, while other mechanisms have no significant relationship with FV. The results also suggest that PRE does not have any significant mediation effect on the relationships of any of the CG mechanisms and FV. Analogous to the results in Panel B of Table 5-5, in this situation (with a consideration made for control variables), the direct effect also fully dominates the total CG mechanisms effects on FV when PRE is taken to be the mediator. The direct effects of the control variables are consistent with that in previous literature, where all three controls (SZ, LV and GW) have significant effects on FV at least at 95% significance level.

The results shown in Panel C of Table 5-6, using CON as a mediating variable and SZ, LV and GW as control variables reveal that the mediation effect of CON is only significant in the relationships between BD and FV, and BC and FV. The total effect of RM on FV is significant (with a coefficient of 0.3647); with no mediation effect is being observed, i.e. the relationship between RM and FV does not have to be mediated through CON as a mediator. Total effects of AC on FV and OW on FV are both insignificant. Significant direct effects of SZ and LV on FV are consistent with the literature, which indicate the influence of firm size and capital structure on firm valuation by the market, yet GW has no significant influence on FV in all situations.

Furthermore, total effect of BD on FV,  $c[BD, FV]$ , is 0.5361 which is highly statistically significant at 99% level. A portion of 85% of total effect is dominated by direct effect,

$c'[\text{BD}, \text{FV}]$ , which is estimated to be highly statistically significant (99% confidence level) with a coefficient of 0.4549; and 15% is attributable to mediated effect (a highly statistically significant coefficient of 0.0812). Total mediated effect is a product coefficient of a direct effect of BD on CON,  $a[\text{BD}, \text{CON}]$  and a direct effect of CON on FV,  $b[\text{CON}, \text{FV}]$ , estimated to be 0.0343 and 2.3665 respectively, where both are significant at least at 95% confidence level.

Total effects of BC on FV,  $c[\text{BC}, \text{FV}]$ , is 0.3750 which is statistically significant at 95% confidence level. The total effect is 81% attributable to direct effect of BC on FV,  $c'[\text{BC}, \text{FV}]$  with a significant estimated coefficient of 0.3017 (remain significant at 91% confidence level), and 19% is attributable to the mediated effect that is significant at 90% confidence level (the coefficient for total mediated effect is 0.00688). Total mediated coefficient is a product of coefficient of a direct effect of BC on CON,  $a[\text{BC}, \text{CON}]$ , which is estimated to be 0.0291 (significant at 90% level), and a direct effect of CON on FV,  $b[\text{CON}, \text{FV}]$ , which is estimated to be 2.3665 (highly statistically significant at 99% confidence level).

**Table 5-6 Direct and Mediated Firm Value Effects of Corporate Governance Mechanisms – Three-Factor Regime**

**Panel A: Earnings Quality Measured as Accruals Quality**

|                                           | Corporate Governance Mechanisms |              |                   |              |                   |              |                   |              |                   |              |
|-------------------------------------------|---------------------------------|--------------|-------------------|--------------|-------------------|--------------|-------------------|--------------|-------------------|--------------|
|                                           | AC                              |              | BD                |              | BC                |              | RM                |              | OW                |              |
|                                           | Coef.                           | t-stat.      | Coef.             | t-stat.      | Coef.             | t-stat.      | Coef.             | t-stat.      | Coef.             | t-stat.      |
| <b>Total Effect</b><br><i>r[CG, FV]</i>   | 0.1414                          | 0.78         | <b>0.5393***</b>  | <b>3.43</b>  | <b>0.3742**</b>   | <b>2.15</b>  | <b>0.3344*</b>    | <b>1.65</b>  | 0.1831            | 1.50         |
| <b>Direct Path</b><br><i>p[CG, FV]</i>    | 0.0983                          | 0.54         | <b>0.5298***</b>  | <b>3.38</b>  | <b>0.3670**</b>   | <b>2.12</b>  | <b>0.2724**</b>   | <b>1.96</b>  | 0.1735            | 1.43         |
| <i>percentage</i>                         | 69.52%                          |              | 98.24%            |              | 98.08%            |              | 81.46%            |              | 94.76%            |              |
| <b>Mediated Path</b><br><i>p[CG, DDA]</i> | <b>-0.2745***</b>               | <b>-2.57</b> | -0.0604           | -0.65        | -0.0460           | -0.45        | <b>-0.3951***</b> | <b>-3.37</b> | -0.0614           | -0.89        |
| <i>p[DDA, FV]</i>                         | <b>-0.1569*</b>                 | <b>-1.79</b> | <b>-0.1569*</b>   | <b>-1.79</b> | <b>-0.1569*</b>   | <b>-1.79</b> | <b>-0.1569*</b>   | <b>-1.79</b> | <b>-0.1569*</b>   | <b>-1.79</b> |
| Total Mediated Path                       | 0.0431                          | 1.47         | 0.0095            | 0.61         | 0.0072            | 0.43         | <b>0.0620*</b>    | <b>1.58</b>  | 0.0096            | 0.80         |
| <i>percentage</i>                         | 30.48%                          |              | 1.76%             |              | 1.92%             |              | 18.54%            |              | 5.24%             |              |
| <b>Direct Path</b><br><i>p[SZ, FV]</i>    | 0.0787                          | 1.34         | 0.0787            | 1.34         | 0.0787            | 1.34         | 0.0787            | 1.34         | 0.0787            | 1.34         |
| <b>Direct Path</b><br><i>p[LV, FV]</i>    | <b>-0.4992***</b>               | <b>-3.27</b> | <b>-0.4992***</b> | <b>-3.27</b> | <b>-0.4992***</b> | <b>-3.27</b> | <b>-0.4992***</b> | <b>-3.27</b> | <b>-0.4992***</b> | <b>-3.27</b> |
| <b>Direct Path</b><br><i>p[GW, FV]</i>    | <b>0.1930**</b>                 | <b>2.05</b>  | <b>0.1930**</b>   | <b>2.05</b>  | <b>0.1930**</b>   | <b>2.05</b>  | <b>0.1930**</b>   | <b>2.05</b>  | <b>0.1930**</b>   | <b>2.05</b>  |



Table 5-6 continued

## Panel B: Earnings Quality Measured as Predictability

|                                                       | Corporate Governance Mechanisms |         |                     |         |                    |         |                   |         |                  |         |
|-------------------------------------------------------|---------------------------------|---------|---------------------|---------|--------------------|---------|-------------------|---------|------------------|---------|
|                                                       | AC                              |         | BD                  |         | BC                 |         | RM                |         | OW               |         |
|                                                       | Coef.                           | t-stat. | Coef.               | t-stat. | Coef.              | t-stat. | Coef.             | t-stat. | Coef.            | t-stat. |
| <b>Total Effect</b><br><i>r</i> [CG, FV]              | 0.1308                          | 0.72    | 0.5365***           | 3.41    | 0.3771**           | 2.17    | 0.3644*           | 1.80    | 0.1672           | 1.37    |
| <b>Direct Path</b><br><i>p</i> [CG, FV]<br>percentage | 0.1282<br>98.01%                | 0.71    | 0.5336***<br>99.46% | 3.44    | 0.3732**<br>98.97% | 2.15    | 0.3588*<br>98.46% | 1.83    | 0.1654<br>98.92% | 1.39    |
| <b>Mediated Path</b><br><i>p</i> [CG, PRE]            | -0.0594                         | -0.32   | -0.0659             | -0.41   | -0.0882            | -0.49   | -0.1284           | -0.63   | -0.0424          | -0.35   |
| <i>p</i> [PRE, FV]                                    | -0.0435                         | -0.98   | -0.0435             | -0.98   | -0.0435            | -0.98   | -0.0435           | -0.98   | -0.0435          | -0.98   |
| Total Mediated path                                   | 0.0026                          | 0.30    | 0.0029              | 0.38    | 0.0038             | 0.44    | 0.0056            | 0.53    | 0.0018           | 0.33    |
| percentage                                            | 1.99%                           |         | 0.54%               |         | 1.01%              |         | 1.54%             |         | 1.08%            |         |
| <b>Direct Path</b><br><i>p</i> [SZ, FV]               | 0.1217**                        | 2.28    | 0.1217**            | 2.28    | 0.1217**           | 2.28    | 0.1217**          | 2.28    | 0.1217           | 2.28    |
| <b>Direct Path</b><br><i>p</i> [LV, FV]               | -0.4881***                      | -3.19   | -0.4881***          | -3.19   | -0.4881***         | -3.19   | -0.4881***        | -3.19   | -0.4881***       | -3.19   |
| <b>Direct Path</b><br><i>p</i> [GW, FV]               | 0.2168**                        | 2.33    | 0.2168**            | 2.33    | 0.2168**           | 2.33    | 0.2168**          | 2.33    | 0.2168**         | 2.33    |

Table 5-6 continued

## Panel C: Earnings Quality Measured as Conservatism

|                                                       | Corporate Governance Mechanisms |              |                            |              |                          |              |                          |              |                          |              |
|-------------------------------------------------------|---------------------------------|--------------|----------------------------|--------------|--------------------------|--------------|--------------------------|--------------|--------------------------|--------------|
|                                                       | AC                              |              | BD                         |              | BC                       |              | RM                       |              | OW                       |              |
|                                                       | Coef.                           | t-stat.      | Coef.                      | t-stat.      | Coef.                    | t-stat.      | Coef.                    | t-stat.      | Coef.                    | t-stat.      |
| <b>Total Effect</b><br><i>r</i> [CG, FV]              | 0.1156                          | 0.64         | <b>0.5361***</b>           | <b>3.41</b>  | <b>0.3705***</b>         | <b>2.13</b>  | <b>0.3647*</b>           | <b>1.80</b>  | 0.1705                   | 1.40         |
| <b>Direct Path</b><br><i>p</i> [CG, FV]<br>percentage | 0.0752<br>65.05%                | 0.42         | <b>0.4549***</b><br>84.85% | <b>2.94</b>  | <b>0.3017*</b><br>81.43% | <b>1.77</b>  | <b>0.3161*</b><br>86.67% | <b>1.60</b>  | <b>0.1454*</b><br>85.28% | <b>1.64</b>  |
| <b>Mediated Path</b><br><i>p</i> [CG, CON]            | 0.0171                          | 1.03         | <b>0.0343**</b>            | <b>2.39</b>  | <b>0.0291*</b>           | <b>1.82</b>  | 0.0206                   | 1.13         | 0.0106                   | 0.99         |
| <i>p</i> [CON, FV]                                    | <b>2.3665***</b>                | <b>4.60</b>  | <b>2.3665***</b>           | <b>4.60</b>  | <b>2.3665***</b>         | <b>4.60</b>  | <b>2.3665***</b>         | <b>4.60</b>  | <b>2.3665***</b>         | <b>4.60</b>  |
| Total Mediated Path                                   | 0.0405                          | 1.01         | <b>0.0812***</b>           | <b>2.12</b>  | <b>0.0688*</b>           | <b>1.70</b>  | 0.0486                   | 1.10         | 0.0251                   | 0.97         |
| percentage                                            | 35.03%                          |              | 15.15%                     |              | 18.57%                   |              | 13.33%                   |              | 14.72%                   |              |
| <b>Direct Path</b><br><i>p</i> [SZ, FV]               | <b>0.1110**</b>                 | <b>2.12</b>  | <b>0.1110**</b>            | <b>2.12</b>  | <b>0.1110**</b>          | <b>2.12</b>  | <b>0.1110**</b>          | <b>2.12</b>  | <b>0.1110**</b>          | <b>2.12</b>  |
| <b>Direct Path</b><br><i>p</i> [LV, FV]               | <b>-0.5329***</b>               | <b>-3.55</b> | <b>-0.5329***</b>          | <b>-3.55</b> | <b>-0.5329***</b>        | <b>-3.55</b> | <b>-0.5329***</b>        | <b>-3.55</b> | <b>-0.5329***</b>        | <b>-3.55</b> |
| <b>Direct Path</b><br><i>p</i> [GW, FV]               | 0.0986                          | 1.04         | 0.0986                     | 1.04         | 0.0986                   | 1.04         | 0.0986                   | 1.04         | 0.0986                   | 1.04         |

The table presents the path analyses of the links between corporate governance mechanisms (AC, BD, BC, RM and OW), a direct link and a link mediated by earnings quality (DDA, PRE and CON). Parameter *r* and *p* respectively indicates the coefficients of total effect and direct effect; and \*\*\*, \*\* and \* respectively indicates statistical significance at the 0.01, 0.05 and 0.10 confidence levels. Variables definitions: FV = firm value measured by Tobin's Q; DDA = accruals quality; PRE = predictability; CON = conservatism; AC = rank index of good audit committee structure; BD = rank index of good board of directors structure; BC = rank index of good board committees structure; RM = rank index of good risk management mechanisms structure; OW = rank index of good ownership structure; and CG = general symbol of corporate governance mechanisms.

### 5.3.3 Corporate Governance Mechanisms, Earnings Quality and Firm Value: Financing Needs Regime

Another objective of this thesis is to obtain an additional insight into the influence of firm financial needs (motivation to acquire funds to finance investments and operations) as an element that may impact the direct and mediated effects of CG mechanisms on firm value, whether as an additional source factor or as an additional mediator. In order to determine which role is mostly played by firm's level of financing needs, this section discusses the results of separate mediation models being employed to assess the relative importance of the two roles.

The use of realised financing (level of cash flow from financing raised) as the proxy of financing needs is made based on the assumption that financing needs, in this case, is a variable that characterised a firm actual needs for financing (*ex post*) instead of an *ex ante* needs. Hence, I believe it is a valid proxy for the model tested.

The discussion in the following subsections related to the above objective is based on separated models, utilising either market-based firm value (FV) or performance-based firm value (ROA) as dependent variables, and for three different earnings quality attributes (DDA, PRE or CON) as mediators. The effects of each of the CG mechanisms (AC, BD, BC, RM and OW) and firm-specific controls (SZ, LV and GW) are considered within all mediated regression models as source variables.

#### ***Firm Value and Financing Needs as Source Variable***

A set of three equations presented below is employed to examine the relative importance of direct and mediated effect of CG mechanisms on market-based firm value (FV); mediated by earnings quality; and controlled by firm size (SZ), firm leverage (LV) and firm growth (GW); with an inclusion of financing needs (CF) as an additional source variable. Equation (5-7) determines the total effects of CG mechanisms on FV, Equation (5-8) is used to estimate the direct effect of CG mechanisms on earnings quality and Equation (5-9) is used to estimate the direct effects of CG mechanisms on FV by considering the effect of different earnings quality attributes as the mediators.

$$\begin{aligned} TQ = & i_1 + c_1AC + c_2BD + c_3BC + c_4RM + c_5OW + c_6SZ + c_7LV \\ & + c_8GW + c_9CF + e_1 \end{aligned} \tag{5-7}$$

$$EQ = i_2 + a_1AC + a_2BD + a_3BC + a_4RM + a_5OW + e_2 \quad (5-8)$$

$$TQ = i_3 + c'_1AC + c'_2BD + c'_3BC + c'_4RM + c'_5OW + c_6SZ + c_7LV + c_8GW + c_9CF + b_1EQ + e_3 \quad (5-9)$$

Where FV is the market-based firm value measured as Tobin's Q; AC is the rank index for good audit committee structure; BD is the rank index for good structure of board of directors; RM is the rank index for good risk management mechanisms structure; OW is the rank index for good ownership structure; EQ denotes an earnings quality general symbol which is used to represent three different attributes of earnings quality, i.e. the level of accruals quality (DDA), predictability (PRE) and conservatisms (CON); SZ is firm size measured as natural logarithm of firm total assets; LV is firm leverage measured as firms debt to equity ratio; GW is firm growth measured as firm sales growth; and CF is firm financing needs measured as the level of cash flow from financing raised.

As can be seen in Panel A of Table 5.7, using DDA as a mediator, statistically BD, BC and RM is significantly related to FV at least at 90% confidence level, with coefficient of 0.5342, 0.4126 and 0.2998 respectively. Total effect of RM on FV is 22% attributable to total mediated effect of 0.0658, which is significant at 90% confidence level and a direct effect which increased to 0.3657. The mediated effect of RM on FV mainly contributed to a highly significant relationship between RM and DDA, which has a coefficient of 0.3951 and significant at 99% confidence level. In another case, it is found that mediated effect dominates the relationship between AC and FV, which is due to the strong relationship between AC and DDA (a highly statistically coefficient of 0.2745) and between DDA and FV (a significant coefficient of 0.1667). These results signify that there should be no relationship between AC and FV unless mediated through the effect of DDA. For CF, the coefficient relating to FV and CF as a source is highly statistically significant (a coefficient of 1.5963 significant at 99% confidence level). All other firm-specific factors are highly significantly related to FV at 99% confidence level, except for SZ which is found to be insignificant.

The results presented in Panel B of Table 5-7, using PRE as a mediator, indicate that the coefficients of total effect of BD, BC and RM on FV are significant at least at 90% confidence level, the other CG mechanisms have insignificant effect on FV. The coefficients relating to BD and FV, BC and FV and RM on FV are respectively 0.5313, 0.4156 and 0.3318. As no mediation effect is observed, the direct effect coefficients relating to each of the CG mechanisms and FV are mostly equivalent to the total effects. The coefficient relating to CF and FV is highly statistically significant, and all control variables (SZ, LV and GW) are significant at least at 90% to impact FV in this case.

As shown in Panel C of Table 5-7, when conservatism is used as a mediator and CF is included as an additional source variable, consistent with Panel A (using DDA as a mediating variable), and Panel B (using PRE as a mediating variable), it is found that BD, BC and RM have significant relationship with FV, indicating respectively the total effects of 0.5301, 0.4129 and 0.3279 for each of the CG mechanisms on FV. The total effect of BD on FV is 18% attributable to a mediated relationship that goes through CON (a significant total mediated coefficient of 0.0945) and 82% attributable to a direct effect of BD on FV (a significant direct effect of 0.4356).

The total effect of BC on FV is 19% attributable to a mediated relationship that goes through CON (a significant total mediated coefficient of 0.08) and 81% attributable to a direct effect of BC on FV (a significant direct effect of 0.3329). In this particular mediated relationship, it is found that the direct effect of CON on FV (labelled as  $b[CON, FV]$  in the table) contributes to the mediation rather than the direct effect of the CG mechanisms (BD and BC in this case) on CON (labelled as a generic abbreviation of  $a[CG, CON]$  in the table).

In addition, CF is highly statistically significant, which signifies a great direct influence of firms' needs for external financing in CG and firm value relationships. Other firm-specific factors are significant in their relationships, except for firm size (SZ) which is insignificant.

**Table 5-7 Direct and Mediated Firm Value Effects of Corporate Governance Mechanisms – Financing Needs as a Source Variable**

**Panel A: Earnings Quality Measured as Accruals Quality**

|                                                      | Corporate Governance Mechanisms |              |                            |              |                            |              |                          |              |                   |              |
|------------------------------------------------------|---------------------------------|--------------|----------------------------|--------------|----------------------------|--------------|--------------------------|--------------|-------------------|--------------|
|                                                      | AC                              |              | BD                         |              | BC                         |              | RM                       |              | OW                |              |
|                                                      | Coef.                           | t-stat.      | Coef.                      | t-stat.      | Coef.                      | t-stat.      | Coef.                    | t-stat.      | Coef.             | t-stat.      |
| <b>Total Effect</b><br><i>r[CG, FV]</i>              | 0.1708                          | 0.97         | <b>0.5342***</b>           | <b>3.49</b>  | <b>0.4126***</b>           | <b>2.44</b>  | <b>0.2998*</b>           | <b>1.52</b>  | 0.1261            | 1.05         |
| <b>Direct Path</b><br><i>p[CG, FV]</i><br>percentage | 0.1250<br>73.19%                | 0.71         | <b>0.5241***</b><br>98.11% | <b>3.44</b>  | <b>0.4049***</b><br>98.13% | <b>2.40</b>  | <b>0.2340*</b><br>78.05% | <b>1.86</b>  | 0.1158<br>91.83%  | 0.97         |
| <b>Mediated Path</b><br><i>p[CG, DDA]</i>            | <b>-0.2745***</b>               | <b>2.57</b>  | -0.0604                    | -0.65        | -0.0460                    | -0.45        | <b>-0.3951***</b>        | <b>-3.37</b> | -0.0614           | -0.89        |
| <i>p[DDA, FV]</i>                                    | <b>-0.1667**</b>                | <b>1.96</b>  | <b>-0.1667**</b>           | <b>-1.96</b> | <b>-0.1667**</b>           | <b>-1.96</b> | <b>-0.1667**</b>         | <b>-1.96</b> | <b>-0.1667**</b>  | <b>-1.96</b> |
| Total Mediated Path<br>percentage                    | <b>0.0457*</b><br>26.76%        | <b>1.56</b>  | 0.0101<br>1.89%            | 0.62         | 0.0077<br>1.87%            | 0.44         | <b>0.0658*</b><br>21.95% | <b>1.69</b>  | 0.0102<br>8.09%   | 0.81         |
| <b>Direct Path</b><br><i>p[CF, FV]</i>               | <b>-1.5963***</b>               | <b>-5.21</b> | <b>-1.5963***</b>          | <b>-5.21</b> | <b>-1.5963***</b>          | <b>-5.21</b> | <b>-1.5963***</b>        | <b>-5.21</b> | <b>-1.5963***</b> | <b>-5.21</b> |
| <b>Direct Path</b><br><i>p[SZ, FV]</i>               | 0.0389                          | 0.67         | 0.0389                     | 0.67         | 0.0389                     | 0.67         | 0.0389                   | 0.67         | 0.0389            | 0.67         |
| <b>Direct Path</b><br><i>p[LV, FV]</i>               | <b>-0.3134**</b>                | <b>-2.05</b> | <b>-0.3134**</b>           | <b>-2.05</b> | <b>-0.3134**</b>           | <b>-2.05</b> | <b>-0.3134**</b>         | <b>-2.05</b> | <b>-0.3134**</b>  | <b>-2.05</b> |
| <b>Direct Path</b><br><i>p[GW, FV]</i>               | <b>0.2803***</b>                | <b>3.01</b>  | <b>0.2803***</b>           | <b>3.01</b>  | <b>0.2803***</b>           | <b>3.01</b>  | <b>0.2803***</b>         | <b>3.01</b>  | <b>0.2803***</b>  | <b>3.01</b>  |

Table 5-7 continued

## Panel B: Earnings Quality Measured as Predictability

|                                                      | Corporate Governance Mechanisms |         |                     |         |                    |         |                   |         |                   |         |
|------------------------------------------------------|---------------------------------|---------|---------------------|---------|--------------------|---------|-------------------|---------|-------------------|---------|
|                                                      | AC                              |         | BD                  |         | BC                 |         | RM                |         | OW                |         |
|                                                      | Coef.                           | t-stat. | Coef.               | t-stat. | Coef.              | t-stat. | Coef.             | t-stat. | Coef.             | t-stat. |
| <b>Total Effect</b><br><i>p[CG, FV]</i>              | 0.1594                          | 0.90    | 0.5313***           | 3.47    | 0.4156**           | 2.46    | 0.3318*           | 1.69    | 0.1094            | 0.92    |
| <b>Direct Path</b><br><i>p[CG, FV]</i><br>percentage | 0.1564<br>98.12%                | 0.89    | 0.5280***<br>99.38% | 3.50    | 0.4112**<br>98.94% | 2.43    | 0.3254*<br>98.07% | 1.72    | 0.1115<br>101.92% | 0.94    |
| <b>Mediated Path</b><br><i>p[CG, PRE]</i>            | -0.0594                         | -0.32   | -0.0659             | -0.41   | -0.0882            | -0.49   | -0.1284           | -0.63   | -0.0424           | -0.35   |
| <i>p[PRE, FV]</i>                                    | -0.0497                         | -1.15   | -0.0497             | -1.15   | -0.0497            | -1.15   | -0.0497           | -1.15   | -0.0497           | -1.15   |
| Total Mediated Path                                  | 0.0030                          | 0.31    | 0.0033              | 0.38    | 0.0044             | 0.45    | 0.0064            | 0.55    | 0.0021            | 0.34    |
| percentage                                           | 1.88%                           |         | 0.62%               |         | 1.06%              |         | 1.93%             |         | 1.92%             |         |
| <b>Direct Path</b><br><i>p[CF, FV]</i>               | -1.5929***                      | -5.18   | -1.5929***          | -5.18   | -1.5929***         | -5.18   | -1.5929***        | -5.18   | -1.5929***        | -5.18   |
| <b>Direct Path</b><br><i>p[SZ, FV]</i>               | 0.0846*                         | 1.61    | 0.0846*             | 1.61    | 0.0846*            | 1.61    | 0.0846*           | 1.61    | 0.0846*           | 1.61    |
| <b>Direct Path</b><br><i>p[LV, FV]</i>               | -0.3020**                       | -1.97   | -0.3020**           | -1.97   | -0.3020**          | -1.97   | -0.3020**         | -1.97   | -0.3020**         | -1.97   |
| <b>Direct Path</b><br><i>p[GW, FV]</i>               | 0.3050***                       | 3.31    | 0.3050***           | 3.31    | 0.3050***          | 3.31    | 0.3050***         | 3.31    | 0.3050***         | 3.31    |

Table 5-7 continued

## Panel C: Earnings Quality Measured as Conservatism

|                                                       | Corporate Governance Mechanisms |              |                            |              |                           |              |                   |              |                   |              |
|-------------------------------------------------------|---------------------------------|--------------|----------------------------|--------------|---------------------------|--------------|-------------------|--------------|-------------------|--------------|
|                                                       | AC                              |              | BD                         |              | BC                        |              | RM                |              | OW                |              |
|                                                       | Coef.                           | t-stat.      | Coef.                      | t-stat.      | Coef.                     | t-stat.      | Coef.             | t-stat.      | Coef.             | t-stat.      |
| <b>Total Effect</b><br><i>r</i> [CG, FV]              | 0.1455                          | 0.82         | <b>0.5301***</b>           | <b>3.46</b>  | <b>0.4129**</b>           | <b>2.43</b>  | <b>0.3279*</b>    | <b>1.66</b>  | 0.1059            | 0.89         |
| <b>Direct Path</b><br><i>p</i> [CG, FV]<br>percentage | 0.0984<br>67.63%                | 0.57         | <b>0.4356***</b><br>82.17% | <b>2.92</b>  | <b>0.3329**</b><br>80.62% | <b>2.02</b>  | 0.2714<br>82.77%  | 1.42         | 0.077<br>72.43%   | 1.17         |
| <b>Mediated Path</b><br><i>p</i> [CG, CON]            | 0.0171                          | 1.03         | <b>0.0343**</b>            | <b>2.39</b>  | <b>0.0291*</b>            | <b>1.82</b>  | 0.0206            | 1.13         | 0.0106            | 0.99         |
| <i>p</i> [CON, FV]                                    | <b>2.7529***</b>                | <b>5.50</b>  | <b>2.7529***</b>           | <b>5.50</b>  | <b>2.7529***</b>          | <b>5.50</b>  | <b>2.7529***</b>  | <b>5.50</b>  | <b>2.7529***</b>  | <b>5.50</b>  |
| Total Mediated Path<br>percentage                     | 0.0471<br>14.55%                | 1.02         | <b>0.0945**</b><br>17.83%  | <b>2.19</b>  | <b>0.0800*</b><br>19.38%  | <b>1.73</b>  | 0.0566<br>17.26%  | 1.11         | 0.0292<br>27.57%  | 0.98         |
| <b>Direct Path</b><br><i>p</i> [CF, FV]               | <b>-1.7973***</b>               | <b>-5.97</b> | <b>-1.7973***</b>          | <b>-5.97</b> | <b>-1.7973***</b>         | <b>-5.97</b> | <b>-1.7973***</b> | <b>-5.97</b> | <b>-1.7973***</b> | <b>-5.97</b> |
| <b>Direct Path</b><br><i>p</i> [SZ, FV]               | 0.0674                          | 1.32         | 0.0674                     | 1.32         | 0.0674                    | 1.32         | 0.0674            | 1.32         | 0.0674            | 1.32         |
| <b>Direct Path</b><br><i>p</i> [LV, FV]               | <b>-0.3302**</b>                | <b>-2.22</b> | <b>-0.3302**</b>           | <b>-2.22</b> | <b>-0.3302**</b>          | <b>-2.22</b> | <b>-0.3302**</b>  | <b>-2.22</b> | <b>-0.3302**</b>  | <b>-2.22</b> |
| <b>Direct Path</b><br><i>p</i> [GW, FV]               | <b>0.1788*</b>                  | <b>1.93</b>  | <b>0.1788*</b>             | <b>1.93</b>  | <b>0.1788*</b>            | <b>1.93</b>  | <b>0.1788*</b>    | <b>1.93</b>  | <b>0.1788*</b>    | <b>1.93</b>  |

The table presents the path analyses of the links between corporate governance mechanisms (*AC*, *BD*, *BC*, *RM* and *OW*), a direct link and a link mediated by earnings quality (*DDA*, *PRE* and *CON*). Parameter *r* and *p* respectively indicate the coefficients of total effect and direct effect; and \*\*\*, \*\* and \* respectively indicates statistical significance at the 0.01, 0.05 and 0.10 confidence levels. Variables definitions: *FV* = firm value measured by Tobin's Q; *DDA* = accruals quality; *PRE* = predictability; *CON* = conservatism; *AC* = rank index of good audit committee structure; *BD* = rank index of good board of directors structure; *BC* = rank index of good board committees structure; *RM* = rank index of good risk management mechanisms structure; *OW* = rank index of good ownership structure; and *CG* = general symbol of corporate governance mechanisms.



### ***Firm Value and Financing Needs as Mediating Variable***

A set of four equations presented below is employed to examine the mediated relationship between corporate governance and firm value with the inclusion of three firm-specific control variables which is known to have influence on firm value, i.e. firm size (SZ), firm leverage (LV) and firm growth (GW). Equation (5-10) determines the total effects of corporate governance mechanisms on firm value, Equation (5-11) is used to estimate the direct effect of corporate governance mechanisms on earnings quality and Equation (5-12) is used to estimate the direct effects of corporate governance mechanisms on firm value in considering the effect of earnings quality as the mediator. All corporate governance variables are included and regressed within one single mediated model. Table 5-8 presents the results of the model.

$$\begin{aligned} TQ = i_1 + c_1AC + c_2BD + c_3BC + c_4RM + c_5OW + c_6SZ + c_7LV \\ + c_8GW + c_9CF + e_1 \end{aligned} \quad (5-10)$$

$$EQ = i_2 + a_1AC + a_2BD + a_3BC + a_4RM + a_5OW + e_2 \quad (5-11)$$

$$CF = i_{2a} + a_{1a}AC + a_{2a}BD + a_{3a}BC + a_{4a}RM + a_{5a}OW + e_{2a} \quad (5.12)$$

$$\begin{aligned} TQ = i_3 + c'_1AC + c'_2BD + c'_3BC + c'_4RM + c'_5OW + c_6SZ + c_7LV + c_8GW + \\ b_1EQ + b_2CF + e_3 \end{aligned} \quad (5-13)$$

Where FV is the firm value measured as Tobin's Q; AC is the rank index for good audit committee structure; BD is the rank index for good board of directors structure; RM is the rank index for good risk management mechanisms structure; OW is the rank index for good ownership structure; EQ denotes an earnings quality general symbol which is used to represent three different attributes of earnings quality, i.e. the level of accrual quality (DDA), predictability (PRE) and conservatisms (CON); SZ is firm size measured as natural logarithm of firm total assets; LV is firm leverage measured as firms debt to

equity ratio; GW is firm growth measured as firm sales growth; and CF is firm financing needs measured as the level of cash flow from the financing raised .

**Table 5-8 Direct and Mediated Firm Value Effects of Corporate Governance Mechanisms – Financing Needs as a Mediating Variable**

**Panel A: Earnings Quality Measured as Accruals Quality**

|                                                             | Corporate Governance Mechanisms |              |                            |              |                           |              |                          |              |                           |              |
|-------------------------------------------------------------|---------------------------------|--------------|----------------------------|--------------|---------------------------|--------------|--------------------------|--------------|---------------------------|--------------|
|                                                             | AC                              |              | BD                         |              | BC                        |              | RM                       |              | OW                        |              |
|                                                             | Coef.                           | t-stat.      | Coef.                      | t-stat.      | Coef.                     | t-stat.      | Coef.                    | t-stat.      | Coef.                     | t-stat.      |
| <b>Total Effect</b><br><i>r[CG, FV]</i>                     | 0.1629                          | 0.89         | <b>0.5581***</b>           | <b>3.54</b>  | <b>0.3904**</b>           | <b>2.24</b>  | <b>0.3149*</b>           | <b>1.55</b>  | <b>0.2271*</b>            | <b>1.85</b>  |
| <b>Direct Path</b><br><i>p[CG, FV]</i><br><i>percentage</i> | 0.1092<br>67.01%                | 0.71         | <b>0.5241***</b><br>93.91% | <b>3.44</b>  | <b>0.3606**</b><br>92.37% | <b>2.40</b>  | <b>0.2340*</b><br>74.31% | <b>1.86</b>  | 0.1158<br>50.99%          | 0.97         |
| <b>Mediated Path</b><br><i>p[CG, DDA]</i>                   | <b>-0.2745***</b>               | <b>-2.57</b> | -0.0604                    | -0.65        | -0.0460                   | -0.45        | <b>-0.3951***</b>        | <b>-3.37</b> | -0.0614                   | 0.89         |
| <i>p[DDA, FV]</i>                                           | <b>-0.1667**</b>                | <b>-1.96</b> | <b>-0.1667**</b>           | <b>-1.96</b> | <b>-0.1667**</b>          | <b>-1.96</b> | <b>-0.1667**</b>         | <b>1.96</b>  | <b>-0.1667**</b>          | <b>1.96</b>  |
| Total Mediated Path<br><i>percentage</i>                    | <b>0.0458*</b><br>28.09%        | <b>1.56</b>  | 0.0101<br>1.80%            | 0.61         | 0.0077<br>1.96%           | 0.43         | <b>0.0659*</b><br>20.92% | <b>1.69</b>  | 0.0102<br>4.51%           | 0.81         |
| <b>Mediated Path</b><br><i>p[CG, CF]</i>                    | -0.0050                         | -0.18        | -0.0150                    | -0.62        | -0.0139                   | -0.52        | -0.0094                  | -0.31        | <b>-0.0633***</b>         | <b>-3.55</b> |
| <i>p[CF, FV]</i>                                            | <b>-1.5963***</b>               | <b>-5.21</b> | <b>-1.5963***</b>          | <b>-5.21</b> | <b>-1.5963***</b>         | <b>-5.21</b> | <b>-1.5963***</b>        | <b>-5.21</b> | <b>-1.5963***</b>         | <b>-5.21</b> |
| Total Mediated Path<br><i>percentage</i>                    | 0.0080<br>4.90%                 | 0.18         | 0.0239<br>4.29%            | 0.61         | 0.0222<br>5.68%           | 0.51         | 0.0150<br>4.77%          | 0.30         | <b>0.1010**</b><br>44.49% | <b>2.93</b>  |
| <b>Direct Path</b><br><i>p[SZ, FV]</i>                      | 0.0389                          | 0.67         | 0.0389                     | 0.67         | 0.0389                    | 0.67         | 0.0389                   | 0.67         | 0.0389                    | 0.67         |
| <b>Direct Path</b><br><i>p[LV, FV]</i>                      | <b>-0.3134**</b>                | <b>-2.05</b> | <b>-0.3134**</b>           | <b>-2.05</b> | <b>-0.3134**</b>          | <b>-2.05</b> | <b>-0.3134**</b>         | <b>-2.05</b> | <b>-0.3134**</b>          | <b>-2.05</b> |
| <b>Direct Path</b><br><i>p[GW, FV]</i>                      | <b>0.2803***</b>                | <b>3.01</b>  | <b>0.2803***</b>           | <b>3.01</b>  | <b>0.2803***</b>          | <b>3.01</b>  | <b>0.2803***</b>         | <b>3.01</b>  | <b>0.2803***</b>          | <b>3.01</b>  |

**Table 5-8 continued**

**Panel B: Earnings Quality Measured as Predictability**

|                                                             | Corporate Governance Mechanisms |              |                            |              |                            |              |                          |              |                   |              |
|-------------------------------------------------------------|---------------------------------|--------------|----------------------------|--------------|----------------------------|--------------|--------------------------|--------------|-------------------|--------------|
|                                                             | AC                              |              | BD                         |              | BC                         |              | RM                       |              | OW                |              |
|                                                             | Coef.                           | t-stat.      | Coef.                      | t-stat.      | Coef.                      | t-stat.      | Coef.                    | t-stat.      | Coef.             | t-stat.      |
| <b>Total Effect</b><br><i>r[CG, FV]</i>                     | 0.1515                          | 0.83         | <b>0.5551***</b>           | <b>3.52</b>  | <b>0.3934**</b>            | <b>2.26</b>  | <b>0.3468*</b>           | <b>1.71</b>  | <b>0.2102*</b>    | <b>1.72</b>  |
| <b>Direct Path</b><br><i>p[CG, FV]</i><br><i>percentage</i> | 0.1406<br>92.79%                | 0.89         | <b>0.5280***</b><br>95.11% | <b>3.50</b>  | <b>0.36692**</b><br>93.26% | <b>2.43</b>  | <b>0.3254*</b><br>93.84% | <b>1.72</b>  | 0.1073<br>51.03%  | 0.94         |
| <b>Mediated Path</b><br><i>p[CG, PRE]</i>                   | -0.0594                         | -0.32        | -0.0659                    | -0.41        | -0.0882                    | -0.49        | -0.1284                  | -0.63        | -0.0424           | -0.35        |
| <i>p[PRE, FV]</i>                                           | -0.0497                         | -1.15        | -0.0497                    | -1.15        | -0.0497                    | -1.15        | -0.0497                  | -1.15        | -0.0497           | -1.15        |
| Total Mediated Path                                         | 0.0030                          | 0.31         | 0.0033                     | 0.39         | 0.0044                     | 0.45         | 0.0064                   | 0.55         | 0.0021            | 0.34         |
| <i>percentage</i>                                           | 1.95%                           |              | 0.59%                      |              | 1.11%                      |              | 1.84%                    |              | 1.00%             |              |
| <b>Mediated Path</b><br><i>p[CG, CF]</i>                    | -0.0050                         | -0.18        | -0.0150                    | -0.62        | -0.0139                    | -0.52        | -0.0094                  | -0.31        | <b>-0.0633***</b> | <b>-3.55</b> |
| <i>p[CF, FV]</i>                                            | <b>-1.5929***</b>               | <b>-5.18</b> | <b>-1.5929***</b>          | <b>-5.18</b> | <b>-1.5929***</b>          | <b>-5.18</b> | <b>-1.5929***</b>        | <b>-5.18</b> | <b>-1.5929***</b> | <b>-5.18</b> |
| Total Mediated Path                                         | 0.0080                          | 0.18         | 0.0239                     | 0.62         | 0.0221                     | 0.52         | 0.0150                   | 0.31         | <b>0.1008***</b>  | <b>2.93</b>  |
| <i>percentage</i>                                           | 5.26%                           |              | 4.30%                      |              | 5.63%                      |              | 4.32%                    |              | 47.97%            |              |
| <b>Direct Path</b><br><i>p[SZ, FV]</i>                      | <b>0.0846*</b>                  | <b>1.61</b>  | <b>0.0846*</b>             | <b>1.61</b>  | <b>0.0846*</b>             | <b>1.61</b>  | <b>0.0846*</b>           | <b>1.61</b>  | <b>0.0846*</b>    | <b>1.61</b>  |
| <b>Direct Path</b><br><i>p[LV, FV]</i>                      | <b>-0.3020**</b>                | <b>-1.97</b> | <b>-0.3020**</b>           | <b>-1.97</b> | <b>-0.3020**</b>           | <b>-1.97</b> | <b>-0.3020**</b>         | <b>-1.97</b> | <b>-0.3020**</b>  | <b>-1.97</b> |
| <b>Direct Path</b><br><i>p[GW, FV]</i>                      | <b>0.3050***</b>                | <b>3.31</b>  | <b>0.3050***</b>           | <b>3.31</b>  | <b>0.3050***</b>           | <b>3.31</b>  | <b>0.3050***</b>         | <b>3.31</b>  | <b>0.3050***</b>  | <b>3.31</b>  |

Table 5-8 continued

## Panel C: Earnings Quality Measured as Conservatism

|                      | Corporate Governance Mechanisms |              |                   |                |                   |              |                   |              |                   |              |
|----------------------|---------------------------------|--------------|-------------------|----------------|-------------------|--------------|-------------------|--------------|-------------------|--------------|
|                      | AC                              |              | BD                |                | BC                |              | RM                |              | OW                |              |
|                      | Coef.                           | t-stat.      | Coef.             | t-stat.        | Coef.             | t-stat.      | Coef.             | t-stat.      | Coef.             | t-stat.      |
| <b>Total Effect</b>  |                                 |              |                   |                |                   |              |                   |              |                   |              |
| <i>r</i> [CG, FV]    | 0.1366                          | 0.74         | <b>0.5570***</b>  | <b>3.49</b>    | <b>0.3879**</b>   | <b>2.20</b>  | <b>0.3449*</b>    | <b>1.69</b>  | <b>0.2196*</b>    | <b>1.78</b>  |
| <b>Direct Path</b>   |                                 |              |                   |                |                   |              |                   |              |                   |              |
| <i>p</i> [CG, FV]    | 0.0805                          | 0.57         | <b>0.4356***</b>  | <b>2.92</b>    | <b>0.2828**</b>   | <b>2.02</b>  | 0.2713            | 1.42         | 0.0766            | 1.17         |
| percentage           | 58.96%                          |              | 78.20%            |                | 72.91%            |              | 78.66%            |              | 34.90%            |              |
| <b>Mediated Path</b> |                                 |              |                   |                |                   |              |                   |              |                   |              |
| <i>p</i> [CG, CON]   | 0.0171                          | 1.03         | <b>0.0343**</b>   | <b>2.39</b>    | <b>0.0291*</b>    | <b>1.82</b>  | 0.0206            | 1.13         | 0.0106            | 0.99         |
| <i>p</i> [CON, FV]   | <b>2.7529***</b>                | <b>5.50</b>  | <b>2.7529***</b>  | <b>5.50</b>    | <b>2.7529***</b>  | <b>5.50</b>  | <b>2.7529***</b>  | <b>5.50</b>  | <b>2.7529***</b>  | <b>5.50</b>  |
| Total Mediated Path  | 0.0471                          | 1.01         | <b>0.0944**</b>   | <b>2.19</b>    | <b>0.0801*</b>    | <b>1.73</b>  | 0.0567            | 1.11         | 0.0292            | 0.97         |
| percentage           | 34.46%                          |              | 16.95%            |                | 20.65%            |              | 16.44%            |              | 13.29%            |              |
| <b>Mediated Path</b> |                                 |              |                   |                |                   |              |                   |              |                   |              |
| <i>p</i> [CG, CF]    | -0.0050                         | -0.18        | -0.0150           | -0.62          | -0.0139           | -0.52        | -0.0094           | -0.31        | <b>-0.0633***</b> | <b>-3.55</b> |
| <i>p</i> [CF, FV]    | <b>-1.7973***</b>               | <b>-5.97</b> | <b>-1.7973***</b> | <b>-5.97</b>   | <b>-1.7973***</b> | <b>-5.97</b> | <b>-1.7973***</b> | <b>-5.97</b> | <b>-1.7973***</b> | <b>-5.97</b> |
| Total Mediated Path  | 0.0090                          | 0.18         | -0.0270           | 0.62           | 0.0250            | 0.52         | 0.0169            | 0.31         | <b>0.1138***</b>  | <b>3.05</b>  |
| percentage           | 6.58%                           |              | 4.84%             |                | 6.44%             |              | 4.90%             |              | 51.81%            |              |
| <b>Direct Path</b>   |                                 |              |                   |                |                   |              |                   |              |                   |              |
| <i>p</i> [SZ, FV]    | 0.0674                          | 1.32         | 0.0674            | 1.32           | 0.0674            | 1.32         | 0.0674            | 1.32         | 0.0674            | 1.32         |
| <b>Direct Path</b>   |                                 |              |                   |                |                   |              |                   |              |                   |              |
| <i>p</i> [LV, FV]    | <b>-0.3302**</b>                | <b>-2.22</b> | <b>-0.3302**</b>  | <b>-2.22**</b> | <b>-0.3302**</b>  | <b>-2.22</b> | <b>-0.3302**</b>  | <b>-2.22</b> | <b>-0.3302**</b>  | <b>-2.22</b> |
| <b>Direct Path</b>   |                                 |              |                   |                |                   |              |                   |              |                   |              |
| <i>p</i> [GW, FV]    | <b>0.1788*</b>                  | <b>1.93</b>  | <b>0.1788*</b>    | <b>1.93*</b>   | <b>0.1788*</b>    | <b>1.93</b>  | <b>0.1788*</b>    | <b>1.93</b>  | <b>0.1788*</b>    | <b>1.93</b>  |

The table presents the path analyses of the links between corporate governance mechanisms (*AC*, *BD*, *BC* *RM* and *OW*), a direct link and a link mediated by earnings quality (*DDA*, *PRE* and *CON*). Parameter *r* and *p* respectively indicate the coefficients of total effect and direct effect; and \*\*\*, \*\* and \* respectively indicates statistical significance at the 0.01, 0.05 and 0.10 confidence levels. Variables definitions: *FV* = firm value measured by Tobin's Q; *DDA* = accruals quality; *PRE* = predictability; *CON* = conservatism; *AC* = rank index of good audit committee structure; *BD* = rank index of good board of directors structure; *BC* = rank index of good board committees structure; *RM* = rank index of good risk management mechanisms structure; *OW* = rank index of good ownership structure; and *CG* = general symbol of corporate governance mechanisms.

#### 5.3.4 Corporate Governance Mechanisms, Earnings Quality and Firm Value: Earning-Price Tied-up Regime

Another objective of this thesis is to obtain an additional insight into the influence of firm financial needs (the relevance of earnings information on share price) as an element that may impact the direct and mediated effects of CG mechanisms on firm value, whether as an additional source factor or as an additional mediator. In order to determine which role is mostly played by earnings-price tied-up, this section discusses the results of separate mediation models being employed to assess the relative importance of the two roles.

Following Basu (1983), price-earnings ratio has additional explanation power on shares on top of size and beta. Additionally, Ball (1978) argues that price-earnings ratio can serve as a proxy for unnamed factors in expected returns. The reason is that, when stocks have relatively higher risks and expected returns, their prices are likely to be lower relative to earnings and thus the price-earnings ratio likely to be higher as well.

The discussions in the following subsections in relation to the above objective is based on separated models utilising either market-based firm value (FV) or performance-based firm value (ROA) as dependent variables, and for three different earnings quality attributes (DDA, PRE or CON) as mediators. The effects of each of CG mechanisms (AC, BD, BC, RM and OW) and firm-specific controls (SZ, LV and GW) are considered within all mediated regression models as source variables.

##### ***Firm Value, Earnings Quality and Earning-Price Tied-up as a Source Variable***

A set of three equations presented below is employed to examine the relative importance of direct and mediated effect of CG mechanisms on market-based firm value (FV); mediated by earnings quality; and controlled by firm size (SZ), firm leverage (LV) and firm growth (GW); with an inclusion of financing needs (CF) as an additional source variable. Equation (5-14) determines the total effects of CG mechanisms on FV, Equation (5-15) is used to estimate the direct effect of CG mechanisms on earnings quality and Equation (5-16) is used to estimate the direct effects of CG mechanisms on FV by considering the effect of different earnings quality attributes as the mediators.

$$\begin{aligned} TQ = & i_1 + c_1AC + c_2BD + c_3BC + c_4RM + c_5OW + c_6SZ + c_7LV \\ & + c_8GW + c_9CF + e_1 \end{aligned} \tag{5-14}$$

$$EQ = i_2 + a_1AC + a_2BD + a_3BC + a_4RM + a_5OW + e_2 \quad (5-15)$$

$$TQ = i_3 + c'_1AC + c'_2BD + c'_3BC + c'_4RM + c'_5OW + c_6SZ + c_7LV + c_8GW + c_9EP + b_1EQ + e_3 \quad (5-16)$$

Where FV is the market-based firm value measured as Tobin's Q; AC is the rank index for good audit committee structure; BD is the rank index for good structure of board of directors; RM is the rank index for good risk management mechanisms structure; OW is the rank index for good ownership structure; EQ denotes an earnings quality general symbol which is used to represent three different attributes of earnings quality, i.e. the level of accrual quality (DDA), predictability (PRE) and conservatisms (CON); SZ is firm size measured as natural logarithm of firm total assets; LV is firm leverage measured as firms debt to equity ratio; GW is firm growth measured as firm sales growth; and CF is firm financing needs measured as the level of cash flow from the financing raised.

**Table 5-9 Direct and Mediated Firm Value Effects of Corporate Governance Mechanisms – Earnings-Price Tied-up as a Source Variable**

**Panel A: Earnings Quality Measured as Accruals Quality**

|                                                      | Corporate Governance Mechanisms |              |                            |              |                           |              |                           |              |                   |              |
|------------------------------------------------------|---------------------------------|--------------|----------------------------|--------------|---------------------------|--------------|---------------------------|--------------|-------------------|--------------|
|                                                      | AC                              |              | BD                         |              | BC                        |              | RM                        |              | OW                |              |
|                                                      | Coef.                           | t-stat.      | Coef.                      | t-stat.      | Coef.                     | t-stat.      | Coef.                     | t-stat.      | Coef.             | t-stat.      |
| <b>Total Effect</b><br><i>r[CG, FV]</i>              | 0.1065                          | 0.60         | <b>0.6018***</b>           | <b>3.94</b>  | 0.3383                    | 2.00         | <b>0.4077**</b>           | <b>2.07</b>  | 0.1754            | 1.48         |
| <b>Direct Path</b><br><i>p[CG, FV]</i><br>percentage | 0.0599<br>56.24%                | 0.34         | <b>0.5916***</b><br>98.31% | <b>3.89</b>  | <b>0.3305**</b><br>97.69% | <b>1.97</b>  | <b>0.3407**</b><br>83.57% | <b>2.42</b>  | 0.1650<br>94.07%  | 1.40         |
| <b>Mediated Path</b><br><i>p[CG, DDA]</i>            | <b>-0.2745***</b>               | <b>-2.57</b> | -0.0604                    | -0.65        | -0.0460                   | -0.45        | <b>-0.3951***</b>         | <b>-3.37</b> | -0.0614           | -0.89        |
| <i>p[DDA, FV]</i>                                    | <b>-0.1696**</b>                | <b>-2.00</b> | <b>-0.1696</b>             | <b>-2.00</b> | <b>-0.1696**</b>          | <b>-2.00</b> | <b>-0.1696**</b>          | <b>-2.00</b> | <b>-0.1696**</b>  | <b>-2.00</b> |
| Total Mediated Path<br>percentage                    | <b>0.0466*</b><br>43.76%        | <b>1.58</b>  | 0.0102<br>1.69%            | 0.62         | 0.0078<br>2.31%           | 0.44         | <b>-0.0670*</b><br>16.43% | <b>1.72</b>  | 0.0104<br>5.93%   | 0.81         |
| <b>Direct Path</b><br><i>p[EP, FV]</i>               | <b>-0.8018***</b>               | <b>-5.56</b> | <b>-0.8018***</b>          | <b>-5.56</b> | <b>-0.8018***</b>         | <b>-5.56</b> | <b>-0.8018***</b>         | <b>-5.56</b> | <b>-0.8018***</b> | <b>-5.56</b> |
| <b>Direct Path</b><br><i>p[SZ, FV]</i>               | <b>0.1597***</b>                | <b>2.71</b>  | <b>0.1597***</b>           | <b>2.71</b>  | <b>0.1597***</b>          | <b>2.71</b>  | <b>0.1597***</b>          | <b>2.71</b>  | <b>0.1597***</b>  | <b>2.71</b>  |
| <b>Direct Path</b><br><i>p[LV, FV]</i>               | <b>-0.4278***</b>               | <b>-2.88</b> | <b>-0.4278***</b>          | <b>-2.88</b> | <b>-0.4278***</b>         | <b>-2.88</b> | <b>-0.4278***</b>         | <b>-2.88</b> | <b>-0.4278***</b> | <b>-2.88</b> |
| <b>Direct Path</b><br><i>p[GW, FV]</i>               | <b>0.2705***</b>                | <b>2.93</b>  | <b>0.2705***</b>           | <b>2.93</b>  | <b>0.2705***</b>          | <b>2.93</b>  | <b>0.2705***</b>          | <b>2.93</b>  | <b>0.2705***</b>  | <b>2.93</b>  |



Table 5-9 *continued*

## Panel B: Earnings Quality Measured as Predictability

|                                                                                                     | Corporate Governance Mechanisms       |                        |                                       |                        |                                       |                        |                                       |                        |                                       |                        |
|-----------------------------------------------------------------------------------------------------|---------------------------------------|------------------------|---------------------------------------|------------------------|---------------------------------------|------------------------|---------------------------------------|------------------------|---------------------------------------|------------------------|
|                                                                                                     | AC                                    |                        | BD                                    |                        | BC                                    |                        | RM                                    |                        | OW                                    |                        |
|                                                                                                     | Coef.                                 | t-stat.                | Coef.                                 | t-stat.                | Coef.                                 | t-stat.                | Coef.                                 | t-stat.                | Coef.                                 | t-stat.                |
| <b>Total Effect</b><br><i>r[CG, FV]</i>                                                             | 0.0957                                | 0.54                   | <b>0.5976***</b>                      | <b>3.91</b>            | <b>0.3420**</b>                       | <b>2.03</b>            | <b>0.4391**</b>                       | <b>2.24</b>            | 0.1580                                | 1.34                   |
| <b>Direct Path</b><br><i>p[CG, FV]</i><br>percentage                                                | 0.0940<br>98.22%                      | 0.53                   | <b>0.5957***</b><br>99.68%            | <b>3.93</b>            | <b>0.3394**</b><br>99.24%             | <b>2.01</b>            | <b>0.4352**</b><br>99.13%             | <b>2.26</b>            | 0.1567<br>99.18%                      | 1.35                   |
| <b>Mediated Path</b><br><i>p[CG, PRE]</i><br><i>p[PRE, FV]</i><br>Total Mediated Path<br>percentage | -0.0594<br>-0.0295<br>0.0018<br>1.88% | -0.32<br>-0.68<br>0.29 | -0.0659<br>-0.0295<br>0.0019<br>0.32% | -0.41<br>-0.68<br>0.35 | -0.0882<br>-0.0295<br>0.0026<br>0.76% | -0.49<br>-0.68<br>0.40 | -0.1284<br>-0.0295<br>0.0038<br>0.87% | -0.63<br>-0.68<br>0.46 | -0.0424<br>-0.0295<br>0.0013<br>0.82% | -0.35<br>-0.68<br>0.31 |
| <b>Direct Path</b><br><i>p[EP, FV]</i>                                                              | <b>-0.7881***</b>                     | <b>-5.44</b>           | <b>-0.7881***</b>                     | <b>-5.44</b>           | <b>-0.7881***</b>                     | <b>-5.44</b>           | <b>-0.7881***</b>                     | <b>-5.44</b>           | <b>-0.7881***</b>                     | <b>-5.44</b>           |
| <b>Direct Path</b><br><i>p[SZ, FV]</i>                                                              | <b>0.2053***</b>                      | <b>3.79</b>            | <b>0.2053***</b>                      | <b>3.79</b>            | <b>0.2053***</b>                      | <b>3.79</b>            | <b>0.2053***</b>                      | <b>3.79</b>            | <b>0.2053***</b>                      | <b>3.79</b>            |
| <b>Direct Path</b><br><i>p[LV, FV]</i>                                                              | <b>-0.4175***</b>                     | <b>-2.80</b>           | <b>-0.4175***</b>                     | <b>-2.80</b>           | <b>-0.4175***</b>                     | <b>-2.80</b>           | <b>-0.4175***</b>                     | <b>-2.80</b>           | <b>-0.4175***</b>                     | <b>-2.80</b>           |
| <b>Direct Path</b><br><i>p[GW, FV]</i>                                                              | <b>0.2967***</b>                      | <b>3.24</b>            | <b>0.2967***</b>                      | <b>3.24</b>            | <b>0.2967***</b>                      | <b>3.24</b>            | <b>0.2967***</b>                      | <b>3.24</b>            | <b>0.2967***</b>                      | <b>3.24</b>            |

Table 5-9 continued

## Panel C: Earnings Quality Measured as Conservatism

|                                                       | Corporate Governance Mechanisms |              |                           |              |                          |              |                           |              |                          |              |
|-------------------------------------------------------|---------------------------------|--------------|---------------------------|--------------|--------------------------|--------------|---------------------------|--------------|--------------------------|--------------|
|                                                       | AC                              |              | BD                        |              | BC                       |              | RM                        |              | OW                       |              |
|                                                       | Coef.                           | t-stat.      | Coef.                     | t-stat.      | Coef.                    | t-stat.      | Coef.                     | t-stat.      | Coef.                    | t-stat.      |
| <b>Total Effect</b><br><i>r</i> [CG, FV]              | 0.0573                          | 0.32         | <b>0.6233***</b>          | <b>4.04</b>  | <b>0.3170*</b>           | <b>1.86</b>  | <b>0.4709**</b>           | <b>2.38</b>  | 0.1602                   | 1.35         |
| <b>Direct Path</b><br><i>p</i> [CG, FV]<br>percentage | 0.0048<br>8.38%                 | 0.03         | <b>0.4987**</b><br>80.01% | <b>3.42</b>  | 0.2115<br>66.72%         | 1.31         | <b>0.3962**</b><br>84.14% | <b>2.12</b>  | <b>0.1216*</b><br>75.91% | <b>1.77</b>  |
| <b>Mediated Path</b><br><i>p</i> [CG, CON]            | 0.0145                          | 1.03         | <b>0.0343**</b>           | <b>2.39</b>  | <b>0.0291*</b>           | <b>1.82</b>  | -0.0206                   | 1.13         | 0.0106                   | 0.99         |
| <i>p</i> [CON, FV]                                    | <b>3.6319***</b>                | <b>7.10</b>  | <b>3.6319***</b>          | <b>7.10</b>  | <b>3.6319***</b>         | <b>7.10</b>  | <b>3.6319***</b>          | <b>7.10</b>  | <b>3.6319***</b>         | <b>7.10</b>  |
| Total Mediated Path<br>percentage                     | 0.0525<br>91.62%                | 1.02         | <b>0.1247**</b><br>20.01% | <b>2.26</b>  | <b>0.1056*</b><br>33.31% | <b>1.77</b>  | 0.0746<br>15.84%          | 1.12         | 0.0385<br>24.09%         | 0.98         |
| <b>Direct Path</b><br><i>p</i> [EP, FV]               | <b>-1.1237***</b>               | <b>-7.74</b> | <b>-1.1237***</b>         | <b>-7.74</b> | <b>-1.1237***</b>        | <b>-7.74</b> | <b>-1.1237***</b>         | <b>-7.74</b> | <b>-1.1237***</b>        | <b>-7.74</b> |
| <b>Direct Path</b><br><i>p</i> [SZ, FV]               | <b>0.2231***</b>                | <b>4.33</b>  | <b>0.2231***</b>          | <b>4.33</b>  | <b>0.2231***</b>         | <b>4.33</b>  | <b>0.2231***</b>          | <b>4.33</b>  | <b>0.2231***</b>         | <b>4.33</b>  |
| <b>Direct Path</b><br><i>p</i> [LV, FV]               | <b>-0.4550***</b>               | <b>-3.21</b> | <b>-0.4550***</b>         | <b>-3.21</b> | <b>-0.4550***</b>        | <b>-3.21</b> | <b>-0.4550***</b>         | <b>-3.21</b> | <b>-0.4550***</b>        | <b>-3.21</b> |
| <b>Direct Path</b><br><i>p</i> [GW, FV]               | <b>0.1449*</b>                  | <b>1.62</b>  | <b>0.1449*</b>            | <b>1.62</b>  | <b>0.1449*</b>           | <b>1.62</b>  | <b>0.1449*</b>            | <b>1.62</b>  | <b>0.1449*</b>           | <b>1.62</b>  |

The table presents the path analyses of the links between corporate governance mechanisms (*AC*, *BD*, *BC*, *RM* and *OW*), a direct link and a link mediated by earnings quality (*DDA*, *PRE* and *CON*). Parameter *r* and *p* respectively indicate the coefficients of total effect and direct effect; and \*\*\*, \*\* and \* respectively indicates statistical significance at the 0.01, 0.05 and 0.10 confidence levels. Variables definitions: *FV* = firm value as measured by the Tobin's Q; *DDA* = accruals quality; *PRE* = predictability; *CON* = conservatism; *AC* = rank index of good audit committee structure; *BD* = rank index of good board of directors structure; *BC* = rank index of good board committees structure; *RM* = rank index of good risk management mechanisms structure; *OW* = rank index of good ownership structure; and *CG* = general symbol of corporate governance mechanisms.

***Firm Value, Earnings Quality and Earning-Price Tied-up as Mediating Variable***

A set of four equations presented below is employed to examine the mediated relationship between corporate governance and firm value with the inclusion of three firm-specific control variables which is known to have influence on firm value, i.e. firm size (SZ), firm leverage (LV) and firm growth (GW). Equation (5-17) determines the total effects of corporate governance mechanisms on firm value, Equation (5-18) is used to estimate the direct effect of corporate governance mechanisms on earnings quality and Equation (5-19) is used to estimate the direct effects of corporate governance mechanisms on firm value in considering the effect of earnings quality as the mediator.

$$TQ = i_1 + c_1AC + c_2BD + c_3BC + c_4RM + c_5OW + c_6SZ + c_7LV + c_8GW + c_9CF + e_1 \quad (5-17)$$

$$EQ = i_2 + a_1AC + a_2BD + a_3BC + a_4RM + a_5OW + e_2 \quad (5-18)$$

$$EP = i_{2a} + a_{1a}AC + a_{2a}BD + a_{3a}BC + a_{4a}RM + a_{5a}OW + e_{2a} \quad (5.19)$$

$$TQ = i_3 + c'_1AC + c'_2BD + c'_3BC + c'_4RM + c'_5OW + c_6SZ + c_7LV + c_8GW + b_1EQ + b_2EP + e_3 \quad (5-20)$$

Where FV is the firm value measured as Tobin's Q; AC is the rank index for good audit committee structure; BD is the rank index for good board of directors structure; RM is the rank index for good risk management mechanisms structure; OW is the rank index for good ownership structure; EQ denotes an earnings quality general symbol which is used to represent three different attributes of earnings quality, i.e. the level of accruals quality (DDA), predictability (PRE) and conservatisms (CON); SZ is firm size measured as natural logarithm of firm total assets; LV is firm leverage measured as firms debt to equity ratio; GW is firm growth measured as firm sales growth; and EP is earnings-price tied up measured as the earnings to price ratio.

**Table 5-10 Direct and Mediated Firm Value Effects of Corporate Governance Mechanisms – Earnings-Price Tied-up as a Mediating Variable**

**Panel A: Earnings Quality Measured as Accruals Quality**

|                                                                                                     | Corporate Governance Mechanisms                                  |                                             |                                                  |                               |                                                  |                               |                                                                   |                                             |                                                 |                               |
|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------------|---------------------------------------------|--------------------------------------------------|-------------------------------|--------------------------------------------------|-------------------------------|-------------------------------------------------------------------|---------------------------------------------|-------------------------------------------------|-------------------------------|
|                                                                                                     | AC                                                               |                                             | BD                                               |                               | BC                                               |                               | RM                                                                |                                             | OW                                              |                               |
|                                                                                                     | Coef.                                                            | t-stat.                                     | Coef.                                            | t-stat.                       | Coef.                                            | t-stat.                       | Coef.                                                             | t-stat.                                     | Coef.                                           | t-stat.                       |
| <b>Total Effect</b><br><i>r[CG, FV]</i>                                                             | 0.1251                                                           | 0.69                                        | <b>0.5381***</b>                                 | <b>3.41</b>                   | <b>0.3845**</b>                                  | <b>2.20</b>                   | <b>0.3926*</b>                                                    | <b>1.93</b>                                 | 0.1605                                          | 1.31                          |
| <b>Direct Path</b><br><i>p[CG, FV]</i><br>percentage                                                | 0.0600<br>47.96%                                                 | 0.34                                        | <b>0.4642***</b><br>86.27%                       | <b>3.89</b>                   | <b>0.3305**</b><br>85.96%                        | <b>1.97</b>                   | <b>0.3105**</b><br>79.09%                                         | <b>2.42</b>                                 | 0.1351<br>84.17%                                | 1.40                          |
| <b>Mediated Path</b><br><i>p[CG, DDA]</i><br><i>p[DDA, FV]</i><br>Total Mediated Path<br>percentage | <b>-0.2745***</b><br><b>-0.1696**</b><br><b>0.0466</b><br>37.21% | <b>-2.57</b><br><b>-2.00</b><br><b>1.58</b> | -0.0604<br><b>-0.1696**</b><br>0.0102<br>1.90%   | -0.65<br><b>-2.00</b><br>0.62 | -0.0460<br><b>-0.1696**</b><br>0.0078<br>2.03%   | -0.45<br><b>-2.00</b><br>0.44 | <b>-0.3951***</b><br><b>-0.1696**</b><br><b>0.0670*</b><br>17.07% | <b>-3.37</b><br><b>-2.00</b><br><b>1.72</b> | -0.0614<br><b>-0.1696**</b><br>0.0104<br>6.49%  | -0.89<br><b>-2.00</b><br>0.81 |
| <b>Mediated Path</b><br><i>p[CG, EP]</i><br><i>p[EP, FV]</i><br>Total Mediated Path<br>percentage   | -0.0232<br><b>-0.8018***</b><br>0.0186<br>14.87%                 | -0.39<br><b>-5.56</b><br>0.39               | -0.0794<br><b>-0.8018***</b><br>0.0637<br>11.83% | -1.54<br><b>-5.56</b><br>1.48 | -0.0576<br><b>-0.8018***</b><br>0.0462<br>12.01% | -1.01<br><b>-5.56</b><br>0.99 | -0.0188<br><b>-0.8018***</b><br>0.0151<br>3.84%                   | -0.29<br><b>-5.56</b><br>0.29               | -0.0187<br><b>-0.8018***</b><br>0.0150<br>9.34% | -0.49<br><b>-5.56</b><br>0.49 |
| <b>Direct Path</b><br><i>p[SZ, FV]</i>                                                              | <b>0.1597***</b>                                                 | <b>2.71</b>                                 | <b>0.1597***</b>                                 | <b>2.71</b>                   | <b>0.1597***</b>                                 | <b>2.71</b>                   | <b>0.1597***</b>                                                  | <b>2.71</b>                                 | <b>0.1597***</b>                                | <b>2.71</b>                   |
| <b>Direct Path</b><br><i>p[LV, FV]</i>                                                              | <b>-0.4278***</b>                                                | <b>-2.88</b>                                | <b>-0.4278***</b>                                | <b>-2.88</b>                  | <b>-0.4278***</b>                                | <b>-2.88</b>                  | <b>-0.4278***</b>                                                 | <b>-2.88</b>                                | <b>-0.4278***</b>                               | <b>-2.88</b>                  |
| <b>Direct Path</b><br><i>p[GW, FV]</i>                                                              | <b>0.2705***</b>                                                 | <b>2.93</b>                                 | <b>0.2705***</b>                                 | <b>2.93</b>                   | <b>0.2705***</b>                                 | <b>2.93</b>                   | <b>0.2705***</b>                                                  | <b>2.93</b>                                 | <b>0.2705***</b>                                | <b>2.93</b>                   |

Table 5-10 *continued*

## Panel B: Earnings Quality Measured as Predictability

|                                                      | Corporate Governance Mechanisms |              |                            |              |                           |              |                           |              |                   |              |
|------------------------------------------------------|---------------------------------|--------------|----------------------------|--------------|---------------------------|--------------|---------------------------|--------------|-------------------|--------------|
|                                                      | AC                              |              | BD                         |              | BC                        |              | RM                        |              | OW                |              |
|                                                      | Coef.                           | t-stat.      | Coef.                      | t-stat.      | Coef.                     | t-stat.      | Coef.                     | t-stat.      | Coef.             | t-stat.      |
| <b>Total Effect</b><br><i>r[CG, FV]</i>              | 0.1140                          | 0.63         | <b>0.5350***</b>           | <b>3.39</b>  | <b>0.3875**</b>           | <b>2.22</b>  | <b>0.4242**</b>           | <b>2.09</b>  | 0.1433            | 1.17         |
| <b>Direct Path</b><br><i>p[CG, FV]</i><br>percentage | 0.0940<br>82.46%                | 0.53         | <b>0.4705***</b><br>87.94% | <b>3.93</b>  | <b>0.3395**</b><br>87.62% | <b>2.01</b>  | <b>0.4056**</b><br>95.62% | <b>2.26</b>  | 0.1273<br>88.85%  | 1.35         |
| <b>Mediated Path</b><br><i>p[CG, PRE]</i>            | 0.0594                          | 0.32         | 0.0659                     | 0.41         | 0.0882                    | 0.49         | 0.1284                    | 0.63         | 0.0424            | -0.35        |
| <i>p[PRE, FV]</i>                                    | 0.0295                          | 0.68         | 0.0295                     | 0.68         | 0.0295                    | 0.68         | 0.0295                    | 0.68         | 0.0295            | 0.68         |
| Total Mediated Path                                  | 0.0018                          | 0.29         | 0.0019                     | 0.35         | 0.0026                    | 0.4          | 0.0038                    | 0.46         | 0.0013            | 0.31         |
| percentage                                           | 1.54%                           |              | 0.36%                      |              | 0.67%                     |              | 0.89%                     |              | 0.87%             |              |
| <b>Mediated Path</b><br><i>p[CG, EP]</i>             | -0.0232                         | -0.39        | -0.0794                    | -1.54        | -0.0576                   | -1.01        | -0.0188                   | -0.29        | -0.0187           | -0.49        |
| <i>p[EP, FV]</i>                                     | <b>-0.7881***</b>               | <b>-5.44</b> | <b>-0.7881***</b>          | <b>-5.44</b> | <b>-0.7881***</b>         | <b>-5.44</b> | <b>-0.7881***</b>         | <b>-5.44</b> | <b>-0.7881***</b> | <b>-5.44</b> |
| Total Mediated Path                                  | 0.0183                          | 0.39         | 0.0626                     | 1.48         | 0.0454                    | 0.99         | 0.0148                    | 0.28         | 0.015             | 0.49         |
| percentage                                           | 16.04%                          |              | 11.70%                     |              | 11.71%                    |              | 3.49%                     |              | 10.28%            |              |
| <b>Direct Path</b><br><i>p[SZ, FV]</i>               | <b>0.2053***</b>                | <b>3.79</b>  | <b>0.2053***</b>           | <b>3.79</b>  | <b>0.2053***</b>          | <b>3.79</b>  | <b>0.2053***</b>          | <b>3.79</b>  | <b>0.2053***</b>  | <b>3.79</b>  |
| <b>Direct Path</b><br><i>p[LV, FV]</i>               | <b>-0.4175***</b>               | <b>-2.80</b> | <b>-0.4175***</b>          | <b>-2.80</b> | <b>-0.4175***</b>         | <b>-2.80</b> | <b>-0.4175***</b>         | <b>-2.80</b> | <b>-0.4175***</b> | <b>-2.80</b> |
| <b>Direct Path</b><br><i>p[GW, FV]</i>               | <b>0.2967***</b>                | <b>3.24</b>  | <b>0.2967***</b>           | <b>3.24</b>  | <b>0.2967***</b>          | <b>3.24</b>  | <b>0.2967***</b>          | <b>3.24</b>  | <b>0.2967***</b>  | <b>3.24</b>  |

**Table 5-10 continued**

**Panel C: Earnings Quality Measured as Conservatism**

|                      | Corporate Governance Mechanisms |              |                   |              |                   |              |                   |              |                   |              |
|----------------------|---------------------------------|--------------|-------------------|--------------|-------------------|--------------|-------------------|--------------|-------------------|--------------|
|                      | AC                              |              | BD                |              | BC                |              | RM                |              | OW                |              |
|                      | Coef.                           | t-stat.      | Coef.             | t-stat.      | Coef.             | t-stat.      | Coef.             | t-stat.      | Coef.             | t-stat.      |
| <b>Total Effect</b>  |                                 |              |                   |              |                   |              |                   |              |                   |              |
| <i>r</i> [CG, FV]    | 0.0834                          | 0.44         | <b>0.5341***</b>  | <b>3.25</b>  | <b>0.3818**</b>   | <b>2.10</b>  | <b>0.4497**</b>   | <b>2.13</b>  | 0.1392            | 1.10         |
| <b>Direct Path</b>   |                                 |              |                   |              |                   |              |                   |              |                   |              |
| <i>p</i> [CG, FV]    | 0.0048                          | 0.03         | <b>0.3203***</b>  | <b>3.42</b>  | -0.2115           | 1.31         | <b>0.3537**</b>   | <b>2.12</b>  | <b>0.0797*</b>    | <b>1.77</b>  |
| percentage           | 5.76%                           |              | 59.97%            |              | 55.40%            |              | 78.66%            |              | 57.24%            |              |
| <b>Mediated Path</b> |                                 |              |                   |              |                   |              |                   |              |                   |              |
| <i>p</i> [CG, CON]   | 0.0171                          | 1.03         | 0.0343            | 2.39         | 0.0291            | 1.82         | 0.0206            | 1.13         | 0.0106            | 0.99         |
| <i>p</i> [CON, FV]   | <b>3.6319***</b>                | <b>7.10</b>  | <b>3.6319***</b>  | <b>7.10</b>  | <b>3.6319***</b>  | <b>7.10</b>  | <b>3.6319***</b>  | <b>7.10</b>  | <b>3.6319***</b>  | <b>7.10</b>  |
| Total Mediated Path  | 0.0621                          | 1.02         | <b>0.1246**</b>   | <b>2.27</b>  | <b>0.1057*</b>    | <b>1.76</b>  | 0.0748            | 1.12         | 0.0385            | 1.00         |
| percentage           | 74.47%                          |              | 23.32%            |              | 27.68%            |              | 16.64%            |              | 27.66%            |              |
| <b>Mediated Path</b> |                                 |              |                   |              |                   |              |                   |              |                   |              |
| <i>p</i> [CG, EP]    | -0.0147                         | -0.39        | -0.0794           | -1.54        | -0.0576           | -1.01        | -0.0188           | -0.29        | -0.0187           | -0.49        |
| <i>p</i> [EP, FV]    | <b>-1.1237***</b>               | <b>-7.74</b> | <b>-1.1237***</b> | <b>-7.74</b> | <b>-1.1237***</b> | <b>-7.74</b> | <b>-1.1237***</b> | <b>-7.74</b> | <b>-1.1237***</b> | <b>-7.74</b> |
| Total Mediated Path  | 0.0165                          | 0.39         | 0.0892            | 1.51         | 0.0647            | 1.00         | 0.0211            | 0.29         | 0.0210            | 0.49         |
| percentage           | 19.77%                          |              | 16.71%            |              | 16.95%            |              | 4.70%             |              | 15.10%            |              |
| <b>Direct Path</b>   |                                 |              |                   |              |                   |              |                   |              |                   |              |
| <i>p</i> [SZ, FV]    | <b>0.2231***</b>                | <b>4.33</b>  | <b>0.2231***</b>  | <b>4.33</b>  | <b>0.2231***</b>  | <b>4.33</b>  | <b>0.2231***</b>  | <b>4.33</b>  | <b>0.2231***</b>  | <b>4.33</b>  |
| <b>Direct Path</b>   |                                 |              |                   |              |                   |              |                   |              |                   |              |
| <i>p</i> [LV, FV]    | <b>-0.4550***</b>               | <b>-3.21</b> | <b>-0.4550***</b> | <b>-3.21</b> | <b>-0.4550***</b> | <b>-3.21</b> | <b>-0.4550***</b> | <b>-3.21</b> | <b>-0.4550***</b> | <b>-3.21</b> |
| <b>Direct Path</b>   |                                 |              |                   |              |                   |              |                   |              |                   |              |
| <i>p</i> [GW, FV]    | 0.1449                          | 1.62         | 0.1449            | 1.62         | 0.1449            | 1.62         | 0.1449            | 1.62         | 0.1449            | 1.62         |

The table presents the path analyses of the links between corporate governance mechanisms (*AC*, *BD*, *BC*, *RM* and *OW*), a direct link and a link mediated by earnings quality (*DDA*, *PRE* and *CON*). Parameter *r* and *p* respectively indicate the coefficients of total effect and direct effect; and \*\*\*, \*\* and \* respectively indicates statistical significance at the 0.01, 0.05 and 0.10 confidence levels. Variables definitions: *FV* = firm value as measured by the Tobin's Q; *DDA* = accruals quality; *PRE* = predictability; *CON* = conservatism; *AC* = rank index of good audit committee structure; *BD* = rank index of good board of directors structure; *BC* = rank index of good board committees structure; *RM* = rank index of good risk management mechanisms structure; *OW* = rank index of good ownership structure; and *CG* = general symbol of corporate governance mechanisms.

### 5.3.5 Corporate Governance Mechanisms, Earnings Quality and Firm Value: Five-factor Regime

Two sets of regression models representing the effects of four measures of earnings quality and corporate governance were employed to test the hypotheses of this study. Firstly, the regression model using accruals quality measures (DDA) is explained and then followed by conservatism (CON) and predictability (PRE). Table 5-11 summarises the results of four regression models, offered in three columns representing the distinguishable effects of DDA, PRE and CON. All corporate governance variables are regressed within the model.

#### *Direct and Mediated Firm Value Effects of Corporate Governance Mechanisms*

The research question of this thesis concerns mainly with the existence and relative importance of direct and mediated paths between a set of CG mechanisms and firm value. A set of three equations presented below is employed to examine the mediated relationship between corporate governance and firm value without the inclusion of any control variable, where Equation (5-21) determines the total effects of corporate governance mechanisms on firm value, Equation (5-22) is used to estimate the direct effect of corporate governance mechanisms on earnings quality and Equation (5-23) is used to estimate the direct effects of corporate governance mechanisms on firm value in considering the effect of earnings quality as the mediator.

$$TQ = i_1 + c_1AC + c_2BD + c_3BC + c_4RM + c_5OW + e_1 \quad (5-21)$$

$$EQ = i_2 + a_1AC + a_2BD + a_3BC + a_4RM + a_5OW + e_2 \quad (5-22)$$

$$FV = i_3 + c'_1AC + c'_2BD + c'_3BC + c'_4RM + c'_5OW + b_1EQ + e_3 \quad (5-23)$$

Where FV is a general symbol that denotes firm value which represents two different firm value measures employed in this thesis, i.e. firm value measured as Tobin's Q (FV); AC is the rank index for good audit committee structure; BD is the rank index for good board of directors structure; RM is the rank index for good risk management mechanisms

structure; OW is the rank index for good ownership structure; and EQ denotes an earnings quality general symbol which is used to represent three different attributes of earnings quality, i.e. the level of accruals quality derived using DD Model (DDA), predictability (PRE) and conservatisms (CON). Parameter  $c$  relates to the CG mechanisms and FV in Equation (5-21); in Equation (5-22), parameter  $a$  denotes the coefficient of the relationship between CG mechanisms and the attributes of EQ; in Equation (5-23), parameter  $c'$  is the parameter relating to the CG mechanisms to FV adjusted for the EQ attributes and parameter  $b$  is the parameter relating to one particular attribute of EQ to the FV adjusted for CG mechanisms;  $e$  represents error variability; and,  $i$  is the intercept.



**Table 5-11 Direct and Mediated Firm Value Effects of Corporate Governance Mechanisms – Five-factor Regime**

**Panel A: Earnings Quality Measured as Accruals Quality**

|                                                                                                            | Corporate Governance Mechanisms                                   |                                             |                                                |                               |                                                |                               |                                                                   |                                             |                                                |                               |
|------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|---------------------------------------------|------------------------------------------------|-------------------------------|------------------------------------------------|-------------------------------|-------------------------------------------------------------------|---------------------------------------------|------------------------------------------------|-------------------------------|
|                                                                                                            | AC                                                                |                                             | BD                                             |                               | BC                                             |                               | RM                                                                |                                             | OW                                             |                               |
|                                                                                                            | Coef.                                                             | t-stat.                                     | Coef.                                          | t-stat.                       | Coef.                                          | t-stat.                       | Coef.                                                             | t-stat.                                     | Coef.                                          | t-stat.                       |
| <b>Total Effect</b><br><i>r[CG, FV]</i>                                                                    | 0.1359                                                            | 0.79                                        | <b>0.5980***</b>                               | <b>4.03</b>                   | <b>0.3769**</b>                                | <b>2.30</b>                   | <b>0.3740*</b>                                                    | <b>1.95</b>                                 | 0.1167                                         | 1.01                          |
| <b>Direct Path</b><br><i>p[CG, FV]</i><br><i>percentage</i>                                                | 0.0865<br>63.65%                                                  | 0.51                                        | <b>0.5872***</b><br>98.19%                     | <b>3.98</b>                   | <b>0.3686**</b><br>97.80%                      | <b>2.26</b>                   | <b>0.3029**</b><br>80.99%                                         | <b>2.34</b>                                 | 0.1057<br>90.57%                               | 0.92                          |
| <b>Mediated Path</b><br><i>p[CG, DDA]</i><br><i>p[DDA, FV]</i><br>Total Mediated Path<br><i>percentage</i> | <b>-0.2745***</b><br><b>-0.1799**</b><br><b>0.0494*</b><br>36.35% | <b>-2.57</b><br><b>-2.19</b><br><b>1.67</b> | -0.0604<br><b>-0.1799**</b><br>0.0109<br>1.82% | -0.65<br><b>-2.19</b><br>0.62 | -0.0460<br><b>-0.1799**</b><br>0.0083<br>2.20% | -0.45<br><b>-2.19</b><br>0.44 | <b>-0.3951***</b><br><b>-0.1799**</b><br><b>0.0711*</b><br>19.01% | <b>-3.37</b><br><b>-2.19</b><br><b>1.84</b> | -0.0614<br><b>-0.1799**</b><br>0.0110<br>9.43% | -0.89<br><b>-2.19</b><br>0.82 |
| <b>Direct Path</b><br><i>p[CF, FV]</i>                                                                     | <b>-1.6388***</b>                                                 | <b>-5.54</b>                                | <b>-1.6388***</b>                              | <b>-5.54</b>                  | <b>-1.6388***</b>                              | <b>-5.54</b>                  | <b>-1.6388***</b>                                                 | <b>-5.54</b>                                | <b>-1.6388***</b>                              | <b>-5.54</b>                  |
| <b>Direct Path</b><br><i>p[EP, FV]</i>                                                                     | <b>-0.8207***</b>                                                 | <b>-5.87</b>                                | <b>-0.8207***</b>                              | <b>-5.87</b>                  | <b>-0.8207***</b>                              | <b>-5.87</b>                  | <b>-0.8207***</b>                                                 | <b>-5.87</b>                                | <b>-0.8207***</b>                              | <b>-5.87</b>                  |
| <b>Direct Path</b><br><i>p[SZ, FV]</i>                                                                     | <b>0.1208**</b>                                                   | <b>2.10</b>                                 | <b>0.1208**</b>                                | <b>2.10</b>                   | <b>0.1208**</b>                                | <b>2.10</b>                   | <b>0.1208**</b>                                                   | <b>2.10</b>                                 | <b>0.1208**</b>                                | <b>2.10</b>                   |
| <b>Direct Path</b><br><i>p[LV, FV]</i>                                                                     | -0.2354                                                           | -1.59                                       | -0.2354                                        | -1.59                         | -0.2354                                        | -1.59                         | -0.2354                                                           | -1.59                                       | -0.2354                                        | -1.59                         |
| <b>Direct Path</b><br><i>p[GW, FV]</i>                                                                     | <b>0.3620***</b>                                                  | <b>3.98</b>                                 | <b>0.3620***</b>                               | <b>3.98</b>                   | <b>0.3620***</b>                               | <b>3.98</b>                   | <b>0.3620***</b>                                                  | <b>3.98</b>                                 | <b>0.3620***</b>                               | <b>3.98</b>                   |

Table 5-11 *continued*

## Panel B: Earnings Quality Measured as Predictability

|                                                                                                            | Corporate Governance Mechanisms       |                        |                                       |                        |                                       |                        |                                       |                        |                                       |                        |
|------------------------------------------------------------------------------------------------------------|---------------------------------------|------------------------|---------------------------------------|------------------------|---------------------------------------|------------------------|---------------------------------------|------------------------|---------------------------------------|------------------------|
|                                                                                                            | AC                                    |                        | BD                                    |                        | BC                                    |                        | RM                                    |                        | OW                                    |                        |
|                                                                                                            | Coef.                                 | t-stat.                | Coef.                                 | t-stat.                | Coef.                                 | t-stat.                | Coef.                                 | t-stat.                | Coef.                                 | t-stat.                |
| <b>Total Effect</b><br><i>r[CG, FV]</i>                                                                    | 0.1243                                | 0.73                   | <b>0.5935***</b>                      | <b>4.01</b>            | <b>0.3807**</b>                       | <b>2.33</b>            | <b>0.4073**</b>                       | <b>2.14</b>            | 0.0986                                | 0.86                   |
| <b>Direct Path</b><br><i>p[CG, FV]</i><br><i>Percentage</i>                                                | 0.1222<br>98.31%                      | 0.72                   | <b>0.5912***</b><br>99.61%            | <b>4.02</b>            | <b>0.3775**</b><br>99.16%             | <b>2.31</b>            | <b>0.4027**</b><br>98.87%             | <b>2.16</b>            | 0.0971<br>98.48%                      | 0.87                   |
| <b>Mediated Path</b><br><i>p[CG, PRE]</i><br><i>p[PRE, FV]</i><br>Total Mediated Path<br><i>Percentage</i> | -0.0594<br>-0.0355<br>0.0021<br>1.69% | -0.32<br>-0.85<br>0.30 | -0.0659<br>-0.0355<br>0.0023<br>0.39% | -0.41<br>-0.85<br>0.37 | -0.0882<br>-0.0355<br>0.0031<br>0.81% | -0.49<br>-0.85<br>0.43 | -0.1284<br>-0.0355<br>0.0046<br>1.13% | -0.63<br>-0.85<br>0.50 | -0.0424<br>-0.0355<br>0.0015<br>1.52% | -0.35<br>-0.85<br>0.33 |
| <b>Direct Path</b><br><i>p[CF, FV]</i>                                                                     | <b>-1.6307***</b>                     | <b>-5.48</b>           | <b>-1.6307***</b>                     | <b>-5.48</b>           | <b>-1.6307***</b>                     | <b>-5.48</b>           | <b>-1.6307***</b>                     | <b>-5.48</b>           | <b>-1.6307***</b>                     | <b>-5.48</b>           |
| <b>Direct Path</b><br><i>p[EP, FV]</i>                                                                     | <b>-0.8052***</b>                     | <b>-5.73</b>           | <b>-0.8052***</b>                     | <b>-5.73</b>           | <b>-0.8052***</b>                     | <b>-5.73</b>           | <b>-0.8052***</b>                     | <b>-5.73</b>           | <b>-0.8052***</b>                     | <b>-5.73</b>           |
| <b>Direct Path</b><br><i>p[SZ, FV]</i>                                                                     | <b>0.1691**</b>                       | <b>3.20</b>            | <b>0.1691***</b>                      | <b>3.20</b>            | <b>0.1691***</b>                      | <b>3.20</b>            | <b>0.1691***</b>                      | <b>3.20</b>            | <b>0.1691***</b>                      | <b>3.20</b>            |
| <b>Direct Path</b><br><i>p[LV, FV]</i>                                                                     | -0.2254                               | -1.52                  | -0.2254                               | -1.52                  | -0.2254                               | -1.52                  | -0.2254                               | -1.52                  | -0.2254                               | -1.52                  |
| <b>Direct Path</b><br><i>p[GW, FV]</i>                                                                     | <b>0.3887***</b>                      | <b>4.30</b>            | <b>0.3887***</b>                      | <b>4.30</b>            | <b>0.3887***</b>                      | <b>4.30</b>            | <b>0.3887***</b>                      | <b>4.30</b>            | <b>0.3887***</b>                      | <b>4.30</b>            |

Table 5-11 *continued*

## Panel C: Earnings Quality Measured as Conservatism

|                                                                                                     | Corporate Governance Mechanisms                |                             |                                                                  |                             |                                                                |                             |                                                |                             |                                                |                               |
|-----------------------------------------------------------------------------------------------------|------------------------------------------------|-----------------------------|------------------------------------------------------------------|-----------------------------|----------------------------------------------------------------|-----------------------------|------------------------------------------------|-----------------------------|------------------------------------------------|-------------------------------|
|                                                                                                     | AC                                             |                             | BD                                                               |                             | BC                                                             |                             | RM                                             |                             | OW                                             |                               |
|                                                                                                     | Coef.                                          | t-stat.                     | Coef.                                                            | t-stat.                     | Coef.                                                          | t-stat.                     | Coef.                                          | t-stat.                     | Coef.                                          | t-stat.                       |
| <b>Total Effect</b><br><i>r[CG, FV]</i>                                                             | 0.0864                                         | 0.50                        | <b>0.6220***</b>                                                 | <b>4.14</b>                 | <b>0.3601***</b>                                               | <b>2.17</b>                 | <b>0.4370***</b>                               | <b>2.27</b>                 | 0.0889                                         | 0.77                          |
| <b>Direct Path</b><br><i>p[CG, FV]</i><br>Percentage                                                | 0.0158<br>18.29%                               | 0.10                        | <b>0.4803***</b><br>77.22%                                       | <b>3.46</b>                 | <b>0.2401</b><br>66.68%                                        | <b>1.56</b>                 | <b>0.3521**</b><br>80.57%                      | <b>1.98</b>                 | 0.0451<br>50.73%                               | 1.23                          |
| <b>Mediated Path</b><br><i>p[CG, CON]</i><br><i>p[CON, FV]</i><br>Total Mediated Path<br>Percentage | 0.0171<br><b>4.1300***</b><br>0.0706<br>81.71% | 1.03<br><b>8.40</b><br>1.03 | <b>0.0343**</b><br><b>4.1300***</b><br><b>0.1418**</b><br>22.80% | 2.39<br><b>8.40</b><br>2.30 | <b>0.0291*</b><br><b>4.1300***</b><br><b>0.1201*</b><br>33.35% | 1.82<br><b>8.40</b><br>1.78 | 0.0206<br><b>4.1300***</b><br>0.0849<br>19.43% | 1.13<br><b>8.40</b><br>1.12 | 0.0106<br><b>4.1300***</b><br>0.0438<br>49.27% | 0.99<br><b>-8.40</b><br>-0.99 |
| <b>Direct Path</b><br><i>p[CF, FV]</i>                                                              | <b>-1.9645***</b>                              | <b>-7.01</b>                | <b>-1.9645***</b>                                                | <b>-7.01</b>                | <b>-1.9645***</b>                                              | <b>-7.01</b>                | <b>-1.9645***</b>                              | <b>-7.01</b>                | <b>-1.9645***</b>                              | <b>-7.01</b>                  |
| <b>Direct Path</b><br><i>p[EP, FV]</i>                                                              | <b>-1.1910***</b>                              | <b>-8.60</b>                | <b>-1.1910***</b>                                                | <b>-8.60</b>                | <b>-1.1910***</b>                                              | <b>-8.60</b>                | <b>-1.1910***</b>                              | <b>-8.60</b>                | <b>-1.1910***</b>                              | <b>-8.60</b>                  |
| <b>Direct Path</b><br><i>p[SZ, FV]</i>                                                              | <b>0.1821***</b>                               | <b>3.69</b>                 | <b>0.1821***</b>                                                 | <b>3.69</b>                 | <b>0.1821***</b>                                               | <b>3.69</b>                 | <b>0.1821***</b>                               | <b>3.69</b>                 | <b>0.1821***</b>                               | <b>3.69</b>                   |
| <b>Direct Path</b><br><i>p[LV, FV]</i>                                                              | -0.2287                                        | -1.65                       | -0.2287                                                          | -1.65                       | -0.2287                                                        | -1.65                       | -0.2287                                        | -1.65                       | -0.2287                                        | -1.65                         |
| <b>Direct Path</b><br><i>p[GW, FV]</i>                                                              | <b>0.2354***</b>                               | <b>2.73</b>                 | <b>0.2354***</b>                                                 | <b>2.73</b>                 | <b>0.2354***</b>                                               | <b>2.73</b>                 | <b>0.2354***</b>                               | <b>2.73</b>                 | <b>0.2354***</b>                               | <b>2.73</b>                   |

Table 5-11 *continued***Panel D: Accrual Quality, Predictability and Conservatism as Separate Measure of Earnings Quality**

|                                                                                                            | Corporate Governance Mechanisms                  |                               |                                                           |                                           |                                                         |                                           |                                                 |                               |                                                |                               |
|------------------------------------------------------------------------------------------------------------|--------------------------------------------------|-------------------------------|-----------------------------------------------------------|-------------------------------------------|---------------------------------------------------------|-------------------------------------------|-------------------------------------------------|-------------------------------|------------------------------------------------|-------------------------------|
|                                                                                                            | AC                                               |                               | BD                                                        |                                           | BC                                                      |                                           | RM                                              |                               | OW                                             |                               |
|                                                                                                            | Coef.                                            | t-stat.                       | Coef.                                                     | t-stat.                                   | Coef.                                                   | t-stat.                                   | Coef.                                           | t-stat.                       | Coef.                                          | t-stat.                       |
| <b>Total Effect</b><br><i>r[CG, FV]</i>                                                                    | 0.0929                                           | 0.54                          | <b>0.6238***</b>                                          | <b>4.14</b>                               | <b>0.3592**</b>                                         | <b>2.16</b>                               | <b>0.4166**</b>                                 | <b>2.15</b>                   | 0.1002                                         | 0.86                          |
| <b>Direct Path</b><br><i>p[CG, FV]</i><br><i>Percentage</i>                                                | 0.0078<br>8.40%                                  | 0.05                          | <b>0.4718***</b><br>75.63%                                | <b>3.48</b>                               | 0.2287<br>63.67%                                        | 1.50                                      | <b>0.2853**</b><br>68.48%                       | <b>2.12</b>                   | 0.0477<br>47.61%                               | 1.32                          |
| <b>Mediated Path</b><br><i>p[CG, DDA]</i><br><i>p[DDA, FV]</i><br>Total Mediated Path<br><i>Percentage</i> | <b>-0.1094***</b><br>-0.0951<br>0.0104<br>11.23% | <b>-2.57</b><br>-1.23<br>1.11 | -0.0604<br>-0.0951<br>0.0057<br>0.92%                     | -0.65<br>-1.23<br>0.57                    | -0.0460<br>-0.0951<br>0.0044<br>1.22%                   | -0.45<br>-1.23<br>0.42                    | <b>-0.3951***</b><br>-0.0951<br>0.0376<br>9.02% | <b>-3.37</b><br>-1.23<br>1.16 | -0.0614<br>-0.0951<br>0.0058<br>5.83%          | -0.89<br>-1.23<br>0.72        |
| <b>Mediated Path</b><br><i>p[CG, PRE]</i><br><i>p[PRE, FV]</i><br>Total Mediated Path<br><i>Percentage</i> | -0.0594<br><b>-0.0662*</b><br>0.0039<br>4.23%    | -0.32<br><b>-1.69</b><br>0.31 | -0.0659<br><b>-0.0662*</b><br>0.0044<br>0.70%             | -0.41<br><b>-1.69</b><br>0.4              | -0.0882<br><b>-0.0662*</b><br>0.0058<br>1.63%           | -0.49<br><b>-1.69</b><br>0.47             | -0.1284<br><b>-0.0662*</b><br>0.0085<br>2.04%   | -0.63<br><b>-1.69</b><br>0.59 | -0.0424<br><b>-0.0662*</b><br>0.0028<br>2.80%  | -0.35<br><b>-1.69</b><br>0.34 |
| <b>Mediated Path</b><br><i>p[CG, CON]</i><br><i>p[CON, FV]</i><br>Total Mediated Path<br><i>Percentage</i> | 0.0171<br><b>4.1367***</b><br>0.0707<br>76.14%   | 1.03<br><b>8.34</b><br>1.02   | <b>0.0343**</b><br><b>4.1367***</b><br>0.1419**<br>22.75% | <b>2.39</b><br><b>8.34</b><br><b>2.30</b> | <b>0.0291*</b><br><b>4.1367***</b><br>0.1204*<br>33.51% | <b>1.82</b><br><b>8.34</b><br><b>1.78</b> | 0.0206<br><b>4.1367***</b><br>0.0852<br>20.46%  | 1.13<br><b>8.34</b><br>1.11   | 0.0106<br><b>4.1367***</b><br>0.0438<br>43.76% | 0.99<br><b>8.34</b><br>0.98   |

**Table 5-11 continued**

**Panel D: continued**

|                                         | Corporate Governance Mechanisms |         |             |         |             |         |             |         |             |         |
|-----------------------------------------|---------------------------------|---------|-------------|---------|-------------|---------|-------------|---------|-------------|---------|
|                                         | AC<br>Coef.                     | t-stat. | BD<br>Coef. | t-stat. | BC<br>Coef. | t-stat. | RM<br>Coef. | t-stat. | OW<br>Coef. | t-stat. |
| <b>Direct Path</b><br><i>p</i> [CF, FV] | -1.9850***                      | -7.11   | -1.9850***  | -7.11   | -1.9850***  | -7.11   | -1.9850***  | -7.11   | -1.9850***  | -7.11   |
| <b>Direct Path</b><br><i>p</i> [EP, FV] | -1.1830***                      | -8.58   | -1.1830***  | -8.58   | -1.1830***  | -8.58   | -1.1830***  | -8.58   | -1.1830***  | -8.58   |
| <b>Direct Path</b><br><i>p</i> [SZ, FV] | 0.1515***                       | 2.82    | 0.1515***   | 2.82    | 0.1515***   | 2.82    | 0.1515***   | 2.82    | 0.1515***   | 2.82    |
| <b>Direct Path</b><br><i>p</i> [LV, FV] | -0.2312*                        | -1.68   | -0.2312*    | -1.68   | -0.2312*    | -1.68   | -0.2312*    | -1.68   | -0.2312*    | -1.68   |
| <b>Direct Path</b><br><i>p</i> [GW, FV] | 0.2117**                        | 2.44    | 0.2117**    | 2.44    | 0.2117**    | 2.44    | 0.2117**    | 2.44    | 0.2117**    | 2.44    |

The table presents the path analyses of the links between corporate governance mechanisms (*AC*, *BD*, *BC*, *RM* and *OW*), a direct link and a link mediated by earnings quality (*DDA*, *PRE* and *CON*). Parameter *r* and *p* respectively indicate the coefficients of total effect and direct effect; and \*\*\*, \*\* and \* respectively indicates statistical significance at the 0.01, 0.05 and 0.10 confidence levels. Variables definitions: *ROA* = firm value as measured by the ratio of return on assets; *DDA* = accruals quality; *PRE* = predictability; *CON* = conservatism; *AC* = rank index of good audit committee structure; *BD* = rank index of good board of directors structure; *BC* = rank index of good board committees structure; *RM* = rank index of good risk management mechanisms structure; *OW* = rank index of good ownership structure; and *CG* = general symbol of corporate governance mechanisms.

#### **5.4 Summary**

This chapter has provided the statistical descriptive analysis of the data and analysis of the mediated regression models. This chapter has particularly described the analysis of firm value effects of good structure of corporate governance mechanisms mediated by three different earnings quality attributes, i.e. accruals quality, predictability and conservatism. Further analysis was made with the inclusion of firm-specific factors, i.e. financing needs, earnings-price tied up, firm size, leverage and growth. Overall, it was concluded that most of the fit indices fulfilled the threshold applicable for all tests. The final part of the chapter presents the results of hypotheses testing. It is established that all models tested produced equivalent results. The associations among variables were somehow in the right direction of the hypotheses that were developed.

## **Chapter 6**

### **DISCUSSION AND IMPLICATIONS**

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#### **6.1 Introduction**

This chapter presents the interpretation and implications of the results as described in Chapter 5. A detailed discussion relating to the hypotheses developed in Chapter 3 is also presented, followed by the research implications. A summary is provided at the end of the chapter. This chapter is organised as follows. Firstly, Section 6.2 offers the discussion on the results of the mediated models. Secondly, the results of hypothesis testing are elaborated in Section 6.3. Thirdly, research implications are presented in Section 6.4. Finally, Section 6.5 summarises the chapter in general.

#### **6.2 Discussions of Results of Mediated Models**

The research question concerns the existence and relative importance of direct and indirect paths between good structure of corporate governance (CG) and firm value (FV). Through the examination of mediation effects of the attributes of earnings quality within the CG-FV relationship, it is revealed that four hypotheses are significant, i.e. H-1, H-4, H-12 and H-13. There is no statistical evidence to draw any conclusion on the significance of the hypotheses other than the hypotheses mentioned.

##### **6.2.1 Corporate Governance Mechanisms, Earnings Quality and Firm Value**

##### ***Hypothesis 1: Good Structure of Audit Committee, Accruals Quality and Firm Value***

The strong evidence in support of Hypothesis 1 (H-1) on the existence of firm value effects of good structure of audit committee mediated by accruals quality. A significant 51% of mediated effects dominated the overall total effects of good structure of audit committee. The result suggests that firm requires audit committee to fulfil the role of mitigating opportunistic earnings management for the value of the firm to increase. This finding is consistent with the finding of DeZoort et al. (2002), who argue that a good structure of an audit committee that is good in its arrangement, resources, authority and diligence, is better able to reduce information asymmetric and mitigate the information risk that can eventually be of benefit to firm performance and hence firm value.

Previously, it was believed that good structure of audit committees could improve the whole governance practices within a firm (Beasley & Salterio 2001; Klein 2002) and that

it could resolve conflicts among internal managers (Fama, E F & Jensen 1983), and resolve issues related to internal audit function (Zain & Subramaniam 2007) and external audit function (Abbott, L.J., Park & Parker 2000; Abbott, L.J. et al. 2007).

However, the evidence found does not assert the findings of Vafeas (2010) and Xie, Davidson and DaDalt (2003) that good structure of audit committee, even with its composition consisting of a majority or entirely of independent directors can improve the quality of reported earnings. In addition, the association between audit committee and lower reporting problems (McMullen & Raghunandan 1996) and earnings management (Mohd-Saleh, Mohd-Iskandar & Rahmat 2007) could not be established without considering the ultimate goal of increasing firm value.

Even if financial expertise is indeed vital for the expended roles of audit committee members to deal with reporting issues as the business environment and transactions become more sophisticated, alongside with stakeholders' higher expectations which require wider responsibilities (Millstein 1998), and poor earnings quality firm is characterised by an audit committee without or with less number of financial experts being appointed as members (McMullen & Raghunandan 1996), the direct association is unable to be proven.

In addition, financial expertise in audit committee cannot simply reduce aggressive earnings management as argued by Bedard & Johnstone 2004, but can prevent the occurrence of financial misstatements (Abbott, Lawrence J., Parker & F.Peters 2004) and increase accruals quality (Dhaliwal, Naiker & Navissi 2010).

According to DeZoort et al. (2002), audit committee diligence is the willingness of the members to work together as needed and necessary in dealing with any issue related to the management, internal and external auditors and other constituents. It is common to quantify audit committee diligence based on the number of meetings held during a financial year, as what has been done in most studies, including those by McMullen and Raghunandan (1996), Xie, Davidson and DaDalt (2003) and Vafeas (2010).

In addition, Abbott, L.J., Park and Parker (2000) and Abbott, Lawrence J., Parker and F.Peters (2004) have documented that frequency of audit committee meetings held at least twice in a financial year is related to lower SEC sanctioned for financial reporting



problems. Moreover, regular audit committee meetings can also reduce the occurrence of earnings management (Vafeas 2010; Xie, Davidson & DaDalt 2003), financial restatement (Beasley et al. 2000) and fraud (Farber 2005).

Reported earnings with high discretionary accruals are presumed to be of poor quality and less reliable and become one of the factors attributed to investor's uncertainty condition, particularly for pricing decision. Since earnings information is relevant for decision making, accruals quality can simply be considered as firm-specific non-diversifiable information risk that affects individual firms' cost of capital.

Consistently, the notion as depicted by Francis, J et al. (2005, p. 296) who state that "By information risk, we mean the likelihood that firm-specific information that is pertinent to investor pricing decisions is of poor quality". As cash is the primitive element that investors priced, poor quality of accruals indicates that the information about the transformation stream of earnings into cash provided to the investors is unclear, this can cause an increase in information risk and thus firms' cost of capital (Francis, J et al. 2005).

To conclude, in considering that the market value of firms is referred to as the unbiased present value of expected current and future cash flows discounted at the risk-adjusted cost of capital, low cost of capital indicates a better value of firm (Gaio & Raposo 2011), provided that the audit committee has the ability to increase accruals quality.

#### ***Hypothesis 4: Good Structure of Risk Management Mechanisms, Accruals Quality and Firm Value***

The findings has strongly proven that the existence of firm value effects on good structure of risk management mechanisms is mediated by accruals quality. Even if the direct path of risk management mechanisms dominated the total effects of risk management mechanisms on firm value, a significant 24% mediated effects of accruals quality within the relationship acknowledge the need of risk management mechanisms to increase the accruals quality for a firm to be better valued by the market participants.

Risk management approach to strategy by top management and a desire to view it as an integrated way is a motivation towards integration of external and internal audit, internal control and risk management committee. Following Spira and Page (2003), a good structure of risk management mechanisms for this thesis is a combination of the elements

of quality of external and internal audit, internal control efficiency and formal establishment of risk management committee.

Based on the belief that each element of risk management will not effectively work on its own, the combination of the elements mentioned above represents a mutual role of risk management within corporate governance structure of a firm that can improve financial reporting quality and thus reduce investors' information risk exposure.

The results confirmed that of previous studies, which found that managers' representations can be less biased if the bias is transparent to others. Rogers and Stocken (2005) found that management's forecasts are more biased when their misrepresentation is relatively difficult to detect and that management's communication are more likely to be biased when they are not verified by a third party (Schwartz & Young 2002). External and internal audit functions come in at this point to provide greater transparency on biased judgements made by managers so as to reduce their misleading behaviours and thus increase the quality of information provided by them. Asare, Davidson and Gramling (2008) found that both internal and external audit functions have the ability to detect misreporting behaviour of managers, as the auditors are more sensitive on managers' incentives to mislead.

In support of Brown and Pinello's (2007) statement that the audit works done by external auditors mitigate earnings management by which they control opportunistic behaviour of managers to manage earnings, an internal audit function provides an additional monitoring mechanism of the manager's actions (Prawitt, Smith & Wood 2009). In addition, Schneider and Wilner (1990) document that the effectiveness of internal audit has a parallel deterrence impact as the effectiveness of external audit on financial reporting irregularities. External and internal audit functions should be working side by side to monitor managers' behaviours that could lead to a better quality of financial reporting.

The degree of deterrence effect of both audit functions is dependent on their effectiveness rather than merely on their presence. Competency and independence of both external and internal auditors provides more meaningful evidence that justify their deterrence impacts on misleading behaviour of managers. As insignificant relationship was found by

Davidson, Goodwin-Stewart and Kent (2005), it has been criticised that its dichotomous measure of internal audit function impacts on misleading financial reports is merely based on the existence (presence or absence) of the function within a firm, which is not well-generalised among public listed firms and unable to capture the variation of nature and focus of firms in establishing such function (Prawitt, Smith & Wood 2009).

On the one hand, the move to outsource internal audit is one of the driving forces for a better change in the quality of the internal audit function. Abbott, L.J. et al. (2007) document that non-routine tasks of an internal audit function require specialised knowledge that are difficult or cost-ineffective to obtain in-house as compared to outsourcing.

Outsourced internal audit can also increase audit quality, in a way that it is outsourced to an external auditor, then there may be significant financial statement audit synergies in both cost and scope of audit (Simunic 1984).

On the other hand, big brand external auditors are perceived to be a strong mechanism, as previous studies have shown that they are able to provide quality audit services through higher qualified opinion in the case of earnings management detection (Becker, C.L. et al. 2010; Juhl, Jubb & Houghton 2007) and earnings forecast errors (Ahmad-Zaluki & Wan-Hussin 2010; Lee, Taylor & Taylor 2006).

Within a risk-based approach framework, the establishment of risk management committee signals firms' awareness of the importance of risk management and control (Hermanson 2006; Selim, G & McNamee, D 1999). However, risk management committee established within a firm is normally combined with other functions, especially with audit committee.

The combination does not promise its efficiency as Alles, Datar and Friedland (2005) and Harrison (1987) claim that this role expansion of audit committee gives rise to various doubts and critics. They argue that when the responsibility of financial reporting and risk management are burdened on the shoulders of audit committee, it will increase workload pressure that could lead to inefficiencies.

In addition, specific oversight on risk management requires adequate understanding of evolving complex organisation structures, processes and relevant risks associated with such complexity. Thus it is believed that a formal establishment of a stand-alone risk management committee separated from audit committee would be more efficient (Collier 1993; Ruigrok et al. 2006; Turpin & DeZoort 1998).

Accruals quality represents the content of abnormal accrual embedding the whole structure of firm's reported earnings. Abnormal accrual is commonly used to justify earnings management activities which embodied the manager's opportunistic behaviour. The lower the content of abnormal accrual indicates that reported earnings are derived with less managers' discretion and more presentable as a true value.

Reported earnings with high discretionary accruals are presumed to be of poor quality and less reliable and become one of the factors attributed to investor's uncertainty condition, particularly for pricing decision. Since earnings information is relevant for decision making, accruals quality can simply be considered as firm-specific non-diversifiable information risk that affects individual firms' cost of capital. Consistently, the notion as depicted by Francis, J et al. (2005, p. 296) who state that "By information risk, we mean the likelihood that firm-specific information that is pertinent to investor pricing decisions is of poor quality". As cash is the primitive element that investors priced, poor quality of accruals indicates that the information about the transformation stream of earnings into cash provided to the investors is unclear, this can cause an increase in information risk and thus firms' cost of capital (Francis, J et al. 2005).

In considering that the market value of firms is referred to as the unbiased present value of expected current and future cash flows discounted at the risk-adjusted cost of capital, low cost of capital indicates a better value of firm (Gaio & Raposo 2011). Consistent with the previous studies, this study concluded with evidence of the existence of mediated associations among good structure of risk management mechanisms, accruals quality and firm value.

**Table 6-1 Hypothesis Testing Results: Accruals Quality as a Mediator**

| Hypothesis |                                                                                                       | Result    |
|------------|-------------------------------------------------------------------------------------------------------|-----------|
| H-1        | The firm value effect of good structure of audit committee is mediated by accruals quality.           | Supported |
| H-4        | The firm value effect of good structure of risk management mechanism is mediated by accruals quality. | Supported |

***Hypothesis 12: Good Structure of Board of Directors, Conservatism and Firm Value***

This study provides firm results in explaining the relationship between certain characteristics of the board of directors with firms' financial reporting. There is evidence that can be relied upon to conclude that the characteristics of a strong board of directors can urge firms to prepare good quality financial reports and eventually promoting good value of firm. Even though there is domination of direct effects of good structure of board of directors on firm value, the existence of significant 14% mediated effects of conservatism should be taken into account.

Strong board of directors is related to the adequate representation of independent directors, small size membership and separation of CEO-chairman roles; hence, good structure of board of directors defined for this thesis is a combination of these characteristics.

Independent judgements provided by independent directors with diverse background and experience are vital for board efficient decision making, particularly to control the discretion of managers that can reduce the event of misleading financial statements (Beasley 1996) and earnings management (Peasnell, Pope & Young 2006), and thus improve the quality of financial reports. Additionally, it is also found that independent board of directors enhances the quality of financial reports in a way that they promote earnings conservatism (Ahmed, Anwer S. & Duellman 2007).

Even though a larger board is presumed to have a broader pool of knowledge that perhaps can increase its capability to monitor the behaviour of managers and the quality of

financial reports, yet many studies found differing evidence. Rahman and Ali (2006) and Ahmed, K, Hossain and Adams (2006), for instance, found that large size board does not improve the quality of reported earnings, particularly, it does not associate with lower earnings management. The risk of having board with large membership is that it causes free rider problems, inefficient decision making and reluctance to criticize managers (Lipton & Lorsch 1992). Moreover, to coordinate a large number of members can be troublesome, as members may participate less in strategic decision making (Forbes & Milliken 1999).

For a board of directors to be an effective monitoring mechanism, particularly in the market where the majority of firms' shares are substantially owned by insider (e.g. in Malaysia), the separation of CEO and chairman's roles is indeed a good practice to constraint full control by the controlling owners over decisions made by the board. In addition, studies have found that the practice of CEO-chairman's combined role can also reduce board effectiveness (Abdul Rahman & Haniffa 2005; Dechow, P.M., Sloan & Sweeney 1995; Klein 2002).

Despite the oppositions made by capital market regulators, standard setters and the academia on the important attribute of conservatism in accounting, this thesis proposes its relevance on firm valuation based on previous literature which highlights on the *ex-ante* motivations for conservative accounting. Watts, Ross L (2003), for instance, particularly posits that contracting benefits, asymmetric shareholder litigation costs, taxation benefits and political pressures are factors which justify the significance of conservatism in accounting, while Kothari, S. P., Ramanna and Skinner (2010) had documented the significance of accounting conservatism in mitigating agency conflicts between shareholders and managers.

Agency problems that is inherent in the relationship between shareholders and managers in public firms are potentially reduced by the practice of conservative accounting. Kothari et al. (2010) argue that accounting conservatism diminishes agency problem in three ways.

As for the arguments presented by Kothari (2010) and the reliance on finance literature, it is argued that the quality of financial information has a direct impact in reducing

individual firm's cost of capital (Easley & O'Hara 2004; Leuz, C. & Verrecchia 2004), specifically, accounting conservatism in reducing cost of capital and hence increasing firm value in two ways.

Firstly, conservative accounting reduces the costs of agency conflict and provide better future cash flow available to the shareholders that can reduce cost of equity (Watts, Ross L 2003). Secondly, conservatism also reduces information asymmetry which exists within the shareholders-managers relationship, as shareholders may require high cost of capital for low conservative firm as a compensation for less transparent information available for them (Ball, Ray, Kothari & Robin 2000; LaFond & Watts 2008).

In considering that the market value of firms is referred to as the unbiased present value of expected current and future cash flows discounted at the risk-adjusted cost of capital, low cost of capital indicates a better value of firm (Gaio & Raposo 2011). Consistent with previous studies discussed above, there is a positive relationship between conservatism and firm value.

***Hypothesis 13: Good Structure of Board Committee, Conservatism and Firm Value***

The establishment of specific task force of the board of directors focusing on several issues of governance is believed to have increase the reliability and relevant of financial reporting. A remuneration committee assesses the performance and determines the remuneration of corporate executives. An effective compensation committee that is able to promote good reporting quality is believed to be independent of the executives. Klein (2002) found that firms with low independent compensation committee (where the CEOs become members of the committee) have higher level of abnormal accruals. In addition, compensation committee is better able to act on behalf of the shareholders if the composition is sufficiently independent (Klein 1998).

A nomination committee's task is to identify and choose the appropriate nominees for the board of directors. In order to perform the function at its best, a nomination committee has to be completely independent of the management. Uzun, Szewczyk and Varma (2004) document how important an independent nomination process of new directors and board members is in corporate fraud deterrence.

In addition, Persons, O (2005) found evidence of low likelihood of financial statement fraud if the nomination committee is solely comprised of independent directors. Low independent nomination committee could also impair the independence of board of directors and audit committee. Shivdasani and Yermack (2002) found that there is a possibility that the board of directors become less independent as more 'grey' directors and non-independent directors will be sitting as member of the board if CEOs are appointed as members of the nomination committee. Klein (1998) suggest that the possibility of audit committee independence is influenced by the independence of nomination committee. The consideration is that because the independence of the board of directors resulted from the nomination process initiated by the committee.

Despite the oppositions made by capital market regulators, standard setter and academia on the important attribute of conservatism in accounting, this thesis proposes its relevance on firm valuation based on previous literature which highlights on the *ex-ante* motivations for conservative accounting. Watts, Ross L (2003), for instance, particularly posits that contracting benefits, asymmetric shareholder litigation costs, taxation benefits and political pressures are factors which justify the significance of conservatism in accounting, while Kothari, S. P., Ramanna and Skinner (2010) has documented the significance of accounting conservatism in mitigating agency conflicts between shareholder and the managers.

Agency problems that is inherent in the relationship between shareholders and managers in public firms are potentially be reduced by the practice of conservative accounting. Kothari et al. (2010) argue that accounting conservatism diminish agency problem in three ways:

As for the arguments presented by Kothari (2010) and reliance on finance literature, it is argued that the quality of financial information has a direct impact in reducing individual firm's cost of capital (Easley & O'Hara 2004; Leuz, C. & Verrecchia 2004), specifically, accounting conservatism in reducing cost of capital and hence increasing firm value in two ways.

Firstly, conservative accounting reduces the costs of agency conflict and provide better future cash flow available to the shareholders that can reduce cost of equity (Watts, Ross



L 2003). Secondly, conservatism also reduces information asymmetry which exists within shareholders-managers relationship, as shareholders may require high cost of capital for low conservative firm as a compensation for the less transparent information available for them (Ball, Ray, Kothari & Robin 2000; LaFond & Watts 2008).

In considering that market value of firms is referred as the unbiased present value of expected current and future cash flows discounted at the risk-adjusted cost of capital, low cost of capital indicates a better value of firm (Gaio & Raposo 2011). Consistent with previous studies discussed above, there is a positive relationship between conservatism and firm value.

**Table 6-2 Hypothesis Testing Results: Conservatism as a Mediator**

| Hypothesis                                                                                                      | Result           |
|-----------------------------------------------------------------------------------------------------------------|------------------|
| H-12 <b>The firm value effect of good structure of board of directors is mediated by earnings conservatism.</b> | <b>Supported</b> |
| H-13 <b>The firm value effect of good structure of board committee is mediated by earnings conservatism.</b>    | <b>Supported</b> |

### **6.3 Research Implications**

This study offers implications in several aspects, including theoretical, methodological and practical aspects.

#### **6.3.1 Theoretical Implications**

From the theoretical perspectives, this study provides a further understanding on the impact of corporate governance on firm value, with an inclusion of the importance of earnings quality and firm-specific factors within the relationship.

#### **6.3.2 Methodological Implications**

The methodology used in this study serves as guidance for future research within the area, particularly the employability of mediation analysis in corporate governance and earnings quality studies using secondary data.

### **6.3.3 Practical Implications**

The findings of this study provide significant practical implications not only for firms but also for the capital market participants and regulators, particularly those in developing countries, such as Malaysia, Thailand and Indonesia.

## **Chapter 7**

# **SUMMARY, LIMITATIONS AND CONCLUSIONS**

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### **7.1 Introduction**

In the previous chapter, the findings of this study were discussed and interpretations have been made accordingly. The implications of the study have also been provided in the previous chapter. This chapter summarises the thesis as a whole and thus provides recommendations for corporate governance reforms and improvements. Finally, this chapter outlines the limitations of the study and potential areas for future research.

### **7.2 Model and Method of the Study**

Although there are many studies on corporate governance and firm value, it is observed that these studies suffer from a number of major weaknesses, particularly lack of attention has been paid on the following issues: (1) the influence of earnings quality as an important element to achieve, prior to the ultimate outcome of increasing the firm value; (2) a measurement of the goodness of a specific corporate governance mechanisms and structure. (3)

The analysis of the data is based on two related streams of research on the relationship between corporate governance and the firm value. Thus the objectives are defined according to the streams. The first stream contains analytical models which specify how a specific mechanism of corporate governance and information risk relates to the value of firm. Many studies have specify a direct link between corporate governance and firm value and in some circumstances, an indirect link that operates through earnings quality. Hence, the first objective of this study is to provide evidence on whether both links exist and if so, whether one is dominant.

The second stream of research which forms the foundation for the analysis provides empirical evidence on associations between individual mechanisms of corporate governance and measures of firm value and, separately, between attributes of earnings quality and measures of firm value. With regards to the latter, an empirical relationship between firm value and earnings quality has been documented, for instance by Francis et al. (2004, 2005) and Gaiao and Raposo (2011). With regards to the former, Shleifer & Vishny (1997) and Stein (2002), among others, provide evidence that specific

mechanisms of corporate governance are related to firm value. This study reports a statistically reliable and economically meaningful association between measures of earnings quality and measures of firm value. Thus, the second objective of this study is to shed light on the extent to which this attribution is confirmed by empirical analyses.

In order to achieve the research objectives, a model has been developed to guide the study. The model development is discussed in Chapter 3.

This study uses a group of 100 randomly selected sample firms listed on the Main Market of *Bursa Malaysia* (Malaysian Stock Exchange) for the period of six years commencing from 2004. Malaysian firms has been used as a sample set as it is considered to be representative of firms operating in emerging markets by which the practice of corporate governance is based on a regulatory and voluntary basis.

### **7.3 Summary of Empirical Results**

The results of this study are discussed under three groups of findings: (1) findings from descriptive statistics; (2) findings from the measurement models; and (3) empirical findings from the mediated regression and panel data models.

#### **7.3.1 Key Findings of Descriptive Statistics Analysis**

The data revealed that the highest portion of observations are firms in the industrial product industry, represented by 185 firm-year observations or 39.28% of the 471 total observations, followed by observations of firms in the trading and services industry (24.63%) and firms in the consumer product industry (19.32%). The lowest observations are 14 (2.97%), firms in the construction industry.

With respect to the market-based firm value (measured as Tobin's Q - FV), out of total observations of 471, the average is 0.807; with the highest value, lowest value and standard deviation of 3.633, 0.204 and 0.525 respectively. For performance-based firm value (as measured as return on assets – ROA), the mean value for pooled observations is 0.096, with a maximum of .0345 and minimum value of -0.105 and standard deviation of 0.066.

The rank index of good structure of board of directors' (BD) value for the 471 pooled data shows an average of 0.496, with a maximum value of 0.812 and a minimum of 0.100.

The standard deviation for the data is 0.155. Regarding the board committees (BC) value, for the 471 pooled data, the mean value is 0.496. Across all observations for the six year period, the standard deviation is 0.150 with the highest value of 0.893 and the lowest value of 0.160. The mean value for pooled data of risk management mechanisms (RM) is 0.502, and the highest among all observations is 0.678 and the lowest is 0.178 and standard deviation of 0.118. With respect to the good ownership structure (OW), the mean value for pooled data is 0.498 with a standard deviation of 0.201 for the 471 observations. The maximum value and minimum value are stated as 0.951 and 0.021 respectively. The average for audit committee (AC) for the 471 pooled data shows a value of 0.492, with a standard deviation of 0.128, maximum value of 0.839 and minimum value of 0.072.

The mean value of accruals quality (DDA) for all the 471 observations is estimated at 0.089. The maximum value is 1.816 and the minimum is 1.452 for the pooled data, with a standard deviation of 0.378. For predictability (PRE), the mean value for the 471 pooled data is 0.004 and the standard deviation is 0.888. The maximum value and minimum value across all observations is found to be 1.962 and -2.024 respectively. With regards to conservatism (CON), as illustrated in Panel G of Table 5-6, the mean value of CON for the pooled data is -0.034, with a maximum (minimum) value of 0.148 (-0.220) and standard deviation of 0.046.

### **7.3.2 Key Findings of Hypotheses Testing**

This study mainly employs a mediation model to investigate the direct effect of individual corporate governance mechanisms on firm value and the indirect effect mediated by the attributes of earnings quality. To test for consistency, three attributes of earnings quality are used, representing several sub-models. The effects of firm-specific factors are also tested to increase the richness of the findings. The findings revealed evidence of the existence of mediated effects of accruals quality and conservatism within the association, triggered by good structure of audit committee, board or directors and risk management mechanisms on the value of firm.

#### **7.4 Limitations of the Study**

Within a specific scope of study, a few limitations have been observed to be associated with this research. Among others, generalisation made based on this research is not appropriate to be applied for firms in all industries, as firms in financial related industries are excluded from the sample. Other limitations are listed as follow:

1. Rank index for individual corporate governance mechanisms is limited to 15 elements.
2. Other firm-specific factors may be worth considering.
3. Only three attributes of earnings quality have been tested.
4. Overall, this thesis employs eight variables. Only two variables, i.e. corporate governance and earnings quality are measured using multiple measures. However, it is claimed that although the employment of one single measure is reliable to measure other variables, the use of multiple measurements for other variables might result in different outcomes.

#### **7.5 Future Research**

There are areas that require further investigation. The following issues provide opportunities for future research:

1. This thesis provides evidence on the associations between corporate governance mechanisms, earnings quality and firm value using a mediated regression model. The model is limited to variables which are associated in a unidirectional relationship (recursive), a structural equation model may be appropriate to be employed by the inclusion of a few other possible factors which behave in a different direction (e.g. non-recursive relationship).
2. Further development of a comprehensive measurement of individual corporate governance rank index, where additional elements could be considered.
3. Other earnings attributes could be considered for further investigation.
4. Analysis for longitudinal effects to increase the richness of findings.
5. Standard mediated regression analysis is employed for the study. It is anticipated that longitudinal and multi-level mediation needs to be considered in the analysis of further studies.

## **7.6 Conclusion**

This study found that it is unnecessary to state that a well-governed firm is highly valued in the capital market as well as is a highly-performance firm. This generalisation is consistent across all models with a few exceptions being observed. In most cases, direct link between corporate governance mechanisms and firm value is far more important than their indirect link mediated by earnings quality. The findings that the direct link between corporate governance mechanisms and firm value dominates the link mediated by earnings quality suggests that a good mechanism of corporate governance has a bigger payoff, by which it improves the value of firm, and thus increases earnings quality. Moreover, the importance of the indirect path is sensitive to specific attributes of earnings quality and the indirect path that is mediated by conservatism is more important than the path mediated by accrual quality.

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