Earnings management and agency costs, evidence from China

A thesis

submitted in fulfilment

of the requirements for the degree

of

Doctor of Philosophy in Accounting and Finance

at

The University of Waikato

by

Yimei Man

Abstract

Based on agency theory, this thesis investigates the link between agency costs and earnings management (EM) using data from listed public companies in China from 1999 to 2014. In this thesis, I examine whether EM reduces agency costs in China, where companies suffer from agency problems. Using static and dynamic models to test the agency costs/EM nexus, I find a significant and positive relationship between agency costs and EM based on a static model that suggests opportunistic EM in China. These results are consistent with suggestions in the literature that EM can be used opportunistically by managers with regard to agency costs (e.g., Dechow & Sloan, 1991; Guidry, Leone, & Rock, 1999; Healy, 1985; Holthausen, Larcker, & Sloan, 1995). However, I find an insignificant relationship between agency costs and EM using a dynamic model that takes into account the endogeneity issue. Therefore, my results suggest that engagement in EM has no significant influence on agency costs in China. Furthermore, board size, board independence, firm size, leverage and CEO duality, which are conventionally thought to be important in explaining agency costs, do not have a significant impact. The results add support to the growing literature on the relevance of endogeneity issues in corporate governance studies, since failing to take these into account can lead to spurious results.

This thesis examines both principal-agent and principal-principal agency costs. The concept of traditional principal-agent agency conflict caused by the separation of ownership and management was conceived in a developed market context. However, in emerging economies, principal-principal agency conflicts are the major concerns in corporate governance. Emerging economies are characterized by weak legal protection, high information asymmetry, and concentrated ownership

structures, which provide the economic and institutional roots for principal-principal agency conflicts.

Based on agency theory, Jiraporn, Miller, Yoon, and Kim (2008) relate agency costs to the extent of EM, and find the practice of EM, on average, reduces agency conflicts in the U.S. In emerging economies, with weak institutional environments and highly concentrated ownership structures, managers become affiliated to the dominant shareholders, and principal-principal agency costs become prevalent. As in other emerging economies, the Chinese market is also subject to characteristics such as highly concentrated ownership structures, weak protection for minority shareholders and uneven legal enforcement. Therefore, this thesis accommodates principal-agent and principal-principal agency costs in relation to EM in China.

The endogeneity issue was the major concern when conducting this study. We add new empirical evidence to support the growing literature on concerns relating to endogeneity issues in corporate governance studies. Consistent with the prior studies of Wintoki, Linck, and Netter (2012) and Schultz, Tan, and Walsh (2010), I show that failing to take endogeneity issues into account can lead to spurious results; therefore, caution must be exerted in making policy implications based on empirical results that fail to address endogeneity issues. I expect my results to be of great interest to academics involved in researching corporate governance topics that have inherited dynamic natures and endogeneity issues.

As agency cost is a fundamental problem in corporate governance worldwide, this study is expected to be of interest to regulatory and supervisory authorities, investors, and financial analysts. The findings are inconsistent with what is implied by Agency theory, suggesting that corporate governance in China is different; therefore conventional western market theory may not fully incorporate the

corporate governance dilemmas prevailing in emerging economies. In agreement with researchers such as Young, Ahlstrom, and Bruton (2004), I suggest that creative solutions need to be explored by emerging economies to resolve their particular agency conflicts in their specific institutional contexts, which indicates fruitful avenues for future research.

Acknowledgements

I would like to express my sincere gratitude to my chief supervisor Professor Stuart Locke for his support and helpful guidance. His knowledge and advice have helped me to keep on track and work at a smooth pace. I would like to thank him for encouraging my research and for encouraging me to grow as a researcher. His advice on both my research and career has been invaluable. I would especially like to thank my co-supervisor Dr Nirosha Hewa Wellalage for guiding me with her knowledge and expertise. Her comments and suggestions were invaluable in improving the quality of my thesis.

My sincere thanks to the Finance staff and postgraduate students in the School of Accounting, Finance and Economics, Faculty of Management, the University of Waikato for their comments and suggestions at seminars and their collegial support. Comments by participants at various seminars and conferences are also much appreciated. Helpful insights were obtained at the Financial Markets and Corporate Governance conference 2018, Melbourne, Australia.

Special thanks go to my family. My PhD journey would not have been possible without my parents' kind help and financial support. I can't thank my parents enough for encouraging me throughout this experience. Similarly, I wish to thank my friends, whose enthusiasm, interest and support in this project have given me the motivation to achieve my goal.

The support of Mr Clive Wilkinson, Management Librarian, is acknowledged with much gratitude for his prompt and patient support over a range of thesis-related issues, including database access, formatting, referencing and more. Finally, I thank my cat, Grey. Grey has helped me a lot and made my life more bountiful by keeping

me company for thousands of hours through the ups and downs of my life as a PhD

student.

Table of Contents

List of Tables

List of Figures

List of Appendices

List of Abbreviations

AC	Agency costs
ADF	Augmented Dickey-Fuller
AR	Autocorrelation
BLUE	Best linear unbiased estimators
CG	Corporate governance
CLRM	Classical linear regression model
CSMAR	China Securities Market and Accounting Research
CSRC	China Securities Regulatory Commission
DAs	Discretionary accruals
DW	Durbin-Watson
DWH	Durbin-Wu-Hausman
EM	Earnings management
ESS	Explained sum of square
FR	Firm performance
GAAP	Generally accepted accounting principal
GLS	Generalized least squares
GMM	Generalized method of moments
IAS	International accounting standards
IFRS	International financial reporting standards
IPO	Initial public offering
IV	Instrumental variable
ML	Maximum likelihood
MM	The method of moments
NDAs	Non-discretionary accruals
OLS	Ordinary least square
PA	Principal-agent
PP	Principal-principal
RSS	Residual sum of squares
SEHK	Hong Kong Stock Exchange
SEO	Seasoned equity offering
SGA	Selling, general, and administrative
SOE	State-owned enterprise
SSE	Shanghai Stock Exchange
SZSE	Shenzhen Stock Exchange
TSLS	Two stage least square
TSS	The total sum of squares
VIF	Variance inflation factors
WLS	Weighted least squares

CHAPTER 1 INTRODUCTION

1.1 Outline

This research investigates the link between earnings management (EM), agency costs (AC), and corporate governance (CG) characteristics, using data from listed public companies in China. This work is timely, given the emerging position of Chinese companies, and is significant as a robust empirical study.

Earnings are vital in managers' decision-making processes, companies' business and investment decisions by investors (Chen & Yuan, 2004). The potential to adjust accounting numbers, either fraudulently or by the astute use of financial reporting rules, is not a new phenomenon. Earnings may not always reflect the real picture of a firm's performance and it is accepted that accounting for financial reporting purposes is "a language with some manoeuvring room" (Stolowy & Lebas, 2006, p. 8).

The analysis undertaken is important, highlighting matters relating to information flows essential for an efficient capital market. Linking the behavioural issues flowing from agency theory through non-congruent goals to earnings management brings to the fore information asymmetry and signalling distortions. This study is beneficial for financial information users to gain a better understanding of the available financial information. Given agency conflicts and EM practice tend to harm the transparency of the company's financial status, this study contributes to the policymakers to by providing insights to agency conflicts and EM practice in China to better supervise the behaviour of listed companies. This study also contributes to the corporate governance literature by extending the literature beyond developed markets and providing the first empirical evidence on the role of EM in

agency conflicts in China. Last but not least, this study provides further support to the growing literature that has raised concerns on endogeneity issue in CG studies (e.g., Pham, Suchard, & Zein, 2011; Schultz et al., 2010; Wintoki et al., 2012) since our results indicate that failing to take endogeneity issues into account can lead to spurious results.

EM is defined as the practices of management to bring reported earnings to the desired level (e.g., Ning, 2009). Management's incentive to change a firm's financial picture to be more favourable connects AC with EM. Agency costs comprise both the traditional principal-agent (PA) costs and the emerging principal-principal (PP) costs. PA agency costs occur because of misaligned interests between owner and management, while PP agency costs result from the concentrated ownership structure that is prevalent in emerging economies. Based on agency theory, EM closely associates with PA; the different interests of ownership and management provide motivations for managers to manage earnings to meet their objectives and to avoid problems with owners. The EM incentive from the PP agency costs perspective is also obvious. One such example is that the majority owner would want to use EM to expropriate profits from minority shareholders or to limit the visibility of PP conflict.

The study is empirical and accommodates both static and dynamic modelling frameworks to investigate the association between the level of agency costs and the extent of EM in China. Fixed-effect ordinary least squares and generalised least squares are used in a static model to address the presence of heteroscedasticity issues. A two-step system generalised method of moment is used in the dynamic model to take account of the endogeneity problem.

The data used for this study were extracted from DataStream and CSMAR. In order to merge the data from DataStream and CSAMR, this study developed a series of codes by matching the full names of companies. All the variables were winsorized with 5% probability to remove the influence of outliers.

Based on the static model employed, EM, in general, increases AC. However, the result of the dynamic model, where the possible impact of historical AC on current AC is fully controlled, indicates no significant relation between AC and EM. The dynamic model using the two-step system generalised method of moment gives sufficient consideration to different sources of endogeneity (e.g., dynamic nature inherited in corporate governance variables, omitted variables, measurement error, and simultaneity). A static model that fails to consider endogeneity may produce a biased and misleading result and the results from a dynamic model are likely to provide more reliable inferences. Thus, our result casts doubt on a causal relationship between AC and EM. This study indicates that the AC/EM relation is subject to endogeneity issues; the past values of agency costs have a positive and significant influence on current agency costs.

Subsection 1.2 justifies the use of the Chinese market as the platform on which to conduct the research. Subsection 1.3 notes the significance of the study and Subsection 1.4 provides the organisation of the thesis.

1.2 Chinese context

Agency costs arise in an effort to resolve agency conflicts and better align the interests of ownership and management. A high level of AC indicates inefficient monitoring activities and weak corporate governance (Guariglia & Yang, 2016; Jensen & Meckling, 1976; Shleifer & Vishny, 1997). Based on agency theory, Jiraporn et al. (2008) posit that agency conflicts could induce managers to exploit

the flexibility in accounting policies to manage earnings, and they find that EM mitigates AC in the US market.

This study examines the AC/EM nexus in China. I chose China because it is the largest emerging economy and it is differs from the US and other developed markets. The legal environment in China is relatively underdeveloped compared to the US and other developed countries (Chen, Firth, Gao, & Rui, 2006). It is important to study how the AC/EM nexus differs in countries with relatively underdeveloped legal environments, such as China, considering the legal environment has significant implications for firm performance and corporate governance (e.g., La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 1998; La Porta, Lopez‑de‑Silanes, Shleifer, & Vishny, 2002).

Unlike western countries, the Communist party has a strong influence on CG in China. For example, the block holders of listed companies in China are often the State; China's company law requires Chinese companies to establish supervisory boards that typically include officials from the company's internal Communist party committee. Senior management staff typically start their careers as government bureaucrats, and they tend to have a different mindset to their counterparts in the developed markets. Therefore, the relatively underdeveloped legal environment and unique CG in China offer an excellent opportunity to examine the impact of EM activities on agency costs.

China is important as the largest emerging economy and the largest recipient of foreign direct investment among developing countries (United Nations Conference on Trade and Development, 2017). The establishment of the Asian Infrastructure Investment Bank (AIIB) and the implementation of the Belt and Road Initiative have further boosted the interest of foreign investors, financial institutions,

multinational companies, and academics in the Chinese economy. Therefore, it is important to study the CG issue in China in order to provide a better understanding for interested parties.

Agency problems are an important aspect of CG in China (Clarke, 2003). Although China has borrowed CG structures from the developed market, only the form of CG has been acquired, not the substance (Backman, 1999). Unlike the widespread shareholders in the developed market, the ownership structure in Chinese listed companies is often State-concentrated. With the presence of highly concentrated ownership, the conflict between majority shareholder and minority shareholders (PP agency conflict) can become severe in Chinese companies. Although previous studies in developed markets suggest that managerial ownership may moderate PA agency conflict (e.g., Ang, Cole, & Lin, 2000; Singh & Davidson III, 2003), owner management is not a panacea for eliminating agency problems (Schulze, Lubatkin, Dino, & Buchholtz, 2001). Especially in China, managers are rarely significant shareholders in listed companies (Jiang & Kim, 2015), indicating serious PA agency problems (e.g., Lin, Ming, & Xu, 2006; Xu, Zhu, & Lin, 2005). This thesis investigates the AC/EM nexus, taking account of both PA and PP agency costs in China.

1.3 Significance of the study

Having reviewed the previous studies on EM in China (e.g., Appendix 1), to the best of my knowledge, this is the first study specifically focusing on the interrelationships between EM, PA and PP agency costs in China, the world's largest emerging market. The significance of this research, therefore, lies in extending the current literature by testing the agency theory-derived hypothesis of whether EM is used to mitigate AC in China.

Most prior studies on agency conflicts have focused on the developed markets, and the literature on AC in emerging economies is limited. There have been calls for researching agency costs in emerging economies, and creative solutions need to be explored by countries with emerging economies to resolve their particular agency conflicts in their own specific institutional contexts (Young et al., 2004; Young, Peng, Ahlstrom, Bruton, & Jiang, 2008). This research is designed to investigate PA and PP agency costs separately in response to the call for such studies, and to deal with agency costs in depth.

This study is significant for financial information users. The relatively underdeveloped legal system negatively influences information asymmetry in the Chinese CG, and listed companies in China tend to be less transparent in terms of corporate information, which leads to a situation where managers manage earnings opportunistically to meet investors' short-term immediate interests (Wang & Claiborne, 2008). Financial reports provide an important way for financial information users to access the firms' financial position. Therefore, the quality or authenticity of the information provided is crucial for information users. Manipulated information can easily mislead investors, as investors are often fixated on earnings and unable to discriminate between the techniques applied to manage earnings and the types of fraud that can be applied in financial reports (Ikram, 2013; Sloan, 1996; Xie, 2001). Earnings management may distort financial information, affecting the authenticity, reliability, and transparency of financial information, which can mislead financial information users (see Appendix 2). By examining the AC/EM nexus among listed companies, this study helps financial information users gain a better understanding of the available financial information.

By studying the EM, PA and PP agency costs nexus in China, this study is also beneficial to policymakers, such as the China Securities Regulatory Commission

(CSRC hereafter), whose primary goal is to ensure China's securities and futures markets operate in an orderly and legitimate manner. As the highest authority of securities supervision and a counterpart of the SEC (Securities and Exchange Commission) in the US, the CSRC exercises unified supervision and management of stock market functions. EM can be driven by stock market purposes, such as capital or funding needs, or to change investors' perceptions, which has the potential to harm the transparency of financial information and investors' rights to access to fair trade. Principal-agent and principal-principal conflicts can also disadvantage shareholders, especially small shareholders. Therefore, by investigating whether EM mitigates agency conflicts in China, this study creates related understanding for CSRC to protect small investors and to supervise the behaviour of listed companies and that of their shareholders, who are obligated to obey relevant laws and regulations.

China is the world's largest emerging market. China and Hong Kong (China) have become the second and third largest global foreign direct investment recipients since 2012 (United Nations Conference on Trade and Development, 2013). With its links to the Communist Party, the Chinese market has unique characteristics and institutional background, which differentiate it from the developed markets. As financial behaviour fluctuates in response to changes in economic circumstances (Kaplan, 1985), EM practice and agency conflicts in Chinese companies may not fully apply the basic theories developed for developed markets due to the unique Chinese context. Considering the uniqueness of the Chinese market and the lack of studies on the association between EM and AC in China, this study is significant in shedding light on this particular topic.

Last but not least, this study provides further support to the growing literature that has raised concerns on endogeneity issues in CG studies (e.g., Pham et al., 2011;

Schultz et al., 2010; Wintoki et al., 2012). My results indicate that failing to take endogeneity issues into account can lead to spurious results. Therefore, I expect the results to be of interest to academics involved in researching CG topics that have inherited dynamic nature and endogeneity issues.

1.4 Summary

The links between EM and AC are investigated in this study, and this is important for at least four reasons. First, this is the first study to investigate the role of EM in agency conflict in China in response to the call for researching agency conflict in emerging economies. Second, PP agency conflict is given full consideration as one important components of agency costs in emerging economies. Third, this study is important for Chinese policymakers, such as the CSRC, because it investigates the AC/EM nexus in the Chinese institutional setting, which is significantly different from the rest of the world. Last, this study adds support to the growing concerns about endogeneity issues expressed in the literature.

This study hypothesises that, in the context of CG mechanisms in Chinese listed firms, the degree of AC (PA and PP agency costs) is strongly associated with EM activities. To address the issue, this study uses both static and dynamic regression model to examine the relationship between EM and agency costs. In addition, multivariate statistics are used to examine the influence of EM, combined with CG factors, on overall agency costs. The results of the static model suggest that discretionary accruals (a proxy for EM) are significantly and positively associated with agency costs, including PA and PP agency costs, in China. However, the dynamic model indicates insignificant association between EM and agency costs. By employing the more advanced model that considers endogeneity, this study finds that the relationship between EM and agency costs is subject to endogeneity

issues; therefore static modelling, in which the dynamic nature and endogeneity issues are not taken care of, can be biased.

The reminder of the thesis is organized as follows:

Chapter 2 provides a review of the theoretical literature on the relationship between EM and agency costs. Agency theory is used as the foundation for hypothesis development and discussion of the results. Chapter 3 provides a review of the prior literature on the fundamental elements of the study and describes the context of corporate governance in China. Based on Chapter 2 and Chapter 3, Chapter 4 establishes the hypotheses on the relationship between EM, principal-agent, and principal-principal agency costs.

Chapter 5 describes the research framework and the measurement of variables for the empirical analysis of the thesis. Chapter 6 describes the data, data sources, and the statistical methods and techniques that are employed in the current study. Chapter 7 specifies the regression model used to address the research questions in this study. The Granger causality test is used to test the causality direction between the dependent and independent variables.

Chapter 8 and Chapter 9 report the empirical results for principal-agent and principal-principal agent costs respectively. Chapter 10 concludes the thesis, clarifies the limitations of the study, and provides recommendations for potential future research.

CHAPTER 2 THEORETICAL PERSPECTIVE

2.1 Introduction

Chapter 2 reviews the finance theories that support the nexus between AC and EM to provide a theoretical rationale for this research. Earnings management represents the practices of management to bring reported earnings to a desired level. The earnings management incentives, such as the intent of obtaining some private gain, is often closely related to agency conflicts.

Agency theory provides a conceptually sound and robust empirical model for examining corporate governance considerations (Daily, Dalton, & Cannella, 2003; Shleifer & Vishny, 1997). Agency theory originally developed in the context of explaining the relationship between the owner (principal) and management (agent) of a business, where the separation of the ownership and management leads to agency conflicts and maximises the EM incentives.

In this chapter, agency theory, combined with stakeholder theory, resource dependency theory and legitimacy theory are reviewed to provide the theoretical base for AC/EM relationship. In Chapter 3, I will explore the prior studies on AC and EM empirically.

2.2 Agency theory, agency conflict, EM

The pioneering work of Ross (1973) and Jensen and Meckling (1976) analyzed the relationship between owners and management. Jensen and Meckling (1976, p. 5) define an agency relationship as "a contract under which one or more persons (the principals(s)) engage another person (the agent) to perform some service on their behalf which involved delegating some decision-making authority to the agent." To pursue the maximization of their own interests, the interests of principals and the

interests of the agent are not aligned. On the one hand, from the principal's perspective, to prevent an agent's interests diverging from the principal's interests, the principal would establish appropriate incentives for the agent and incur monitoring costs to limit the agent's aberrant activities. On the other hand, when the agent's action harms the principal's interests, bonding costs are applied to compensate the principal. The third type of cost in an agency relationship refers to "residual loss" (Jensen & Meckling, 1976, p. 5). Residual loss represents the reduction in the principal's welfare as result of divergence between the agent's decisions and those decisions that maximise the principal's welfare. Jensen and Meckling (1976) define agency costs as the sum of monitoring costs for principals, bonding costs for agents, and the residual loss.

The traditional focus of agency theory lies in the conflicts between principal and agent. The concept of principal-agent conflict was conceived in a developed market, where the ownership structure is decentralized, with strong legal protection of investors. However, in emerging markets, the major concern transfers from PA conflict to PP conflict, due to the changes in institutional settings. In emerging economies, concentrated ownership structures are common, and legal protection of investors is weak. The effectiveness of corporate governance mechanisms varies from market to market and country to country, because of the differences in the institutional environments in different markets or countries. Institutional factors are important determinants of how corporate governance operates and affects businesses' performance (Aguilera, Filatotchev, Gospel, & Jackson, 2008; Aguilera & Jackson, 2003; Ahern & Dittmar, 2012). Similarly, cultural factors, legal frameworks, religion, educational standards and gender considerations also have implications for corporate governance (Davies & Schlitzer, 2008; Zattoni & Cuomo, 2008).

Management's incentive to change a firm's financial picture to become more favourable connects AC with EM. The practice of EM can bring reported earnings to the desired level, hence, it is natural for the managers to engage in EM to satisfy self-interest (Schipper, 1989; Scott, 1997). The case for a nexus between AC and EM has been strongly asserted in prior studies. For instance, based on agency theory, Lambert (1984) examines the impact of principal and manager relations on earnings and finds that the EM (income smoothing) incentives arise with the presence of AC. Dye (1988) argues that not only the agency conflict but also the perception of a potential investor about the firm value triggers EM. EM can be used to add information value, reduce information asymmetry, and mitigate AC (e.g., Arya, Glover, & Sunder, 2003; Louis & Robinson, 2005; Warfield, Wild, & Wild, 1995). However, EM can also be used opportunistically to deteriorate AC when managers undertake EM to benefit themselves (e.g., Bergstresser & Philippon, 2006; Dechow & Sloan, 1991; Guidry et al., 1999; Healy, 1985; Holthausen et al., 1995).

2.2.1 Key concepts of agency theory

The basics of agency theory relate to the problems between principals and agents (Lambert, 2001). Most fundamentally, agency theory contributes to management research by addressing two questions. The first question refers to "how do features of information, accounting, and compensation systems affect (reduce or make worse) incentive problems?" The second question is "how does the existence of incentive problems affect the design and structure of information, accounting, and compensation systems?" (Lambert, 2001, p. 1)

Agency theory demonstrates the conflicts caused not only by the separation of ownership and management but also by the separation of risk-bearing, decision-making and control functions (Morris, 1987). Agency theory is applied in research

areas such as corporate governance, information systems, outcome uncertainty, incentives, and risk. As Lambert (2001, p. 2) states, "agency theory provides a framework for rigorously examining the link between information systems, incentives, and behaviour."

2.2.2 Agency conflict and EM

Agency theory provides a theoretical basis for research issues about the separation of ownership and management, and the separation of ownership and management leading to opportunistic acts by managers to increase their own wealth (Jensen & Meckling, 1979). Agency theory "allows us to explicitly incorporate conflicts of interest, incentive problems, and mechanism for controlling incentive problems" (Lambert, 2001, p. 1). On the issue of EM practice and agency conflicts, agency theory offers a theoretical tool to explain the effect of EM practice and agency conflicts, and the incentives behind EM practice from the perspective of agency conflicts.

Earnings are vital, and financial reports play an important role in conveying accounting information to external accounting information users. The dependence placed on accounting information strongly motivates managers to manage earnings for their personal benefit (Rahman & Ali, 2006). Jensen and Meckling (1976) refer to the managers' activities of maximising their own interests as agency costs. Therefore, agency theory provides the theoretical perspective that rationalizes the agency conflicts and the management incentives for EM.

Also, agency theory studies frequently fall into the category of EM, as management incentives and earnings are closely related. For instance, in practice, it is common that a firm's management attempts to influence earnings to "(a) maximise its compensation, (b) avoid the breaching of debt covenants of bond liabilities, which

would prevent payment of dividends, and (c) minimise reported income to lessen the possibility of governmental interference if the enterprise has high political visibility" (Dodd & Rozycki, 2008, p. 405).

The separation of management and ownership is the original concern of agency theory, which is also the key to Jensen and Meckling (1976) agency model. Over the years, the focus of agency theory has broadened beyond the concerns of owners/shareholders seeking maximum returns through share prices and dividends to incorporate other stakeholders.

In their pioneering work on agency theory, Jensen and Meckling (1976) suggest that the separation of owner and management creates information asymmetries, which provide an opportunity for agents to engage in activities that can have a negative impact on firms' performance and owners' welfare. Owners can reduce the information asymmetry and management incentive hazard by monitoring agent activities and by creating incentives for an agent to act in line with the owners' interests. Thus, according to Jensen and Meckling (1976), when the owners participate directly in the company's management or owners act as managers, agency costs can be minimised. However, Schulze et al. (2001) disagree.

Schulze et al. (2001) assert that the presence of owner management does not necessarily eliminate agency costs. On the contrary, "shareholders have incentives to invest resources in curbing both managerial and owner opportunism" (p. 99). In their study of 1376 family firms with owner management, Schulze et al. (2001) find that the assumed benefits of owner management (family ownership, in particular), are offset by agency costs and other costs of ownership. Therefore owner management, which aligns the owner's and the manager's interests, still incurs agency costs and engenders various agency threats. Schulze et al. (2001) provide

an extension to the agency theory in general by investigating shareholder incentives in agency costs and discrediting the myth of owner management as a panacea for eliminating agency costs.

Unlike the widespread shareholders in the developed market, the ownership structure in Chinese listed companies is often State-concentrated. However, managers in China are rarely significant shareholders in listed companies (Jiang & Kim, 2015), thus indicating serious PA agency problems and extensive incentive to manage earnings (e.g., Lin et al., 2006; Xu et al., 2005).

Besides traditional PA agency costs, which are the focus of agency theory, PP agency costs in emerging economies are attracting more attention. PP agency costs arise when dominant owners pursue their own targets by sacrificing minority owners' interests (Chen & Young, 2010).

Jiraporn et al. (2008) apply agency theory as a tool to evaluate whether EM is opportunistic or beneficial. Based on agency theory, Jiraporn et al. (2008) relate the degree of EM to the magnitude of agency costs and find negative PA/EM relation in the US market.

2.3 Generalised agency theory with stakeholders

In addition to the owner/management relationship, there are many other stakeholders, including employees, customers, suppliers, creditors, communities, and the general public, who have a relationship with the firm through its management. Hill and Jones (1992) successfully reconcile these multifarious stakeholders with agency theory, developing a resultant model of stakeholder-agency, which is a generalized theory of agency. "Stakeholders" refers to a group

of interest-related parties who have a legitimate claim on the firm and may vary as to the size of their stake in the firm.

Among all the stakeholders of a firm, managers play a unique role. This is because each stakeholder can be considered as a part of the firm's nexus of implicit or explicit contracts and managers occupy a central position. Managers are involved in contractual relationships with all other stakeholders, and at the same time, managers directly control the decision-making processes of the firm. Therefore, managers act on behalf of the other stakeholders (Hill & Jones, 1992). This led to the development of stakeholder-agency theory, where all stakeholders are considered as principals and managers are the agents hired by the other stakeholders. Hence, agency theory can be seen as a subset of the generalized stakeholder-agency theory.

2.4 Agency theory and board incentives

From the perspective of agency theory, incentives are vital with regard to management effectiveness. Misalignments between the board and the shareholders incur agency costs. Monitoring costs in agency theory emphasize the principals' perspective, given the strong incentive for principals to monitor the agent. However, the board's ability to monitor is often overlooked (Hillman & Dalziel, 2003). Resource dependence theorists assert that apart from its monitoring function, the board also serves as a resource provider, which enhances firm performance and maintains social resources via external connections (Hillman, Cannella, & Paetzold, 2000). Hillman and Dalziel (2003) provide a richer understanding of how board capital relates to the monitoring and provision of resources by integrating agency theory with resource dependence theory. They argue that board capital directly relates to the monitoring and provision of resources, and board incentives affect

board monitoring indirectly. In other words, board incentives have a moderating effect on the board's capital relationship with the monitoring and provision of resources.

Resource dependence theory can be integrated into agency theory. From the integrated model described by Hillman and Dalziel (2003), the role of incentive can be clearly seen to moderate the relationship between board capital and monitoring, and the provision of resources (Figure 2-1 demonstrates the integration of resource dependence theory with agency theory).

Figure 2-1 Integrated model of board capital, board incentive, and firm performance
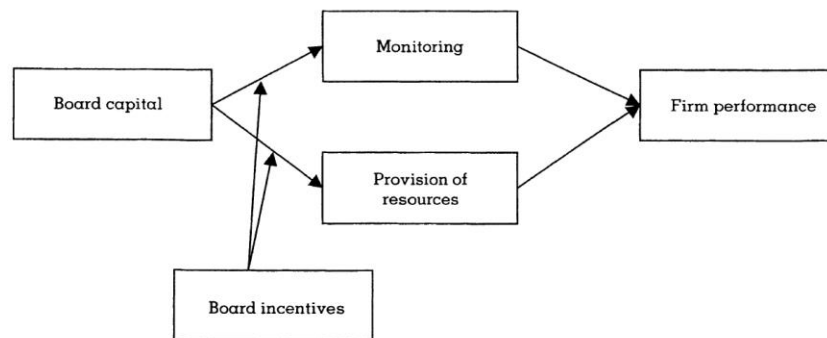
(Source: Hillman & Dalziel, 2003, p. 390)

Figure 2-1 provides a schematic linkage of Resource Dependency and Agency theories. Board capital leads to the provision of resources to firm performance, consistent with resource dependency theory. The stream of agency theory research focuses on the effects of board monitoring on firm performance. Monitoring and providing resources are important board functions and reconciling these respective emphases provides additional insights of board functions.

From the agency theory perspective, which deals with incentive issues, this study argues that the board, as the resource provider, uses all the resources as its incentives. In other words, the resources that the board possesses help the realization of the board's incentives.

17

2.5 Agency costs and legitimacy

Some research has suggested that legitimacy theory needs to be considered in EM (e.g., Sun, Salama, Hussainey, & Habbash, 2010). Suchman (1995, p. 574) defines legitimacy as "a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions." Legitimacy theory can be seen as two-fold. One layer of legitimacy is macro-oriented. The other layer focuses on the organizational level. The two layers of legitimacy theory are demonstrated in Figure 2-2.

Figure 2-2 Layers of legitimacy theory
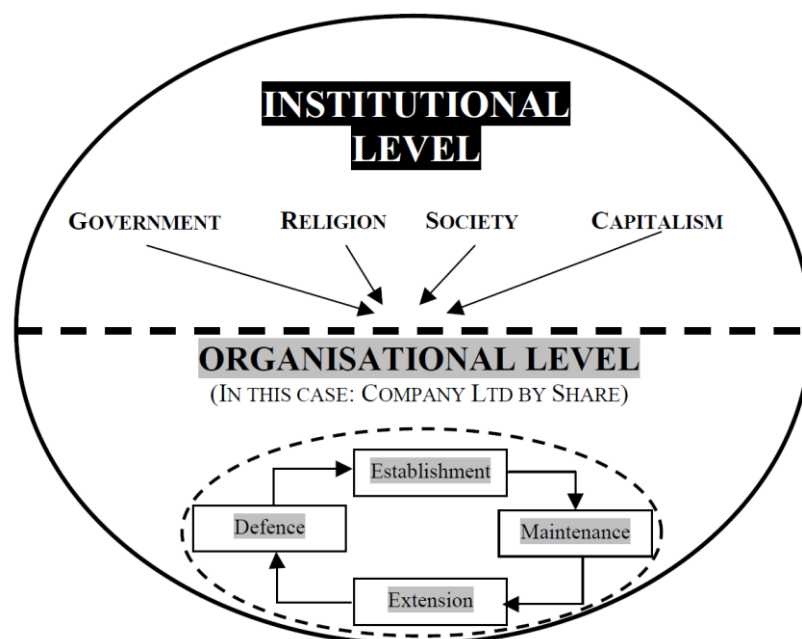
(Source: Tilling, 2004, p. 2)

The first level of legitimacy theory, which is the institutional level, deals with organizational structures, such as government, religion, society and capitalism as a whole, and explores how the organizational structure has gained acceptance or legitimacy in general society. The second level, the organizational level, deals with the congruence between "the social values associated with or implied by their

activities" and "the norms of acceptable behaviour in the larger social system in which they are a part" (Mathews, 1993, p. 350). From an agency theory perspective, the members of the first level are relevant stakeholders of the firm.

Most researchers operating from an accounting or finance perspective use an understanding of legitimacy at the organizational level. According to Tilling (2004), legitimacy theory at the organizational level suggests that there are four stages in a firm's legitimacy. As illustrated in Figure 2-2, the four stages are: firstly, establishing legitimacy; secondly, maintaining legitimacy; thirdly, extending legitimacy; and lastly, defending legitimacy. The last stage of defending legitimacy has drawn the most attention from accounting researchers, in terms of corporate social responsibility, corporate environmental reporting, voluntary disclosure, and financial disclosure policy (Fernando & Lawrence, 2014; Guthrie & Parker, 1989; Mathews, 1993; Moir, 2001).

The legitimacy of institutions is an important component of the business environment; various studies have explored legitimacy-related good corporate governance. As Lindblom (1994, p. 2) explains, legitimacy is "a condition or status which exists when an entity's value system is congruent with the value system of the larger social system of which the entity is a part. When a disparity, actual or potential, exists between the two value systems, there is a threat to the entity's legitimacy". Harmonizing and legitimating a CG system with others is desirable for firms when competing with counterparts in the global economy (Djelic, 2007; Guler, Guillén, & Macpherson, 2002; Tolbert & Zucker, 1983).

Aguilera and Cuervo-Cazurra (2004) examine the factors that affect applications of the code of good CG in countries worldwide, and they contend that companies improve national CG systems in response to both endogenous and exogenous

pressure. Endogenous pressure may arise from pressure to increase the system's efficiency, while exogenous pressure aims to acquire legitimation. Aguilera and Cuervo-Cazurra (2004) suggest that the dual forces of endogenous and exogenous pressure require firms in different countries not only to increase CG effectiveness but also to legitimate the countries' CG system.

From the perspective of stakeholder and legitimacy theory, companies' social disclosure or CSR (corporate social responsibility), which is considered part of the dialogue between the company and its stakeholders, plays a role in negotiating relationships (Gray, Kouhy, & Lavers, 1995). Ullmann (1985) was one of the first to explore legitimacy theory with regard to stakeholders. Companies with social disclosure and CSR create a positive image with their stakeholders and are recognized by a range of stakeholders. In addition, the positive image created is beneficial to the company's reputation, resulting in economic benefits (Sun et al., 2010).

From the perspective of agency and stakeholder theory, managers who are motivated by self-interest may tend to undertake EM to maximise their interests at the expense of the firm's stakeholders. "Nonetheless, stakeholders will respond to management in case their interests are damaged by earnings management practices" (Sun et al., 2010, p. 684). To avoid being dismissed, managers may attempt to manage earnings aiming at a good or "legitimate" impression for stakeholders and the public at large, to enhance the firm's legitimacy.

Agency theory, when considering stakeholder and legitimacy issues, is well suited to research on corporate governance and EM. In Sun et al. (2010)'s attempt to examine the relationship between CG and EM, they contend that to maintain organizational legitimacy, managers are motivated to engage in EM to fulfil

stakeholders' expectations, and thus to obtain social support. Also, relying on legitimacy theory, Yip, Van Staden, and Cahan (2011) investigate whether CSR reporting is related to EM, in the specific context of a political environment. They argue that companies apply various strategies, such as CSR reporting and EM, to obtain legitimacy, and they find the relationship between CSR reporting and EM is affected by the political environment.

In addition to the theories discussed above, Rajgopal, Shivakumar, and Simpson (2007) propose a catering theory to rationalize EM activities, based on stock price motivation. Catering theory is built on two main assumptions. The first assumption specifies that there is a time-varying investor response to positive earnings surprises relative to negative earnings surprises. The second assumption is that the current stock price is important to managers. Rajgopal et al. (2007) provide robust research results that show managers identify changes in investors' responses to reported earnings over time. In other words, managers cater to their investors' response by managing the accruals. In order to maintain or to increase the stock price, managers manage earnings by increasing abnormal accruals to cater for investors' appetites, and "this catering behaviour is observed when investors place a relatively high price on firms that report positive earnings surprises" (Rajgopal et al., 2007, p. 32).

As discussed above, agency theory, combined with stakeholder theory, resource dependency theory and legitimacy theory, provides the theoretical base from which to investigate the AC/EM relationship. In Section 2.6, based on a multi-theoretical orientation, the relevant CG characters will be discussed by reviewing the prior literature.

2.6 Corporate governance and agency costs

Corporate governance (CG) is a term that is often used but rarely defined. Researchers often have different interpretations of CG. In general, CG is viewed as a system of rules and factors that organize and control a company's daily operation (Gillan & Starks, 1998). Zingales (1998) defines CG as the exercise of authority, direction, and control, or a set of structures that set up boundaries for business operation. Shleifer and Vishny (1997) and Huson (1997) emphasize the importance of CG from the perspective of a company's stakeholders. A CG system provides ways to deal with the company's stakeholders to make sure they are getting returns through their investments. For a firm to perform competitively and enter the international capital market, good corporate governance is vital. In particular, internal CG mechanisms are more closely related to the company's management and thus play an important role in monitoring and constraining agency conflicts and EM (Shan, 2015).

Good CG helps to reduce agency costs and transaction costs. Hart (1995) suggests corporate governance is important when agency costs are present. In the absence of an agency problem, CG becomes relatively less important; this is because when there is no misalignment of goals, i.e. no agency conflict, the maximization of stakeholder wellbeing is the accepted priority. With the presence of an agency problem, a comprehensive contract that specifies everything in advance leaves no room for residual decisions that may incur agency costs. The standard PA model assumes there are no costs for establishing a comprehensive contract. However, in reality, contracting costs or transaction costs cannot be eliminated. Hart (1995) notes that firms are unlikely to develop comprehensive contracts, because of the high costs in practice. As a result, firms' contracts mostly end up being incomplete, with gaps or missing provisions in the contract terms. The implications of

incomplete contracts include conflicts of interest and potential legal disputes. In most cases, incomplete contracts and agency problems present simultaneously. CG is important in these cases since it provides the mechanism for decision making when the provision is missing in the initial incomplete contract (Hart, 1995).

2.6.1 Theory-based variables of interest, EM

Offering agency theory as the theoretical framework, this study examines how the degree to which EM is engaged in affects agency costs (PA and PP costs).

According to agency theory, when the agency conflict is severe, managers tend to undertake EM to mitigate the severity of agency costs. From the perspective of generalized agency theory with stakeholders, managers who act as the agent for all the interest-related parties are motivated to coordinate a nexus of various stakeholders.

Agency theory, taking consideration of stakeholder theory and resource dependence theory, explains the incentive for managers to use EM to alleviate the conflict between managers and other stakeholders.

Agency theory, focusing on the legitimacy theory issues, provides additional explanation of managers' incentives to manage earnings. According to legitimacy theory, managers are motivated to manage earnings to meet the expectations of internal stakeholders and the public, to develop and maintain the legitimacy of the firm.

This study emphasizes the impact of EM engagement on agency costs and applies an empirical approach of regression to test the relationship between EM and agency costs. Thus, the variable of interest related to agency costs is EM. Based on agency theory, with considerations of aspects of stakeholder theory, resource dependence theory, and legitimacy theory, this study hypothesizes that engagement in EM will

help to mitigate the conflict between principal and agent, and conflict between the majority of shareholders and the minority of shareholders.

2.6.2 Theory-based explanatory variables

After choosing the variable of interests, to specify the regression model, other explanatory variables are required. It is important to "choose variables and a functional form on the basis of theoretical and general understanding of the relationship" (Hill, Griffiths, & Lim, 2008, p. 151). This study selected several elements from internal CG mechanisms as control variables. This section reviews the theoretical and empirical literature on the explanatory variables and agency costs.

Internal governance mechanisms include the controlling mechanisms for various groups inside a firm, such as its management, its board of directors and its shareholders. According to agency theory, agency costs occur when the interests of the firm's managers do not match the interests of the firm's owners (Ang et al., 2000). Agency theory provides a tool to investigate the conflicts between various groups (ownership and management).

Internal mechanisms play an important role in monitoring managers' behaviour and in aligning managers' interests with shareholders' interests. Thus, internal mechanisms are essential in constraining the agency problem and should be included in the model for examining agency costs. This section reviews several corporate governance factors that have been frequently examined by previous studies with regard to agency costs.

2.6.2.1 Board independence

The Board of Directors is responsible for overseeing the activities of a company. A group of individuals is elected to comprise a board of directors to represent

stockholders and to monitor a firm's management (Weisbach, 1988). The legal responsibilities of boards and board members vary with the nature of the organization, and between jurisdictions.

The directors of an organization are those persons who are members of its board. The board of directors can be categorized into inside and outside directors by the presence or absence of other relationships with the organization.

An inside director is a board director who is also connected to the organization, such as an employee, officer, chief executive, or major shareholder. Inside directors represent the interests of the firm's stakeholders, and often have special knowledge of its inner workings, its financial or market position. An inside director who is employed as a manager or executive of the organization is sometimes referred to as an executive director. Executive directors usually have a specified area of responsibility in the organization, such as finance, marketing, human resources, or production.

An outside director is a member of the board who is not otherwise employed by or engaged with the organization and does not represent any of its stakeholders. An outside director is also known as an independent director. A typical example of an outside director is one who is president of a firm in a different industry. Outside directors are not employees of the company or affiliated with it in any other way.

Outside directors bring outside experience and perspectives to the board. Outside directors are often useful to a company since they can think objectively and rarely have a conflict of interests with shareholders or managers; therefore, outside directors are often useful in handling disputes between inside directors, or between shareholders and the board. On the other hand, there are also deficiencies associated with outside directors because they may lack familiarity with specific issues relating

to the organization's governance and they may not have adequate knowledge about the industry or sector in which the firm is operating.

There is additional evidence supporting a negative opinion on the effect of outside/independent directors. For instance, Rosenstein and Wyatt (1990) assert that the selection of outside directors is dominated by managers. They argue that given the outside directors are chosen by managers, there will be doubt about outside directors' abilities to make independent judgments on a firm's performance.

Therefore, board independence is an important factor in the internal governance mechanism (Rosenstein & Wyatt, 1990). A board that is independent of the company refers to the situation that arises when the majority of the board are outside directors who are not affiliated with the top executives of the firm. An independent board also rarely has business dealings with the company, in order to avoid potential conflicts of interests. An independent board is expected to oversee the firm's executives vigilantly to alleviate managerial opportunism and to increase shareholder value. Therefore, an independent board is often considered a necessity for good CG. However, the effectiveness of an independent board can be compromised for various reasons, such as the expertise of the outside or independent directors, and how busy the independent directors are. Lack of sufficient background may also limit outside directors' insight in a specific business, and consequently affect the firm's development in the long term. Also, when the independent directors hold positions on several different boards, it is natural to expect that their efforts with regard to each firm may be compromised.

2.6.2.2   Board size

Board size is an important element in the internal CG mechanism and relates to agency problems. There are two main board-size effects discussed in the literature:

the impact on the communication within the board; and the monitoring ability of the board.

There are divergent arguments for small and large boards. Some studies find that firms with a smaller board tend to be more effective and a bigger board size tends to lead to increased problems in communication and coordination (e.g., Muth & Donaldson, 1998; Sonnenfeld, 2002; Yermack, 1996).

In support of small boards, Lipton and Lorsch (1992) and Jensen (1993), among others, assert that increased board size raises the issue of poor communication and can harm the effectiveness of the firm. Yermack (1996) finds a negative relationship between board size and firm value, which is consistent with the findings of Lipton and Lorsch (1992). Yermack (1996) used a sample of 452 large firms in the US, Eisenberg, Sundgren, and Wells (1998) expanded Yermack (1996) study by testing the board size and firm performance relationship using a sample of small and midsize firms in Finland, achieving similar results. Eisenberg et al. (1998) also show an inverse association between board size and firm profitability in an extended sample comprised of small firms with small boards.

In support of large boards, Dalton, Daily, Johnson, and Ellstrand (1999), Firstenberg and Malkiel (1994), among others, assert large boards contain expanded information and diverse managerial experience that enhances the boards' capabilities in terms of stimulating various perspectives and monitoring. A reduced ability of the board to monitor management behaviour may result in increased agency costs.

In general, board size is considered an important indicator of board characteristics and CG. The purpose of this study is to investigate the impact of EM on agency

costs, and board size will be included as one of the explanatory variables in the model used in this study.

2.6.2.3 *CEO duality*

The term CEO duality is used when the Chief Executive Officer is also the chairperson of the board of directors. The board of directors is set up to monitor managers such as the CEO on behalf of the shareholders. The board of directors designs compensation contracts and hires or fires managers, including the Chief Executive Officer. CEO duality may benefit the firm if the CEO works closely with the board to create value.

The establishment of CEO duality is a double-edged sword. On one hand, CEO duality provides a unity of command at the head of the firm, which allows the firm to send a reassuring message to its shareholders. On the other hand, when the CEO is also the chairperson of the board of directors, it is easier for the CEO to assert control over the board and consequently make it more difficult for shareholders to monitor and discipline the firm's management.

Shareholders elect a board of directors, boards of directors elect CEOs, and in turn, CEOs must answer to their board of directors. CEO duality is controversial as explained above. From the perspective of agency theory, firms would benefit from separating the position of CEO from that of board chair.

When a person simultaneously holds the position of CEO and board chair, the CEO's behaviour will be restrained less, and the CEO could more easily act in his or her own interests since there is no separate chairperson to oversee the board and protect shareholders' welfare. The consequence of two roles for a single person is

the potential for increased conflict between shareholders and manager, and adverse effects on shareholders' interests.

McGrath (2009) mentioned that, besides the weakening of the board's oversight powers, CEO duality also raises concerns about CEO succession. Consider the situation when a dual CEO retires as CEO but retains his or her role as the board chair. This would alleviate the agency conflict since the roles are separated; however, what should not be neglected is the new CEO's position, particularly the difficulties that will be faced conducting his or her work as a new CEO. Although the last CEO has left the position, he or she would be still quite influential as the chairperson of the board, and the CEO has to answer to the board. Thus the chairperson of the board is bound to question any changes initiated by the new CEO. Board members may also side with the chairperson, given their working experience together and trust in each other. Therefore, CEO duality can cause conflicts of interest, and difficulties for the new CEO since the former CEO's influence and power continues as the chairperson of the board.

The opposing side of agency theory argues that CEO duality will lead to more effective and efficient management. Advocates of CEO duality support the stewardship theory and believe that when a CEO is holding a dual role as the board chair, it will contribute to aligning the firm's managers and board of directors, allowing the CEO to manage the firm and serve as a representative of the shareholders even more effectively.

Although as a CG phenomenon, CEO duality has been widely discussed, the prior literature on CEO duality provides inconclusive evidence on whether CEO duality is beneficial or detrimental (Dalton, Hitt, Certo, & Dalton, 2007). Many studies indicate that there is not much relationship between CEO duality and firm

performance (e.g., Baliga, Moyer, & Rao, 1996; Daily & Dalton, 1997). One may suspect that without an independent chairperson to oversee the CEO's behaviour, there are more chances for CEO corruption. However, against many people's intuition, many high-profile corporate scandals, such as Enron and WorldCom, which received much attention because of CEO corruption, actually had a separation of CEO and board chair (McGrath, 2009).

The literature shows that CEO duality has a role in agency costs. The presence of CEO duality leads to powerful managers. When the manager gains too much power, with increases in managerial entrenchment and reduction in the effectiveness of board monitoring, the agency conflicts between managers and shareholders can worsen (Finkelstein & D'aveni, 1994; Weisbach, 1988). Because of the high potential for managerial entrenchment and agency costs, investors appear to react negatively to a firm with CEO duality (Sundaramurthy, Mahoney, & Mahoney, 1997).

Agency theorists favour a vigilant board of directors, because board directors serve as the primary device to protect shareholders' interests and a vigilant board of directors, composed of a large portion of outside or independent directors, tends to have more substantial motivation to monitor its CEO. At the same time, a vigilant board of directors favours non-duality, mainly because CEO duality has the potential to increase CEO entrenchment and may result in opportunistic and inefficient behaviour (Finkelstein & D'aveni, 1994). CEO duality with a non-vigilant board of directors can result in a shortage of power, influence, and motivation to monitor and discipline the CEO's behaviour. Thus, from the agency theory perspective, CEO duality is one of the sources of agency conflict, as a result of less effective and less efficient monitoring by the board.

Prior studies provide mixed evidence of CEO duality with respect to agency costs and firm performance. In the US, using the sample of Fortune 500 companies, Baliga et al. (1996) find that both market and firm performance are unaffected by changes in firms' CEO duality status. Consistent with Baliga et al. (1996), Chen, Lee, and Li (2008) use a sample of firms in the S&P 1500 index to show no evidence of a significant relationship between CEO duality and firm performance after controlling for the self-selection bias using the Heckman two-step method. In contrast, Yan Lam and Kam Lee (2008), using a sample of H-share companies in China, found that CEO duality tends to be beneficial for non-family firms, while for family firms, non-duality status is better. In Sri Lanka, where the ownership structure is highly concentrated in family-owned businesses, the presence of CEO duality is found to be positively associated with agency conflicts in subsidiaries of multinational corporations, while there is no significant relationship to firm performance and agency costs in local public companies (Hewa Wellalage & Locke, 2011b). Given CEO duality is one of the attributes of a company's agency conflicts, this study includes CEO duality as one of the variables in explaining agency costs.

2.6.2.4   Capital structure

Capital structure is an important element regarding corporate governance since it reflects how a firm finances its operation and growth. Capital structure is a mixture of debt and equity. Debt and equity represent different sources of funds. The debt to equity ratio is the usual measurement of a firm's capital structure and provides insight into the firm's overall risk. Debt, as one way to raise capital in the capital market, has an advantage in terms of tax (since the interest payments on debt are tax deductible), and unlike equity, debt does not dilute the existing ownership. Equity, the second component of capital structure, is usually more expensive than

debt, and grants the equity holder the right to claim the firm's future earnings as a part owner.

Leverage refers to the amount of debt used to finance a firm's assets. When there is a significantly larger amount of debt than equity, the firm is considered highly leveraged. A highly leveraged capital structure is usually referred to as aggressive, and poses a greater risk to investors; however, the risk may turn into the primary source of the firm's growth.

Agency costs of debt and equity have been widely discussed (e.g., Brockman & Unlu, 2009; Jensen, 2004; Jensen, 2005; Jensen & Meckling, 1976; Kim & Sorensen, 1986). Misaligned interests of managers and stakeholders incur agency costs, including agency costs of equity that occur due to the difference in interests between managers and shareholders, and agency costs of debt that lean more on conflicts of interest between shareholders and debtholders. When managers' interests diverge from the interests of shareholders, managers engage in suboptimal decisions by compromising the target of firm value maximization. Agency costs of equity arise firstly due to compromised firm wealth, and secondly due to monitoring costs incurred to prevent managers from taking suboptimal decisions.

Agency costs of debt occur due to the conflict between shareholders and bondholders. Shareholders, who invest with bondholders' money, may not act in the best interest of bondholders. However, it is not the shareholders who make the important investment decisions in listed firms. Instead, it is the managers who themselves act as the agents of shareholders to make important decisions related to a firm's investment. In one potential scenario, the firm's management is more in favour of the shareholders; in this case, the firm's management would try various means to transfer the firm's wealth to shareholders instead of bondholders. To

prevent the managers from doing so, the bondholder/debtholders may demand higher interest rates or impose restrictive covenants. The priority given to dividends is one example of protecting debtholders from losses due to agency costs of debt. In the management's aim to please shareholders, where the firm's priority is to pay cash dividends, there will be less left for the firm to pay its debts. Thus interests generated by debt should be paid before cash dividends to equity holders.

The conflict between shareholders and bondholders is referred to as the agency cost of debt. The relationship between managers and shareholders can affect the agency costs of debt (Brander & Poitevin, 1992). Increasing the amount of debt in a firm's capital structure may lead to an increase in the agency costs of debt, including bankruptcy costs. Specifically, Brander and Poitevin (1992) study how the conflict between managers and shareholder affects the agency costs of debt and find that managerial compensation contracts play an important role in mitigating the agency costs of debt. Agency costs of debt cannot be eliminated entirely by managerial contracts. However, the setting of managerial contracts does contribute to alleviating the conflict between shareholders and bondholders.

Firms with higher insider ownership tend to have higher debt ratios due to agency costs (Kim & Sorensen, 1986). With a higher percentage of inside ownership, firms may prefer to finance capital by issuing debt, rather than equity to avoid the agency costs of equity. Comparing to levered firms, Agrawal and Nagarajan (1990) find that the managers of all-equity firms tend to have larger stockholdings and more family involvement. As a result, managerial choice in all-equity firms is more focused on minimizing the risk associated with undiversified investments by managers.

Debt and equity compose a firm's capital structure, and most studies on capital structure using the debt-equity ratio assume that all debt is homogeneous. Lasfer (1999) argues that when studying a firm's capital structure, it is not only the amount of debt but also the type of debt that matters. The various characteristics of debt (leases, convertible loans, loan capital, bank loans, overdraft, notes, and bills) are important dimensions with respect to the capital structure decision. Lasfer (1999) studied the applied debt category across different firm sizes and finds there are significant differences in the selection of debt category, debt maturity in small and large firms.

Jensen (1986) points out the benefit of debt in motivating organizational efficiency. He states that when a firm is highly leveraged, the threat caused by failing to repay the loan will motivate the organization to become more efficient. "The optimal debt-equity ratio is the point at which firm value is maximized, the point where the marginal costs of debt just offset the marginal benefits" (Jensen, 1986, p. 324). Therefore, leverage is also considered an important control with respect to agency conflict.

2.6.2.5 *Firm size*

Firm size closely relates to agency costs. Managers of firms who make decisions that conflict with the firm's goal of maximizing shareholder wealth incur agency costs. The costs of ensuring the alignment of managers' and shareholders' interests are normally higher in larger firms than in smaller firms. There are several reasons. Firstly, the sheer size of larger firms creates significant agency problems. With a larger size and a multi-layered organization, the monitoring of managers becomes more complex and difficult. Secondly, monitoring costs for larger firms are higher. Larger firms, especially multinational firms with foreign subsidiaries, encounter

more difficulties in monitoring distant managers. Also, larger firms may incur costs in aligning the goals of employees from different cultures. When the firm size increases and the business expands internationally, it is common that employees from a different culture, with different backgrounds, start to diverge from a uniform goal. Thus, aligning the goals also becomes part of the firm's costs in solving agency problems. Larger firms thus have relatively more problems in aligning the interests of the principals with the agents; larger firms usually have a higher level of agency cost.

The size of a firm has an impact on its CG mechanisms (Baker & Hall, 2004). As mentioned above, large firm size may create more difficulties relating to monitoring and may cause severe agency problems. However, for this reason, large firms, in turn, are more motivated to devote more attention and put more effort into avoiding agency costs. As a result, larger firms tend to have a higher level of CG with strict governance rules.

International evidence in the prior literature shows that larger firms, which have relatively more and better resources, tend to pay more attention to CG, and thus have more apparent CG mechanisms (Black, Jang, & Kim, 2006). In Malaysia, Ariff, Ibrahim, and Othman (2007) find a strong influence of firm size on firms' ratings, but not so much evidence for the other CG factors. In Korea, firm size is also found positively related to CG quality (Guillen, 2000), and there is evidence showing it is relatively easier for large firms in Korea to introduce outside directors to their boards (Cho & Kim, 2003).

Although there are many studies supporting the idea that firm size is positively related to CG quality, there is little evidence from the Chinese market. To

investigate the relationship between EM level and agency costs in the context of Chinese listed companies, this study employs firm size as a control variable.

2.7 Summary

This chapter provided the finance theories that support the AC/EM nexus. Agency theory is the predominant theory in agency problems. Along with agency theory, resource dependency theory and legitimacy theory were discussed as part of a theoretical rationale, and the theory-based CG variables that relate to agency problems were explained. The next chapter reviews prior empirical evidence around AC and EM and provides the background on corporate governance practices in China.

CHAPTER 3 LITERATURE REVIEW

3.1 Introduction

This chapter reviews the prior studies on EM and agency costs. The phenomenon of EM is not new. Earnings are vital to managers' decision-making processes and also powerfully affect companies' business activities. EM is acknowledged in the flexibility afforded by GAAP. There are various incentives for managers to exploit flexibility in accounting policies to manage earnings. Simply to define EM as good or bad is too simplistic. What is evident is that EM aims to alter the apparent earnings, and by altering the earnings, it actually aims to alter the impression of a business's performance. When managers manage earnings abusively to materially misrepresent or distort a firm's performance, it produces misleading information for the firm's information users, such as investors in the stock market. In such cases, EM is harmful in terms of accounting information quality and market transparency. However, it does not mean that altered earnings figures always result in a less meaningful indicator. On the contrary, it is possible that an altered figure is more realistic in terms of capturing a firm's expected future earnings. Therefore, EM can be both opportunistic and beneficial.

China is an interesting case in which to study EM activities due to its unique political control, institutional system and regulation. Unlike the US, the Chinese economy is centralized; regulators examine and approve economic decisions. The Chinese socialist system and special institutional background provide an interesting context for the study of EM activities. For example, X. Chen et al. (2008) find that local governments in China manage earnings to help listed firms to circumvent the central government's regulations on rights offerings. Chen and Yuan (2004) note that in order to overcome the accounting-based threshold (three years continuous

minimum 10% of ROEs) for rights offerings, increasing numbers of firms use their nonoperating income to manage earnings. Chen and Yuan (2004) find Chinese regulators have responded to EM behaviour by scrutinizing the excessive use of nonoperating income, and their ability to do so has improved over time.

The purpose of this research is to investigate how EM practices affect agency conflicts in China. As discussed in Chapter 2, based on agency theory, it is natural to expect that managers will manage earnings to avoid problems with owners or to limit the visibility of minority shareholders. To review studies on the two key elements, EM and AC, the rest of this chapter proceeds as follows. Section 3.2 reviews the relevant issues on EM, while Section 3.3 discusses agency problems, especially PP agency conflict in China. Section 3.4 presents CG mechanisms that contribute to constraining agency conflicts, and Section 3.5 introduces the Chinese CG background for this study.

3.2 Earnings management

3.2.1 Early discussions of EM

Research on EM can be traced back to the 1980s, originating in the US. Early work such as that of Lambert (1984) and Dye (1988) established the theory and brought insight to the understanding of EM. Lambert (1984) uses agency theory to examine the impact of owner/manager relationships on earnings. Lambert (1984) finds that the incentives for income smoothing arise to respond to principal-agent conflict. Later, Dye (1988) further rationalizes the internal and external demand for cosmetic EM. Dye (1988) asserts, on the one hand, that internal demand for earnings management is triggered by principal-agent conflict, which is consistent with Lambert (1984) argument. On the other hand, in the capital market, shareholders'

attempts to alter investors' perceptions of a firm's value are the source of the external demand for EM.

The studies of Lambert (1984) and Dye (1988) are the cornerstones of EM study in terms of theoretical contributions. In empirical research, the contributions of Healy (1985), Schipper (1989), and Jones (1991) are significant. Healy (1985) examines the association between company accruals and managers' incentives under a company's bonus contract. Healy (1985) finds that a bonus contract creates incentives for managers to choose accounting procedures selectively in order to maximise the value of their own compensation or bonus. Schipper (1989) reviews and summarizes studies on EM. Jones (1991) examines whether US companies manage earnings during import relief investigations to get import relief benefits. The Jones Model improves the measure of EM compared to prior research by DeAngelo (1986), Healy (1985), and McNichols and Wilson (1988), Jones (1991) measures the degree of earnings management through the proportion of discretionary components in the total accruals, and successfully explains around one quarter of the variation in total accruals. The Jones model is employed in many studies, such as those of Kasznik (1999), Klein (2002) and Teoh, Welch, and Wong (1998a). Dechow, Sloan, and Sweeney (1995) evaluate the ability of different models to detecting earnings management, and they find a modified version of the Jones model is the most powerful in detecting EM.

Standard accounting literature applies the discretionary accruals of the Jones model as a proxy for EM. The Jones model was conceived in the US market, and is thus more suitable for developed countries with similar circumstances in terms of politics, institutional structure, regulation and accounting standards. In the Chinese context, the relevance and suitability of discretionary accruals as an earnings management measurement has been questioned. Ding, Zhang, and Zhang (2007)

suggest two main reasons for the unsuitability of employing discretionary accruals as an EM measurement in China. First, it is difficult for Chinese firms to manage earnings through non-cash accruals due to the tax-oriented system in China. Second, given that related transactions are one of the dominant characteristics of the Chinese capital market, related party transactions tend to be a better measurement of EM than accruals in the Chinese context, as Jian and Wong (2004) recommend.However,

> *Not all firms in China belong to groups. In regions where state enterprises are poorly developed and small in scale, such as those in less developed inland provinces, firms report directly to a state asset management bureau. Other non-group-controlled firms that are burgeoning in coastal regions are private businesses established by entrepreneurs, and township-village enterprises, which are under the supervision of the township or village governments. These firms are more likely to operate independently (Jian & Wong, 2004, p. 3).*

Therefore, for Chinese privately-owned and relatively small State-owned companies, discretionary accruals are still a relevant measure of EM.

In addition to discretionary accruals derived from the Jones model, to capture EM in non-market-based, non-operating related party transactions, the earnings management proxy of "non-operating income/sales" is also employed (Bertrand, Mehta, & Mullainathan, 2002; Jian & Wong, 2004).

3.2.2 The evolving scope of EM

Research on EM was initiated in the late 1980s (Watts & Zimmerman, 1990). The definitions of EM in the literature are neither clear nor consensus-based (Dechow,

Sloan, & Sweeney, 1996). This section reviews two representative definitions of EM in the literature.

3.2.2.1   A three-category classification

Ronen and Yaari (2008) divide EM into three categories: beneficial, neutral and pernicious.   They consider "Beneficial earnings management enhances the transparency of reports; the pernicious involves outright misrepresentation and fraud; the grey (neutral) is manipulation of reports within the boundaries of compliance with bright-line standards, which could be either opportunistic or efficiency-enhancing" (p. 25).

The first category includes studies inclined to stress the beneficial effect of EM. Researchers support the opinion that EM takes advantage of the available flexibility in choosing accounting treatments, without violating the requirements of accounting standards. EM is not always negative, and is expected and demanded from both inside and outside the business, and by stakeholders in the capital market (Parfet, 2000). EM can be beneficial in signalling managers about future cash flows (Beneish, 2001; Chtourou, Bedard, & Courteau, 2001; Demski, 1998; Demski, Patell, & Wolfson, 1984; Suh, 1990).

The second category, which is the neutral group, refers to studies that portray neutral attitudes about EM. Researchers who support this idea believe that EM can be either opportunistic or economically efficient (Fields, Lys, & Vincent, 2001). Scott (2012, p. 423) states EM is " the choice by a manager of accounting policies, or real actions, affecting earnings so as to achieve some specific reported earnings objective." Also, Scott (2012) demonstrates both the positive and negative perceptions of EM. The positive effect of EM mainly rests on its function in opening up communication with outsiders. It can be difficult and costly to translate a

manager's expertise and skills about a firm to the board directors and investors, and thus communication between managers, directors, and investors is blocked in many cases. Under these circumstances, EM can serve as a way to open up communication to give outsiders some inside information on management, the financial health of the firm, and the manager's expertise, through financial statements. EM can also be beneficial in encouraging efficient contracting, given that EM provides an option for flexibility when a management contract imposes strict and incomplete terms on a manager. EM is considered "bad" when it reduces the reliability of financial reporting information. The negative effects of EM include being opportunistic, self-interested, and creating implications for accountants. Mulford and Comiskey (2002) explain that no matter whether it is within or beyond the flexibility afforded by GAAP, EM, as a tool to alter earnings, is desired and conducted to respond to certain motivations and incentives.

The third category, the pernicious group, includes studies that regard EM as detrimental. Researchers such as Chtourou et al. (2001); Levitt (1998); Miller and Bahnson (2002); and Tzur and Yaari (1999) assert that EM is harmful to the representation and transparency of financial reports. Schipper (1989) develops a framework to detect the intention to perform EM, and conditions that give rise to EM. Schipper (1989) notes that "by 'earnings management' I really mean 'disclosure management 'in the sense of a purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain (as opposed to, say, merely facilitating the neutral operation of the process)" (*p. 92).* Although Schipper (1989) is in support of the argument that EM is harmful, he also acknowledges the beneficial aspects of EM; for instance, in revealing private information. One commonly cited study by Healy and Wahlen (1999) supports the view that EM is an abusive practice. *"Earnings management occurs when managers*

use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers" (Healy & Wahlen, 1999, p. 368). EM in the pernicious group is opportunistic and driven by self-interest.

However, Arya et al. (2003) argue that unmanaged earnings are not necessarily always better for shareholders; to some extent, managed earnings to conceal information can also be beneficial to shareholders. The Chinese phrase "guoyoubuji", from the Analects of Confucius, which states that excess is just as bad as a deficiency, precisely fits with Arya et al.'s observations on the extent of transparency and EM in financial reporting. Arya et al. (2003) suggest that transparency in financial report serves the shareholders only up to a turning point; beyond that point, the increased transparency will tend to damage the interests of shareholders due to the lack of company privacy. In other words, a certain level of transparency in financial reporting motivates better performance, but too much may inhibit it adversely.

Ronen and Yaari (2008, p. 27) disagree and point out two main weaknesses of the definition of EM provided by Healy and Wahlen (1999). First, there is no clear separation between EM and normal activities that output earnings. Second, it is arbitrary to conclude that EM is harmful and misleading. To make up for the two deficiencies, Ronen and Yaari (2008) develop a three-part alternative definition of EM, where "Earnings management is a collection of managerial decisions that result in not reporting the true short-term, value-maximizing earnings as known to management. Earnings management can be beneficial, it signals long-term value; pernicious, it conceals short- or long-term value; neutral, it reveals the true short-term performance. The managed earnings result from taking production/investment

actions before earnings are realized, or making accounting choices that affect the earnings numbers, and their interpretation after the true earnings are realized" (p. 27). Ronen and Yaari (2008) propose that EM can fit in all categories, being potentially beneficial, neutral, or pernicious.

Thus the definition of Ronen and Yaari (2008) tends to be more comprehensive in describing EM.

3.2.2.2 *A constructive definition of earnings management*

A constructive definition of earnings management was developed by Ning (2009). Ning (2009) reviews the literature and finds that EM, earnings manipulation, and earnings fraud are often considered as synonymous. To overcome the inconsistencies in definitions, Ning (2009) develops a deliberate definition of EM composed of earnings management, earnings fraud, and creative accounting.

Earnings manipulation refers to "the management's action taken to bring about the desired level of reporting earnings" (Ning, 2009, p. 36). Ning (2009) differentiates the scope of earnings manipulation, EM, earnings fraud, and creative accounting.

Figure 3-1 The components of earnings manipulation

	Earnings Management	Paper Earnings Management (PEM)
Earnings Manipulation — in which "management takes deliberate steps to bring reported earnings to a desired level" (p. 33).	"refers to the earnings manipulation through exercising the discretion accorded by accounting standards and corporate laws, and/or structuring activities in such a way that expected firm value is not affected negatively" (p. 33).	Real Earnings Management (REM)
	Earnings Fraud — "refers to the earnings manipulation by violating accounting standards and corporate laws, and/or structuring activities in such a way that reduces expected firm value" (p. 33).	Paper Earnings Fraud (PEF) / Real Earnings Fraud (REF)
	Creative Accounting, "refers to the earnings manipulation practices that do not violate accounting standards or corporate laws because of the lack of relevant standards or laws, for example, when firms engage in business innovations" (p. 33).	Paper Creative Accounting (PCA) / Real Creative Accounting (RCA)

(Source: adapted from Ning, 2009, p. 34)

Based on Ning (2009), Figure 3-1 demonstrates the key components of earnings manipulation, comprising EM, earnings fraud, and creative accounting. As we can see from Figure 3-1, earnings fraud is the most aggressive type of manipulation, which violates accounting standards and corporate laws. Creative accounting is a relatively mild type of manipulation that uses the vagueness created by the lack of relevant standards and laws, while EM is undertaken using the discretion accorded by accounting standards and corporate law.

In order to develop a comprehensive definition of EM, this study combines the definitions of Ronen and Yaari (2008) and Ning (2009). This study agrees with the opinion that EM can be beneficial, pernicious, or neutral. Also, this study accepts the classification of EM and its counterparts as specified by Ning (2009). After adjustment and integration, this study defines EM as follows.

45

EM refers to practices of management designed to bring reported earnings to the desired level. It occurs either by using the discretion afforded by accounting standards and corporate laws, or through a lack of relevant accounting standards or corporate laws. EM can be beneficial, pernicious, or neutral.

This section developed the definition of EM for this study. The next section briefly discusses the common strategies used in EM.

3.2.3 EM practices

The general strategies employed to manage earnings provide a way to perceive the incentives of EM (Scott, 2012). Four common EM strategies are presented as follows.

The first strategy has been described as "taking a bath" (Scott, 2012, p. 425). Taking a bath represents the behaviour that occurs when a definite loss is happening in a firm, and the firm reports a larger loss by writing off assets and taking advantage of accrual reversal to increase the chance of reporting profits in the future. The second strategy is minimizing income. Minimizing income usually happens for the purpose of income tax consideration, or in politically visible firms with a high profit where capital assets and intangibles are written off. Thirdly, maximizing income is prevalent for the purpose of bonuses or avoiding violation of a debt covenant. The fourth strategy is income smoothing (Wild, Subramanyam, & Halsey, 2007). The primary motivation for income smoothing is to satisfy risk-averse managers' preferences for obtaining a stable bonus stream and guaranteeing relatively constant compensation. In addition, income smoothing helps to avoid violation of the covenant and smooths the covenant ratio over time. Managers smooth income to protect themselves from the risk of low reported income and subsequent dismissal.

46

3.2.4 EM techniques

Specific accounting techniques are used in practice to realise earnings strategies. This section reviews EM techniques.

Mulford and Comiskey (2002) find that the most commonly used EM technique is to take advantage of the flexibility that exists in GAAP among earnings management examples detected by the Securities and Exchange Commission (SEC) of the US. A summary of EM within the boundaries of GAAP is presented in Appendix 3.

When EM goes beyond the limits of the flexibility allowed by GAAP, it can become abusive by using fraud (e. g., improperly recognizing revenue, improperly charging asset write-offs against acquisition reserves, improper cost capitalization, misrepresenting the payment status of accounts, or improperly holding open accounting periods and continuing to book sales). Among the examples of EM exposed by the Accounting and Auditing Enforcement Releases (AAERs) of SEC, revenue recognition and expense recognition are identified as two major areas in which EM often occurs (Mulford & Comiskey, 2002).

The EM strategies and techniques employed by managers vary from situation to situation. To a large extent, the EM strategy employed depends on a manager's purpose or incentive. Therefore, management incentive plays an important role in the selection of the strategy to manage earnings. The next section introduces examples of the common incentives and motivations for managers to manage earnings.

3.2.5 Incentives for EM

This section explores the main incentives for firms to undertake EM. A large body of prior literature has been dedicated to studying the drivers behind EM (e. g., Dodd

& Rozycki, 2008; Mulford & Comiskey, 2002; Ronen & Yaari, 2008; Scott, 2012). This study categorises the common incentives into four main areas: management purposes, maintaining a stable earnings stream, stock market purposes, and contracting.

3.2.5.1 Management purposes

Management compensation is one of the main incentives for EM (Dodd & Rozycki, 2008). A close relationship between a CEO's potential compensation and the value of stocks and options holding is more likely to incur EM through discretionary accruals (Bergstresser & Philippon, 2006). When the ownership of the company is widely dispersed, and managers own a small fraction of the company, the managers' personal income won't be affected by the company's value. In this circumstance, managers may act in ways to increase their private benefits, which may reduce the value of investors' claims. Therefore, the managers' insulation from the company's performance may lead to conflicts between owner and manager, and result in reducing the company value. The alternative option is to associate managers' compensation with the company's share price, aiming to incentivize managers to act in line with the shareholders' interests. However, with this setting, a new set of problems emerges. The sensitive association between managers' bonuses and the company's share price provides an incentive for managers to exploit their discretion in reporting earnings and to manipulate the stock price of their company (Bergstresser & Philippon, 2006; Scott, 2012).

The other management incentives behind EM may include CEO turnover, insider trading and management buyout (Ronen & Yaari, 2008). In the case of CEO turnover, the existing CEO is motivated to increase his or her bonus and thus to increase his or her chance of obtaining a directorship. CEO turnover-motivated EM

is not rare in reality. One famous example refers to when Louis Gerstner took over the CEO position at IBM, and billions of dollars' worth of charges comprised of expenses related to this turnaround and future business were written off in the same year. To a large extent, these write-offs were the reason for the earnings increases reported in subsequent years (Wild et al., 2007).

Insider trading is based on private information. A violation of insider trading rules occurs when a trader takes advantage of material nonpublic information to make purchases or sales. Insider trading often motivates EM activities, given the fact that insider trading is closely tied to private information. Prior research shows that managers are more likely to sell their shares during a period when earnings are overstated, in violation of GAAP (Beneish, 1999). Also, insider traders are found more likely to sell (buy) stocks when they manipulate earnings upward (downward) (Boyer, Ciccone, & Zhang, 2006).

A management buyout is "a leveraged buyout in which managers of the firm to be taken private are also equity investors" (DePamphilis, 2009, p. 5). Managers who purchase the firm would like to pay as little as possible. Therefore the buyout process provides the managers with the incentive to manage earnings downward before buyout so that the purchase price decreases. Studies by Marquardt and Wiedman (2004); Perry and Williams (1994) provide evidence of downward earnings management before a management buyout.

3.2.5.2 *Stable earnings stream*

When smooth income brings a higher level of dividends and weakens the associative relationship between a firm's expected returns and the market portfolio's expected returns, there will be a demand for a stable earnings stream

(Beidleman, 1973). Income smoothing deliberately normalizes a firm's income with the aim of meeting a required target (Riahi-Belkaoui & Jones, 2004).

Companies are motivated to engage in EM to smooth out any apparent volatility in returns. Through EM, the excess returns in good years can be hidden as a reserve for the bad years to smooth out undesired declines in earnings (Coffee Jr, 2004). Often the managers' current-period compensation is conditional on the history of outcomes; managers would like to smooth the earnings stream at the time of the report. Apart from the reserve and compensation reasons, annual corporate income, proxy contests and foreign trade regulation also provide incentives for managers to smooth earnings (Riahi-Belkaoui & Jones, 2004).

3.2.5.3   Stock market purposes

A large body of prior study provides evidence that the practice of EM has an impact on firms' stock performance (e.g., Chou, Gombola, & Liu, 2006; Rangan, 1998; Teoh et al., 1998a; Teoh, Welch, & Wong, 1998b). Managers engage in EM to create an impact on the share price and aim to reduce the cost of capital (Wild et al., 2007).

The major incentive for EM from the stock market perspective refers to the issue of initial public offerings (IPOs) (Scott, 2012). EM has been used by issuing firms to manipulate their stock price. Managers manage firms' earnings to achieve a higher stock price before a firm goes public (Clarkson, Dontoh, Richardson, & Sefcik, 1992). There is evidence that discretionary accruals (a proxy for EM level) are often unusually high around the IPO year (Teoh et al., 1998a). Loughran and Ritter (1995) and Spiess and Affleck-Graves (1995), among others, find that issuing firms often have significant negative abnormal returns for up to five years after the offering date. Rangan (1998) finds discretionary accruals-associated EM in the

period surrounding seasoned equity offerings (SEO) are negatively correlated with the earnings changes in the subsequent year. Rangan's study provides support for the argument that the stock tends to be overpriced during the offering because of EM and the subsequent reversal of discretionary accruals would cause earnings to decline in the post-offering period.

Apart from the strong incentives for EM during the issuing period, when a firm fails to meet investors' earnings expectations, it can also cause damage to the firm's reputation and lead to an adverse influence on the firm's share price and cost of capital. Therefore, during the dividend payout period, firms are motivated to manage their earnings to meet the expectations of investors (Scott, 2012). In addition, they are motivated to meet certain target of earnings benchmarks, while mergers and acquisitions, bond covenants and debt, negotiations with employees, and regulatory constraints (tax consideration) also motivate firms to engage in EM (Ronen & Yaari, 2008).

Other stock market-related factors that motivate firms to undertake EM may include the drive to meet the quarterly earnings predictions of financial analysts, to increase income before acquisition, and the desire to decrease earnings before leveraged management buyout (Dechow & Skinner, 2000; Erickson & Wang, 1999; Wu, 1997).

3.2.5.4 *Contracting*

In addition to stock market effects, contracting also provides motivations for managers to engage in EM. For instance, managerial compensation contracts usually relate bonuses to the companies' profit; thus in order to meet the required earnings level to acquire bonuses, managers may engage in EM (Wild et al., 2007).

Debt covenant is another type of contract that motivates EM. The debt covenant hypothesis of positive accounting theory predicts EM may be undertaken for covenant purposes (Healy, 1985; Scott, 2012). Wild et al. (2007) also suggest that EM provides a convenient solution for managers when they have to pay a high price for the violation of debt covenants. The rationale is that violation of a debt covenant can be very costly for firms; therefore, to avoid violation and avoid even being close to a violation of debt covenant, managers manage earnings. Debt covenant-motivated EM has been discussed in a number of previous studies. Sweeney (1994) finds that managers manage earnings upward significantly in a sample of defaulted debt covenant firms. DeFond and Jiambalvo (1994) find that, in the year before the year a debt covenant is violated, EM or discretionary accruals are more active. DeAngelo, DeAngelo, and Skinner (1994) document conservative behaviour in troubled companies; they find companies facing a violation of debt covenant manage income downwards to use the reduced earnings as a signal to all the involved information users and in preparation for the subsequent contract renegotiations.

This section has discussed the four main incentives (management purposes, stable earnings stream, stock market purposes, and contracting) behind EM; the next section reviews some other incentives triggering EM.

3.2.5.5   *Other incentives*

EM activities are also impacted by the trade-offs between benefits and costs of managing earnings. As Watts and Zimmerman (1990) assert, managers will engage in EM when the benefit of EM overcomes its cost. For example, the presence of adverse political activity may induce managers to manage earnings downward to minimize political cost; when the risk associated is high, smoothing earnings to

avoid volatility is required; and when there are changes in top management, aligning with the new managers' interests becomes a strong incentive.

A summary of earnings management motivation is provided by Mulford and Comiskey (2002), who differentiate the conditions that motivate EM and the underlying incentives to manage earnings. Table 3-1 presents the various incentives and the associated conditions that lead to the practice of EM.

Table 3-1 Conditions and associated incentives for earnings management

Condition	Incentive
Earnings are somewhat short of the consensus earnings forecast in the market.	To avoid a potentially sharp drop in share price.
A firm is preparing for an initial public offering of its shares.	To present the best possible earnings picture so as to maximise the price at which the issue is sold.
Earnings are just above the minimum level required to earn incentive compensation, or close to exceeding the maximum beyond which no additional incentive compensation is earned.	To cause earnings to remain between the minimum and maximum earnings level so as to maximise incentive compensation.
A firm, either because of size or industry membership, or both, is a potential target for adverse political activity.	To minimise the political costs of size and/or industry membership by avoiding what might be considered excessive profit levels.
A firm is close to a violation of an earnings-related financial covenant in a credit or debt agreement.	To avoid the potential adverse effects of a covenant violation, for example, an interest rate increase, a demand for security or immediate repayment.
Earnings are either somewhat above or somewhat below a long-term trend believed by management to be sustainable.	To avoid an improper market response to earnings being temporarily off trend.
Earnings volatility is induced by a series of nonrecurring items.	To reduce earnings volatility so that a valuation penalty, associated with a perceived higher level of risk, is not assessed.
A change in the top management of the firm has taken place.	To take large write-offs immediately upon the arrival of new management, relieving future results.
Large losses associated with restructuring and related charges have been accrued in the past.	To reverse any overstated portion of the accruals in order to achieve earnings goals in later periods.

(Source: Mulford & Comiskey, 2002, p. 61)

As Table 3-1 shows, the EM incentive arises in order to avoid undesirable situations. The management incentives behind EM include reducing political costs and intervention by government agencies (e.g., antitrust regulators and the Internal Revenue Service); obtaining support from government (e.g., subsidies and

protection from external competition); and combatting demands from labour unions (Burgstahler & Dichev, 1997; Wild et al., 2007).

Table 3-1 shows that the conditions that motivate EM are usually related to weak internal control, turnover of top management, complex transactions and inexperienced boards of directors. The next section further discusses the conditions that give rise to EM.

3.2.6 Conditions giving rise to EM

Regardless of whether EM is done within or outside the flexibility of accounting principles, it is purposeful and motivated by certain conditions and incentives, which can vary over a broad range. For managers, bringing earnings to a desired level is tempting and can be the main drive to engage in EM. Different firm conditions generate different management incentives and lead to different expectations or desires with regard to earnings. The most discussed incentive is raised by conflicts between managers and shareholders (principal-agency conflict); for instance, managers' compensation maximization. When managers' compensation is tied to the performance of a firm or the level of earnings, it provides an incentive for managers to manage earnings to maximise their compensation packages, which may contain bonuses, cash payments, and/or stock. The life cycle position of the company also plays an important role in EM. One typical example is when a company is facing the issuance of an initial public offerings (IPO). Whether it is to achieve the minimum level of earnings required for an IPO or to maximise the share price with a better earnings picture, threshold firms facing IPO issuance are motivated to manage earnings.

Conditions that increase EM practices constitute an important research issue discussed in previous studies (Schipper, 1989). By reviewing the previous literature,

this section briefly discusses the conditions that give rise to EM. This study summarises three conditions that can give rise to EM activities, in Section 3.2.6.1, Section 3.2.6.2, and Section 3.2.6.3. Prior studies are divided into three topics: firm performance; information asymmetry; and accounting standards.

3.2.6.1 EM, corporate governance and firm performance

A firm's corporate governance is closely related to the extent of EM. For example, the corporate or financial background of the board directors and audit committee members is an important factor in constraining EM. Also, there is evidence that frequent meetings between the board and audit committee reduce the probability of EM (Xie, Davidson III, & DaDalt, 2003).

The relationship between EM and firm performance is one of the main streams in EM studies. Prior studies find EM is used by managers to window-dress their company's performance. Dechow et al. (1995) and Kasznik (1999) provide evidence in support of a positive correlation between discretionary accruals and a firm's return on assets. Lee, Li, and Yue (2006) expand on the work of Dechow et al. (1995) and Kasznik (1999). Lee et al. (2006) present evidence consistent with that of Dechow et al. (1995) and Kasznik (1999) concerning the relationship between EM and firm performance. In addition, Lee et al. (2006) find that EM is positively associated with expected earnings growth in the future. Therefore, prior studies in general indicate that EM is used to improve current firm performance as well as to increase the future expected earnings growth to achieve a favourable financial picture.

3.2.6.2 EM and information asymmetry

The extent of information asymmetry plays an important role in EM activities. Information asymmetry refers to the situation where one party has access to more

or better information than the other party. Information asymmetry causes an imbalance of power between managers and shareholders, information producers and information users (Mishra, Heide, & Cort, 1998).

Information asymmetry between management and shareholders contributes to engagement in EM (Dye, 1988; Trueman & Titman, 1988). When the information asymmetry is severe, it is difficult and costly for shareholders to monitor the manager's behaviour. Richardson (2000) conducted an empirical test to investigate the relationship between information asymmetry and EM, and the findings are in support of a positively and statistically significant relationship between the extent of information asymmetry and EM. Healy, Hutton, and Palepu (1999) and Welker (1995) find a negative relationship between bid-ask spreads[1] and firm disclosure policy; and provide support for the theory of a positive relationship between the presence of information asymmetry and the practice of EM. Therefore, the extent of information asymmetry is the second condition that gives rise to EM.

3.2.6.3   *EM and accounting standards*

Since EM is conducted by taking advantage of the flexibility in accounting standards, the adoption of accounting standards has significant implications for EM. The impact of accounting standards on EM has been studied in various markets.

In the countries of the European Union, Callao and Jarne (2010) find the practice of discretionary accruals increased after the adoption of IFRS (international financial reporting standards). In contrast, Zéghal, Chtourou, and Sellami (2011)

---

[1] In the literature, information asymmetry is measured in three main ways: analysts' forecast measures (Krishnaswami & Subramaniam, 1999); investment opportunity set measures (Gaver & Gaver, 1993; Penman, 1996); and microstructure measures (Choi, Salandro, & Shastri, 1988; George, Kaul, & Nimalendran, 1991; Stoll, 1989). The measurement of bid-ask spreads and dispersion in analysts' forecasts for information asymmetry are most prevalent (Brown & Han, 1992; Clarke & Shastri, 2000; Richardson, 2000).

show that the mandatory introduction of IAS/IFRS reduced the level of EM based on French listed companies from 2003 to 2006. Similarly, Barth, Landsman, and Lang (2008) find that 21 countries that apply IAS have a lower level of EM, indicating that the application of IAS may result in higher accounting quality.

In Germany, German GAAP, IAS and US GAAP are all allowed (Goncharov & Zimmermann, 2007), and Van Tendeloo and Vanstraelen (2005) present evidence that there is no significant difference in the level of EM under German GAAP or IFRS. However, Goncharov and Zimmermann (2007) find there is a lower level of EM under US GAAP than German GAAP or IAS. In general, the prior literature shows that the accounting standards employed by the company/country do influence the practice of EM. When the accounting standards are imprecise or nonexistent, the practice of EM tends to increase (Nelson, Elliott, & Tarpley, 2002).

The other conditions that can affect the extent to which EM is practiced include non-audit service fees (Kinney Jr & Libby, 2002); the issuance of IPOs and SEOs; changes in top management; and large losses or being close to the minimum level required to earn management compensation (Mulford & Comiskey, 2002).

This section reviews the EM topics in the prior literature. As discussed in Chapter 2, agency problems are a strong driver for EM. However, despite the strong assertion of the AC/EM relationship suggested by agency theory, the empirical evidence for an AC/EM relationship is scant. Therefore, the next section introduces agency costs, which constitute the other key element in this study.

3.3 Agency costs

Agency theory provides a theoretical basis for research issues relating to the separation of ownership (principal) and management (agent) (Jensen & Meckling, 1976). The separation of principal and agent generates opportunistic acts by agents

to manage earnings to increase their wealth. Thus, agency theory studies frequently fall under the category of EM (Dodd & Rozycki, 2008). Agency costs occur due to the conflicts between not only principals and agents but also between principals and principals. The next section explains and compares principal-agent and principal-principal agency costs.

3.3.1 PA agency conflict

PA agency costs occur as a result of the separation of principal and agent, as discussed in Chapter 2. Agency theory asserts that an agent will be interested in pursuing his or her objectives, instead of always maximizing the benefits of the principal (Jensen & Meckling, 1979).

Agency conflict varies with the economic, social, and political context (Scrimgeour & Duppati, 2014). The fixed image of PA agency conflict in developed countries does not suit the context of emerging economies. Typical PA agency conflict caused by the separation of ownership and management is not sufficient to describe the agency problem in emerging economies. This is because in emerging economies, with weak shareholder protection, ownership is often highly concentrated in a family or with the state instead of being widely held (Porta, Lopez-de-Silanes, & Shleifer, 1999). When ownership is dominated by a controlling shareholder, agency conflict between controlling and minority shareholders is most likely to arise (Peng, Wang, & Jiang, 2008).

3.3.2 PP agency conflict

PP agency costs occur when there is a conflict between majority and minority shareholders. In developed economies, a large body of studies has focused on PA agency conflicts (Gillan, 2006; John & Senbet, 1998; Singh & Davidson III, 2003). However, in emerging economies, PP agency costs are the major concern of CG

(Young, Peng, Ahlstrom, Bruton, & Jiang, 2008). PP agency costs in emerging economies originated from problematic agency conflicts in an attempt to adjust to suit the context of emerging economies (Wright, Filatotchev, Hoskisson, & Peng, 2005; Young et al., 2008). A concentrated firm ownership structure has become prevalent in response to the traditional owner/manager conflict in emerging economies (Dharwadkar, George, & Brandes, 2000). Without effective external governance mechanisms, a concentrated firm ownership structure intensifies conflict between controlling and minority shareholders (LaRiviere, McMahon, & Neilson, 2017; Morck, Wolfenzon, & Yeung, 2005), and it has become an important source of PP agency costs (Young et al., 2008). In India, the agency costs in mixed ownership firms are found to be lower than those in concentrated state-owned firms (Locke & Duppati, 2014). Conflict between family shareholders and non-family shareholders represents another form of PP agency conflict. Villalonga and Amit (2006) find that in family businesses, when a descendant serves as CEO, agency costs caused by the conflicts between family and non-family shareholders is higher than the traditional PA agency costs in non-family firms. Specifically, a comparison between PA conflict and PP conflict is provided in Table 3-2.

Table 3-2 Comparisons between PA and PP conflict

	PA	PP
Goal incongruence	Between fragmented, dispersed shareholders and professional managers.	Between controlling shareholders and minority shareholders.
Manifestations	Strategies that benefit entrenched managers at the expense of shareholders in general.	Strategies that benefit controlling shareholders at the expense of minority shareholders.
Institutional protection of minority shareholders	Formal constraints (e.g. judicial reviews and courts) set an upper bound on potential expropriation by majority shareholders. Informal norms generally adhere to shareholder wealth maximization.	Formal institutional protection is often lacking, corrupt, or unenforced. Informal norms typically favour the interests of controlling shareholders over minority shareholders.

Market for corporate control	Active as a governance mechanism 'of last resort'.	Inactive even in principle. Concentrated ownership thwarts notions of takeovers.
Ownership pattern	Dispersed - holding 5% to 20% equity is considered as 'concentrated ownership'. A shareholder with 5% equity stake is regarded as a 'blockholder'.	Concentrated - often more than 50% of equity is held by a controlling shareholder. Often structured as a 'pyramid' where cash flow rights are greater than ownership rights.
Boards of directors	Legitimate legal and social institutions with a fiduciary duty to safeguard shareholders' interests.	In emerging economies, boards often have yet to establish institutional legitimacy and thus are ineffective.
Top management team	Professional managers who often have made their way up through the ranks or are hired from outside after extensive search and scrutiny of qualifications. Monitored internally by boards of directors and externally by the managerial labour market.	Typically family members or associates. Monitored mainly through family consensus or self-regulation adhering to 'gentlemen's agreements'.

(Source: adapted from Young et al., 2008)

Both PA and PP agency costs are important components of agency costs. As Table 3-2 shows, PA and PP agency conflicts occur in different contexts. PP agency conflicts often take place where shareholder protection is weak, boards are ineffective, and ownership structure is highly concentrated. When the shareholding is dispersed, and shareholders' interests are safeguarded by legitimate legal and social institutions with a fiduciary duty, conflicts among shareholders tend to be replaced with conflicts between managers and shareholders. Therefore, ownership structure, institutional settings, legal protection, and CG mechanisms are fundamental in shaping agency conflicts. Emerging economies are characterized by having weak legal protection, high information asymmetry and concentrated ownership structure, which provide the economic and institutional roots for PP agency conflicts. In developed markets, with dispersed ownership structure and strong legal protection of minority shareholders, the balance is tilted towards PA agency conflicts.

3.3.2.1 Prevalence of PP agency conflict

There is a large gap between developed countries and emerging economies in terms of corporate governance (Zhao, Anand, & Mitchell, 2005).

"Emerging economies are low-income, rapid-growth countries using economic liberalization as their primary engine of growth" (Hoskisson, Eden, Lau, & Wright, 2000, p. 249). Emerging economies are split into developing economies (e. g., developing countries in Asia, Latin America, Africa and the Middle East) and transition economies (e. g., the former Soviet and China) (Hoskisson et al., 2000). The economic and institutional development in emerging economies varies with the economies' context (Wright, Filatotchev, Hoskisson, & Peng, 2005). In response to the various institutional contexts in emerging economies, companies adjust their corporate governance strategies correspondingly (Boyer & Hollingsworth, 1997; Feldman & Rafaeli, 2002; Peng, 2003; Peng, Lee, & Wang, 2005; Peng & Zhou, 2005). Many emerging economies, such as China, Russia, South Korea and Thailand, have adopted CG strategies from the Anglo-American system. However, these emerging economies have only inherited the form of CG in developed countries, not the substance (Backman, 1999).

Compare to developed countries, institutional settings and organizational activities in emerging economies are relatively weak and unstable (Young et al., 2008). Concentrated ownership is the main attribute of the prevalent PP agency costs in emerging economies as minority shareholders would not exist with a dispersed ownership structure (Young et al., 2008).

3.3.2.2 The consequence of PP conflict

Young et al. (2008) summarise multilevel organizational consequences and primary manifestations of PP conflicts. PP conflicts have consequences at (from highest to

lowest) the country level, the intermediate level and the firm level. For individual firms, the effect of PP agency conflict is twofold. First, PP agency conflict affects monitoring and bonding costs, and second, it affects the company's organizational strategy and competitiveness.

Both monitoring costs and bonding costs are high in emerging economies because of PP conflicts. Young et al. (2008) propose three reasons for the high monitoring costs. First, due to the ambiguous institutional structure, the terms of contracts are difficult to specify and measure and this makes monitoring more difficult. Second, managers and controlling shareholders are bonded together; as a result, many of the traditional monitoring mechanisms, such as the board of directors, become inefficient. Third, concentrated ownership leads to decreases in stock market liquidity, share prices fail to reflect information sufficiently and this damages the monitoring capacity of the capital market in emerging economies. Bonding costs, as an implicit guarantee against expropriation, would tend to attract more minority shareholders. Examples of bonding costs include building up a reputation for being opposed to expropriation, and issuing American Depository Receipts (ADRs) to alleviate minority shareholders' concerns.

The other consequence of PP conflicts lies in their effect on organizational strategy and competitiveness. With concentrated ownership and inefficient monitoring mechanisms, firm strategies are likely to be corrupted. Actions such as employing related employees, enhancing controlling shareholder's interests by harming firm performance, reducing expenditure on innovation, and increasing cost capital for higher dividends to attract minority shareholders, damage the firm's valuation and competitiveness, and further worsen PP agency conflicts.

3.4 Corporate Governance mechanisms

The definitions of CG provided in the literature are not unanimous (Gillan, 2006). In general, CG is considered as a system that controls and directs companies, and CG mechanisms are categorized into two groups: internal governance mechanisms and external governance mechanisms (Gillan, 2006; Weir, Laing, & McKnight, 2002).

3.4.1 Internal governance mechanisms

Internal governance mechanisms include the controlling mechanisms operating in the various groups inside a firm, as demonstrated in Figure 3-2.

Figure 3-2 Internal corporate governance mechanisms
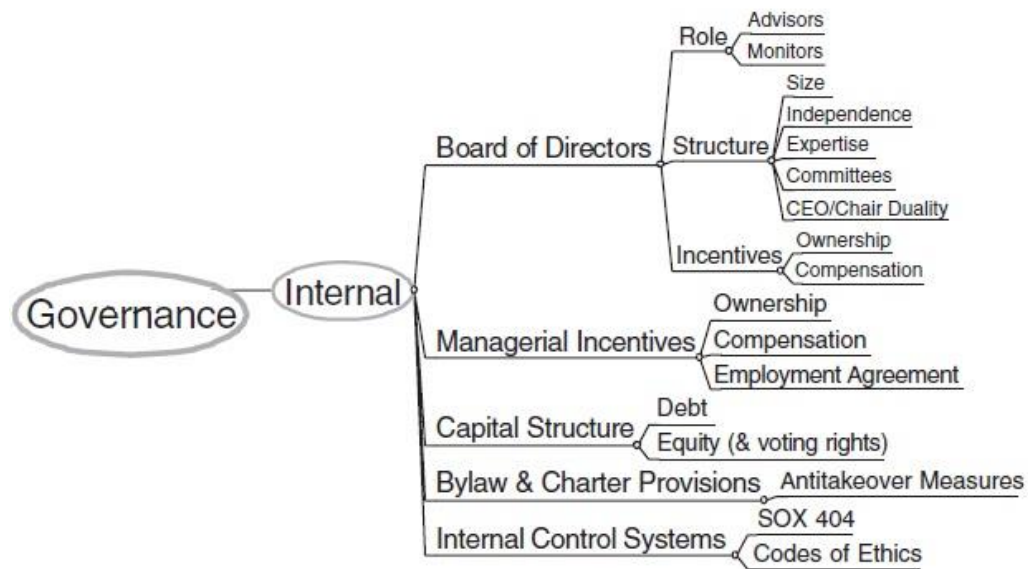
(Source: adapted from Gillan, 2006, p. 384)

Figure 3-2 shows that internal corporate governance can be divided into five categories, including the board of directors, (e.g., the director's roles, the board structure, and the board incentives); managerial incentives; capital structure; bylaw and charter provisions; and internal control systems. The following five subsections

provide reviews of each of these five components of internal corporate governance mechanisms.

3.4.1.1 Board of directors

The board of directors is comprised of a group of individuals who are elected to represent stockholders to monitor a firm's management (Weisbach, 1988). A large body of prior studies has focused on the board of directors as an important factor in internal CG mechanisms, and shows that management characteristics have a significant impact on the engagement of EM (e.g., Du, Lai, & Pei, 2016; Qi, Lin, Tian, & Lewis, 2017).

The primary roles of the board of directors are to make decisions on behalf of their shareholders and to fairly represent the interests of shareholders. Board directors are divided into two categories: inside directors who are also the managers of the company, and outside directors who are independent employees of the company. The board characteristics present great potential for agency conflict. The prior research presents evidence that a high proportion of inside directors motivates the board to make decisions more beneficial to the managers (Reddy, Locke, & Scrimgeour, 2010). In China, Chen et al. (2006) find that an increase in the proportion of outside directors on the board contributes to the reduction of fraud committed by companies.

Other board characteristics include board size, board diligence, and board expertise. Board size is an important element in the internal CG mechanism and closely relates to agency problems. There are pros and cons for both small and large board sizes. Small boards are easier to manage and tend to be more effective. However, large boards tend to have expanded resources since more board members have external sources of information (Eisenberg et al., 1998).

A large body of prior literature has established that board diligence and board expertise are essential board characteristics. For instance, researchers have found that more diligent boards lead to more effective management (Conger, Finegold, & Lawler, 1998; Vafeas, 1999). The diligence of the board can be observed in terms of the number of board meetings, the level of preparation for meetings, attention in meetings, and action after meetings. (Carcello, Hermanson, Neal, & Riley, 2002). A more diligent board is expected to be more efficient, caters for shareholders' demands better, and aligns manager's incentives with shareholders better. Therefore board diligence is considered an important indicator of agency conflicts.

The monitoring role of board directors is important in improving CG quality (Lipton & Lorsch, 1992). There are several factors that limit boards' effectiveness in carrying out their monitoring functions. The first factor that hinders board effectiveness relates to the limited time spent by the directors on each meeting or on the business of the board. Outside directors may take a role in many boardrooms, and typically, when they finally sit in a boardroom, most of the time they will be occupied by formalities like management reports, which leave no time for directors to exchange meaningful ideas. Particularly with large boards, there is often insufficient time for all the members to express their ideas.

Secondly, the complexity of information makes it difficult for board directors to carry out their duties. Lipton and Lorsch (1992) emphasize that managers and directors are supposed to devote themselves to organizing and conceptualizing the provided data, instead of drowning in the complexity of the data they receive. Even with well-organized data, outside directors may still find it difficult to make a decision based on the existing information, considering that outside/independent directors may lack sufficient experience and knowledge in the particular industry or company affairs. This phenomenon has led to the proposition that the more time

directors spend on company affairs, the more diligent they are, and the more open exchange of ideas they have, the better they can manage and monitor the company.

Other factors that limit board effectiveness include lack of cohesiveness, overpowered CEOs/top management, and confused accountability (Lipton & Lorsch, 1992, p. 23). To help board directors monitor a company's performance more efficiently, Lipton and Lorsch (1992) propose measures such as reducing the board size moderately, maintaining at least a 2% ratio of independent directors to other directors, and increasing board meeting frequency and board meeting duration. Board directors are expected to be diligent enough to spend at least 100 hours annually on each board to prepare for regular meetings, reviewing reports in advance. Notably, board diligence has an important impact on how effectively boards carry out their monitoring functions, and is thus an important indicator of the company's CG.

The importance of board diligence is supported by empirical studies. For example, in Malaysia, Foo and Zain (2010) tested the relationship between board diligence and the firm's liquidity, and suggest that board diligence indicates active monitoring of the firm's management and more alignment between managers' incentives and shareholders. Thus board diligence is expected to mitigate agency conflicts as well as information asymmetry and to positively associate with liquidity. Their empirical results support the hypotheses. However, there are also opposing arguments in the literature. For instance, Vafeas (1999) examines whether the frequency of board meeting addresses CG problems, and finds a negative association between the frequency of board meetings and firm performance, which indicates that board meetings with regard to CG serve as a reactive approach instead of a proactive one. The increased number of board meetings, in this case, led to weaker CG or firm performance.

Board independence is another important factor in CG (Rosenstein & Wyatt, 1990). An independent board is considered a necessity for good corporate governance. Outside or independent directors with multiple directorships have a strong incentive to contribute to the decision-making process in order to build their reputations as experts (Fama, 1980; Fama & Jensen, 1983). However, the effectiveness of independent board members can be compromised in a number of ways. One example relates to the expertise of outside directors. Lacking sufficient background may limit outside directors' insight into a particular business, and consequently, affect the firm's development in the long run. The 'busyness' of board directors is also associated with CG quality. Prior research indicates that directors with multiple directorships tend to be more at risk of opportunistic behaviour (Gilson, 1990). To prevent directors with multiple directorships engaging in EM, the quality of audit service must increase with the number of directors with multiple directorships (Carcello et al. 2002). Also, when a director is sitting on a large number of boards, due to the level of distraction, the director may not be able to provide thoughtful and quality oversight of the firm's executives. To measure the degree of board independence, the percentage of inside directors on the board is often used (Ahmed & Duellman, 2007).

3.4.1.2 *Managerial incentives*

Managerial incentives are important components of internal governance mechanisms, and managerial incentives are, to a large extent, influenced by ownership structure. As in other emerging economies, the ownership of listed companies in China is highly concentrated, as a result of the antecedent institutional conditions.

The concept of corporate governance was introduced in China by the end of the 1980s. As a first step to introducing CG, a legalistic CG system was developed, similar to the Anglo-American CG system. However, the previously enforced central planning economy led to the phenomenon of a concentrated ownership structure with dominant state-shareholders in Chinese listed companies (Wei & Geng, 2008). In China, State-owned enterprises are invested in or participated in not only by the Chinese central government but also by local and provincial governments. Under China's multi-layered governmental system, the target interests of central State-owned enterprises and local State-owned enterprises are different from each other. Central government pays more attention to preserving or increasing the value of state-owned assets. Local governments focus mainly on state-owned enterprises' contributions to the local economy, municipal construction, employment, and tax revenue. Chinese local governments even provide subsidies to the relevant local state-owned listed companies to manage their earnings and further enhance their operating performance. In other words, "local governments intimately dance with listed firms to the tune set by the central government" (X. Chen et al., 2008, p. 273). Therefore, highly concentrated ownership in China produces managerial incentives that have the potential to worsen agency problems.

3.4.1.3 Capital structure

Debt and equity are the two main means for companies to raise capital externally in capital markets. The proportions assigned to debt and equity establish the company's capital structure. There are pros and cons for both debt financing and equity financing. The most obvious advantage of financing with debt refers to the interest tax shield since the interests on borrowings are often tax-deductible.

Prior literature has suggested that debt can act as a self-enforcing governance mechanism. This is because, with the presence of debt, managers are obligated to generate enough cash flow to pay off interest and principal, and the potential agency costs of free cash flow can be mitigated (Grossman & Hart, 1982; Jensen, 1986, 1993). However, the opposing argument suggests that the interest on debt is relatively cheap and can be easily paid off from the company's earnings; therefore, there is not enough incentive for managers to generate more cash flow.

The advantage of equity investment is that companies do not take on debt and thus have no need to repay an investment. However, the ownership of the business will be diluted, as the company accepts the equity investment in exchange for partial ownership.

3.4.1.4   Bylaw and charter provisions

"The bylaw and charter provisions pertain to those governance features that serve as potential barriers to the market for corporate control" (Gillan, 2006, p. 388). Examples of governance features acting as bylaw and charter provisions include poison pills (a tactic used by companies to make stock shares of the company look unattractive, and thus to prevent or discourage hostile takeovers), staggered elections, and classified boards. Staggered elections refer to a strategy by which the board directors are elected for separated times. In a classified board, the board directors serve for different term lengths depending on their particular classification. Poison pills, staggered elections, and classified boards are bylaw and charter provisions used by companies to prevent takeover attempts. The advantage of these bylaw and charter provisions is to make hostile takeover attempts more difficult. The existing literature opposes such CG features, and provides evidence

of a negative association between antitakeover measures and firm performance (Bebchuk & Cohen, 2005; Daines & Klausner, 2001; Field & Karpoff, 2002).

3.4.1.5 *Internal control systems*

Internal control systems encompass a set of rules, policies, and procedures by which companies maintain environments that stimulate incorruptibility and prevent fraudulent activities by management and employees. Internal control systems help to provide reasonable assurance on matters such as the reliability of the company's financial report, the company's effective and efficient operation, and the compliance of the company's activities with applicable laws and regulations. The Sarbanes Oxley Act Section 404, as an example of internal control systems, aims to reduce corporate fraud by increasing the stringency of procedures and requirements for financial reporting. Another example refers to the company codes of ethics, which provide a guide to ethical principles that are consistent with the company's core values and a set of standards to which professionals should adhere. Breaking the codes of ethics may result in termination or dismissal of management. Therefore, an internal control system is an effective measure to make universal compliance from all employees easier and to set up better environments for management to implement CG.

3.4.2 External governance mechanism

External governance mechanisms refer to the outside influences on the governance of the firm. As shown in Figure 3-5, consumer groups, clients, and government regulations are all sources of eternal governance.

Figure 3-3 External governance mechanisms
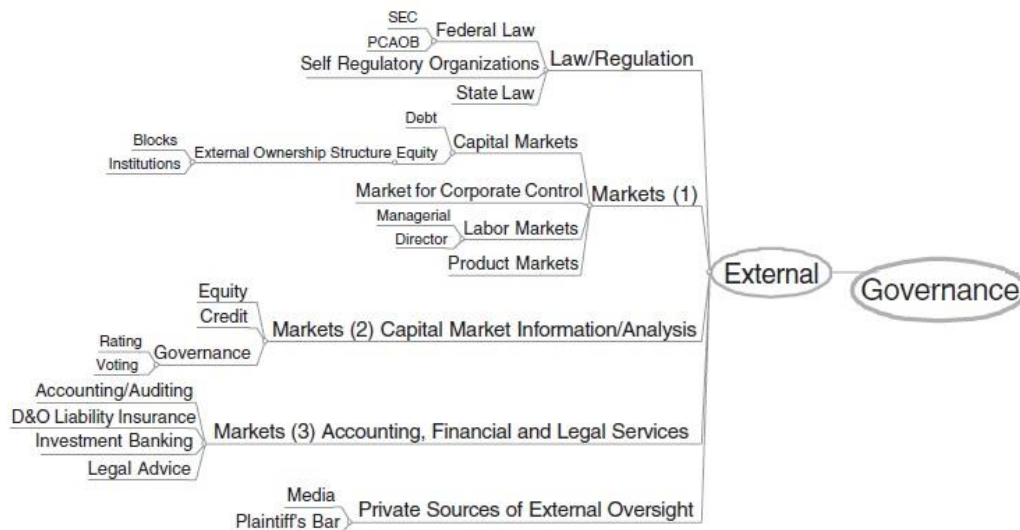
(Source: adapted from Gillan, 2006, p. 384)

In a publicly traded firm, external shareholding is one of the external governance mechanisms (Gillan, 2006). External shareholding refers to those shares that are held by institutions, blockholders, and individuals outside the company. External information users usually obtain their financial information from company financial reports, which convey the company's financial information to those outside of the firm. When managers' compensation or promotion is evaluated based on the firm's performance in the stock market, managers are motivated to manage earnings to meet the investors' expectations for their own personal benefit. Therefore, the higher the proportion of external shareholding, the greater the potential for agency costs. Also, external shareholders provide more incentive to ensure effective monitoring. Prior studies provide evidence that increased external shareholdings result in better firm performance (Leech & Leahy, 1991; Shleifer & Vishny, 1986).

Publicly traded firms operate under legal constraints. As a disciplining mechanism, corporate control can be effective when internal mechanisms fail. Companies with

inappropriate internal control would most probably be associated with poor firm performance. As a result, it is easy for other management teams in the market to gain control of the company. Therefore, the threat of takeovers in the market motivates management to enhance their firm's performance (Kennedy & Limmack, 1996; O'Sullivan & Wong, 1999).

3.5 Research background in China

This section presents the relevant background of listed companies and the stock market in China. Chinese listed companies have less corporate information available than do listed companies in developed economies. The gap between Chinese listed companies and listed companies in developed economies is significant (Wang & Claiborne, 2008). The main differences include, for instance, the ownership structure, and political control of CG. In this section, the distinctive features of Chinese CG are discussed.

3.5.1 State-owned ownership in China

The State is often the majority shareholder in companies listed in China, and State-owned enterprises (SOEs) make up a large portion of Chinese listed companies. By investigating all the listed companies in China from 1994-2000, X. Chen et al. (2008) found that Chinese local governments helped related local State-owned listed companies with EM by granting subsidies. Furthermore, they provide evidence that, to a great extent, this behaviour of local governments helped listed companies to cross the offering threshold (an average return on equity of 10%, from 1994 to 2001, which was regulated by the central government). With boosted profit, there is less chance of listed companies being delisted. However, from 2001, after the Chinese central government became aware that local governments had been involved in EM,

the CSRC started to exclude the effect of transitory non-operating profits to refine the return on equity (ROE) benchmark.

In the original work on agency costs by Jensen and Meckling (1976), a zero agency-cost scenario, by definition, refers to cases of firms owned by a single owner-manager. When the firm's equity is partially owned by managers and partially owned by shareholders, agency costs occur due to the separation of management and ownership. In modern corporations, which are publicly traded, it is rare that managers entirely own the firm's equity. Therefore, there cannot be no-agency-costs-based firms among publicly traded firms. Without no-agency-costs-based firms, the study of agency costs often lacks a reference point.

Ang et al. (2000) use data on non-publicly traded firms, where some firms' managers own 100 percent of the equity, to investigate agency costs. Their study contributes significantly by estimating agency costs in the so-called no-agency-costs-based case firms. Their empirical result suggests that agency costs are inversely related to the manager's ownership share, indicating that managerial ownership helps to reduce agency costs.

Ang et al. (2000) find managerial ownership reduces PA agency costs in the US market. Agency problems in China are subject to the unique Chinese economic environment and institutional system. In China, more than 60% of listed companies are State-owned, which is much higher than for their counterparts worldwide. For instance, only 0.8% of listed companies in Japan are State-owned, and State ownership is 0.08% in the UK, 6.3% in Germany, 5.11% in France, and 23.5% in Singapore (Li & Zhang, 2010).

It is noteworthy that the ownership structure of Chinese listed firms is very different and unique compared to other countries. An ownership structure dominated by the

State creates conflict between minority shareholders and majority shareholders, which is different from the traditional agency costs between the principal (owner) and agent (managers). The agency costs caused by conflict between minority shareholders and majority shareholders are categorized as PP conflict. PP conflict is prevalent in emerging economies with weaker investor protection and companies with concentrated ownership structure, as discussed in Section 3.3.2.

3.5.2 Accounting standards implementation in China

The Chinese Ministry of Finance issued a series of new accounting standards that were convergent with International Financial Reporting Standards (IFRS) in 2006. The convergence process of Chinese GAAP with IFRS was divided into four stages (Peng & van der Laan Smith, 2010).

The first stage was from 1993 to 1997, in which a market-oriented accounting model was introduced to the Chinese accounting system. The second stage was from 1998 to 2000, during which China's Ministry of Finance issued an Accounting System for Joint Stock Limited Enterprises, replacing the 1992 system. Meanwhile, ten specific Chinese Accounting Standards were promulgated. The third stage was from 2001 to 2006. The 2001 Accounting System replaced the 1998 Accounting System. The ten specific standards extended to sixteen Chinese Accounting Standards that comprised five premier standards, five modified standards, and six new standards. The fourth stage was implemented from 2006. On February 15, 2006, China's Ministry of Finance officially released an enterprise system of accounting standards. The regulations were put in force for listed companies on January 1, 2007. The Basic Standard was modified to replace the 1992 Basic Standard. A total of 38 Chinese Accounting Standards were issued to replace the accounting system implemented in 2001, as well as the 16 Chinese Accounting Standards promulgated

in 2001. The 2006 enterprise system of accounting standards shows the tendency of Chinese accounting standards to be more and more consistent with the IFRS.

Prior literature provides evidence that the level of earnings management is affected by the adoption of accounting standards. For example, Callao and Jarne (2010) found the level of EM increased after the adoption of IFRS in the European Union. In contrast, Zéghal et al. (2011) showed that the mandatory introduction of IAS/IFRS reduced the level of EM in French listed companies from 2003 to 2006. Similarly, Barth et al. (2008) argue that adopting IAS contributed to a lower level of EM in 21 countries, and Ho, Liao, and Taylor (2015) also find evidence of reduction in accrual-based earnings management after IFRS adoption in China.

3.5.3 Define A-shares, B-shares, and H-shares in Chinese stock market

The Shanghai Stock Exchange (SSE) and Shenzhen Stock Exchange (SZSE) are two independently operating stock exchanges in mainland China. The SSE and SZSE are both directly supervised by the China Securities Regulatory Commission. The Hong Kong Stock Exchange (SEHK), located in Hong Kong China, is the second largest stock exchange in Asia.

The majority of companies listed on the Chinese exchanges offer two types of shares: A-shares and B-shares. A-shares are issued by domestic Chinese companies, and are only available for purchase by domestic institutions, organizations and mainland Chinese citizens. A-shares are only quoted in Chinese RMB. By the end of 2012, the State-owned holding amounted to a total of 953 listed companies, accounting for 38.5% of A-share listed companies in China. The total market capitalization of State-owned holding companies was 13.71 trillion Yuan,

accounting for 51.4% of the A-share listed companies' total market capitalization in 2012 (Wang, 2013).

In China, B-shares are quoted in foreign currencies (US dollars on the Shanghai Stock Exchange and Hong Kong dollars on the Shenzhen Stock Exchange) and are open to both domestic and foreign investment. From 2001, the government has allowed mainland Chinese residents to invest in both A-shares and B-shares instead of limiting investment to A-shares only (with a proviso that requires locals to set up a foreign currency account).

H-shares in China are shares issued by companies (after receiving approval from the CSRC) that are registered in the mainland but listed in Hong Kong. Domestic institutions and organizations are allowed to invest in H-shares, but not mainland citizens. Besides B-shares and H-shares, foreign shares in China also include the N-share, L-share, and S-share, which are issued by Chinese companies listed on the New York, London and Singapore stock exchanges. However, very limited numbers of N-shares, L-shares and S-shares are issued; the majority of foreign shares issued in China are H-shares. Figure 3-6 shows the shareholding structure of the Chinese stock market.

Figure 3-4 Shareholding structure in the Chinese stock market
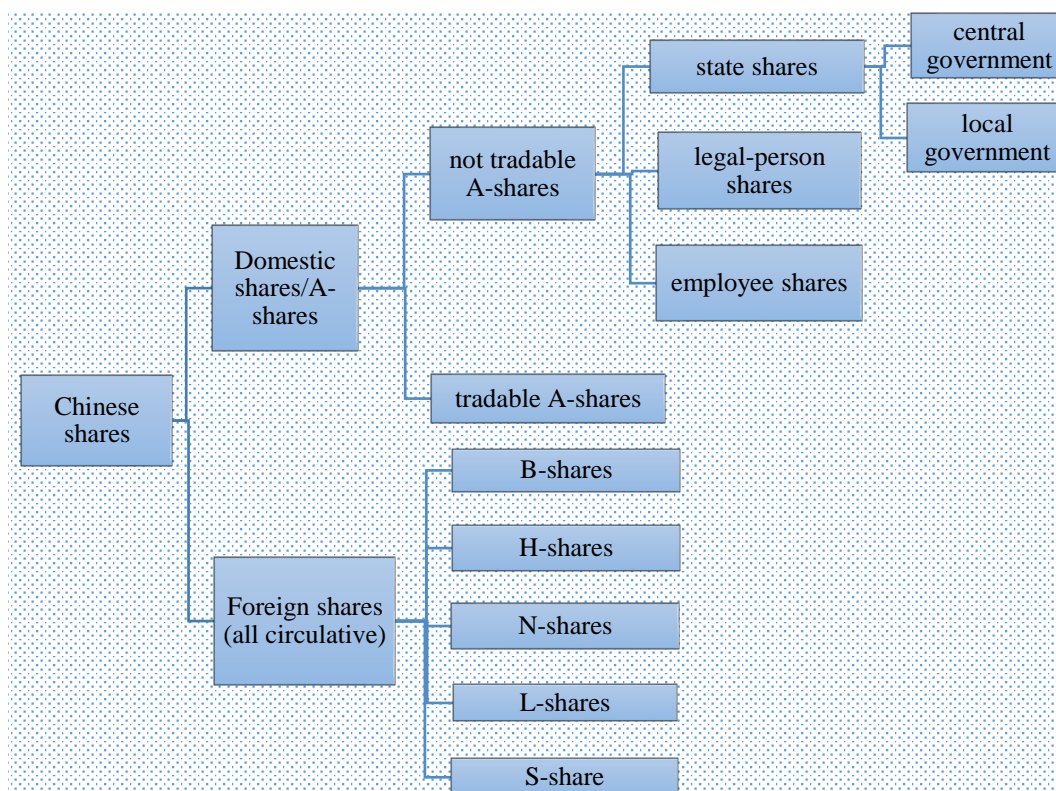
(Source: adapted from Yi & Davey, 2010, p. 328)

3.5.4 Shareholders in China: An Overview

There are three equity types in China's listed companies: State-owned shares, corporate shares, and trading shares. Entities or institutions are eligible to make investments on behalf of the state to purchase State-owned shares using State-owned assets. Corporate shares represent the equity owned by corporations, institutional organizations, or social societies that are equivalent to corporations. Trading shares or public shares are available to individuals or to company employees who make investments using their personal assets.

State-owned listed companies comprise a large portion of Mainland China's capital market. On behalf of the State, the State Council and local governments invest in

companies and generate State-owned shares, to maintain investors' rights as well as obligations in line with related laws and regulations.

Shareholders whose equity investment exceeds half of the total capital or who exercise significant influence on the company with even less than a 50% shareholding can be considered as controlling shareholders. In Mainland China, for the State to maintain controlling ownership in enterprises in certain sectors is a State policy, and China's Corporate Law also stems from this policy. Instead of the common goal of entrepreneurship, which is to maximize the shareholders' wealth, the State pursues the firm's efficiency for political purposes.

The Chinese government takes the role of controlling ownership and serves the State's purposes other than the maximization of wealth as a shareholder. Political purposes may include the maintenance of urban employment, or direct control over sensitive industries The blended purpose of the State makes monitoring more difficult, and increases the conflict between the State as the controlling shareholder and other shareholders (Clarke, 2003). When the State controls the purposes of the company, it is convenient for the State to intervene in the firm's management, alter the purpose of the firm, and exploit minority shareholders' interests.

Expropriation behaviour by the controlling shareholder can lead to PP agency costs, which is prevalent in emerging economies. There is a trade-off between political costs and agency costs (Chang & Wong, 2004). On the one hand, with political control over firms, the purpose of firms may be altered to reflect political and social objectives, and firms' goals of maximization of wealth may be compromised. On the other hand, the existence of political control may mitigate agency problems and in turn improve firms' performance. Although firms may have objectives other than wealth maximization under political control, agency conflicts can be alleviated by

the presence of the State as a controlling shareholder. This is because it is in the State's interests to avoid conflict with managers to prevent the reduction of resources with which the State, as controlling shareholder, can exercise discretion (Brada, 1996). Therefore, the net effect of political control is determined by the balance of political costs after offsetting agency costs.

China's economic system before the late 1990s was a centrally planned economy. The government had full control over the demand and supply of goods and services for the country. This type of economy was also applied in the former Soviet Union. In a centrally planned economy, the government owns certain industries and has central control over the planning and financial system. For instance, the government decides what goods and services will be produced, the amount of each good or service that will be produced and the prices of those goods and services. Advocates of centrally planned economic systems believe that a planned economy, with control of every resource in the society, is more efficient than a free market economy: the government can attempt to put the country's wealth to the best possible use and allocate the country's resources to all its citizens. However, even if the government has control of every resource in the country, it is unable to control the invisible forces of the market. Also, there are various unknown factors that affect the demand for and supply of goods. Therefore, it is unlikely that a central planner can accurately predict and plan the amounts to be produced.

Given that the Maoist version of the central planning economic system had failed to promote economic growth, the reform of the economic system in China began in 1978, as decided by the Party leader in the Third Plenum of the National Party Congress's 11th Central Committee. The Communist Party conducted the reform aiming to stimulate economic growth and make communism work better, by

introducing a market mechanism in the system and by reducing the direct control of the government.

The term "the socialist market of the economic system" was officially introduced by Deng in the 14th National Communist Party Congress, 1992. From then to the present, the Chinese government has carried out substantial efforts to push for market reform and to establish a socialist market in the economic system, and has made significant achievements. During the transition to this new economic system created by China, the increasing non-State sector has played an important role in facilitating economic growth.

The economic reforms shifted SOE financing from the government to the market, and the establishment of the stock exchanges (Shanghai and Shenzhen stock exchange) aimed to help the former failing SOEs acquire finance by raising capital on the open market. The Chinese SOEs have obtained some autonomy as independent economic entities with the progress of the transitional reforms in China (Qian, 2000).

China's company law requires Chinese companies to establish a two-tier board which consists of a board of directors and a supervisory board. The members of the supervisory board typically include one person from the company's internal Communist Party committee. The role of the supervisory board in the Chinese CG is explored by Xiao, Dahya, and Lin (2004). First-hand evidence from a survey investigation shows that the supervisory boards in Chinese companies perform as "honoured guests, friendly advisors, and censored watchdogs," with only two companies indicating that the supervisory board fulfilled a role as independent monitors (Xiao et al., 2004, p. 53). In China, the structure of two-tier boards is adopted in the transitional CG environment; the supervisory board represents a

fading but still strong influence from the Chinese Communist Party and the government.

In China, the State has long been focused on the improvement of the CG of SOEs. The Shanghai Stock Exchange has published CG reports in China every year since 2003. The 2006 report that focused on SOEs points out that government forces are more powerful with respect to CG than market forces, tending to push Chinese CG to move backward rather than forward, and the hierarchy of approval is often more influential than regulation and enforcement (Sina Finance, 2006, November 29).

Supervisory boards in Chinese listed companies are representatives of the Party/government. The tight control of the Party over firms can be attributed to several factors including highly concentrated State ownership. Party or government officials are accustomed to intervening in corporate affairs and are unwilling to give up their corporate power and interests (Xiao et al., 2004). Due to the fundamental influence of the government on supervisory boards, it is doubtful whether the supervisory boards are able to play a neutral and independent role in monitoring. When the chairperson of the supervisory board is a Party/government official, it is very likely that Party loyalty leads to negligence or sacrifice of the interests of minority shareholders.

3.5.5 Supervision Committees in Mainland China

Supervision committees are another distinctive feature of Chinese CG. "China's law requires Chinese companies to establish a 'board of supervisors,' usually chaired by an employee representative from the China Federation of Trade Unions, the company's only governance-sanctioned union. Other members of the supervisory board typically include an official from the company's internal Communist Party committee and at least one other person elected by shareholders.

Company directors and other senior managers are not allowed to sit on the board of supervisors" (Mitchell, 2008, April 2, p. 1).

To improve the quality of corporate governance and to reduce the risk of governance failure, improvement in internal CG oversight is quite important, as internal CG is presumed to carry out the primary aspects of control over a corporation (Gillan, 2006). According to Chinese Company Law, a limited liability company or a joint stock company is required to have a Supervisory Committee (Deloitte, 2017). According to the Code of Corporate Governance for listed companies in China, all listed companies must establish a supervisory committee (State Council of the People's Republic of China, 2008). In smaller companies with fewer shareholders, members of the supervisory committee can be appointed without setting up a formal committee.

In particular, for a joint company or a limited liability company, a Supervisory Committee should comprise at least three people. For small-scale, limited liability companies with a small number of shareholders, the establishment of a Supervisory Committee is not necessary, but one or two supervisors are required. In a Supervisory Committee, both shareholder and employee representatives should be included. Company employees elect employee representatives. However, directors and senior officers of the company are not allowed to be included in a Supervisory Committee. As for a board of directors, a Supervisory Committee requires a chairperson, and a vice-chairperson if necessary (Central Government of China, 2008). For SOEs[2], regardless whether they are fully-owned or simply controlled by

---

[2] In Chinese SOEs, "the supervisory committee was introduced to monitor management in 2007. For these companies, the responsibilities of the supervisory committee have gradually changed, from

the State, their Supervisory Committee requires at least five members, and no less than one-third of the Supervisory Committee should be employee representatives. The State-owned Assets Supervision and Administration Commission (SASAC) designates the supervisors of SOEs' Supervisory Committees, while the employee representatives' assemblies elect employee representatives to the Supervisory Committee. SASAC appoints the chairperson of the Supervisory Committee.

In Mainland China, the establishment of a supervisory committee aims to monitor the activities of board directors and CEOs. The supervisory committee can require board directors or managers to correct any breaches of company policy and to rectify any procedures that may be harmful to company's interests.

The responsibilities of supervisory boards in China also include reviewing the financial affairs of the company, monitoring directors' performance, and proposing shareholder meetings. As clarified in the "State-Owned Enterprises Supervisory Committee Interim Provisions," the responsibilities of supervisory boards include monitoring financial conditions, monitoring financial activities and management activities; and more specifically, reviewing the company's compliance with laws, administrative regulations; verifying the authenticity and legitimacy of financial reports by reviewing the financial and accounting information; reviewing the

---

simply monitoring last year's activities to monitoring those of the current year and submitting the annual inspection report within the first half of the following year. This approach assumes daily supervision, where the committee conducts a focused annual inspection of the company's activities together with the annual financial audit. The committee may also integrate the financial inspection with the annual external audit so as to focus on key points in the course of an inspection by referencing and using the audit result of its external auditor" (Deloitte, 2017).

company's operational efficiency with regard to state-owned assets management and other conditions; and lastly, proposing rewards, penalties, appointment, and removal of management by evaluating its performance.

3.5.5.1 Does the supervisory board become a source of PP conflict?

In China, the supervisory board, which represents the Communist party and the government, imposes political influence on companies' CG activities.

The supervisory board represents the State's interests while the board of directors represents the shareholders' interests. This two-tier board structure makes agency conflicts in China more complex. PP agency costs emerge especially when the State holds the majority share of a company's stock. When the State acts as the controlling shareholder, the supervisory board and the board of directors share a common agenda, which is to align CG activities with the State's incentives, and CG activities become biased toward benefiting the controlling shareholder. In such cases, the minority shareholders are powerless in CG activities and exposed to expropriation by the controlling shareholders.

Clarke (2003) points out several problems under the Chinese CG system that may exacerbate agency problems. For instance, the Chinese CG policy allows the State to maintain full or controlling ownership of enterprises in some industries. Also, the majority of Chinese listed companies, which are mostly restructured and decentralized former SOEs, are still State-controlled. This makes monitoring difficult in Chinese companies and stirs up conflict between the State, as the controlling shareholder, and other shareholders. The primary purpose of the Chinese government in controlling firms is to increase the firms' efficiency to fit political purposes, which are necessarily in line with the purpose of wealth maximization. As a result, minority shareholders are exposed to expropriation since

they have no other way other than wealth to benefit from their investment in the company.

In the Berle and Means (1991) model of the modern corporation, ownership is dispersed and almost completely divorced from control, and members of a corporation debate serious company affairs at the shareholders' meetings. The Chinese style of CG, where government representatives dominate the shareholder meetings, means that the shareholder meeting loses its primary function and become less effective and inevitably reduced to mere formalities.

Despite the problem of PP agency conflict, the Chinese CG style with imposed incentives from central government through the supervisory board, led to local protectionism, an issue of the relationships between various layers of government. The Chinese government started reforms from the 1980s to decentralize companies, which provides strong motives for local governments to shield local firms and industries from interregional competition. However, the Chinese government has not promulgated or implemented any policy to prohibit interregional trade barriers (Bai, Du, Tao, & Tong, 2004).

X. Chen et al. (2008) provide evidence of Chinese local government engaging in EM (e.g., by providing fiscal transfer) to help local firms to circumvent central government regulations. The CSRC issued a series of regulations on IPOs and rights offering to protect shareholders from management expropriation. The CSRC regulations on rights offerings require a continuous two year profit and a minimum average 10% ROE for three years (and a minimum 6% of ROE for each of the previous three years since 1999) (X. Chen et al., 2008). When the regional government's performance is closely related to the local listed SOEs' performance, the CSRC rigid regulations on rights offerings trigger rampant EM by local

government, central government, and SOEs; this phenomenon is referred to as Chinese Tango.

In addition, the setting up of institutions also has significant implications on a country's CG system. In China, there is doubt about whether the legal institutions can perform their expected tasks or play the roles that were assigned to them. Clarke (2003) suggests too much cannot be expected from these legal institutions in China, and uses the example of private plaintiff-driven litigation in the courts. "Listed companies got that way because they and their officers had political backing; Chinese courts are not politically powerful and are hence reluctant to take cases involving large sums of money and powerful defendants" (Clarke, 2003, p. 503). If it is unlikely that the court will act on private rights in China, what about other legal institutions like CSRC, which is the Chinese equivalent of the Securities and Exchange Commission in the US? First, considering the scale of CSRC's task in overseeing all the listed companies in China, its staffing levels are inadequate. Second, similar to SEC, the primary task of CSRC is to supervise companies' disclosure instead of guarding companies' profits. Although the CSRC issues regulations on the minimum number of independent board directors and assigns duties, such as good faith, diligence and loyalty, to board directors; the duties are probably meaningless in the context of the current Chinese legal system, considering that Chinese Company Law allows very limited disciplinary actions against directors.

As Clarke (2003, p. 504) documents, in China, "The financial information industry is significantly crippled by the State's continuing insistence on control over all information. Control over information is a cornerstone of the Chinese Communist Party's system of political control and is unlikely to disappear much before the Party itself. Other intermediary institutions such as law firms, accounting firms,

investment banks, brokerages, and stock exchanges all exist - like any organization in China - only with government permission and cannot simply spring up in response to market demand. There is no real market for corporate control, and the market for managerial talent is still very small". A more recent study by Fan, Wong, and Zhang (2007) again provides evidence of the negative political influence on CG in China. In particular, they find that politically connected CEOs in China are associated with poorer post-IPO performance, and that politically connected CEOs are more likely to recruit or appoint a board of directors who are bureaucrats, rather than board directors who are more qualified with relevant professional backgrounds.

In China, there are three predominant groups of shareholders: the State, legal persons (institutions), and individuals (Xu & Wang, 1999). Prior studies that examined the impact of ownership on firm performance in China often neglected the political influence imposed on listed companies by the supervisory board. Despite the potential agency problem caused by concentrated ownership, Chen, Firth, and Xu (2009) find that the State controlling shareholder in China may not be a bad thing, compared with the other types of ownership control; the SOEs affiliated to the central government in China show better performance than the State Asset Management Bureau controlled companies, SOEs affiliated to local government, and private investors. However, it is possible that this phenomenon is due to political intervention in listed companies and the result of expropriation of resources from non-SOEs.

Chen et al. (2009) point out that firms controlled by State Asset Management Bureaus and State-owned enterprises are both ultimately owned by the State, but they differ in many ways. The officials of State Asset Management Bureau controlled companies typically have no experience in relevant business and lack the necessary skills and knowledge to monitor managers; their promotion is unlikely to

depend on how much they contribute to improving the firm's performance or how much value they create, but mostly depends on how well they follow the central or local government's instructions to exert pressure on the firm's directors to do things.

Given the context of the Chinese CG system and institutional settings, it is reasonable to suspect that political intervention by the government remains even when the State does not hold the majority share or even a mere minority. In one assumed instance, a manufacturing company needs to choose either a State-owned transport company or a privately-owned transport company as their cooperative partner (assume that the costs for both companies are similar, or the costs for the state-owned company are even slightly higher than the private-owned one). The manufacturing company's board of directors are dictated to by the supervisory board, which represents the State's will. In such a situation, most likely the manufacturing company will sign a contract with the State-owned transport company. Such underlying cases in Chinese corporate governance tend to exacerbate agency conflicts, especially PP conflicts given the government's will penetrate the management of companies with or without the State as the controlling shareholder.

In China, efforts have been made to segregate the responsibilities of the company and the controlling shareholder. Chinese Company Law requires the controlling shareholder not to act against the company's interests through related-party transactions. Also, in 2002, the CSRS released the Corporate Governance Code for Listed Companies to prevent controlling shareholders from influencing the company's decision-making or its business operations, and stipulated that controlling shareholders should not act against the interests of the company and other shareholders. However, the real effects of such regulation are in doubt since

various studies have reported evidence on the severity of controlling shareholder associated related-party transactions in China (Cheung, Jing, Lu, Rau, & Stouraitis, 2009; Jian & Wong, 2010; Lo, Wong, & Firth, 2010).

3.5.6 PA, PP agency conflict and EM in China

PA agency conflict occurs through the separation between and divergence of ownership and management (Jensen & Meckling, 1976), and has been considered as one of the fundamental problems in improving the corporate governance mechanism (Shleifer & Vishny, 1997). Even in the advanced economies, such as the US market, where the governance mechanism is extensively studied, there is still ongoing debate on how to better align the owner-manager interests and to mitigate managerial expropriation (e.g., Bates, Kahle, & Stulz, 2009; Bebchuk, Cohen, & Ferrell, 2008; Harford, Mansi, & Maxwell, 2008; Lazonick & O'sullivan, 2000).

PA agency problem is an important subject for CG in China (Clarke, 2003). Although the ownership structure in Chinese listed companies is often State-concentrated. However, owner management does not eliminate the PA agency problem (Schulze et al., 2001). Especially in China, managers/agents are often simply government officials (professional managers) appointed (hired) by the State, and they do not take responsibility for the results of business operations. In practice, government officials may as well pursue their welfare (e.g., job promotions or increases in salaries and other benefits) at the expense of the interests of the state (Lin et al., 2006), and indicating serious PA agency problems in spite of the concentrated State-ownership (e.g., Lin et al., 2006; Xu et al., 2005).

Figure 3-5 Ownership structure of listed firms in Asia

Comparing ownership structure of listed firms
Panels A and B are taken from LLS (1999). In Panel C, the first row is the average of the Asian countries included in Claessens et al. (2000), excluding Japan. The last row for China includes our sample of 1,147 listed firms.

Country	Widely held	State	Family	Widely held financial	Widely held corporation
Panel A: LLS (1999) sample with large firms					
High antidirector average	34.17	15.83	30.42	5.0	5.83
Low antidirector average	16.00	23.67	38.33	11.0	2.00
Sample average	24.00	20.19	34.81	8.3	3.70
Panel B: LLS (1999) sample with medium firm size					
High antidirector average	16.67	10.33	50.92	5.83	1.67
Low antidirector average	6.00	20.87	53.80	6.67	2.67
Sample average	10.74	16.19	52.52	6.30	2.22
Panel C: Asian firms					
Asia (no Japan, from Claessens et al., 2000)	3.09	9.36	59.36	9.66	18.55
China (our calculations)	0.44	60	13.56	1.83*	24.17**

Notes: (1) "Widely held" firms are defined as no large shareholder holds more than 10% of shares. "State" ("family") firms are those with the controlling shareholder being the state (a family)."Widely held financial" ("widely held corporation") are those with the controlling shareholder being a widely held financial company (widely held corporation).
*For these Chinese firms, we identify the dominant shareholder to be a financial company, but we are not sure whether the financial company is widely held or not.
**For these Chinese firms, we identify the dominant shareholder to be another listed and traded corporation, but we are not sure whether this corporation is widely held or not.

(Source: adapted from Allen, Qian, & Qian, 2005, p. 89)

Su, Xu, and Phan (2008) provide evidence that conflicts between principal and principal create high agency costs in China. In China, the phenomenon of concentrated ownership is particularly prominent and unique among emerging economies. Allen et al. (2005) investigate and compare the ownership structure of emerging economies in Asia, and Figure 3-5 presents the ownership structure of listed firms in Asia. As Figure 3-6 shows, there is a great difference between concentrated ownership in China and other Asian economies. In Asian countries, excluding Japan, 59.36% of listed companies have a family-dominated ownership structure; however, in China up to 60% of listed companies are state-owned.

Figure 3-5 shows that ownership structure in Asian businesses is generally concentrated in family or the Government, and this phenomenon is particularly acute in China with a large portion (more than half) of the shares under the State's control. Based on data from 2007, 63.15% of Chinese listed companies are state-owned (Li & Zhang, 2010), as shown in Figure 3-6.

Figure 3-6 Ownership structure of listed firms in China compared with other countries

The percentage of firms with the state as ultimate controller in China compared with other countries

	China	HK	UK	Germany	Japan	France	Singapore
State (%)	63.15	1.40	0.08	6.30	0.80	5.11	23.50
Non–state (%)	36.85	98.60	99.20	93.70	99.20	94.89	76.50

This table is based on the 2007 data of 1481 Chinese public listed companies. Data for firms in Hong Kong, Japan, and Singapore come from Claessens et al. (2000), and data for the UK, Germany, and France are from Faccio and Lang (2002).

(Source: adapted from Li & Zhang, 2010, p. 634)

Due to the highly concentrated ownership structure, listed companies in China face more severe PP agency conflict than PA agency conflict. Unlike other emerging economies, the concentrated ownership structure in China is unique as the majority of Chinese listed firms are under State-dominated control instead of being family-dominated. This distinct characteristic of concentrated ownership structure in China offers a brilliant opportunity to investigate the extent of EM and its relationship with agency conflict. This section discusses the different types of agency conflicts. PA agency costs are the focus in the developed market, while PP agency costs are more of a concern in emerging markets. In China, with its relatively underdeveloped legal system, CG faces severe agency problems. However, there is evidence that certain CG mechanisms help to constrain agency conflicts. The next section discusses CG and the CG mechanisms that alleviate AC.

Management's incentive to change a firm's financial picture to become more favourable connects AC with EM. Since the practice of EM can bring reported earnings to the desired level, it is natural for the managers to engage in EM to satisfy self-interest (Schipper, 1989; Scott, 1997). Managers manage earnings to add information value, reduce information asymmetry, and mitigate AC (e.g., Arya et al., 2003; Louis & Robinson, 2005; Warfield et al., 1995). EM can also be used opportunistically to deteriorate AC when managers undertake EM to benefit themselves (e.g., Bergstresser & Philippon, 2006; Dechow & Sloan, 1991; Guidry et al., 1999; Healy, 1985; Holthausen et al., 1995).

3.6 Summary

This chapter has reviewed the literature on EM, AC, CG, and developed a foundation for researching the AC/EM relation in China.

Section 3.2 reviewed the literature on EM and discussed the essential factors in earnings management study, such as the definition of earnings management, the techniques needed to undertake earnings management, the incentives for firms to engage in earnings management, and the conditions giving rise to EM. Section 3.3 reviewed agency costs including both PA agency and PP agency costs. Specifically, the literature on PP agency costs in an emerging economies context provided a robust background for the investigation of PP agency costs in China and identified the gap in the literature and the contribution to be made. Subsequently, Section 3.4 discussed relevant research issues relating to corporate governance. More background about ownership structure, accounting standards, and specific stock market characteristics in China was provided in Section 3.5.

CHAPTER 4 RESEARCH QUESTION AND HYPOTHESES

4.1 Introduction

Chapter 2 and Chapter 3 reviewed the theoretical and empirical literature on AC and EM. Based on the discussion in Chapter 2 and Chapter 3, this chapter establishes the research question and develops theoretical hypotheses.

Based on the theoretical framework in Chapter 2, agency theory combines with stakeholder theory and legitimacy theory to provide support for the AC/EM nexus. Agency theory and stakeholder theory contend that managers tend to undertake EM to maximise their interests at the expense of the firm's stakeholders. Legitimacy theory contends that managers are motivated to engage in EM to fulfil stakeholders' expectations to maintain organizational legitimacy and to obtain social support.

In Chapter 3, the prior literature on AC and EM was discussed. Engagement in EM activities aims to bring earnings to the desired level (Ning, 2009). Managers are often motivated to engage in EM activities to maximize their wealth and to avoid problems from the owners, by which AC arises. There are two types of agency conflicts, PA and PP conflicts. In developed markets with dispersed ownership structures, the different interests between ownership and management (i.e., PA conflict) form the main driver for managers to manage earnings to cater for shareholders' interests or to increase managers' personal wealth.

In emerging economies where the ownership structure is concentrated, the major agency conflict is that between majority shareholders and minority shareholders (i.e., PP conflict) since managers, to a large extent, affiliate with the majority shareholder. As a result, the majority shareholder is motivated to employ EM to expropriate profits from minority shareholders. Therefore, based on agency theory,

this study hypothesizes that, in the context of CG mechanisms in Chinese listed firms, engagement in EM activities and the level of agency costs (PA and PP agency costs) are closely associated.

4.2 The Context in China

As discussed in Chapter 3 Section 3.4, in China, the ownership structure is significantly State-dominated instead of family-controlled (Li & Zhang, 2010). The distinctive characteristics of concentrated ownership structure in China offer a unique opportunity to investigate the AC/EM nexus.

Jiraporn et al. (2008) apply agency theory to evaluate whether EM is opportunistic or beneficial. Based on agency theory, Jiraporn et al. (2008) relate the degree of EM with the magnitude of agency costs, and find that a higher degree of EM leads to lower agency costs in the US market.

CG in emerging economies is different. In response to the economic contexts in emerging markets, companies adjust their CG strategies correspondingly (Boyer & Hollingsworth, 1997; Feldman & Rafaeli, 2002; Peng, 2003; Peng et al., 2005; Peng & Zhou, 2005).

Compared to the developed countries, institutional and organizational settings in emerging economies are not stable, are relatively weak, and concentrated ownership is prevalent (Young et al., 2008). Young et al. (2008) find two reasons why concentrated ownership is more common in emerging economies. First is the information asymmetry that exists between founders and professional managers. Due to the institutional environment in emerging economies, there is a lack of trust between unfamiliar parties. It is common that the founders of a company are not willing to share information with their managers and outside investors. Second, firms in emerging economies depend on concentrated ownership to keep

managerial opportunism under control. The reason for this phenomenon is that in emerging economies, external governance is not effective. Therefore internal governance becomes crucial in terms of CG. However, as an important element of internal governance mechanisms, boards of directors in emerging economies are not powerful enough to monitor companies' behaviour without sufficient institutional support. As a result, concentrated ownership becomes prevalent, and without strong legal protection for minority shareholders, PP agency conflicts have become problematic in China and other emerging economies. PP agency costs arise when the dominant owners pursue their targets by sacrificing the minority owners' interests (Chen & Young, 2010). Therefore in addition to the traditional PA agency costs, which are the focus of agency theory, it is important to address the issue of PP agency costs when studying CG in emerging economies, especially in China, with its dominant State ownership.

4.3 Hypothesis

This study hypothesizes that agency costs and EM are closely related to each other in China. Managers' incentives are often sensitive to earnings (Bushman & Smith, 2001). Management incentives to create an altered impression of business performance connect AC with EM. Various studies define EM in terms of its links with management incentives.

For example, Schipper (1989, p. 92) defines EM as "a purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain". The dependence placed on accounting information strongly motivates managers to manage earnings for their personal benefit (Rahman & Ali, 2006). Such opportunistic acts by managers to increase their interests incur principal-agent agency costs (Jensen & Meckling, 1979).

Management's incentive to change a firm's financial picture to be more favourable connects AC with EM. The practice of EM can bring reported earnings to the desired level. Hence, it is natural for managers to engage in EM to satisfy their self-interest (Schipper, 1989; Scott, 1997). The case for a nexus between PA agency costs and EM has been strongly asserted in prior studies. For instance, based on agency theory, Lambert (1984) examines the impact of principal and manager relationships on earnings and finds that EM (income smoothing) incentives arise with the presence of PA agency costs. Dye (1988) argues that not only agency conflict but also the perceptions of a potential investor about the firm's value can trigger EM. EM can be used to add information value, reduce information asymmetry, and mitigate AC (e.g., Arya et al., 2003; Louis & Robinson, 2005; Warfield et al., 1995). However, EM is often used opportunistically to exacerbate agency conflicts when managers undertake EM to benefit themselves (e.g., Bergstresser & Philippon, 2006; Dechow & Sloan, 1991; Guidry et al., 1999; Healy, 1985; Holthausen et al., 1995).

Despite the strong linkage between AC and EM suggested by agency theory and the prior literature, the empirical research on this issue is scant. To the best of my knowledge, the work of Jiraporn et al. (2008) is the only study that empirically examines the relationship between PA agency conflicts and EM, and they find that EM reduces PA agency costs in the US market. Several corporate scandals, such as Enron and WorldCom, have cast a negative light on EM. From the perspective of agency theory, Jiraporn et al. (2008) argue that EM is not as totally detrimental to firms as it appears to be. The advocates of opportunistic EM argue that companies engage in EM when managers' and shareholders' interests misalign, to distort the reported earnings. In contrast, the proponents of beneficial EM believe that EM enhances the information value of earnings. The beneficial aspect of EM refers to

the use of EM to unblock communications between managers and owners, and alleviate AC. However, the wider public, by intuition, tends to prefer absolute transparency in financial reporting. Arya et al. (2003, p. 111) defend their position by arguing that it is too simplistic to draw the conclusion that EM definitely reduces transparency, since "a fundamental feature of decentralized organizations is the dispersal of information across people. Different people know different things and nobody knows everything. In such an environment, a managed earnings stream can convey more information than an unmanaged earnings stream". Specifically, EM can play an effective role in various corporate governance events, such as communicating expertise, limiting owner intervention, and posturing. In the example of communicating expertise, being able to achieve certain goals in earnings, in particular, smooth earnings, requires hard work from a manager, and by doing it successfully, managers demonstrate their expertise in predicting future earnings (Demski, 1998). In this case, EM works as a demonstration or proof of managers' ability, and leads to better communication between managers and owners. Therefore, engaging in EM can be beneficial or detrimental with regard to agency problems, and it is important to expand the literature by studying the AC/EM nexus in China.

In an advanced economy such as the U.S. market where governance mechanisms have been extensively studied, there is an ongoing debate on how to better align owner-manager interests and to mitigate managerial expropriation (e.g., Bates et al., 2009; Bebchuk et al., 2008; Harford et al., 2008; Lazonick & O'sullivan, 2000).

Agency problems are important aspects of CG in China (Clarke, 2003). Unlike the widespread shareholding found in developed markets, the ownership structure in Chinese listed companies is often State-concentrated. Previous studies in developed markets suggest that managerial ownership may moderate agency conflict (e.g.,

Ang et al., 2000; Singh & Davidson III, 2003). However, owner management is not a panacea for eliminating agency problems (Schulze et al., 2001). Especially in China, managers are rarely significant shareholders in listed companies[3] (Jiang & Kim, 2015), thus indicating serious agency problems (e.g., Lin et al., 2006; Xu et al., 2005; Zhang, Tang, & Lin, 2016). Therefore, my first hypothesis is as follows:

Hypothesis1: There is a significant relationship between EM and PA agency costs in China.

Consistent with Jiraporn et al. (2008), a positive relationship between PA and EM indicates the opportunistic use of EM, and a negative relationship between PA and EM indicates a beneficial use of EM.

PA agency costs are the focus of developed markets such as the US. In China, in addition to the traditional PA agency costs, PP conflicts are prevalent due to the concentrated ownership structure, severe information asymmetry and weak legal protection for minority shareholders, as discussed in Chapter 3 Section 3.3. Minority shareholders are exposed to profit expropriation by controlling shareholders, in which managers/controlling shareholders tend to maximise their benefits and limit the visibility of PP conflict to minority shareholders by managing earnings. Therefore, research on PP agency costs is important in the context of China, where companies exhibit skewed shareholder interests. The second hypothesis of this study is as follows:

Hypothesis2: There is a significant relationship between EM and PP agency costs in China.

---

[3] The State is a major shareholder in many public listed companies in China. Managers/agents of State-owned companies are often simply government officials (professional managers) appointed (hired) by the State, and they do not take responsibility for the results of business operations. In practice, government officials may as well pursue their own welfare (e.g., job promotions or increases in salaries and other benefits) at the expense of the interests of the state (Lin et al., 2006).

Consistent with Jiraporn et al. (2008), a positive relationship between PP and EM indicates the opportunistic use of EM, and a negative relationship between PP and EM indicates a beneficial use of EM.

4.4 Summary

This chapter reviews the corporate governance context in China. Based on Chapter 2 and Chapter 3, this chapter establishes the research question and develops theory-based hypotheses on the relationship between EM and AC. The next chapter, Chapter 5 will describe all the variables used in this study, and their measurements.

CHAPTER 5 DESCRIPTION OF VARIABLES

5.1 Introduction

This chapter describes all the variables employed in the study. To obtain a robust result, this study employs different proxies for variables of interest, including AC and EM. Measurement of control variables is also discussed in this chapter. Section 5.2 explains accruals and the representative models for detecting EM. The measurement of PA and PP agency costs is discussed in Section 5.3. Section 5.4 presents the measurement of the control variables employed.

5.2 How can earnings management be detected?

5.2.1 Accruals

As discussed in Chapter 3, most studies detect EM through the level of discretionary accruals. "Accruals arise when there is a discrepancy between the timing of the cash flows and the timing of the accounting recognition of the transaction" (Ronen & Yaari, 2008, p. 371).

Reported earnings with a high level of accruals are considered to be of poor quality (Chen, Lin, & Lin, 2008). In order to examine the magnitude of EM current accruals are divided into two parts; non-discretionary accruals (NDAs hereafter) and discretionary accruals (DAs hereafter). NDAs are caused by the company's normal business activities, while DAs are considered abnormal (Healy & Wahlen, 1999; Xie, 2001). DA is commonly employed as a proxy for EM (Chou, Gombola, & Liu, 2006).

Jones (1991) defines total accruals as "the change in the noncash working capital before income taxes payable less total depreciation expense, and the change in the noncash working capital before taxes is defined as the change in current assets less

current liabilities" (p. 207). Most of the variation in total accruals is driven by current accruals; that is, the current accruals lead to most of the changes in total accruals (Dechow, 1994; Roosenboom, van der Goot, & Mertens, 2003). Specifically, identification of working capital accruals or current accruals from companies' operations is as follows:

> *Current accruals are revenues and expenses that firms include in a period's net income although the cash flows associated with these revenues and expenses take place in earlier or later periods. These current accruals can be broken up into nondiscretionary and discretionary parts. Whereas nondiscretionary current accruals are constrained by rules, institutions, and economic circumstances, only discretionary current accruals are subject to management (Roosenboom et al., 2003, p. 251)*

Following standard accounting literature, this study employs DA as one of the proxies for EM.

5.2.2 Accrual Models

Early models employed in studies such as that of Healy (1985) were random walk models (Yoon & Miller, 2002). Jones (1991) proposes a novel model to estimate the discretionary component of the total accruals instead of the discretionary component of a single accrual. In order to test whether the estimated discretionary accruals are managed to decrease income during the import relief investigation period, Jones implements a cross-sectional analysis. To extend the methodology employed by other earnings management studies, Jones develops time-series models to measure the applied total non-discretionary accruals and cross-sectional tests of hypothesised EM. The Jones model and four other models are discussed by

Dechow, Sloan and Sweeney (1995) as representing the evolution of models for generating non-discretionary accruals. The other four models are the Healy (1985) model, the DeAngelo (1986) model, the Dechow et al. (1995) model and the Dechow and Sloan (1991) model.

According to Dechow et al. (1995), these five models had a significant influence on the development of earnings management measurement. Table 5-1 demonstrates the five accrual models.

Table 5-1 Models to detect earnings management

Models		Where,
The Healy Model	$$NDA_\tau = \frac{\sum_t TA_t}{T}$$	NDA= estimated non-discretionary accruals; TA= total accruals scaled by lagged total assets; t= 1,2,3…T is a year subscript for years included in the estimation period; τ = a year subscript indicating a year during the event period.
The DeAngelo Model	$$NDA_\tau = TA_{\tau-1}$$	NDA= estimated non-discretionary accruals; TA= total accruals scaled by lagged total assets; τ = a year subscript indicating a year during the event period.
The Jones Model	$$NDA_\tau = \alpha_1(1/A_{\tau-1}) + \alpha_2(\Delta REV_\tau) + \alpha_3(PPE_\tau)$$	ΔREV_τ = revenues in the year τ fewer revenues in the year $\tau-1$ scaled by total assets at $\tau-1$; PPE_τ = gross property plant and equipment in the year τ scaled by total assets at $\tau-1$; $A_{\tau-1}$ = total assets at $\tau-1$; $\alpha_1, \alpha_2, \alpha_3$ = firm-specific parameters.
The Modified Jones Model	$$NDA_\tau = \alpha_1(1/A_\tau) + \alpha_2(\Delta REV_\tau - \Delta REC_\tau) + \alpha_3(PPE_\tau)$$	ΔREC_τ = net receivables in the year τ less net receivables in the year $\tau-1$ scaled by total assets at $\tau-1$.
The Industry Model	$$NDA_\tau = \gamma_1 + \gamma_2 median_I(TA_\tau)$$	$median_I(TA_\tau)$ = the median value of total accruals scaled by lagged assets for all non-sample firms in the same 2-digit SIC code. γ_1, γ_2 = estimated using OLS on the observations in the estimation period.

(Author created)

According to Dechow et al. (1995), the five models in Table 5-1 are the most representative models for detecting EM. In particular, by evaluating accrual-based earnings management models, Dechow et al. (1995) find that a modified version of

the Jones (1991) Model is the most efficient and robust. Figure 5-1 illustrates the

development process for the EM models, as well as their major assumptions and

limitations.

Figure 5-1 Relationships and major assumptions of five models to detect earnings management
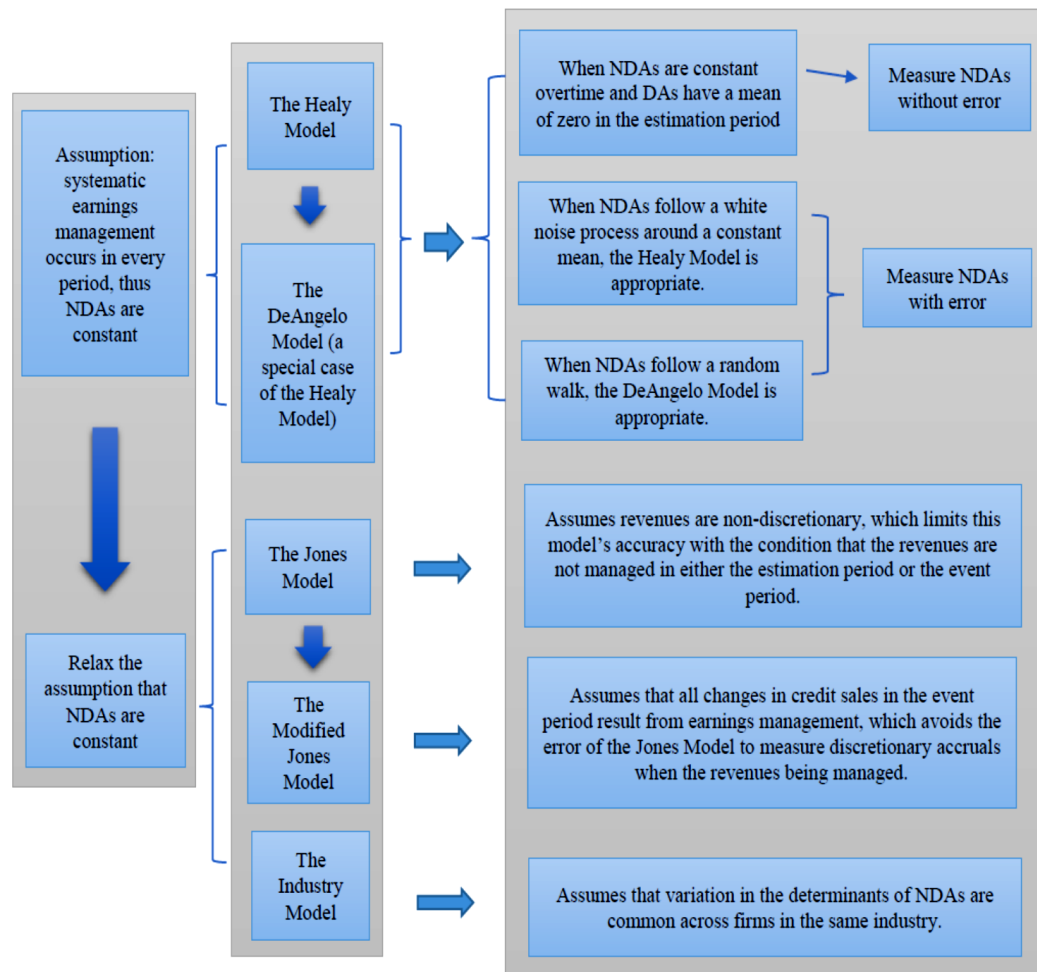
(Author created)

The Jones Model has been widely used and modified by many researchers of EM,

such as Klein (2002), Bergstresser and Philippon (2006), Teoh et al. (1998a), and

Kasznik (1999). As an illustration, Table 5-2 shows the previous studies that have

applied the Jones Model and the Modified Jones Model and the major adjustments

they have made to the models. As widely employed as the Jones model is, it is

subject to some limitations. When the sampled firms experience extreme

performance, the Jones and modified Jones models can be mis-specified (Kothari,

Leone, & Wasley, 2005). Kothari et al. (2005) propose that a performance-matched discretionary accruals measure is applicable if researchers aim to calibrate the degree of EM of firms experiencing extreme performance, relative to the firms in the control group that represent regular performance.

In this section, I introduce the accruals models that have been employed to detect EM in the literature. Of these models, the Modified Jones model is used in this study, because it is an efficient and robust estimator (Dechow et al., 1995). The next section presents the process of DA estimation using the Modified Jones model.

Table 5-2 Previous studies using the Jones Model and the Modified Jones Model

Authors	Model	Adjustment
Bergstresser and Philippon (2006)	The Jones Model	No major adjustment
Klein (2002)	The Jones Model	No major adjustment
Becker, DeFond, Jiambalvo, and Subramanyam (1998)	The Jones Model	No major adjustment
Kothari et al. (2005)	The Modified Jones Model	Add a return on assets (ROA) as an explanatory variable.
Kasznik (1999)	The Modified Jones Model	Add the change in operating cash flows as an explanatory variable.
Chung, Firth, and Kim (2002)	The Modified Jones Model	No major adjustment
Frankel, Johnson, and Nelson (2002)	The Modified Jones Model	No major adjustment
Roosenboom et al. (2003)	The Modified Jones Model	Remove the gross property plant and equipment (PPE) as an explanatory variable.
Yoon and Miller (2002)	The Modified Jones Model	Add the change in cash expenses, noncash expenses multiplied by the growth rate of PPE as explanatory variables. Remove PPE as an explanatory variable.

5.2.3 Measurement of earnings management level

This study follows the Modified Jones Model approach (Dechow et al., 1995) to measure discretionary accruals as a proxy for EM. The following process is used to calculate discretionary accruals using the Modified Jones model.

1. Generate the coefficients a_1, a_2, a_3 estimated by the following model,

$$TA_{i,t}{}^4/A_{i,t-1} = a_1\left(1/A_{i,t-1}\right) + a_2\left(\Delta REV_{i,t}/A_{i,t-1}\right) + a_3\left(PPE_{i,t}/A_{i,t-1}\right) + \varepsilon \ (1)$$

2. Use the estimated coefficients, estimate the NDAs,

$$NDA_{i,t}/A_{i,t-1} = a_1\left(1/A_{i,t-1}\right) + a_2\left(\Delta REV_{i,t} - \Delta REC_{i,t}\right)/A_{i,t-1} +$$
$$a_3\left(PPE_{i,t}\right)/A_{i,t-1} \tag{2}$$

3. Calculate DAs,

$$DA_{i,t} = TA_{i,t} - NDA_{i,t} \tag{3}$$

Where $TA_{i,t}$ = the total accruals of firm i in year t;

$NDA_{i,t}$ = the non-discretionary accruals of firm i in year t;

$DA_{i,t}$ = the discretionary accruals of firm i in year t;

$A_{i,t-1}$ = total assets of firm i in year t-1;

$\Delta REV_{i,t}$ = revenues of firm i in year t less revenues in year t-1;

$PPE_{i,t}$ = gross property plant and equipment of firm i in year t;

$\Delta REC_{i,t}$ = net receivables of firm i in year t less net receivables in year t-1.

As indicated above, there are three steps in estimating discretionary accruals using the Modified Jones model. The first step aims to generate the coefficients a_1, a_2 and a_3. The generated coefficients from the first step are then applied in the second

---

[4] Following Jones (1991), TA_t is calculated as $[(\Delta Current\ Asset_t - \Delta Cash_t) - (\Delta Current\ liabilities_t - \Delta Current\ maturities\ of\ long\ term\ debt_t - \Delta Income\ taxes\ payable_t) - Depreciation\ and\ amortization\ expense_t]$, where the change ($\Delta$) is the difference between time t and time t-1.

equation to calculate NDA. The last step is to take the difference between TA and NDA to calculate DA.

There are two ways to run the regression of equation (1) to generate the coefficients. One way is to run a time series regression, and the other is to run it cross-sectionally.

For the time series approach, equation (1) is used to regress the variables from the same firm across different time periods. In this way, the generated coefficients will vary across firms but not years. In the cross-section approach, equation (1) is used to regress the variables from different firms in the same industry for the same time period. Thus, the generated coefficients will vary across years but remain the same for firms in the same industry.

It is noteworthy that when applying the cross-section approach, it is very important to run the regression within each industry, so that the influence of different industries on DA can be controlled for (Cohen, Dey, & Lys, 2008; Ding et al., 2007).

Both the time-series approach and the cross-sectional approach are subject to some disadvantages. Time-series analysis requires a relatively longer observation period to obtain reliable parameter estimates for a linear regression (DeFond & Jiambalvo, 1994). In this study, the panel dataset contains data from 1999-2014, which covers 16 years, so the length of the estimation period is adequate. The other disadvantages of the time series approach include, for example, non-stationary coefficients due to the fact that the variables used in time series estimation may not be stationary. The disadvantages of the cross-sectional approach include, for example, the fact that real world data hardly fits the assumption that the coefficients are same for all firms within a particular year for a particular industry (Kasznik, 1999).

The discretionary accruals estimated have an important implication for the quality of a firm's earnings. Large discretionary accruals indicate low-quality earnings and

are a signal of active EM behaviour. Following DeFond and Jiambalvo (1994), Kasznik (1999), and Cohen et al. (2008), the current study employs both time-series and cross-sectional approaches to estimate DA as a proxy of EM. DA estimated using cross-sectional model is applied as a robustness check. The results are presented in Chapter 8 and Chapter 9.

A large absolute value of discretionary accruals indicates active EM behaviour, while the signs of discretionary accruals indicate the strategy adopted by firms (Ding et al., 2007). Positive discretionary accruals show maximisation of earnings; negative discretionary accruals show minimisation of earnings. Following Jiraporn et al. (2008), Cohen et al. (2008), Bartov, Gul, and Tsui (2000), Klein (2002), and Warfield et al. (1995), this study uses the unsigned absolute value of discretionary accruals to capture the extent of EM.

Abnormal accruals (discretionary accruals) from the Modified Jones model have been used as a proxy for EM in research in most western countries (e.g., Dechow et al., 1995; Kasznik, 1999; Klein, 2002; Kothari et al., 2005). This study focuses on China, and cultural diversity has a remarkable impact on corporate governance (Haniffa & Cooke, 2005; Van der Laan Smith, Adhikari, & Tondkar, 2005). As mentioned in Chapter 3 Section 3.2, in addition to discretionary accruals, the ratio of non-operating income to sales is applied to measure EM, following Ding et al. (2007). The non-operating to sales ratio captures non-operations-related earnings tunnelling, which is prevalent in India (Bertrand et al., 2002). Given the prior evidence on the severity of tunnelling and the minority shareholder expropriation problem in China, this study incorporates the non-operating income ratio as a supplemental measure of EM.

5.3 How can agency costs be detected?

5.3.1 Measurement of principal-agent (PA) agency costs

Prior studies have used proxies to measure PA agency conflict. For example, Ang et al. (2000) and Singh and Davidson III (2003) use the asset utilization ratio to measure PA agency costs. They argue that the asset utilization ratio evaluates the efficiency of how a company's assets are being used by managers. In other words, the asset utilization ratio indicates managerial effectiveness by measuring the relationship between a firm's investment (or input, i.e., assets) and the manager's output (sales or income). PA agency costs are inversely related to the asset utilization ratio. A weak asset utilization ratio implies poor output (sales), and hence poor managerial effectiveness with higher PA agency costs. McKnight and Weir (2009) argue that the ratio of assets utilization as a proxy for PA agency costs has many potential drawbacks. For example, total sales do not represent the managers' output or ability to create value because sales are not always generated from profitable activities. However, the assets utilization ratio still provides a useful indicator of PA agency conflict. Thus, this study employs the asset utilization ratio as the first proxy to gain an insight into PA agency conflict.

$$PA_{asset\_utilisation} = \frac{Annual\ Sales}{Total\ Assets}$$

To conduct robust tests, this study also uses other proxies to measure PA agency costs. Aligning with Singh and Davidson III (2003), this study uses SGA (selling, general, and administrative) expenses standardized by total assets as the second proxy for PA agency costs. SGA expenses refer to the selling, general, and administrative expenses reported on firms' income statements. Since SGA expenses occur as a non-production cost, a high level of SGA expenses is considered a sign of poor managerial effectiveness. Without being assigned to the

cost of products, SGA expenses, as a percentage of total sales, indicate whether managers are spending firms' resources efficiently or wasting valuable cash flow. Thus, a high percentage of SGA expenses in total sales reflects a severe PA agency conflict.

$$PA_{SGA} = \frac{SGA\ expenses}{Total\ Sales}$$

5.3.2 Measurement of principal-principal (PP) agency costs

In addition to traditional PA agency costs, which are the focus of agency theory, PP agency costs in emerging economies are attracting more and more attention. PP agency costs arise when the dominant owners pursue their targets by sacrificing minority owners' interests (Chen & Young, 2010). Especially in emerging economies, PP conflicts are prevalent with concentrated ownership structures and weak legal protection. The minority shareholders are exposed to expropriation by controlling shareholders.

"Dividends signal the severity of the conflicts between the large, controlling owner and small, outside shareholders" (Gugler & Yurtoglu, 2003, p. 733). The extent of dividend payment reflects insider expropriation as the dividend payment releases the company wealth from insider control. Given the concentrated ownership structure, PP agency conflicts are expected to rise in response to higher levels of dividend pay-out or distribution ratios in emerging economies. The underlying reason is that when the ownership structure is highly concentrated, the dividend pay-out amount rises in alignment with the preferences of controlling shareholders, since the controlling shareholders' wealth is highly associated with particular firms (Carney & Gedajlovic, 2002).

Ownership concentration or type of ownership has important implications for PP agency conflict (Dahya, Dimitrov, & McConnell, 2008; Kim, Kitsabunnarat-Chatjuthamard, & Nofsinger, 2007; Setia-Atmaja, 2009). Firms with highly concentrated ownership tend to pay low dividends, because the largest shareholders prefer to keep the money inside the company to use for their private benefit (La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 2000; Pinkowitz, Stulz, & Williamson, 2006). Compared to ownership structure, the percentage of the cash dividend of total assets is a more direct measure of PP agency conflict (Banchit & Locke, 2011). Some studies use the extent of private benefit consumption to measure ownership concentration as well as PP agency conflict (Barclay & Holderness, 1989; Dyck & Zingales, 2004). Renders and Gaeremynck (2012) developed a synthetic index using a set of variables to measure the extent of PP agency conflict instead of relying on one variable such as the percentage of a cash dividend of total assets, or the extent of private benefits consumption. They argue that their synthetic index includes variables that increase the ability of major shareholders to extract private benefits, and the variables used in their synthetic index are linked to the severity of agency conflicts.

Compared to well-regulated, transparent financial markets, emerging markets that are characterized as having weak legal systems and weak shareholder protection face more agency problems between majority shareholders and minority shareholders. Unlike the dispersed ownership in western countries, in emerging markets with very concentrated ownership, the problem of expropriation of minority shareholders by controlling shareholders emerges. The expropriation problem can be reflected in the dividend payments of the firm.

Dividend payment removes corporate wealth from insider control; higher dividends are paid by companies where the country's legal protection of minority shareholders

110

is strong (La Porta et al., 2000). Dividend payment provides insight into insider expropriations and gives a perspective on agency conflicts between controlling shareholders and minority shareholders. Therefore, this study uses dividend payment as a PP proxy. Following Faccio, Lang, and Young (2001), the dividend payment is measured by four ratios, including the dividend/sales ratio; the dividend/total market value of common and preferred stocks ratio; the dividend/earnings after tax and interests ratio; and the dividend/total cash from operations ratio. In addition to the four dividend ratios, the percentage of cash dividends to total assets is also used as a PP agency costs proxy, following Banchit and Locke (2011).

For those firms that rarely pay out dividends, there will not be sufficient data to compute dividend ratios. Thus this study uses a sixth proxy for PP agency costs. Hewa Wellalage and Locke (2011a) studied the PP agency costs in unlisted small companies in New Zealand. Since unlisted small companies do not pay out dividends as a method of distributing profit, net income apportioned to a number of working owners is used to capture the distribution of profit and extent of expropriation. Following Hewa Wellalage and Locke (2011a), this study uses (net operating income/share number)/sales as an alternative measure of dividend ratio. All the PP agency cost proxies are regressed against EM and control variables.

In sum, the six ratios of PP agency costs proxies include the dividend to cash flow ratio, the dividend to earnings ratio, the dividend to sales ratio, the dividend to market capitalization ratio, the dividend to total asset ratio, and the (net operating income/share number)/sales ratio. When insider expropriation is severe, lower dividends are paid to outside shareholders. Therefore a decrease in dividend payment measures indicates higher PP agency conflicts. The reason for using six

ratios is to create diversified measures of the dividend rate to insulate the conclusions from individual measure biases.

5.4 Other control variables

Agency costs occur when the interests of a firm's managers do not match the interests of the firm's owners (Ang et al., 2000). To examine the relationship between agency costs and EM, it is important to control the internal governance mechanisms, such as board size, board independence, CEO duality, leverage and firm size, that tend to have effects on agency costs.

As discussed in Chapter 3, board characteristics are an important part of the internal CG mechanism. Research on boards of directors has expanded from traditional issues of board structure to include board size, board independence, and board activity (Gillan, 2006). The primary roles of the board of directors are to make decisions on behalf of their shareholders and to fairly represent the interests of managers and shareholders. To investigate the relationship between EM and agency costs in China, this study uses a group of elements (i. e., board size, board diligence, board expertise, board independence, CEO duality, CEO characteristics) to control for the influence of board characteristics. This section briefly explains each of the control variables included and how each is measured.

Board size

Board size and board independence are the two main board characteristics. Board size is an important element in the internal CG mechanism and relates to agency problems (Eisenberg et al., 1998). The relationship between board size and agency costs is inconclusive according to the existing literature. Agency theory suggests that a relatively small board size is more effective and efficient, thus alleviating agency conflicts and enhancing firm performance (Jensen, 1993). As Lipton and

Lorsch (1992, p. 65) describe it, "when a board has more than ten members, it becomes more difficult for them all to express their ideas and opinions in the limited time available". This is supported by Firstenberg and Malkiel (1994), who argue that a large board size endangers focus as well as genuine interaction and debate inside the boardroom.

In contrast, resource dependence theory provides a rationale for a large board size. From the resource dependence theory perspective, a large board size is considered a source of effective external linkage and is hence associated with positive corporate outcomes (Alexander, Fennell, & Halpern, 1993; Dalton et al., 1999; Goodstein, Gautam, & Boeker, 1994). To investigate the impact of board size on agency costs, following Yermack (1996), this study measures board size as the natural log of the total number of directors on the board. The research question of this study is established using agency theory as the foundation; therefore, based on agency theory, we expect relatively smaller boards to be efficient and to alleviate agency costs.

Board independence

A higher proportion of outside/independent directors tends to have a positive impact on the firm, given that independent directors often provide natural, unbiased opinions (Reddy et al., 2010). The prior literature provides evidence of beneficial effects of independent directors in the Chinese market. For example, Chen et al. (2006) show that increased proportions of outside directors on boards are negatively associated with frauds committed by companies.

Ahmed and Duellman (2007) use the percentage of inside directors on a board as a measurement of board independence: in this case, the lower the board independence metric, the higher is the level of board independence. This current study uses the

percentage of independent directors on the board as a measure of board independence. Therefore a higher board independence metric in this study indicates a higher level of board independence. If outside/independent board members enhance monitoring, a negative association between board independence and agency costs can be expected.

CEO duality

The term CEO duality is used to describe a Chief Executive Officer who is also the chairperson of the board of directors. CEO duality has been widely discussed as a CG phenomenon (Dalton et al., 2007). Prior studies have examined the relationship between CEO duality, firm performance, and agency problems (Hewa Wellalage & Locke, 2011b; Krause, Semadeni, & Cannella, 2014). One of the agency problems caused by CEO duality is managerial entrenchment, which occurs "when managers gain so much power that they can use the firm to further their interests rather than the interests of shareholders" (Weisbach, 1988, p. 435). Based on agency theory, CEO duality increases managerial entrenchment and reduces the effectiveness of board monitoring, which would result in greater agency problems (Finkelstein & D'aveni, 1994). Correspondingly, investors appear to react negatively to a firm with CEO duality, due to the high potential for managerial entrenchment (Sundaramurthy et al., 1997). Other CEO characteristics, such as CEO educational level and CEO past functional experience, also have some impact on internal CG mechanisms (Rajagopalan & Datta, 1996).

In this study, CEO duality is included in the regression model as a dummy variable. The CEO duality dummy takes the value of 1 when there is CEO duality, and is otherwise 0. Using agency theory as the theoretical rationale, the presence of CEO duality can be expected to increase agency conflicts.

Leverage

Leverage is included as another control variable. The debt to equity ratio is used to measure the level of leverage in this study. Highly levered firms and highly distressed firms tend to have weak CG (Friedman, Johnson, & Mitton, 2003). Also, there is evidence to show that managers use increases in the firm's leverage level to realize their own interests. For example, Harris and Raviv (1988) and Stulz (1988) find that managers increase firms' leverage levels in order to increase their shares' voting power to maintain their job tenure. From this perspective, a positive relationship between a firm's leverage level and agency costs is expected.

However, there are also arguments that leverage is negatively associated with agency costs (Shleifer & Vishny, 1997). Gillan (2006, p. 388) argues that debt in capital structure contributes to alleviating the potential agency costs of free cash flow, as "debt can act as a self-enforcing governance mechanism" by forcing the managers to generate enough cash to fulfil the company's obligations related to interest payments and loan repayments. This study predicts a positive relationship between leverage level and agency costs given the interest on debt is relatively cheap and can be easily paid off by the company's earnings.

Firm size

Firm size has a strong influence on CG, as discussed in Chapter 2 Section 2.6.2. Given that larger firms have relatively more problems in aligning the interests of the principal with the agent, larger firms usually have a higher level of agency costs (Guillen, 2000). However, larger firms, which generally have relatively more and better resources, tend to pay more attention to CG and thus have more apparent CG mechanisms (Ariff et al., 2007; Beiner, Drobetz, Schmid, & Zimmermann, 2004; Black et al., 2006). To investigate the relationship between EM level and agency

costs in Chinese listed companies, firm size is controlled for in the regression model. Following Klapper and Love (2004), this study measures firm size as the natural log of total sales, and the expectation is that larger firms have more agency costs.

In addition to the control variables described above, in order to capture the stock exchange-specific effect, the industry-specific effect, and the time-specific effect, this study includes three types of dummies (i.e., a stock exchange dummy, industry dummy, and year dummy) in the regression model. A description of all variables used in the regression model is presented in Table 5-3.

Table 5-3 Variables Description

Proxy		Description
PA	PA asset	Annual Sales/total assets
	PA sga	SGA expenses/total assets
PP	PP income	(Net operating income/share numbers)/sales
	PP divpayout	Cash dividend to total assets
	PP divsale	Dividend/sales
	PP divmar	Dividend/total market value of common and preferred stocks
	PP divearn	Dividend/earnings after tax and interests
	PP divcf	Dividend/total cash from operations
EM	EM1	Discretionary accruals estimated by time-series analysis (absolute value)
	EM2	Non-operating income/sales
	EM3	Discretionary accruals estimated by cross-sectional analysis (absolute value)
	Board size	Natural log of the total number of the directors on the board
	Board independence	The percentage of inside directors on the board
	CEO duality	Dummy variable, 1 if CEO duality exists; 0, otherwise
	Leverage	Total liability/total assets
	Firm size	the natural log of total assets
	Industry type	Industry type1=Properties; Industry type2=Conglomerates; Industrytype3=Industry; Industry type4=Commerce; Industry type5=Utilities; Industry type 5 is the omitted dummy variable. Industry1dummy equals 1 if firm belongs to industry type1; Industry2dummy equals 1 if firm belongs to industry type2; Industry3dummy equals 1 if firm belongs to industry type3; Industry4dummy equals 1 if firm belongs to industry type4;
	Stock exchange dummy	Stock type1= SSE share; Stock type2=SZSE share; Stock type3 = GEM[5]; Stock type 1 SSE share is the omitted dummy variable. SSE dummy equals 1 if stock type is type1; SZSE dummy equals 1 if stock type is type2;
	Year dummy	The year 1999 is omitted

---

[5] GEM, growth enterprise market, is the second board market, subordinate to the main board market. China's GEM refers to the Shenzhen GEM. It differs a lot from the main board in listing threshold, regulatory system, information disclosure, trader requirement, investment risks, etc. It aims to support small and medium enterprises, typically high-growth enterprises, build up normal exit mechanisms for venture capitals and provide a strategic financing platform for countries with independent innovation.

This study constructed a sample including all the listed companies in the Shanghai and Shenzhen stock exchanges from 1999 to 2014. The data were collected from DataStream and China Securities Market and Accounting Research (CSMAR). The data codes for DataStream and CSMAR differ, so the full names of the companies were used to merge both sets of data. Banking industries and financial institutions were deleted from the sample, as is commonly done, reflecting the different regulation, liquidity, and governance for finance and banking industries (Bauer, Frijns, Otten, & Tourani-Rad, 2008). Also, extreme values were removed from the dataset via 5% winsorization. Based on the above discussions on the variables in this Chapter, Table 5-4 summarizes the expected signs of the variable coefficients.

Table 5-4 Predicted signs of the estimated coefficients on controlling variables

	PA asset ratio	PA sga ratio	PP proxies
Board size	-	+	-
Board independence	+	-	+
CEO duality	-	+	-
Firm size	-	+	-
leverage	-	+	-

5.5 Summary

This chapter describes the dependent variable and independent variable for the empirical analyses of the thesis. The modified Jones model is used to obtain the level of EM activities, and financial ratios from prior studies are used to measure PA and PP agency costs. Board size, board independence, CEO duality, leverage, and firm size are used to control for corporate governance characteristics which are well-documented in the corporate governance literature. In addition, industry, stock exchange, and year dummy are used to control for industry specific, stock exchange specific, and time specific effects. Chapter 6 will describe the data source and empirical methods used in this thesis.

CHAPTER 6 METHOD

6.1 Introduction

This chapter presents the empirical method used in this study. Section 6.1 describes the data type and the data sources. Section 6.2 discusses the research method for this study. Sections 6.3 to 6.9 explain the method and econometric tools used in this study. Prior studies investigating the AC/EM relationship have used a static framework. In this study, the dynamic nature of CG is integrated into the modelling and a more advanced method (generalised method of moments) is applied.

The research methodology is positivist, following the ideas of Watts and Zimmerman (1986). Positivist accounting and finance studies have been popular since the 1960s (Ball & Brown, 1968; Beaver, 1968). Positivist researchers propose that "given an objective, a researcher can turn a prescription into a conditional prediction and assess the empirical validity" (Watts & Zimmerman, 1990, p. 9). Positivists believe that reality is objective, singular and separate from the researcher and that the researcher is independent of the reality being researched (Creswell, 2017). Reality is observable, and guides the choice of empirical method. The positivist approach in economics provides a platform for finance and accounting studies to investigate relevant issues (Watts & Zimmerman, 1990). Early positivist thinking in relation to accounting choice studies arose from the perspective of agency costs in debt and compensation contracts. "The agency cost associated with debt and management compensation contracts and the agency, information, and other contracting costs associated with the political process provided the hypotheses tested in the early empirical accounting choice studies (bonus plan, debt/equity, and political cost hypotheses)" (Watts & Zimmerman, 1990, p. 134).

Another frequently cited example of early positivist accounting and finance research lies in the detection of managers' compensation contracts and agency costs (Smith & Watts, 1982). In positivist accounting theory, a quantitative approach is used in the strategy of inquiry. "Certain types of social research problems call for specific approaches" (Creswell, 2017, p. 21). It is important to match the research approach to the research problem.

> *When the problem is identifying factors that influence an outcome,*
> *the utility of an intervention or understanding the best predictors*
> *of outcomes, then a quantitative approach is best. It is also the*
> *best approach to use to test a theory or an explanation. (Creswell,*
> *2017, p. 22).*

The purpose of this study is to investigate the interrelationships between EM level, PA agency costs and PP agency costs in the CG context in the Chinese market. Specifically, this study aims to ascertain the influence of the selected factors (EM level) on an outcome (PA agency costs, and PP agency costs).

Therefore, this research adopts an underpinning positivist paradigm and uses quantitative methodology. The extent of EM and agency costs are observable phenomena and quantifiable. The next section describes the data types and the data sources.

6.2 Data

Panel data are sets of data in which the behaviour of each entity (individuals, firms, etc.) is observed over time. Panel data are also known as longitudinal or cross-sectional time-series data. Panel data contains observations of the same set of entities obtained over multiple time periods. Time-series and cross-sectional data can be thought of as special cases of panel data. Time series and cross-sectional

data represent two sets of information, which have only one dimension, and can be derived from panel data. The cross-sectional component reflects the differences observed between entities, while the time series component reflects the differences observed for one entity across multiple time periods. Panel data sets come in two forms, balanced and unbalanced. In the case of balanced panel data, every cross-sectional entity is observed for the same time period. In the unbalanced panel case, the cross-sectional entities are observed for different time periods; in other words, some observations for some time periods are missing.

To support a thorough examination of the research question, a comprehensive dataset was prepared. Therefore, a panel regression approach was the preferred analytic model, and the panel approach requires data for individual company variables, cross-sectional data, and the same variables for the same companies over a number of years (the time-series component).

The dataset compiled for the study covers the majority of the publicly traded companies listed on China's domestic stock exchanges (i.e., the Shanghai and Shenzhen Stock Exchanges). A panel set is often considered to be efficient in handling econometric data since it captures two-dimensional aspects of observations by including data for X cross-sections and Y time periods. To examine the impact of EM level on agency costs for listed Chinese companies from 1999 to 2014, a panel data set is appropriate. The panel data set applied in this study is unbalanced because of missing values for some companies over some years.

The data collected combines two separate data sets; CSMAR[6] and DataStream[7]. CSMAR and DataStream use different codes for the same company, although each database has a distinct code for each company. In order to merge the CSMAR and DataStream data, this study combines the CSMAR company code and DataStream company code via the unique full name of the company. This is the first study, as far as I am aware, that has developed a unique code that matches companies listed in both CSMAR and DataStream. Specifically, accounting and CG data (including total assets, total sales. total liability, leverage ratio, non-operating income, the number of directors, and the number of independent directors) were collected from CSMAR, while the industry type and stock exchange type data were collected from DataStream. CSMAR specializes in China stock market data and there are fewer missing values relative to other databases. Where necessary, any additional data were collected from DataStream or individual company websites.

Next, the research paradigm employed in this study is briefly discussed. In this study, the criteria used in the selection of the sample of companies are as follows. First, all the companies included in the sample must be listed companies on Shanghai Stock Exchange or Shenzhen Stock Exchange. Second, financial firms and banks are excluded from the sample. Third, the data or information for all firms included in the sample must be available in CSMAR and DataStream.

Research involves scientific practices that are "based on people's philosophies and assumptions about the world and the nature of knowledge; in this context, about

---

[6] The China Stock Market &Accounting Research (CSMAR) Database provides high-quality data on China's stock markets and the financial statements of China's listed companies. The CSMAR is jointly produced by GTA Information Technology Co. Ltd (the leading global provider of Chinese financial market data, Chinese industries and economic data) to cater for the needs of Chinese economic analysis and research by scholars from universities and financial institutions.
[7] DataStream is a global financial and macroeconomic data platform covering equities, stock market indices, currencies, company fundamentals, fixed income securities and key economic indicators for 175 countries and 60 markets.

how research should be conducted" (Collis & Hussey, 2013, p. 46). Therefore, the research paradigm (i.e., the way researchers design research, collect data and analyze data) is based on researchers' basic beliefs about the world.

Bryman and Bell (2011, p. 24) comment that "[a] research paradigm is a cluster of beliefs and dictates which for scientists in a particular discipline influence what should be studied, how research should be done, and how results should be interpreted". The basic research paradigm for this study was developed after examining two research approaches; qualitative and quantitative (Burrell & Morgan, 2007). The two fundamental research paradigms (or research philosophies) are given different names in different circumstances (Collis & Hussey, 2013). The alternative terms for the quantitative paradigm are positivist, objectivist, scientific, experimentalist, and traditionalist. The alternative terms for the qualitative paradigm include phenomenological, subjectivist, humanistic, and interpretivist. Based on the researcher's subjective or objective view of social reality, research paradigms are classified as either qualitative or quantitative. Given their significant influence on the entire research process, it is important to identify research paradigms. Each research paradigm has assumptions based on fundamental aspects of ontology, epistemology, axiology, rhetoric, and methodology.

Quantitative and qualitative research paradigms vary in many aspects (Collis & Hussey, 2013; Johnson & Onwuegbuzie, 2004). The first relates to data and sampling. In a quantitative approach, quantitative data that is highly specific and precise are generated, while in a qualitative approach, data are more subjective, narrative, and may contain more literal descriptions instead of continuous numeric data. To pursue a quantitative approach, large samples are often required, as statistics generated from a larger population tend to be more reliable. In a qualitative approach, researchers tend to focus on a small sample in order to study the emerging

phenomena in depth. The second area of difference is in the method applied. A quantitative study usually concerned with hypothesis testing, while a qualitative study is concerned with theory generation. In quantitative studies, an econometric and statistical method is commonly applied to generalize from sample to population. With the help of econometric techniques, researchers are able to eliminate the confounding influences of many variables and only use the variables of interest to assess the underlying cause and effect relationship more credibly. In contrast, a qualitative approach relies less on econometrics and focuses more on providing understandings and descriptions of people's personal experiences, or the participants' own categories of meaning. Thus, the qualitative approach is often used to describe complex phenomena. The third difference lies in the reporting of results. The results of quantitative approach are relatively independent of the researcher, and primarily based on statistical significance calculated using an econometric model. However, in reporting the outcomes of qualitative research, researchers can describe phenomena in rich detail using narrative.

Although the quantitative and qualitative approaches are different in many ways, they are not actually as discrete as they appear. There is an emerging approach named the mixed method, which combines quantitative and qualitative approaches. The belief is that combining the two approaches can provide a more complete understanding of the research problem than either the quantitative or qualitative approach alone.

6.3 Proposed research method

"Certain types of social research problems call for specific approaches" (Creswell, 2017, p. 21). It is important to match the research approach with the research

problem. A quantitative approach is best when the research agenda is to identify factors that

> *Influence an outcome, the utility of an intervention, or to understand the best predictors of outcomes. In addition, it is convenient to use a quantitative approach to test a theory or an explanation. On the other hand, if a concept or phenomenon needs to be understood because little research has been done on it, then it merits a qualitative approach (Creswell, 2017, p. 22).*

The purpose of this study is to investigate the association between AC and EM in China based on agency theory; in other words, to investigate the influence of several selected factors (such as EM level, board size, board independence, CEO duality and firm size) on an outcome (such as AC). The quantitative approach is suitable in this situation.

6.4 Multiple regression

Regression is a statistical measure, which has been commonly applied to examine the strength and direction of the relationship between a dependent variable (usually denoted Y) and a series of independent variables (usually denoted X). Typically, a correlation coefficient matrix is estimated first to test whether two variables are associated with each other, and then regression is undertaken to take the analysis further to gain an idea of what kind of relationship is involved. Simple linear regression and multiple linear regression are the two basic types of regression analysis. There are also regression methods for non-linear relationships.

Simple linear regression involves only one independent variable to predict the outcome of the dependent variable. In contrast, multiple regression uses at least two

independent variables (i.e., predictor variables or explanatory variables) to explain the outcome of Y (the dependent variable, also known as the response variable, or outcome variable). To achieve a good model, a lot of work is needed. Constructing regression models involves much decision-making in order to ensure that the models meet certain validity criteria. For example, a serial correlation among model variables should be avoided (this is because one of the classical linear regression model (CLRM) assumptions is serial independence, and violations of this assumption may lead to autocorrelation issues). Another example refers to the selection of variables employed in the model. Too many explanatory variables may lead to unneeded variables misspecification, while too few may cause omitted variables misspecification (Asteriou & Hall, 2015).

6.4.1 Correlation

The correlation coefficient in statistics is used to measure the strength and direction of a linear relationship between two variables. The value of a correlation coefficient is always between +1 and -1, where the absolute value of 1 implies a perfect positive/negative linear relationship and 0 implies no linear relationship at all. A correlation coefficient measures how closely two variables are related or the extent to which two variables tend to change together, but not the causation between variables. Covariance also measures the relationship between two variables; however, covariance values range from negative infinity to positive infinity, and are thus not standardized like correlation coefficients. The disadvantage of covariance is its dependence on the units of measurement of the variables; it is the expected value of the product of the deviation of one variable from its mean and the deviation of the other variable from its mean. As a result, if the units of measurement for the variables change, the covariance also changes (Dougherty, 2011). The correlation coefficient in mathematics is calculated as the covariance

divided by the product of each variable's standard deviation. In the other words, the correlation coefficient is a function of the covariance by taking a normalizing term (the production of variance) into account.

For a regression model, analysts would expect the independent variables and dependent variable to be correlated, as correlation indicates the potential impact of independent variables on the dependent variable. However, the correlation coefficients between independent variables are not expected to be too high (e.g., higher than 0.5), since high values would violate the assumption of CLRM that there is no linear relationship among explanatory variables. Violation of this assumption may cause multicollinearity problems.

Often correlation analyses refer to the Pearson correlation and the Spearman correlation. The Pearson correlation measurement is suitable for continuous variables, while the Spearman correlation measurement is often used to evaluate relationships involving ordinal variables (Hauke & Kossowski, 2011). Given that the financial data is continuous for this study, the Pearson correlation coefficient is applied.

6.4.2 Hypothesis testing

A hypothesis test is a statistical test that proceeds by making an assumption and examining whether the evidence from the sample data is enough to infer a certain condition to be true for the entire population. A hypothesis test is composed of two mutually exclusive hypotheses about a population; the null hypothesis, and the alternative hypothesis. Only one of the null or alternative hypotheses can be true. A null hypothesis (normally denoted H_0) is the statement being tested, and analysts maintain the belief that the null is true unless the sample test statistics suggest the opposite, and in which case the analysts reject the null. When the null hypothesis is

rejected, the alternative hypothesis (normally denoted H_1) is considered more appropriate.

Usually, the null hypothesis states there is no relationship between variables. A hypothesis test will remain on the null until enough evidence emerges to support the alternative. A p-value is often applied to determine whether to reject the null or not. When the p-value is smaller or equal to the chosen level of significance (1%, 5%, or 10%; this study uses the 5% significance level), the null hypothesis will be rejected (Hill et al., 2008).

In a hypothesis test, the hypothesized mathematical relationship is known as the regression model. In practice, the hypothesis is made based on theories, and empirical analysis is implemented with the purpose of evaluating the plausibility of the hypothesis. Alternatively, an empirical analysis can be performed first and then fitted into a proper theoretical framework (Dougherty, 2011). In general, researchers or scholars configure the implications of theory into hypotheses, and the hypotheses constitute a regression model. Therefore, regression models, derived from theoretical arguments, represent simplified complex real-world relationships and contain theoretical explanations of economic phenomena.

In regression modelling, there are dependent and independent variables. The dependent variable is also known as the outcome variable. It is called dependent because it "depends" on the independent variable. The independent variable is also known as the explanatory variable. The independent variable is stand-alone and does not change dependent on the other variable. The dependent variable responds to the independent variable. A regression model tests how the dependent variables vary with the independent variables. The results of model testing explain the extent

and character of the effects that the independent variables have on the dependent variables.

The objective of this study is to examine the association between AC and EM. As discussed in Chapter 3 Section 3.4, the traditional focus of AC is PA agency costs, while PP agency costs are more prevalent in emerging economies due to the concentrated ownership structure. AC can decompose into PA and PP agency costs, and the relationship of EM with PA and PP is tested separately in this study. Following the hypothesis testing procedure, this study proposes the null hypothesis that there is no relationship between AC and EM.

6.4.3 Dummy variables

A variable, as a measurement of a characteristic, number or quantity, tends to increase or decrease and takes different values. However, a dummy variable, which is an artificial variable created and added to a regression model in order to differentiate distinct categories of observations, takes one of only two values; 0 and 1. A dummy variable is also known as an indicator variable, design variable, categorical variable, binary variable, or qualitative variable.

Dummy variables are assigned a value of 0 or 1 to represent subgroups of the sample. Dummy variables are used to code different categories with numerical values, capture the qualitative effects of observations and to sort the sample data into mutually exclusive and exhaustive categories. For example, to differentiate the gender of all observations, a gender dummy with value 1 when female, otherwise 0, can be added to the regression model. A dummy variable can have more than two categories. While applying multiple dummy variables, it is important to pay attention to the "dummy variable trap". The number of dummies added into a regression should always be one less than the total number of available categories.

This is because, when the number of dummies equals the number of available categories, exact multicollinearity will occur, which is also known as the dummy variable trap. The omitted category or omitted dummy is used as a reference group. Mathematically, it does not matter which category is omitted; however, in general, the dominant or most normal category is omitted for convenience in practice (Asteriou & Hall, 2015; Dougherty, 2011).

In this study, in order to check industry-specific effects, stock exchange-specific effects and time-specific effects, an industry dummy, stock exchange dummy and year dummy are used in the model.

6.4.4 Ordinary Least Squares (OLS)

After developing the regression or econometric model, the next step in a regression analysis is to estimate the unknown parameters of the model. Ordinary least squares (OLS) is a statistical method used to estimate the parameters of the linear regression model. The goal of the OLS method is to minimise the sum of squares of differences between objective observations and those predicted by a linear function. In other words, OLS closely fits a function with data by minimising the sum of squares errors (or RSS, which is short for residual sum of squares) from the dataset. The smaller the RSS, the better the model fits the data. When a perfect fit occurs, the residuals equal zero. However, in general, disturbance terms make a perfect fit impossible (Dougherty, 2011).

According to Seddighi (2013, p. 38), " Amongst all methods of estimation available, there are only two types which satisfy the efficiency criterion, given the assumptions. These are the OLS estimator and the maximum likelihood (ML) estimator. The OLS estimator can be obtained without reference to the normality

assumption, whilst ML estimators require the assumption of normality to hold. Both methods generate identical estimators of parameters."

Unlike OLS, ML estimators are obtained by maximising the probability of observing the sample data set. The basic idea of ML estimation is to maximise the "agreement" between the developed model and the observed sample data, starting by writing a likelihood function of the sample data (Fields et al., 2001).

6.4.5 Fixed effect and random effect OLS

A fixed effect estimator, also known as a within-group estimator, is used when it is suspected that time-constant effects for each entity are correlated with the explanatory variables. The fixed effect estimator allows the intercept for each entity to vary, but keeps the slope parameters constant across all the entities and time periods. Notably, the intercept for each entity in the fixed effect estimator only varies across individuals but not over time. By doing so, all the behavioral differences among individual entities across different time periods are captured by the intercept; thus the fixed effect estimator allows different intercepts for each observed group (entity). The purpose of treating intercepts as group (entity)-specific in the fixed effect estimator is to control for the effects of time-invariant variables with time-invariant effects, or in other words, to control for specific differences among all the observed entities.

"In the fixed effects model, we assumed that all individual differences were captured by differences in the intercept parameter. In the random effects model, we again assume that all individual differences are captured by the intercept parameter, but we also recognize that the individuals in our sample were randomly selected, and thus we treat the individual differences as random rather than fixed" (Hill et al.,

2008, p. 398). The random effect estimator assumes that the error term is uncorrelated to the explanatory variables.

The Hausman test and the Breusch-Pagan test can be used to check for any correlation between the error term and the explanatory variables, and hence help analysts in making a choice between the fixed effect estimator or the random effect estimator (Gujarati, 2009). "The Hausman test compares the coefficient estimates from the random-effects model to those from the fixed effects model. The idea underlying Hausman's test is that both the random effects and fixed effects estimators are consistent if there is no correlation between error term and the explanatory variables " (Hill et al., 2008, p. 404). The random effect estimator is preferred under the null hypothesis of the Hausman test due to the higher efficiency of the random effect, while the fixed effect estimator is preferred in the alternative hypothesis. Thus, if the null hypothesis of the Hausman test is rejected, it indicates that the random effect estimator is inconsistent and inefficient, and the fixed effects estimator should be used to estimate the model parameters.

6.5 Statistical Criteria for regression results evaluation

This section introduces two types of basic statistical criteria that are commonly used to evaluate regression results: R-squared and tests of significance. We estimate the "goodness of fit" of the model to the sample data using R-squared and the adjusted R-squared. Subsequently, tests of significance on each of predictors are applied to check whether the statistical evidence is against or in favour of the inclusion of each predictor. A joint test of significance is applied to estimate whether all the predictors jointly have a significant impact on the dependent variable, which is also called the overall significance of regression (Seddighi, 2013).

6.5.1 R-Squared

OLS minimizes the sum of squared residuals. In general, a model fits data well when the differences between observed values (actual value) and the model's predicted values are small and unbiased. R-squared is a statistical measure used to determine how well the model fits the data. Total sample variation (TSS, the total sum of squares) in Y (the dependent variable) can be decomposed into a part that has been explained by the regression model (ESS, explained sum of squares) and a part that is unexplained (RSS, the residual sum of squares).

R-squared (also known as the coefficient of determination) is measured by using ESS divided by TSS, which is the percentage of the explained variance in Y out of the total variance in Y. Hence, the closer R-squared approaches 1, the better the model fits the data. When R-squared has a value between 0 and 1, it implies "the proportion of the variation in Y about its mean that is explained by the regression model" (Hill et al., 2008, p. 81). R-squared can be negative, but it is usually not.

However, there are some drawbacks of using R-squared to estimate the goodness of model fit. The first problem is, as Greene (2012, p. 42) puts it, "R-squared will never decrease when another variable is added to a regression equation". Every time a new predictor is added, R-squared increases. As a result, a model may appear to have better model fit, or higher R-squared, simply because it has more independent variables. Another problem with R-squared is that it is not comparable across models with different dependent variables. R-squared would change even if the model was simply rearranged, with an identical RSS (Brooks, 2014).

When the R-squared estimator is misleading, the adjusted R-squared can provide a better inference. The adjusted R-squared is a modification to R-squared which takes into account the number of predictors in the model. Unlike the R-squared, the

adjusted R-squared only increases if the newly added predictor improves the model fit more than could be expected by chance. If a newly added predictor improves the model to an extent less than what would be expected by chance, the adjusted R-squared decreases. The adjusted R-squared is always lower than R-squared.

The R-squared and adjusted R-squared produces very similar results in the GLS and GMM analysis. The fixed-effect OLS produces only R-squared (within, between, overall). To be consistent, I report R-squared for all the three models.

6.5.2 Tests of significance

Generally, a t-test is used to test the hypothesis on each of the individual slope coefficients in regression, while an F-test is used to test the joint hypothesis that contains multiple hypotheses or a hypothesis on multiple coefficients simultaneously. The t-test tests the significance of each explanatory variable; the F-test tests the overall significance of an estimated regression equation.

6.5.2.1 T-test

The t-test is perhaps the most commonly used statistical analysis procedure for hypothesis testing. The t-test examines whether the means of two data sets are statistically different from each other. There are different types of t-test, including the one-sample t-test, unpaired two-sample t-test, and paired two-sample t-test. The one-sample t-test is used to compare the mean of sample data and a hypothesized value, while the two-sample t-test is used to compare the means of two groups or two data sets. When the two groups or samples are independent of each other, an unpaired t-test is appropriate to use, while if the two data sets are paired, for example, one set of data is recorded for a group before treatment and a second set of data is recorded from the same group after treatment, then a paired t-test is appropriate.

The t-test statistics in a regression result report are used to determine a p-value that indicates whether to reject the null hypothesis or not. The null hypothesis for a t-test in a regression equation hypothesizes that individually, the independent variable is not significant in explaining dependent variable Y. The p-value is commonly referred to as the exact significance level. A large absolute value in a test statistic will lead to a small p-value, and vice versa. As with t-test statistics, p-values are almost always provided by software packages automatically. The p-value is useful because it contains all the information required to conduct a hypothesis test. Instead of calculating the test statistics and looking up critical values from the table, researchers can decide on whether to reject the null hypothesis or not, directly from the p-value. If the p-value for an independent variable is less than or equal to the chosen significance level (α), the test suggests that the observed data is inconsistent with the null hypothesis, so the null hypothesis must be rejected, indicating that this specific independent variable has a significant impact on the dependent variable (Brooks, 2014).

6.5.2.2   F- test

As mentioned above, in multiple regression, the t-test can be used to test whether an individual independent variable affects the dependent variable significantly or not. However, testing the individual significance of a regression coefficient (using the t-test) and testing the overall significance of the regression is not the same thing. The t-test cannot be used to test the joint impact of all independent variables. One or more individual regression coefficients having no impact on a dependent variable does not mean the impact of all the independent variables collectively on the dependent variable is also insignificant. The F-test is commonly used to test the hypothesis on the joint impact of all independent variables. As Brooks (2014, p. 96) puts it, "Any hypothesis that could be tested with a t-test could also have been tested

using an F-test, but not the other way around. So, single hypotheses involving one coefficient can be tested using a t- or an F-test, but multiple hypotheses can be tested only using an F-test". The null hypothesis of an F-test states that all the slope coefficients of independent variables are simultaneously equal to zero, or in other words, all the independent variables jointly have no influence on dependent variable Y (Gujarati, 2009).

The F-test statistic and p-value are routinely reported in the regression results prepared by statistics software. To interpret the F-test statistic, researchers can compare the value of the F-test statistic and the critical value of the F-test at a chosen significance level, and reject the null when the test statistic is greater than the critical value. Alternatively, the p-value approach can be used. The p-value reports the probability that the null hypothesis is true. By comparing the p-value and the chosen level of significance, the outcome of a test can be determined. For example, if the p-value of the F-test is 0.1%, which is smaller than the chosen significance level of 5%, it means that there is only a 0.1% chance that the null hypothesis of the F-test is true; thus one should reject the null, and draw the conclusion that all the independent variables collectively have a significant impact on the dependent variable.

6.6 The assumptions of classical linear regression models (CLRM)

There are some underlying assumptions in classical linear regression models (CLRM), which are illustrated in Table 6-1. These assumptions are important for OLS estimates to produce the best estimators available. When the classical assumptions of CLRM hold, OLS produces linear and unbiased estimators with the smallest variance (referred to as BLUE, an acronym for best linear unbiased

estimators). When one or more assumptions are violated (excluding the assumption on the normal distribution of residuals), OLS is no longer BLUE.

Table 6-1 CLRM assumptions

Assumption	Violation may imply
1) Linearity of the model	Wrong regressors Non-linearity Changing parameters
2) X has some variation	Errors in variables
3) X is non-stochastic and fixed in repeated samples	Autoregression
4) Expected value of disturbance is zero	Biased intercept
5) Homoskedasticity	Heteroscedasticity
6) Serial independence	Autocorrelation
7) Normally distributed disturbance	Outliers
8) No linear relationship among explanatory variables	Multicollinearity

(Source: adjusted from Asteriou & Hall, 2015, p. 37)

Table 6-1 shows that violation of the assumptions of CLRM would lead to an inconsistent and biased estimator. Therefore, before relying on OLS regression results, checks on the validity of these assumptions are needed. In the following subsections, the common problems of multicollinearity, heteroscedasticity and autocorrelation are introduced, and the tests used to detect the problems, and their solutions, are also discussed.

6.6.1 BLUE

The basic framework of regression analysis is the CLRM, and the CLRM is based on a set of assumptions. Under these assumptions, the least-squares estimator generates the minimum variance among all unbiased linear estimators, providing best linear unbiased estimation (BLUE). In a regression context, an OLS estimator produces BLUE when three conditions hold. These conditions are: (1) linear (that is a linear function of a random variable); (2) unbiased (which means the estimator's average or expected value is equal to the estimator's real value); and (3) efficient

(that is an unbiased estimator with the least or smallest variance) (Gujarati, 2009). This is also the basis of the Gauss-Markov theorem.

6.6.2 Multicollinearity

One of the CLRM assumptions requires that there are no exact linear relationships between the independent variables. Violation of this assumption may lead to multicollinearity. Multicollinearity in regression refers to the phenomenon in which two or more independent variables are highly correlated, indicating that one independent variable can be explained by a linear function of other independent variables. Perfect multicollinearity occurs when one independent variable can be expressed as an exact linear function of one or more of the others. However, perfect multicollinearity rarely arises with real data. Perfect multicollinearity is often correctable in actual cases; for instance, perfect multicollinearity can be corrected by avoiding the dummy variables trap or by excluding X and X^2 in the same equation. However, imperfect multicollinearity still occurs when independent variables are correlated, and cannot be corrected as easily as perfect multicollinearity (Gujarati, 2009).

In general, multicollinearity does not affect the goodness of fit or the goodness of prediction. If the research is only aimed at predicting a dependent variable from a set of independent variables, with the presence of multicollinearity, the predictions made by the regression would still be accurate; the overall R^2 would still provide an accurate indication of how well the independent variables together predict the dependent variable. Multicollinearity does not adversely affect the predictive power of the regression model as a whole, but it can be problematic if the purpose of regression is to estimate the contributions of individual independent variables. In this case, regression coefficient estimators change erratically in response to small

changes in the model or data, the regression coefficient becomes unstable and difficult to interpret, and thus is no longer valid regarding individual predictors.

Multicollinearity inflates the variance of the parameter estimators; variance inflation factors (VIF) measure how much the variance of estimated regression coefficients are inflated compared to the coefficient estimator in the absence of multicollinearity. If the VIF value exceeds 10, it indicates the existence of problematic multicollinearity (Asteriou & Hall, 2015).

6.6.3 Heteroscedasticity

Multicollinearity occurs when the assumption of no linear relationship between independent variables fails, while heteroscedasticity occurs when the CLRM assumption of homoskedasticity (meaning the variance of the error term is constant) is violated. In the homoskedasticity assumption, variations in the values of independent variables are assumed not to affect the variance of dependent variables.

The existence of heteroscedasticity can invalidate statistical tests of significance, thus it is considered a major concern in the application of regression analysis. "Significant variations in the independent variables cause the variance of the dependent variable/disturbance term to change, resulting in heteroscedasticity" (Asteriou & Hall, 2015, p. 83). Therefore, heteroscedasticity most often arises with cross-sectional data, where the values for each individual may change significantly from one to the next.

Even though the OLS estimator is still unbiased and consistent (but no longer efficient, and thus no longer BLUE) in the presence of heteroscedasticity, the standard errors of the estimates will be adversely affected and become biased with heteroscedasticity. If the standard errors are biased, the t statistics and F statistics will generate misleading results and are no longer reliable. In addition, the R^2

estimator will also overestimate the degree of linear relationship in the regression model (Seddighi, 2013).

There are informal and formal methods that can be used to detect heteroscedasticity. The informal approach refers to visual inspection (graphical method). In the case of multiple regression with more than one independent variables, heteroscedasticity can be detected if the scatterplot of least squares residual exhibits a systematic pattern; in other words, a 'healthy' model should have no patterns of any sort in the residuals (Asteriou & Hall, 2015; Gujarati, 2009).

Two common formal tests of heteroscedasticity are the Breusch-Pagan test (Breusch & Pagan, 1979a) and the White test (White, 1980). Both tests can be performed in most statistical software, such as EViews, Stata, SAS, and MATLAB. The Breusch-Pagan test detects any linear form of heteroscedasticity by testing whether the error variance depends on anything observable. The White test is a special case of the Breusch-Pangan test; in the White test, the normal distribution assumption of errors is relaxed (Gujarati, 2009).

Heteroscedasticity is harmful to the reliability of regression estimates and there are tests that can detect it, but is there a way to resolve heteroscedasticity problems; what are the remedial measures? When heteroscedasticity is found in an OLS regression model, before proceeding with the regression, the first step should be to have a look at the specification of the model or try to transform the variables. This is quite important because sometimes heteroscedasticity occurs due to improper model specification (for example, some important variables may be omitted in the model), or the effects of variables are not linear. In such cases, heteroscedasticity is not the actual problem, model misspecification is; heteroscedasticity may disappear once the model is properly re-specified (Williams, 2015). A second way to deal

with heteroscedasticity is to use robust standard errors. As mentioned above, heteroscedasticity may lead to biased standard errors, where OLS assumes that the errors or residuals are independent and identically distributed. The application of robust standards errors tends to be more reliable in the presence of heteroscedasticity because it relaxes the OLS assumptions on errors. Another way to proceed with heteroscedasticity is to apply the generalized (or weighted) least squares method (GLS or WLS) (Asteriou & Hall, 2015; Gujarati, 2009). Under GLS, the OLS variables are transformed to satisfy the CLRM standard assumptions on least squares and thus generate a set of parameter estimators that are BLUE.

6.6.4 Autocorrelation

One of the CLRM assumptions for BLUE states that the error terms should be uncorrelated with each other. Autocorrelation, also known as serial correlation, occurs when the error terms are correlated. Autocorrelation most likely occurs in regressions using time series data sets. In time series data where the observations are successive, the error term in one period may affect the error in other time periods.

In the case of autocorrelation, the OLS estimators are still unbiased and consistent. However, OLS estimators are no longer efficient, and therefore no longer BLUE. That is, among all the unbiased estimators, OLS no longer generates estimates with minimised variance. Additionally, with autocorrelation, OLS methods tend to underestimate the standard errors of estimators and regression, thus the t-test, F-test, and R-squared become unreliable. This means that almost all the basic tools of regression analysis become biased and inconsistent. Most likely, R-squared and t-statistics will be overestimated, producing an image of better model fit and higher estimate significance than the correct one (Asteriou & Hall, 2015; Dougherty, 2011; Seddighi, 2013).

There are various causes of autocorrelation. Asteriou and Hall (2015) summarise three main causes. First, omitted variables can cause autocorrelation. For instance, when the dependent variable Y is related to two independent variables but only one independent variable is included in the model, the effect of the omitted independent variable will be captured by the error term. Especially in time series data sets, where the omitted variable depends on its previous values, and the previous error terms capture the effects of omitted variables in previous time periods, the current error term becomes dependent on the previous error terms, and unavoidably correlated with the previous error terms. Second, model misspecification can also lead to autocorrelation. For instance, when a researcher wrongly assumes a straight-line relationship that is in fact a quadratic relationship, then the error term obtained by the straight-line model will be correlated with the quadratic term. Then the changes in error terms are dependent on the changes in independent variables, which leads to autocorrelation. The third possible cause of autocorrelation is systematic errors in measurement. When systematic measurement errors accumulate over time, the errors reveal themselves as auto-correlated.

The Durbin-Watson (DW) test is one of the statistical tests for detecting the presence of autocorrelation or serial correlation (Asteriou & Hall, 2015). The DW test can detect whether autocorrelation exists, but is incapable of identifying its cause (Seddighi, 2013). There are a few assumptions that must be met in order to assure the validity of a DW test. First, a constant term or intercept needs to be included in the regression model requiring a DW test. Second, the serial correlation is assumed to be first order only and the regression model should not include a lagged dependent variable as one of its explanatory variables. There are different orders of autocorrelation. First order correlation is often denoted as AR(1), which is the simplest form of autocorrelation, describing the situation where successive

values of the same variable are correlated, or in other words, where consecutive errors are correlated. Second-order autocorrelation occurs when the error terms two periods apart are correlated, and so forth (Seddighi, 2013).

Autocorrelation can have two types, positive or negative. In positive autocorrelation, positive error terms are almost always followed by positive error terms, and negative error terms are almost always followed by negative error terms. In other words, the consecutive errors in positive autocorrelation usually have the same sign. In negative autocorrelation, consecutive errors usually have opposite signs; positive errors are almost always followed by negative errors, and negative errors are almost always followed by positive errors.

6.7 Endogeneity

Endogeneity occurs when there is a correlation between the independent variable and the regression equation's error term. When the independent variables are not correlated with error, the situation is described as exogenous (Verbeek, 2008).

Endogeneity results in biased and inconsistent parameters that make regression estimators unreliable. Endogeneity commonly has three forms: omitted variables, simultaneity, and measurement error (Roberts & Whited, 2012).

Omitted variables refer to those variables that should be included in the regression equation, but in fact are not. There are various reasons for the existence of omitted variables. For instance, omitted variables bias can arise when a relevant predictor or explanatory variable that is correlated with the included predictors fails to be included in the model. Also, omitted variable bias can arise when factors that happen to be correlated with the included explanatory variables are difficult to quantify or observe. When the relevant variables fail to be included in the model as explanatory variables, they will appear in the error term of the regression model.

When the omitted variable is correlated with any of the included explanatory variables, the composite error term in the regression model will become correlated with the explanatory variables. In this case, the OLS parameter estimates become inconsistent and biased.

The second cause of endogeneity is called simultaneity or reverse causality. Simultaneity occurs when independent variables have an impact on the dependent variable, and at the same time, the dependent variable has an impact on the independent variables. In this case, it becomes plausible to argue that either the independent variable causes the dependent variable or that the dependent variable causes the independent variable. Statistically, simultaneity violates the assumptions in the error terms and results in inconsistent OLS estimators (Roberts & Whited, 2012; Verbeek, 2008).

The third form of endogeneity refers to measurement error. In most cases, researchers use proxies or metrics to measure, quantify, and represent unobservable variables. However, variables in CG sometimes are abstract and hard to quantify or observe; for example, the extent of information asymmetry or conflicts of interest. Measurement error arises when there is a discrepancy between the real or true values of the variables of interest and the chosen proxy. As a result, the raised measurement error becomes part of the composite error term in regression analysis. Measurement error may occur in both the dependent variable and independent variables. OLS estimations produce consistent estimates as long as the measurement error is uncorrelated with the explanatory variables, and vice versa. Therefore, endogeneity issues arise when explanatory variables are correlated with error terms. Omitted variables, simultaneity and measurement error are the three main causes.

When one or more explanatory variables in a regression equation are endogenous (i.e., correlated with the composite error term) the OLS estimates are biased and inconsistent. To address the endogeneity problem, alternative estimators are needed. According to Roberts and Whited (2012), the standard remedy for endogeneity is the instrumental variable (IV) method. For a variable to fit as a qualified instrument, it needs to satisfy two conditions, which are relevance and exclusion conditions. The first condition, the relevance condition, requires the instrument variable to be partially correlated with the endogenous variable. The second condition, the exclusion condition, requires the instrument variable to be uncorrelated with the composite error term in regression. When there are more instrumental variables than endogenous variables, the model is said to be overidentified.

Two stage least squares (2SLS or TSLS) is another popular alternative estimation to deal with endogeneity. The 2SLS technique generates estimators in two stages. The first stage generates proxies systematically to replace endogenous explanatory variables. The second stage simply substitutes the proxies for endogenous variables and estimates the parameters using OLS. Most econometrics packages support 2SLS.

When endogeneity presents, methods like instrumental variables and 2SLS produce consistent and efficient estimators. However, when there is no endogeneity problem, using instrumental variable (IV) or 2SLS methods will result in consistent but no longer efficient (i.e. smallest variance) estimators. Therefore, testing whether endogeneity is present is important before discarding the OLS estimates. Testing for the presence of endogeneity is actually testing whether there is a correlation between explanatory variables and the error term. The Hausman specification test can be used for this purpose (Hausman, 1978). The Hausman specification test is

used to determine whether a variable or a group of variables is endogenous or exogenous.

6.8 Instrumental variable (IV) estimates

Instrumental variable (IV) estimation uses additional variables as "instruments" to replace endogenous variables. The endogenous variables are correlated with the error source for various reasons, including omitted variables, measurement errors in the regressors, and simultaneous causality, as discussed in Section 6.7. The fundamental idea of IV estimation is to find a valid instrument variable Z, and then replace the endogenous variable X with Z to examine the effect on dependent variable Y. Basically, the instrumental variable Z is used to isolate the exogenous part of X. Valid instrumental variables need to satisfy two conditions; instrument relevance and instrument exogeneity. Instrument relevance requires that the instrument Z must correlate to the endogenous variable X. If the correlation between instrument Z and endogenous variable X is weak, then the instrument is considered as a weak instrument and no longer desirable, since weak instruments may result in bias. Instrument exogeneity requires that instrument Z to be uncorrelated to the error term. Therefore, a valid instrument must be relevant and exogenous. One way to find a valid instrument is to look for exogenous variations that affect X.

In the CG context, it is difficult to identify legitimate instruments that are exogenous and at the same time correlated with the endogenous variable (Bhagat & Bolton, 2008; Gompers, Ishii, & Metrick, 2003). Most empirical studies apply imperfect instruments, such as weak instruments, semi-endogenous, or quasi-instrumental variables (Renders, Gaeremynck, & Sercu, 2010). Weak instruments are exogenous but have a very low correlation with the endogenous variable; semi-endogenous or

quasi-instrumental variables are those highly correlated with the endogenous variable but not strictly exogenous. A related approach relies on a dynamic panel data model to resolve the endogeneity problem. For example, in a CG-FP relationship, the lagged value of CG is used as the instrument for the current CG, since past performance is unlikely to be impacted by the current CG, and is thus exogenous (Love, 2010). However, because CG tends to be persistent, slow-moving and almost all explanatory variables in CG are considered as endogenously determined, this approach is also plagued with the weak instruments problem. Due to the difficulty in finding valid exogenous instrumental variables in CG, the IV approach is compromised. The next section introduces the generalized method of moments (GMM), which is considered the most feasible solution for taking account of endogeneity.

6.9 Generalized Method of Moments (GMM)

The endogeneity issue is pervasive in empirical corporate finance studies. "The combination of complex decision processes facing firms and limited information available to researchers ensures that endogeneity concerns are present in every study" (Roberts & Whited, 2013, p. 6). Studies on CG inevitably encounter endogeneity problems, given the dynamic nature inherent in CG. The process of CG is consecutive and the CG of the last period always influences the CG in the next.

Wintoki et al. (2012) emphasize that the dynamic nature inherent in CG as a source of endogeneity is often ignored. In CG, the current CG features are often correlated with past CG features; in other words, the current CG features are often a function of past GC features. Ignoring the direct influence imposed by past CG features on current CG features often yields inconsistent estimates.

The dynamic panel model is introduced to capture the influence of lagged dependent variables on the current outcome, by including lagged dependent variables as explanatory variables. However, the inclusion of lagged dependent variables violates the CLRM assumption of no correlation between the explanatory variable and the error term; therefore, the OLS estimates become biased and inconsistent (Anderson & Hsiao, 1982; Arellano & Bond, 1991).

The advantages of the dynamic panel GMM (generalized method of moments) estimator are reflected in at least three aspects. First, the dynamic panel GMM estimator accounts for the entity-specific fixed effect to mitigate unobservable heterogeneity. Second, the dynamic panel GMM estimator accounts for the impact of past dependent variable values on the current ones to keep only exogenous attributes. The third advantage is the instrument advantage. In the traditional instrumental variable approach, it is known to be difficult to find proper external instruments in CG studies (Flannery & Hankins, 2013). The dynamic panel GMM estimator uses a combination of variables from the entity's history as valid instruments. Therefore, compared to the traditional IV approach that requires valid external instruments, which are never easy to find, the dynamic panel GMM estimator is much more convenient given the instruments are internal, and already contained in the panel data.

The method of moments (MM) estimation is also superior to the ML estimation. The ML estimator is sensitive to its distributional assumptions, which is not convenient since the collected sample data are often not normally distributed. "Unlike ML estimation, GMM does not require complete knowledge of the distribution of the data. Only specified moments derived from an underlying model are needed for GMM estimation. In some cases in which the distribution of the data

is known, ML estimation can be computationally very burdensome whereas GMM can be computationally very easy" (University of Washington, 2005, p. 1).

The idea of the method of moments relies on the analogy between sample and population. Each sample statistic has a counterpart in the population; for example, the sample average and the expected population average. MM or GMM use the sample data to infer the population character (Zsohar, 2012). In general, " a GMM estimator of the true parameter vector is obtained by finding the element of the parameter space that sets linear combinations of the sample cross products as close to zero as possible" (Hansen, 1982, p. 1029).

> *The advantage of GMM stems from the fact that it optimally exploits all the linear moment restrictions specified by the model…It is essential to ensure that there is no higher order serial correlation to have a valid set of instruments independent of the residuals. This can be investigated by using Sargan's test of overidentifying restrictions. This two-step GMM methodology can control for the correlation of errors over time, heteroscedasticity across firms, simultaneity, and measurement errors due to the utilization of the orthogonal conditions on the variance-covariance matrix (Antoniou, Guney, & Paudyal, 2008, p. 70).*

In the dynamic GMM estimator category, there are differenced GMM and system GMM. Differenced GMM was introduced by Holtz-Eakin, Newey, and Rosen (1988) and Arellano and Bond (1991). The differenced GMM estimation uses first-differenced equations to eliminate unobserved fixed effects and lagged instruments for correcting for the simultaneity in the first-differenced equations. The basic

procedure of differenced GMM consists of three steps. The first is to develop a dynamic model. A dynamic modelling framework is used when the problem being investigated indicates a dynamic nature, where the independent variables are dynamically associated with the dependent variables. In a dynamic model, the lagged dependent variables are included as one of the explanatory variables. The number of lags of dependent variables included should be sufficient to capture the influence of past dependent variables on the current dependent variable value. If we include n lags of the dependent variable, any historical data of dependent variables that are older than the lags should have no direct influence on the current value of the dependent variable; thus historical dependent variables beyond n lags are expected to be exogenous in order to avoid the presence of endogenous variables in the model. The second step in differenced GMM is to transform the developed dynamic model to the first-differenced form. The third step is to apply the GMM estimator to estimate the transformed dynamic model in a first-differenced form, using the lagged values of independent variables as instruments for the current independent variables.

However, there are at least three shortcomings of differenced GMM estimators (Wintoki et al., 2012). The first problem comes along with the process of transforming levelled equations to the first-differenced form. The differencing procedure reduces the variation in the explanatory variables, and thus reduces the test power. The second shortcoming involves the instruments used. In differenced GMM, lagged variables in levels serve as the instruments of the transformed differenced equation. Arelleno and Bover (1995) note that the levelled instruments are not sufficient and may be weak for the differenced equation. The third drawback is that the impact of measurement error on the dependent variables can be exacerbated by the differencing procedure.

To moderate the shortcomings of difference GMM, Arelleno and Bover (1995) and Blundell and Bond (1998) propose system GMM estimation, which consists of both levelled and differenced equations. In addition to the differenced equation from difference GMM, system GMM estimation uses the original equation in levels, and then uses the lagged differences as the instruments. Therefore, the system GMM estimation composes a system of equations by stacking the differenced equation up with the equation in levels, and using lagged levels and lagged differences as instruments in the differenced equation and the levels equation, respectively.

Arellano and Bond (1991) propose that in differenced GMM, the absence of information in level variables leads to substantial loss of efficiency. The instruments used in the differenced GMM estimator contain little information about the endogenous variables in first difference, and the lagged first-differenced values are informative instruments for the endogenous variables in levels. When the instruments are only weakly correlated to the endogenous variables, bias may emerge from the instrumental estimators (Bound, Jaeger, & Baker, 1995; Staiger & Stock, 1994; Stock & Yogo, 2002). A subsequent study by Blundell and Bond (1998) asserts that the system GMM estimator, which uses both lagged first-differenced and lagged levels instruments, reveals gains in efficiency of estimation. By adding an additional instrument set, the system GMM estimator successfully reduces the bias of a finite sample. "Under the system GMM technique, the model is estimated in both levels and first differences, as level equations are simultaneously estimated using differenced lagged regressors as instruments. In this way, apart from controlling for individual heterogeneity, variations among firms can partially be retained" (Antoniou et al., 2008, pp. 70-71). In particular, the system GMM suits CG studies, considering the endogeneity issues and dynamic nature inherent in CG. Taking the instance of governance/performance relationship,

"the system GMM model enables us to estimate the governance/performance relation while including both past performance and fixed-effects to account for the dynamic aspects of governance/performance relation and time-invariant unobservable heterogeneity, respectively" (Wintoki et al., 2012, p. 596).

Differenced and system GMM are popular mainly because they are able to handle important concerns, such as fixed effects and endogenous explanatory variables, in modelling. Although the GMM estimator has obvious advantages over many other estimators, it is noteworthy that the GMM estimator is also subject to some deficiencies. For example, in the differenced GMM, instruments often contain inadequate information about the endogenous variables. Thus, the differenced GMM is associated with weak instruments and often yields unsatisfactory, low and statistically insignificant parameter estimates (Blundell & Bond, 2000).

The caveat for using the system GMM is that it may create too many instruments and lead to overidentified models. Roodman (2009) addresses the problem of too many instruments or instrument proliferation in GMM estimation. He proposes two techniques to reduce the instrument count. One way is to limit the lag depth, and the other is to collapse the instrument set. Also, Mehrhoff (2009) provides a solution to the problem of too many instruments in the form of factorization of the standard instrument set. Factorization of the standard instrument set is optimal and a valid transformation to ensure the consistency of GMM.

6.10 Dynamic nature of CG

Various studies in CG, especially in internal CG studies, have adopted the dynamic model to capture its dynamic nature and address the potential endogeneity issues (e.g., Flannery & Hankins, 2013; Nguyen, Locke, & Reddy, 2014; Wintoki et al., 2012). Wintoki et al. (2012) find no causal relation between board structure and

firm performance under a dynamic modelling framework, which contradicts prior evidence. Wintoki et al. (2012) attribute the contradictory result to ignorance of the relationship between current and past firm performance in the prior studies. In CG, it is often hard to ascertain the cause and effect relationships among underlying factors; for example, whether the firm performance drives CG or the CG drives firm performance. Ignorance of potential reversed causation and application of estimators that are inefficient in alleviating endogeneity issues, such as OLS, has caused the endogeneity issue to plague CG studies.

Flannery and Hankins (2013) examine and compare the performance of various econometric methodologies estimating dynamic panel models under realistic statistical conditions, where the dataset tends to be unbalanced and contains endogenous repressors. They find that GMM performs better with the presence of dynamic lagged dependent variables, while the traditional OLS estimator performs poorly.

In the implementation of GMM estimation, it is important to decide the length of lags of CG variables to ensure dynamic completeness. In a dynamic model, the lags that contain influence from the past should be included. Failure to capture all the information from the past may incur potential model misspecification due to omitted variable bias and endogeneity, given the omitted lags are relevant in explaining current performance (Wintoki et al., 2012). To avoid the bias caused by omitted and endogenous instruments, one may want to include both recent and older, (i.e., more lagged) instruments, expecting that with expanded lag-length, the instrument set becomes more comprehensive and leaves fewer loopholes in capturing all influences from the past. However, there is a fundamental trade-off in including more lags. Expanded lag-length may help to capture past influences, but

the more lagged the instruments are, the weaker they become. Weak instruments also incur bias in instrument estimation.

Glen, Lee, and Singh (2001) and Gschwandtner (2005) suggest that two lags are sufficient to capture the influence of past performance in CG studies. Wintoki et al. (2012) compare the performance of lag two and older lags, and find that in the presence of the most recent two lags, the older lags become insignificant. Thus they suggest that the most recent two lags subsume sufficient information to capture the dynamic governance/performance relationship, which is consistent with Glen et al. (2001) and Gschwandtner (2005).

Additionally, Wintoki et al. (2012) examine how strongly the present is correlated with the past in CG. They find that not only the governance variable but also the frequently used control variables (i.e., board size, board independence, CEO duality, firm size, market to book value, standard deviation of stock returns, leverage, number of business segments) in CG studies are dynamic, endogenous and adjust in response to firm performance. They compare the result of different models (the OLS model, fixed effect model, dynamic OLS model and system GMM model), and find the coefficient sign of the same variable flips. For example, board independence presents a positive and significant coefficient in the static fixed-effects model, but it is negative in static OLS estimates, which suggest that bias may arise due to ignorance of unobservable heterogeneity and dynamic relationships (Wintoki et al., 2012).

Using a dynamic GMM model, Wintoki et al. (2012) demonstrate no significant effect of board structure on firm performance after controlling for the endogeneity problem, which is in sharp contrast to prior studies. However, when they examine the determinants of board structure on firm characteristics, the overall inference

stays unchanged from the OLS estimation of a static model to the dynamic GMM model. According to Wintoki et al. (2012, p. 601), "this difference (of OLS and GMM inferences on 'performance on structure' regression and 'structure on structure' regression) provides some insight as to what aspects of empirical corporate finance analysis may be the most susceptible to biases arising from ignoring the combination of unobservable heterogeneity and the dependence of present corporate finance variables on the past, and correspondingly, where analysis using dynamic panel estimation may be the most important". In the governance/performance relationship, which is a "performance on structure" regression, dynamic relationship-associated endogeneity is especially important, because the relationship between past performance and the current governance is strong. However, in the firm characteristics/board structure relationship, which is a "structure on structure" regression, the relationship between the past value of the dependent variable (board structure, or governance) and the current value of explanatory variables (firm characteristics) is not as strong and less important. Therefore, although the effect of past firm characteristics on current governance is strong, the effect of current governance on past firm characteristics is much weaker. In the "structure on structure" regression, the status of current governance is not strongly determined by the past, and thus less susceptible to biases due to endogeneity arising from unobservable heterogeneity and dynamic relationships. In fact, if there were any link between past governance and current structure, it would be indirectly through the effect of "performance on structure".

What Wintoki et al. (2012) emphasize is that, when encountering a "performance on structure" model, more attention should be paid to the inference of dynamic GMM estimation and less attention to the inference of static OLS estimation. This is because past governance has strong implications for current firm performance,

and in such cases, the dynamic GMM model controls for simultaneity, unobservable heterogeneity, and the potential effect of CG's dynamic nature to eliminate biases. On the contrary, when encountering a "structure on structure" model, equal weight should be placed on the static OLS estimation and dynamic GMM estimation.

Based on Agency theory, this study examines the association between agency costs and EM. This study argues that the relationship between AC and EM is dynamic and endogenous. The potential endogeneity in the AC/EM relation derives from three sources: (1) omitted exogenous variables; (2) simultaneity; and (3) the dynamic nature inherent in internal governance.

Omitted variables are a common source of endogeneity in CG studies since CG is complex and a synthesis of various factors, so capturing all the variables that have a role in the relationship is not easy. Endogeneity issues also exist because of simultaneity. As in the CG/FP relationship, in the AC/EM relationship, it is difficult to determine whether EM drives AC or AC drives EM. Dynamic relationships are another concern with regard to endogeneity, as the past current AC could be the result of previous management, and previous AC should be included to explain the current AC.

Therefore, this study uses the two-step system GMM to tackle the endogeneity problem, as the two-step system GMM is considered the most feasible solution for endogeneity issues in a dynamic panel setting (e.g., Antoniou et al., 2008; Schultz et al., 2010).

6.11 Summary

This chapter introduced the data sources and methods used in this study. The potential sources of endogeneity issues and the techniques employed in this study

to tackle endogeneity were discussed. The next chapter specifies the regression models used to test the hypotheses and to answer the research questions.

CHAPTER 7 MODEL SPECIFICATION

7.1 Introduction

This chapter specifies the regression models for this study and is organized as follows. Section 7.1 summarizes the variables used in the model. Specifically, Section 7.1 briefly describes the dependent and independent variables. All of the variables and variables' proxies are chosen based on suggestions in the prior corporate governance literature. Section 7.2 conducts the Granger causality test and discusses the model specification of the current study.

7.2 Variables

7.2.1 Dependent variable

This study employs a linear regression model[8] and uses agency costs as the dependent variables. Specifically, the dependent variables used in this study include the traditional PA agency costs as well as the PP agency costs that are prevalent in emerging economies.

7.2.2 Explanatory variables

The variable of interest in this study is EM. Other than EM, this study also employs five firm-level explanatory variables to control for corporate governance characteristics. The five firm-level explanatory variables are: (i) board size; (ii) board independence; (iii) firm size; (iv) leverage; and (v) CEO duality.

---

[8] Ding et al. (2007) find evidence of an inverted U-shaped relationship between EM and ownership in China. From the perspective of agency theory, there is no obvious reasoning to support a non-linear AC/EM relationship; thus, following Jiraporn et al. (2008), a linear regression model is used for the AC/EM relationship.

7.2.3 Other control variables

In addition to the explanatory variables on CG characteristics, to control for unobserved heterogeneity and to alleviate the potential bias caused by omitted variables, this study includes an industry dummy, stock exchange dummy and year dummy in the model. Unobserved heterogeneity is common within observation groups. Potential unobserved heterogeneity may arise due to, for example, differences in local economic environments or difference in industries.

For a panel data set, it is suggested to always include a year dummy, since year dummies are helpful in capturing the influence of time series trends. The panel data set may have the individual fixed-effects eliminated but not the time fixed-effects. Year dummies will pick up variations in the outcome that happen over time but are not attributed to other explanatory variables. Without the use of year dummies, time series regressions or panel regressions can be biased due to the influence of the aggregate time series trends, which has nothing to do with the causal relationship (Gormley & Matsa, 2013). The use of industry, stock exchange and year dummies also contributes to controlling for the aggregate trending in time series.

7.3 Model specification

7.3.1 Granger causality test

To check the direction of the relationship between AC and EM, this study conducted a Granger (2001) causality test. The Granger causality test requires the data to be stationary; in other words not possessing any unit roots, prior to the causality analysis.

"To obtain a satisfactory econometric model with respect to economical and statistical assumptions, it is important to have knowledge about the trend behaviour of the economic variables that are modeled" (Vogelvang, 2005, p. 278). If the data

sets are trending, then transformation of variables is needed to remove the time trend from the data. Standard methods to remove the time trend include taking the log form, or taking the first differences of the data. Unit roots refer to a stochastic trend in the time series (also known as a random walk with drift). If the data has a unit root, it means there is a systematic pattern in the data set. A unit root test can be used to determine if the data are trending or stationary. If the result suggests no presence of unit roots using levels of data, transformation of the variable to remove the time trend is not needed.

Initially, unit root tests are used to test for stationarity in time series data. The panel unit root test generates multiple series instead of single series in a time series unit root test (EViews, 2017). This study applies four different panel-based unit root tests to check both the common root and individual root. The Levin, Lin, and Chu (2002) test is used to test for the common root, while three other tests: Im, Pesaran, and Shin (2003); Fisher-type tests using ADF (i.e., augmented Dickey-Fuller); and PP (Phillips-Perron) are used to test for the individual roots (Maddala & Wu, 1999). The common unit root test assumes the autoregressive coefficient is identical across cross-sections, while the individual unit root test allows the autoregressive coefficient to vary across cross-sections. All three individual unit root tests used combine the individual unit root test to derive a panel-specific result.

The null hypothesis of the panel unit root test indicates unit root or non-stationary. As shown in Table 7-1, the P-values of all the unit root tests for all the proxies of EM and AC (including PA and PP) proxies are lower than 1%, which suggests rejection of the null, and thus that the EM and AC proxies are stationary. Therefore, the EM and AC variables are qualified to proceed with Granger causality tests.

Table 7-1 Unit root test

160

Variables	Levin, Lin & Chu	Im, Pesaran and Shin W-stat	ADF - Fisher Chi-square	PP - Fisher Chi-square
PAasset	-382.633	-54.0915	7915.31	9246.23
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
PAsga	-16646.2	-1430.96	7575.92	8901.27
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
PPincome	-19.4481	-19.1468	4913.38	5136.45
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
PPdivpayout	-210.426	-80.6175	9193.86	10891.4
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
PPdivsale	-309.811	-106.658	11661.5	13368.2
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
PPdivmar	-1486.19	-120.781	11369.7	13206.9
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
PPdivcf	-181.204	-78.7189	9058.30	10381.8
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
PPdivearn	-511.994	-76.0718	9306.59	11028.6
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
EM1	-547.222	-115.468	4259.45	4931.37
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
EM2	-7975.17	-451.792	10226.7	11716.3
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
EM3	-887.405	-105.461	10880.5	12727.0
	(0.0000)	(0.0000)	(0.0000)	(0.0000)

Note: This table presents the results of unit root tests on the basis of levels. The Levin, Lin and Chu test is employed to test the common unit root, while the Im, Pesaran, and Shin, Fisher-ADF and Fisher-PP test the presence of individual root. P-values are reported in parentheses. Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality. Rejection of the null indicates no presence of unit root or stationary.

The Granger causality test is used in the current study to examine the causality relationship between AC and EM. It is a statistical test used to test the causality between two variables based on the variables' ability of prediction.

The Granger (2001) causality test is not testing an exact cause and effect relationship in the everyday sense. It tests the ability of one variable to predict (or Granger-cause) the other. "A variable y is said to Granger-cause x if x can be predicted with greater accuracy by using past values of the y variable rather than not using such past values, all other terms remaining unchanged" (Asteriou & Hall, 2015, p. 336).

The results of the Granger causality tests are reported in Table 7-2 and Table 7-3. Table 7-2 presents the test results on EM1 (discretionary accruals estimated using a time-series approach) and dependent variables (i.e., PA and PP agency cost proxies). The null hypothesis of the Granger causality test indicates that there is no

161

Granger causality present between EM1 and AC. Rejection of the null would suggest the alternative hypothesis is more appropriate. In Table 7-2,with regard to EM1 and AC, most of the null hypotheses are rejected in two ways, suggesting that in the EM1 and AC relationship, EM1 and AC Granger-cause each other simultaneously.

Table 7-2 Granger causality test of EM1 and agency costs

PA	Null Hypothesis:	Obs	F-Statistic	Prob.
	EM1 does not Granger Cause PAasset	14229	5.51260***	0.0040
	PAasset does not Granger Cause EM1		15.7840***	1.E-07
	PAsga does not Granger Cause EM1	13924	19.9465***	2.E-09
	EM1 does not Granger Cause PAsga		101.010***	3.E-44
PP	Null Hypothesis:	Obs	F-Statistic	Prob.
	PPincome does not Granger Cause EM1	7689	3.20179**	0.0407
	EM1 does not Granger Cause PPincome		0.68522	0.5040
	PPdivpayout does not Granger Cause EM1	14125	6.88349***	0.0010
	EM1 does not Granger Cause PPdivpayout		59.4619***	2.E-26
	PPdivsale does not Granger Cause EM1	14083	14.1349***	7.E-07
	EM1 does not Granger Cause PPdivsale		51.4926***	5.E-23
	PPdivmar does not Granger Cause EM1	13458	149.654***	5.E-65
	EM1 does not Granger Cause PPdivmar		224.593***	1.E-96
	PPdivcf does not Granger Cause EM1	14125	1.54747	0.2128
	EM1 does not Granger Cause PPdivcf		4.02075**	0.0180
	PPdivearn does not Granger Cause EM1	14125	5.19342***	0.0056
	EM1 does not Granger Cause PPdivearn		55.4630***	1.E-24

Note: This table reports the results of the Granger causality test between EM1 and AC proxies. EM1 is discretional accruals computed using time series analysis of the modified Jones model. Asterisks of *, **, ***, indicate significance at the 10%, 5% and 1% level, respectively.

Similar to Table 7-2, Table 7-3 and Table 7-4 also present a two-way rejection for most relationships, suggesting the EM proxies (i.e., EM2, EM3) and AC tend to Granger-cause each other simultaneously, which may incur the issue of endogeneity. As discussed in Chapter 6, simultaneity is one of the main sources of endogeneity. This study applies the Dubin-Wu-Hausman test to test for the presence of endogeneity in Chapter 8 and Chapter 9.

Jiraporn et al. (2008) test how AC and EM relate to each other, and they use AC as one of the explanatory variables to explain EM. According to the Granger causality test, the causality relation occurs in two directions with regard to the AC/EM

162

relationship. This study aims to investigate the role of EM activities in alleviating

AC, and therefore uses EM as an explanatory variable to explain AC.

Table 7-3 Granger causality test of EM2 and agency costs

PA	Null Hypothesis:	Obs	F-Statistic	Prob.
	PAasset does not Granger Cause EM2	21986	67.5630***	6.E-30
	EM2 does not Granger Cause PAasset		6.62916***	0.0013
	PAsga does not Granger Cause EM2	21491	178.280***	2.E-77
	EM2 does not Granger Cause PAsga		30.5562***	6.E-14
PP	Null Hypothesis:	Obs	F-Statistic	Prob.
	PPincome does not Granger Cause EM2	11356	9.45526***	8.E-05
	EM2 does not Granger Cause PPincome		11.3364***	1.E-05
	PPdivpayout does not Granger Cause EM2	16136	1.55944	0.2103
	EM2 does not Granger Cause PPdivpayout		2.74887**	0.0640
	PPdivsale does not Granger Cause EM2	21073	12.3548***	4.E-06
	EM2 does not Granger Cause PPdivsale		7.59486***	0.0005
	PPdivmar does not Granger Cause EM2	20887	6.30897***	0.0018
	EM2 does not Granger Cause PPdivmar		75.7026***	2.E-33
	PPdivcf does not Granger Cause EM2	11539	4.26556**	0.0141
	EM2 does not Granger Cause PPdivcf		1.34110	0.2616
	PPdivearn does not Granger Cause EM2	15941	4.39326**	0.0124
	EM2 does not Granger Cause PPdivearn		2.93005*	0.0534

Note: This table reports the results of Granger causality tests between EM2 and AC proxies. EM2 is the non-operating income ratio. Asterisks of *, **, ***, indicate significance at the 10%, 5%, and 1% level, respectively.

Table 7-4 Granger causality test of EM3 and agency costs

PA	Null Hypothesis:	Obs	F-Statistic	Prob.
	PAasset does not Granger Cause EM3	14278	41.8349***	8.E-19
	EM3 does not Granger Cause PAasset		15.3591***	2.E-07
	PAsga does not Granger Cause EM3	14000	13.1521***	2.E-06
	EM3 does not Granger Cause PAsga		19.2192***	5.E-09
PP	Null Hypothesis:	Obs	F-Statistic	Prob.
	PPincome does not Granger Cause EM3	7747	2.12446	0.1196
	EM3 does not Granger Cause PPincome		1.33017	0.2645
	PPdivpayout does not Granger Cause EM3	14169	50.7527***	1.E-22
	EM3 does not Granger Cause PPdivpayout		40.0941***	4.E-18
	PPdivsale does not Granger Cause EM3	14134	0.03631	0.9643
	EM3 does not Granger Cause PPdivsale		9.46869***	8.E-05
	PPdivmar does not Granger Cause EM3	13506	59.4269***	2.E-26
	EM3 does not Granger Cause PPdivmar		10.2556***	4.E-05
	PPdivcf does not Granger Cause EM3	14169	7.28246***	0.0007
	EM3 does not Granger Cause PPdivcf		15.6153***	2.E-07
	PPdivearn does not Granger Cause EM3	14169	38.8335***	2.E-17
	EM3 does not Granger Cause PPdivearn		33.9416***	2.E-15

Note: This table reports the result of Granger causality tests between EM3 and AC proxies. EM3 is discretional accruals computed using time series analysis of the modified Jones model. Asterisks of *, **, ***, indicate significance at the 10%, 5% and1% level, respectively.

7.4 Summary

This chapter describes the research framework and model specification for the empirical analyses of the thesis. Given the dynamic nature inherent in corporate governance studies, the empirical models in this study are established in a dynamic modeling framework. The one-year lagged dependent variable is employed as explanatory variables in the empirical models. The System GMM method that takes into account of all forms of endogeneity is applied to estimate the empirical models. Chapter 8 provide the empirical results for the first research question on the relationship between EM and PA.

CHAPTER 8 EARNINGS MANAGEMENT AND PA COSTS

8.1 Introduction

Based on the first hypothesis of a relationship between PA and EM as developed in Chapter 4, this chapter empirically tests the relationship between PA agency costs and EM in China. This chapter uses two different modelling frameworks (static and dynamic modelling) to test the relationship.

Chapter 8 and Chapter 9 provide the empirical analysis results and interpretation. Chapter 8 focuses on PA agency costs, which are the traditional emphasis of agency theory. In Chapter 9, PP agency costs that are prevalent in emerging economies are the focus.

The remainder of this chapter proceeds as follows. Section 8.1 presents the preparation of the data and preliminary analysis, which includes summary statistics, correlation, and the multicollinearity test for the PA/EM model. In Section 8.2, the main analysis is conducted. A static model is estimated using fixed-effect OLS and GLS after testing for the presence of heteroscedasticity. The Dubin-Wu-Hausman (DWH) test is then used to test for the presence of endogeneity. The DWH test suggests the presence of endogeneity. Therefore, the two-step system GMM dynamic model is used in subsection 8.2. Section 8.3 provides the multivariate statistics, and Section 8.4 concludes the chapter.

8.2 Preliminary data analysis

8.2.1 Winsorization

All the variables employed in this study were winsorized to remove the influence of the most extreme 5% of data from two tails. The computation of statistical

parameters can be heavily influenced by extreme values, and winsorized variables tend to provide a robust estimation of statistics. By winsorizing the data, the tail values of the dataset are set to be equal to a specified percentile. For example, this study applies a 95% winsorization, which means the bottom 2.5% of the values are set equal to the value corresponding to the 2.5th percentile, while the top 2.5% of the values are set equal to the value corresponding to the 97.5th percentile.

8.2.2 Summary statistics

This section reports the summary statistics of the PA/EM relation. Two proxies of PA and two proxies of EM are used. Hence there are four equations to test: equation (8-1a) to equation (8-2b).

$$PAasset_{it} = a_0 + a_1 EM1_{it} + a_2 board_{size_{it}} + a_3 board_{independence_{it}}$$
$$+ a_4 leverage_{it} + a_5 firm_{size_{it}} + a_6 CEOduality$$
$$+ stock\ exchange\ dummy + industry\ dummy$$
$$+ year\ dummy + \varepsilon \dots\dots\dots\dots\dots\dots\dots\dots\dots\ equation(8-1a)$$

$$PAasset_{it} = b_0 + b_1 EM2_{it} + b_2 board_{size_{it}} + b_3 board_{independence_{it}}$$
$$+ b_4 leverage_{it} + b_5 firm_{size_{it}} + b_6 CEOduality$$
$$+ stock\ exchange\ dummy + industry\ dummy$$
$$+ year\ dummy + \varepsilon \dots\dots\dots\dots\dots\dots\dots\dots\dots\ equation(8-1b)$$

Equation (8-1a) and Equation (8-1b) use the asset utilization ratio as the proxy for PA agency costs. As discussed in Chapter 5, the asset utilization ratio is commonly used to measure PA agency costs, and an increase in the asset utilization ratio indicates a decrease in PA agency conflicts. Equation (8-1a) and Equation (8-1b) use EM1 and EM2 as the proxies for EM respectively. As introduced in Chapter 5, EM1 denotes the discretionary accruals estimated through the time series approach. EM2 denotes the non-operating income to sales ratio, which captures the EM

through non-operation related activities. EM3, the discretionary accruals estimated

cross-sectionally, is used in the robustness check.

$$PAsga_{it} = c_0 + c_1 EM1_{it} + c_2 board_{size_{it}} + c_3 board_{independence_{it}}$$
$$+ c_4 leverage_{it} + c_5 firm_{size_{it}} + c_6 CEOduality$$
$$+ stock\ exchange\ dummy + industry\ dummy$$
$$+ year\ dummy + \varepsilon\ ....\ equation(8-2a)$$

$$PAsga_{it} = d_0 + d_1 EM2_{it} + d_2 board_{size_{it}} + d_3 board_{independence_{it}}$$
$$+ d_4 leverage_{it} + d_5 firm_{size_{it}} + d_6 CEOduality$$
$$+ stock\ exchange\ dummy + industry\ dummy$$
$$+ year\ dummy + \varepsilon\ ....\ equation(8-2b)$$

Equation (8-2a) and Equation (8-2b) use SGA expenses standardized by total assets

as the second proxy for PA agency conflict. SGA expenses refer to the selling,

general, and administrative expenses reported on firms' income statements. As

discussed in Chapter 5, an increase in SGA expenses standardized by total assets

ratio indicates an increase in PA agency costs. Equation (8-2a) and Equation (8-2b)

test the relationship between PAsga and two different EM proxies (EM1 and EM2)

respectively.

Table 8-1 Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
PAasset	27,768	0.6156	0.3891	0.1295	1.5932
PAsga	27,262	0.1643	0.1230	0.0328	0.5129
EM1 (millions)	18772	-24.30	347.00	-921.00	712.00
EM2	27608	0.0161	0.0236	0.0002	0.0915
EM3 (millions)	18821	-24.50	352.00	-930.00	725.00
board_size (person)	23,816	9.232239	2.050819	3	19
board_indepedence	23,797	0.3087	0.1234	0.0000	0.4444
firm_size	27,911	21.4775	1.0901	19.7446	23.8042
leverage	26,549	0.4665	0.2051	0.1138	0.8363
CEOduality	17,483	0.2036	0.4027	0	1

Note: This table reports descriptive statistics based on all the variables used in this chapter. The number of observations varies because of missing values. For interpretation purposes, the logarithmic form of the variables is not used as the basis of descriptive statistics. Instead, the descriptive statistics of variables are calculated on the basis of levels after 5% winsorization.

Table 8-1 reports the summary statistics of the dependent variables and independent variables used in the above equations. The levels data set after winsorization with 5% probability is used to compute the summary statistics.

The mean of the PAasset ratio suggests, on average, the companies in the sample generate about 62% of total assets as annual sales. The mean of PAsga suggests that, on average, 16% of total assets are spent on selling, general, and administrative expenses in this sample. The average time-series discretionary accruals (EM1) indicates the extent of earnings management is -24.30, which is similar to the average of cross-sectional time-series discretionary accruals (EM3). The average of EM2 suggests that on average, 1.61% of total sales are income from non-operating activities. The maximum board size in the sample is 19, indicating the largest board contains 19 members, while the minimum of 3 indicates the smallest board in the sample contains 3 members. The summary statistics of board independence show that in the sample, a maximum 44% of directors are independent, while a minimum of zero suggests there are boards that are completely composed of insider directors. The mean of leverage suggests, on average, that the firms in the sample carry approximately 47% leverage. The mean of the dummy variable CEO duality is around 20%, suggesting that 20% of firms in the sample have a CEO who is also acting as the chair of the board.

8.2.3 Correlation

This study uses natural log values of board independence, leverage, and EM to address the skewed data and non-normal distribution of residuals. Table 8-2 presents the pairwise correlation coefficients between sets of variables. As discussed in Chapter 6, the correlation coefficient measures the strength and direction of a linear relationship between two variables.

The correlation matrix in Table 8-2 shows that the independent variables are not highly correlated with each other (mostly lower than 0.5). The underlying problem for highly correlated variables in regression is multicollinearity. In subsection 8.1.4, the VIFs (variance of inflation factors) are computed to examine whether there is a multicollinearity issue in the current model.

As Table 8-2 shows, with a correlation coefficient of -0.0786, EM1 and EM2 are negatively related to each other. This means that when there is a high level of discretionary accruals, the non-operating income ratio tends to be low. This indicates that the companies in the sample tend to rely more on one means of earnings management than the other.

Board size is positively associated with the PAasset ratio but negatively associated with the PAsga ratio, suggesting that PA agency costs are negatively related to board size. This indicates that larger board sizes in the sample are associated with decreases in PA agency costs. This does not support the agency theory argument that a large board size is less efficient, but instead supports the resource dependence theory that the bigger the board size, the more resources or external information can be introduced and used by the company to make effective and efficient decisions.

Board independence is negatively associated with the PAasset ratio and insignificantly associated with the PAsga ratio. Since an increase in the PAasset ratio indicates a decrease in PA agency costs, the negative correlation between board independence and PAasset ratio suggests that the more outside board members there are on a board, the more severe are the PA agency conflicts.

Both firm size and leverage show significant correlation and are negatively related to PA agency costs. This supports the argument that large firms tend to pay more attention to agency conflicts, and have more capacity to deal with conflicts more

professionally (Ariff et al., 2007; Beiner et al., 2004; Black et al., 2006). The evidence of the impact of leverage on agency costs is mixed in the prior literature. On one hand, high levels of debt or leverage are often associated with weak corporate governance, and therefore more severe agency problems (Friedman et al., 2003). On the other hand, when a company is highly distressed, managers are motivated to be self-enforcing to generate adequate cash in order to fulfill the company's obligations related to interest payments and loan repayments (Gillan, 2006). The coefficients on leverage show a significant positive relationship with PAasset, and a significant negative relationship with PAsga, thus suggesting more distressed companies have a lower level of PA agency conflict, which is in line with the second argument. CEO duality negatively associates with PAasset and positively associates with PAsga, suggesting the presence of CEO duality in a company increases the conflicts between principal and agent.

Table 8-2 Correlation Matrix

	PAasset	PAsga	EM1	EM2	board_size	board_independence	firm_size	leverage	CEOduality
PAasset	1								
PAsga	-0.349***	1							
EM1	0.0560***	-0.235***	1						
EM2	-0.326***	0.325***	-0.0786***	1					
board_size	0.0666***	-0.120***	0.136***	-0.0886***	1				
board_independence	-0.0301***	0.0162	0.0224*	0.0904***	-0.372***	1			
firm_size	0.115***	-0.381***	0.608***	-0.153***	0.253***	0.0213*	1		
leverage	0.163***	-0.268***	0.298***	-0.122***	0.143***	-0.0326***	0.351***	1	
CEOduality	-0.0577***	0.119***	-0.0817***	0.0786***	-0.160***	0.0784***	-0.146***	-0.170***	1

Note: This table presents pair-wise correlation coefficients for all the variables used in this chapter. The variables are defined in Table 5-3. Asterisks of *, **, ***, indicate significance at the 10%, 5% and 1% level, respectively.

8.2.4 Multicollinearity test

As discussed in Chapter 6, variance inflation factors (VIFs) measure how much the variance of estimated regression coefficients are inflated compared to the coefficient estimator in the absence of multicollinearity. In this section, VIFs are computed to detect whether there is a multicollinearity problem in the model.

Table 8-3 shows the VIFs of all the four models investigating PA agency costs and EM relation, and illustrates that the mean VIFs for the variables applied in the PA/EM model are all lower than twice the minimum VIF of each column or the cut-off point of 10 or 5, indicating the absence of multicollinearity.

Table 8-3 Variance inflation factors for multicollinearity test

Variable	PAasset		PAsga	
	VIF	VIF	VIF	VIF
EM1	1.61		1.61	
EM2		1.04		1.04
board_size	1.28	1.26	1.28	1.26
board_in~e	1.18	1.18	1.18	1.18
firm_size	1.77	1.25	1.76	1.25
leverage	1.18	1.16	1.18	1.16
CEOduality	1.06	1.07	1.06	1.07
Mean VIF	1.34	1.16	1.34	1.16

Note: This table reports the variance inflation factors calculated for all the four equations that investigate PA/EM relationships in this chapter.

8.3 Multiple regression

This section presents the multiple regression results of Equations (8-1a), (8-1b), (8-2a) and (8-2b). In subsection 8.2.1, a heteroscedasticity test is applied to check the presence of heteroscedasticity. The result indicates the presence of heteroscedasticity, thus in subsection 8.2.2, a fixed-effect OLS (Hausman) test is used to choose between a fixed-effect or random-effect approach. In addition, GLS approaches are used in the static model to control for heteroscedasticity. Subsection 8.2.3 tests for the presence of endogeneity; the results of the DWH test suggest the

models are subject to endogeneity issues. Therefore in subsection 8.2.4, the dynamic two-step system GMM model is applied as an alternative method to take all forms of endogeneity into account.

8.3.1 Heteroscedasticity test

As discussed in Chapter 6, one important assumption of the OLS requires the variance of the error term to be constant. Violation of this assumption indicates a heteroscedasticity problem, and the pooled OLS estimation is thus no longer optimal. It is therefore important to test whether the models are subject to heteroscedasticity problems or not. This study conducts a Breusch-Pagan/Cook-Weisberg test for heteroscedasticity to examine the presence of heteroscedasticity. The null hypothesis of the Breusch and Pagan (1979b) and Cook and Weisberg (1983) test assumes constant variance or no presence of heteroscedasticity. The chi-squared statistics calculated and the p-values across the four equations all suggest rejection of the null, and indicate that there is a heteroscedasticity issue in the model, hence pooled OLS estimation is not recommended.

This study controls for the heteroscedasticity problem in the static model using fixed-effect OLS with a robust standard error that produces heteroscedasticity-consistent standard errors. A Hausman test is conducted in subsection 8.2.2.1 to check whether the fixed-effect OLS suits the model.

Table 8-4 Breusch-Pagan/Cook-Weisberg test for heteroscedasticity

Breusch-Pagan / Cook-Weisberg test for heteroscedasticity				
Ho: Constant variance				
	EM1		EM2	
	PAasset	PAsga	PAasset	PAsga
chi2	419.16	1340.81	1778.31	1888.22
Prob > chi2	0.0005	0.0000	0.0000	0.0000

Note: This table reports the results of the heteroscedasticity test. Rejection of the null hypothesis of the Breusch-Pagan/Cook-Weisberg test for heteroscedasticity suggests the presence of heteroscedasticity; thus the pooled OLS is not optimal.

8.3.2 Static model

In this section, the traditional static model is estimated using the fixed-effect OLS and GLS. The remainder of the section proceeds as follows. Subsection 8.2.2.1 commences with a Hausman test to decide whether a fixed-effect or random effect is more suitable for the model. Subsection 8.2.2.2 reports the results and interpretation of the fixed-effect OLS and GLS regression.

8.3.2.1 Fixed-effect or Random-effect OLS

The Hausman (1978) test is used to choose between fixed-effect and random-effect OLS. The null hypothesis of the Hausman test favours the random effect estimation. Thus, rejection of the null suggests that a fixed-effect OLS is superior to a random effect. Fixed-effect OLS with robust standard errors eliminates unobserved fixed effects and controls heteroscedasticity issues in pooled OLS.

Table 8-5 Hausman specification test

Test H_o : difference in coefficients not systematic				
	EM1		EM2	
	PAasset	PAsga	PAasset	PAsga
chi2	309.81	209.22	761.76	519.63
Prob>chi2	0.0000	0.0000	0.0000	0.0000

Note: This table reports the results of the Hausman test applied to choose between fixed-effect and random-effect OLS. Rejection of the null hypothesis suggests a fixed-effect OLS estimation is preferred.

Table 8-5 shows that the p-values of the Hausman test are all lower than the minimum 1% significance level, suggesting rejection of the null hypothesis. Therefore, in the next subsection, a fixed-effect OLS with robust standard error is applied to estimate the PA and EM model.

8.3.2.2 Fixed-effect OLS and GLS

Table 8-6 reports the results of the fixed-effect OLS estimation. In addition to the fixed-effect OLS, GLS is also employed to address the issue of heteroscedasticity.

Preliminary tests revealed a heteroscedasticity problem in subsection 8.2.1. White (1980) introduces a weighted least squares estimator to address the heteroscedasticity problem and finds significant improvement in heteroscedasticity using a weighted least squares estimator compared to an OLS estimator. With regard to heteroscedasticity, the terms of GLS (generalized least squares) and weighted least squares are interchangeable (Gujarati, 2009). GLS regression is used in addition to the fixed-effect OLS to estimate the static model. The results of the fixed effect OLS and GLS are reported in Table 8-6 and Table 8-7, respectively.

Columns (2)-(3) of Table 8-6 report the fixed-effect OLS regression results by regressing the PA agency costs proxy, PAasset, on the first proxy for EM (EM1, the discretionary accruals estimated using a time series approach) and other control variables. Columns (4)-(5) of Table 8-6 report the fixed-effect OLS regression results by regressing the second PA agency costs proxy, PAsga, on EM1 and other control variables.

Columns (6)-(7) of Table 8-6 report the fixed-effect OLS regression results by regressing the PA agency costs proxy, PAasset, on the second proxy of EM (EM2, the non-operating income to sales ratio) and other control variables. Columns (8)-(9) of Table 8-6 report the fixed-effect OLS regression results by regressing the second PA agency costs proxy, PAsga, on EM2 and other control variables.

Table 8-6 Fixed-effect OLS estimation, static model

VARIABLES	EM1				EM2			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	PAasset		PAsga		PAasset		PAsga	
		t		t		t		t
EM1	-0.00260*	-1.74	0.00156***	2.63				
	(0.00150)		(0.000591)					
EM2					-0.0276***	-12.90	0.00891***	11.63
					(0.00214)		(0.000767)	
board_size	0.00662	0.34	-0.000277	-0.02	0.0275	0.97	-0.0100	-1.03
	(0.0194)		(0.0113)		(0.0285)		(0.00972)	
board_independence	-0.0198	-0.99	-0.00384	-0.36	-0.0364	-1.54	-0.0124	-1.27
	(0.0199)		(0.0106)		(0.0237)		(0.00976)	
firm_size	-0.0650***	-13.79	-0.0421***	-10.10	-0.0927***	-8.83	-0.0352***	-10.55
	(0.00471)		(0.00417)		(0.0105)		(0.00334)	
leverage	0.00772	1.09	0.0201***	4.18	0.0427***	3.62	0.0175***	4.42
	(0.00710)		(0.00480)		(0.0118)		(0.00397)	
CEOduality	-0.0119*	-1.66	-0.00147	-0.37	0.00182	0.18	-0.00396	-1.14
	(0.00720)		(0.00400)		(0.0102)		(0.00348)	
Constant	1.975***	9.33	1.041***	11.29	2.188***	8.95	0.935***	7.35
	(0.212)		(0.0922)		(0.245)		(0.127)	
Industry dummy	no		no		no		no	
Stock exchange dummy	no		no		no		no	
Year dummy	yes		yes		yes		yes	
Observations	12,442		12,321		16,953		16,789	
Number of stock	2,017		2,017		2,531		2,530	
R-squared	0.047		0.080		0.090		0.098	
F statistics	25.73		16.17		27.34		24.07	
Prob > F	0.0000		0.0000		0.0000		0.0000	

Note: This table reports the results of the fixed-effect OLS static model of equations 8-1a, 8-2a, 8-1b, 8-2b in this chapter. Two PA costs proxies PAasset and PAsga) are used to run the regression against the EM proxies (i.e., EM1, EM2) and the other controlling CG variables. Asterisks of *, **, ***, indicate significance at the 10%, 5% and 1% level, respectively. Standard errors are reported in parentheses.

Table 8-7 GLS estimation, static model

VARIABLES	EM1				EM2			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	PAasset		PAsga		PAasset		PAsga	
		t		t		t		t
EM1	-0.0111***	-2.66	0.00386***	2.97				
	(0.00416)		(0.00130)					
EM2					-0.08640***	-40.24	0.02510***	33.91
					(0.00215)		(0.00074)	
board_size	0.119***	3.50	-0.0419***	-3.91	0.00823	0.43	0.01028	1.55
	(0.0341)		(0.0107)		(0.01926)		(0.00662)	
board_independence	-0.107**	-2.31	-0.0330**	-2.40	0.00160	0.06	0.00883	0.99
	(0.0463)		(0.0137)		(0.02593)		(0.00894)	
firm_size	0.0497***	7.15	-0.0435***	-20.76	-0.00473	-1.23	-0.02655***	-21.67
	(0.00695)		(0.00210)		(0.00355)		(0.00122)	
leverage	0.145***	13.92	-0.00283	-0.96	0.11301***	19.37	-0.03115***	-15.48
	(0.0104)		(0.00295)		(0.00584)		(0.00201)	
CEOduality	-0.0241*	-1.91	-0.00214	-0.53	-0.01119	-1.59	0.00892***	3.67
	(0.0126)		(0.00401)		(0.00705)		(0.00243)	
Constant	-2.726***	-5.88	1.235***	21.06	-0.01334	-0.12	0.85324***	22.61
	(0.464)		(0.0586)		(0.10945)		(0.03774)	
Industry dummy	yes		yes		yes		yes	
Stock exchange dummy	yes		yes		yes		yes	
Year dummy	yes		yes		yes		yes	
Observations	12,442		12321		16,953		16,789	
Number of stock	2017		2017		2,531		2,530	
R-squared	0.181		0.053		0.2956		0.2631	
F statistics	105.19		27.64		179.65		153.04	
Prob > F	0.0000		0.0000		0.0000		0.0000	

Note: This table reports the results of the GLS static model of equations 8-1a, 8-2a, 8-1b, 8-2b in this chapter. Two PA costs proxies (PAasset and PAsga) are used to run the regression against the EM proxies (EM1, EM2) and the other controlling CG variables. Asterisks of *, **, ***, indicate significance at the 10%, 5% and 1% level, respectively. Standard errors are reported in parentheses.

Table 8-6 shows that EM has a significant impact on PA agency costs. As shown in column (2), EM1 is negatively associated with PAasset, which indicates that a higher level of EM1 increases PA agency costs, as a decrease in the PAasset proxy relates to an increase in the PA agency costs. More specifically, the coefficient of EM1 is significant and negative at the 10% level (β=-0.00260, t=-1.74), suggesting that one unit increase in EM1 will, on average, increase PA agency costs by 0.26%, holding all other factors fixed. Column (4) shows that EM1 is positively associated with PAsga, suggesting that a higher level of EM1 increases PA agency costs, as an increase in the PAsga proxy represents an increase in the PA agency costs. Thus, the fixed-effect estimators of the first EM proxy, EM1, suggest that engagement in EM activities increases agency costs between principal and agent.

The fixed-effect OLS estimators of the second EM proxy (EM2) present results that are consistent with those for EM1. As reported in Column (6) of Table 8-6, EM2 is negatively associated with PAasset, which indicates that a higher level of EM2 increases PA agency costs, as an increase in the PAasset proxy is linked to a decrease in PA agency costs. More specifically, the coefficient of EM2 is significant and negative at the 1% level (β=-0.0276, t=-12.90), suggesting that one unit increase in EM2 measurement will, on average, increase PA agency costs by 2.76%, holding all other factors fixed. Therefore, using the fixed-effect OLS static model, the time-series discretionary accruals (EM1) and non-operating income ratio (EM2) are significantly positively related to the level of PA agency costs.

In addition to fixed-effect OLS estimation, this study also uses GLS to estimate the static model. GLS relaxes the assumption of OLS and is often used to control for heteroscedasticity. The results of the GLS estimation are reported in Table 8-7. The GLS estimation shows that EM has a significant influence on PA agency costs.

Consistent with the fixed-effect OLS estimation, EM1 and EM2 are negatively associated with PAasset, and positively associated with PAsga.

Jiraporn et al. (2008) investigate the relationship between EM and PA agency costs in the US, and report a significant negative relationship between EM and agency costs, indicating that EM, on average, is not detrimental, and even beneficial. The static model results obtained in this study also suggest a significant relationship between PA and EM. However, contradicting the findings of Jiraporn et al. (2008) in the US, the static model of fixed-effect OLS and GLS estimation suggest that EM in China is not beneficial but is exacerbating PA agency conflicts, and engagement in EM in China, thus stimulating instead of alleviating PA agency conflicts.

However, it is important to note that the fixed-effect OLS approach assumes strict exogenous explanatory variables. In other words, it assumes there is no correlation between the explanatory variables and the regression error term. Violating this assumption may lead to unreliable causal inferences. Endogeneity issues are highly likely to arise in CG issues, including the PA/EM model. As Wintoki et al. (2012) emphasize in their paper, endogeneity issues are especially important when investigating the effect of governance or board structure on performance, because of the dynamic nature inherent in these variables.

Both the fixed-effect OLS approach and GLS estimation fail to take endogeneity sources (such as dynamic nature, omitted variables, measurement error) into account when estimating parameters. Therefore the fixed-effect OLS and GLS statistics do not appear to provide an optimal and reliable basis for causal inferences for the PA/EM relationship. The next section discusses the potential endogeneity issues and conducts tests for the presence of endogeneity.

8.3.3 Endogeneity and GMM

Dynamic relationships are an important source of endogeneity in the CG research context. In order to capture the impact of past corporate governance characteristics, this study uses both a static model and a dynamic model to specify the AC/EM nexus, as discussed in Chapter 6 Section 6.9. It is acknowledged that endogeneity issues are pervasive in empirical CG studies. Endogeneity means that the explanatory variables are correlated with the model error term. The sources of endogeneity are mainly omitted variables, simultaneity and measurement error (Roberts & Whited, 2013). Harris and Raviv (2008) and Raheja (2005) argue that there is a dynamic nature inherent in corporate governance circumstances, because past CG characteristics tend to be carried forward and have an impact on current CG characteristics. More recently, Schultz et al. (2010) and Wintoki et al. (2012) reach the same conclusion and suggest that a dynamic model, where lagged performance is used as explanatory variable, is the most appropriate model for internal corporate governance research. This study therefore applies a dynamic model in addition to the static model, and uses a 1-year lagged dependent variable as an explanatory variable, as recommended by Wintoki et al. (2012), to control for the dynamic nature of the internal CG context.

The Generalized Method of Moments (GMM) estimator is used to estimate the dynamic model to correct for bias caused by potentially endogenous explanatory variables. GMM estimation relaxes the OLS assumptions, such as normally distributed error terms. GMM is often more efficient than the other types of estimations (e.g., OLS and 2SLS) (Wooldridge, 2001). Specifically, the GMM estimator with differenced dependent variable and lagged instruments is efficient in correcting unobserved effects and simultaneity bias (Blundell & Bond, 2000).

Dynamic GMM estimation is superior to least squares or fixed-effect estimation, because dynamic GMM estimation accounts for unobservable heterogeneity, influences from past value, and is not dependent on external instruments (Wintoki et al., 2012). Wintoki et al. (2012) argue that the assumption of governance variables' current values as completely independent of past values is not realistic, and CG issues are most likely of a dynamic nature. Wintoki et al. (2012) also provide empirical support showing that corporate governance is dynamically related to a firm's past performance.

A dynamic GMM model with a first-differenced dependent variable has become the leading GMM application in the panel data context (Wooldridge, 2001). The GMM estimator uses instrumental variables to constrain endogeneity effects. Ineffective instrumental variables can lead to serious bias in the estimation. In the dynamic GMM model, the first-differenced dependent variable is used to remove unobserved firm-specific effects, using the lag two and beyond functions as instrumental variables (Anderson & Hsiao, 1982; Blundell & Bond, 2000). To take endogeneity and the dynamic nature of internal CG into account, this study uses a dynamic GMM model to examine how EM affects agency costs. Before proceeding with GMM estimations, this study carefully tests for the presence of endogeneity in regressors. The Dubin-Wu-Hausman (DWH) test is applied for each of the equations for the PA/EM relationship, under the null hypothesis that all the variables are exogenous. Rejection of the null indicates the presence of endogeneity. The results of the DWH test for endogeneity are shown in Table 8-8.

Table 8-8 Endogeneity test

Model	Robust score chi2
	H_o : variables are exogenous
PAasset-EM1	76.29
	(p = 0.0000)
PAasset-EM2	342.844
	(p = 0.0000)
PAsag-EM1	131.949
	(p = 0.0000)
PAsga-EM2	297.564
	(p = 0.0000)

Note: This table reports the results of the endogeneity test. The rejection of the null suggests the regressors used are subject to endogeneity issues.

Table 8-8 presents the DWH test statistics that follow a Chi-squared distribution with the degree of freedom of 6. This study treats all the CG variables as endogenous, and the industry dummy, stock exchange dummy and year dummy as exogenous. One-year lagged differences of the CG variables are used as instrumental variables. As shown in Table 8-8, all the p-values suggest rejection of the null hypothesis of the DWH test. Therefore, the OLS and GLS estimations of the static model could be biased due to the presence of endogeneity, and a dynamic system GMM model is more appropriate. The next subsection uses a dynamic two-step system GMM estimation to estimate the PA/EM relationship and interpret the result.

8.3.4 GMM dynamic model

Dynamic panel-data estimation, two-step system GMM

CG variables tend to be persistent and slow-changing over time (Brown, Beekes, & Verhoeven, 2011; Flannery & Hankins, 2013). As a result, the dynamic nature of CG is one source of endogeneity, which arises from the impact of past values of governance variables on current values, but is often ignored in empirical CG research (Wintoki et al., 2012). Taking into account the slow-changing features of CG variables, this study uses a dynamic two-step system GMM model as the main

approach. The two-step system GMM estimator is the preferred solution to deal with endogeneity issues arising from a dynamic panel setting (Antoniou et al., 2008).

This study treats all the CG variables (EM, board size, board independence, firm size, leverage, CEO duality) as endogenous, and the industry dummy, stock exchange dummy and year dummy as exogenous. The lagged level and first-differenced values of the endogenous variables are used as instruments in the two-step system GMM estimation.

This study uses two sets of specification tests to check the validity of instruments: autocorrelation tests of residuals, and over-identification tests of instruments.

Autocorrelation (AR) tests of residuals and over-identification tests of instruments are important diagnostics in terms of two-step system GMM estimation. Arellano and Bond (1991) develop a test for the presence of autocorrelation. If the AR test suggests the presence of autocorrelation, then the tested lags are invalid as instruments. As shown in Table 8-9, Arellano-Bond AR tests in first difference are applied to test the presence of serial correlation in differenced residuals. The Arellano-Bond AR(1) test uses the first differences of the first lags of residuals, the AR(2) test uses the first differences of the second lags of residuals, and the AR(3) test uses the first differences of the third lags of residuals. As discussed in Chapter 6 Section 6.8, system GMM contains both a levels equation and a differenced equation. The original residuals of the differenced equation tend to have serial correlation by construction. However, serial correlation is not expected in differenced residuals. "If a significant AR(2) statistic is encountered, the second lags of endogenous variables will not be appropriate instruments for their current values" (Baum, 2010, p. 65). The presence of autocorrelation can render some lags invalid as instruments. For example, when the p-values of Arellano-Bond AR tests

suggest that the AR(1) statistic is significant, while the AR(2) statistic is insignificant, the second lags of endogenous variables are considered as valid instruments but not the first lags. The optimal length of lags used in this study as instruments are chosen based on Arellano-Bond AR tests, which are reported with the GMM estimation results.

The consistency of a system GMM estimator is highly dependent on the validity of the instruments set. Instrument variables should not correlate with the error terms, as discussed above. Arellano-Bond AR tests are employed to test the serial correlation in the first differences of residual error. The other validity issue with regard to the instruments used requires testing of whether the model is appropriately specified. This study uses an overidentification test, in which the null indicates a well-specified model and a valid instrument set. The Sargan test of over-identification and Hansen test of over-identification are used to test for joint validity of the instrumental variables. The results of the GMM estimation, Arellano-Bond AR tests, Sargan test of over-identification, and Hansen test of over-identification for the PA/EM relationship are reported in Table 8-9 and Table 8-10.

As shown in Table 8-9 and Table 8-10, the results of the two-step system GMM show the coefficients of 1-year lagged PA agency costs are all positive and statistically significant, suggesting that past values of PA agency costs significantly contribute to controlling for unobserved historical factors in the relationship between EM and PA agency costs. This empirical evidence strongly supports the arguments of Wintoki et al. (2012) that there is a dynamic nature inherent in CG circumstances.

Table 8-9 PAasset-EM model, two-step system GMM, dynamic model

(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	PAasset					
		z	P>z		z	P>z
Lagged PAasset	0.808***	11.44	0.000	0.811***	11.66	0.000
	(0.0706)			(0.0695)		
EM1	0.0129	0.24	0.810			
	(0.0537)					
EM2				0.00776	0.30	0.766
				(0.0261)		
board_size	-0.0573	-0.39	0.693	-0.0859	-0.84	0.401
	(0.145)			(0.102)		
board_independence	0.524*	1.82	0.068	0.354	1.09	0.278
	(0.287)			(0.327)		
firm_size	-0.0191	-0.28	0.777	-0.000181	-0.01	0.994
	(0.0673)			(0.0222)		
leverage	0.0121	0.24	0.813	-0.0242	-0.58	0.560
	(0.0512)			(0.0416)		
CEOduality	0.00121	0.03	0.979	-0.0112	-0.26	0.797
	(0.0467)			(0.0436)		
Constant	1.084	1.62	0.106	0.800	1.36	0.175
	(0.671)			(0.590)		
Industry dummy	yes			yes		
Stock exchange dummy	yes			yes		
Year dummy	yes			yes		
Observations	12,440			15,700		
Number of stock	2,017			2,481		
Number of instruments	33			31		
Wald chi2	2444.15			1529.44		
Prob > chi2	0.000			0.000		
AR(1)		-7.38	0.000		-8.55	0.000
AR(2)		0.60	0.551		0.36	0.718
AR(3)		0.89	0.374		1.53	0.126
Sargan test (chi2)		8.80	0.117		4.23	0.238
Hansen test (chi2)		7.65	0.177		3.25	0.355

Note: This table reports the results of the dynamic two-step system GMM regression of PA agency costs (PAasset) on lag 1 of the dependent variable, EM proxies, and other control variables. Asterisks of *, **, ***, indicate significance at the 10%, 5% and 1% level, respectively. The Windmeijer-corrected standard errors are reported in parentheses. The z-statistics are reported for a large sample size, on the basis of Windmeijer-corrected standard errors. The industry dummy, stock exchange dummy, and year dummy are treated as exogenous. The other variables are treated as endogenous. Lag2 and beyond of the endogenous variables are used as instruments.

Table 8-10 PAsga/EM model, two-step system GMM, dynamic model

(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	PAsga					
		z	P>z		z	P>z
Lagged PAsga	1.121***	8.48	0.000	1.054***	7.47	0.000
	(0.132)			(0.141)		
EM1	-0.000202	-0.01	0.991			
	(0.0185)					
EM2				-0.00596	-0.50	0.616
				(0.0119)		
board_size	0.0346	0.66	0.512	-0.0188	-0.48	0.628
	(0.0528)			(0.0387)		
board_independence	-0.0653	-0.58	0.561	-0.110	-1.13	0.259
	(0.113)			(0.0976)		
firm_size	0.0152	0.76	0.449	0.0120	1.32	0.187
	(0.0201)			(0.00907)		
leverage	-0.0117	-0.68	0.493	-0.0155	-1.54	0.124
	(0.0171)			(0.0101)		
CEOduality	-0.00182	-0.11	0.912	0.00731	0.42	0.673
	(0.0165)			(0.0173)		
Constant	-0.515*	-1.95	0.051	-0.373	-1.55	0.121
	(0.264)			(0.240)		
Industry dummy	yes			yes		
Stock exchange dummy	yes			yes		
Year dummy	yes			yes		
Observations	12,260			15,450		
Number of stock	2,017			2,480		
Number of instruments	34			35		
Wald chi2	2138.44			1724.53		
Prob > chi2	0.000			0.000		
AR(1)		-6.70	0.000		-6.86	0.000
AR(2)		1.54	0.123		2.14	0.032
AR(3)		0.93	0.352		0.30	0.768
Sargan test (chi2)		7.36	0.195		11.48	0.119
Hansen test (chi2)		4.62	0.464		6.12	0.526

Note: This table reports the results of the dynamic two-step system GMM regression of PA agency costs (PAsga) on lag 1 of the dependent variable, EM proxies, and other control variables. Asterisks of *, **, ***, indicate significance at the 10%, 5% and 1% level, respectively. The Windmeijer-corrected standard errors are reported in parentheses. The z-statistics are reported for a large sample size, on the basis of Windmeijer-corrected standard errors. The industry dummy, stock exchange dummy, and year dummy are treated as exogenous. The other variables are treated as endogenous. Lag2 and beyond of the endogenous variables are employed as instruments.

A dynamic two-step system GMM estimation is used to take the dynamic nature of PA/EM relation into account. The results for the PAasset-EM model are reported in Table 8-9. It is noteworthy that when applying a dynamic model and GMM estimator to control endogeneity issues, the estimators are different from the static models using OLS or GLS estimation.

Both the fixed-effect OLS and GLS estimations report a negative and significant impact of EM on PAasset, suggesting that an increase in EM level results in increases in PA agency costs. According to the two-step system GMM result in column (2) of Table 8-9, EM1 (time-series discretionary accruals estimated using the Jones model) is not significantly associated with PAasset (z=0.24, p=0.810). In column (5) of Table 8-9, EM2 also shows an insignificant relationship to PA agency costs (z=0.30, p=0.766).

Table 8-10 shows that in the dynamic two-step system GMM estimation, similar to the result using PAasset, both EM proxies show insignificant association with the second PA agency costs measure, PAsga. The results of the static estimation and dynamic estimation may differ as a result of ignoring the endogeneity issue and the dynamic nature inherent in the PA/EM relationship.

8.4 Multivariate analysis

Multivariate statistics encompass the simultaneous observation and analysis of more than one outcome variable. Multivariate analysis is a generalization of analysis to a situation in which there are several dependent variables (Tabachnick, Fidell, & Osterlind, 2007).

The null hypothesis of multivariate tests is that the slope of all coefficients is simultaneously zero. The hypothesis being tested is whether there is a joint linear effect of the set of predictors on the set of responses. In other words, multivariate

tests tell us whether a set of predictors accounts for a statistically significant portion of the variance in the dependent variables.

In the last section, multiple regressions are estimated for the four equations separately. This section conducts multivariate statistics to test the overall impact of EM combined with other independent variables in the set of combined dependent variables, PA agency costs. The four tests used are Wilks' Lambda, Pillai's Trace, Hotelling-Lawley trace, and Roy's greatest root.

The F statistics of the multivariate tests are presented in Table 8-11. Columns (2)-(4) report the test results for EM1 combined with the other control variables on the set of combined dependent variables (PAasset and PAsga). Columns (5)-(7) report the test results of EM2 combined with the other control variables on the set of combined dependent variables (PAasset and PAsga). The results of all four tests of multivariate statistics show that the set of independent variables (EM and controlling variables) jointly has a significant influence on the set of dependent variables (PA agency costs).

Table 8-11 Multivariate statistics

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Source	EM1			EM2			
		F	Prob>F		F	Prob>F	
W	0.7875***	260.38	0.0000	0.6882***	574.49	0.0000	e
P	0.2144***	246.48	0.0000	0.3240***	540.69	0.0000	a
L	0.2674***	274.36	0.0000	0.4352***	608.62	0.0000	a
R	0.2579***	529.31	0.0000	0.3897***	1089.93	0.0000	u
Residual	12314			16782			

Note: This table reports the results of multivariate statistics, where W = Wilks' lambda; L = Lawley-Hotelling trace; P = Pillai's trace; R = Roy's largest root; e = exact, a = approximate, u = upper bound on F. Multivariate statistics test the joint impact of the set explanatory variables on the group of dependent variables. Rejection of the null indicates significance.

8.5 Robustness check

This section conducts a robustness check on the estimations reported in Section 8.2.4 regarding the PA/EM relationship. The robustness check uses an alternative measurement of discretionary accruals. As discussed in Chapter 5, the first EM proxy, EM1, is identified as discretionary accruals by a time-series model. This section identifies discretionary accruals, EM3, using a cross-sectional model, and re-estimates the two-step system GMM model[9] to check whether the results remain consistent.

As shown in Table 8-12, the coefficients for 1-year lagged PA agency costs remain positive and statistically significant, suggesting that the past extent of PA agency costs significantly contributes to controlling for unobserved historical factors in the relationship between EM and PA agency costs. This is consistent with the results reported using the other two EM proxies in Section 8.2. Therefore, it provides strong evidence related to the dynamic nature inherent in CG circumstances.

---

[9] The fixed-effect OLS and GLS result of PA/EM3 model is available in Appendix 5 and Appendix 7. The fixed-effect OLS is chosen based on the Hausman test, which is available in Appendix 4.

Table 8-12 Robustness check of the relation between PA agency costs and EM estimated using cross-sectional analysis: two-step system GMM estimation

(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	PAasset			PAsga		
		z	P>z		z	P>z
Lagged PAasset	0.899***	17.31	0.000			
	(0.0519)					
Lagged PAsga				1.086***	7.76	0.000
				(0.140)		
EMcross	-0.0233	-0.25	0.804	-0.00226	-0.12	0.906
	(0.0938)			(0.0191)		
board_size	0.0662	0.33	0.741	0.0244	0.48	0.630
	(0.200)			(0.0506)		
board_independence	0.358	0.75	0.451	-0.0755	-0.67	0.502
	(0.476)			(0.113)		
firm_size	-0.0102	-0.15	0.880	0.0143	0.68	0.496
	(0.0677)			(0.0209)		
leverage	0.0915	1.40	0.160	-0.00827	-0.47	0.640
	(0.0652)			(0.0177)		
CEOduality	-0.122	-0.94	0.345	-0.00299	-0.18	0.854
	(0.129)			(0.0163)		
Constant	1.014	1.37	0.171	-0.429	-1.57	0.116
	(0.741)			(0.273)		
Industry dummy	yes			yes		
Stock exchange dummy	yes			yes		
Year dummy	yes			yes		
Observations	12,459			12,300		
Number of stock	2,018			2,017		
Number of instruments	35			34		
Wald chi2	8856.32			2156.51		
Prob > chi2	0.000			0.000		
AR(1)		-10.15	0.000		-6.29	0.000
AR(2)		1.15	0.251		1.64	0.101
AR(3)		0.29	0.771		0.70	0.485
Sargan test (chi2)		5.82	0.561		7.46	0.189
Hansen test (chi2)		2.35	0.938		4.43	0.489

Note: This table reports the results of the dynamic two-step system GMM regression of PA agency costs (i.e., PAasset and PAsga) on lag 1 of the dependent variable, EM proxy, and other control variables. Discretionary accrual estimated through cross-sectional analysis is used as the EM proxy. Asterisks of *, **, ***, indicate significance at the 10%, 5% and 1% level, respectively. The Windmeijer-corrected standard errors are reported in parentheses. The z-statistics are reported for a large sample size, on the basis of Windmeijer-corrected standard errors. The industry dummy, stock exchange dummy, and year dummy are treated as exogenous. The other variables are treated as endogenous. Lag2 and beyond of the endogenous variables are employed as instruments.

8.6 Summary

To address the first hypothesis developed in Chapter 4, this chapter investigated the relationship between EM and PA agency costs in China.

Firstly, in Section 8.2.2, the fixed-effect OLS and GLS were used to estimate the static model employed. The static regression showed that EM1 (discretionary accruals estimated using time series approach), and EM2 (the non-operating income ratio that measures the level of EM through tunneling), supported the hypothesis of a significant positive PA/EM relationship, which is contrary to Jiraporn et al. (2008) finding in the US market. In addition, the multivariate statistics showed each of the two EM proxies combined with other control variables accounted for a statistically significant portion of the variance in PAasset and PAsga.

Given that CG variables tend to be persistent and slow-changing, a dynamic model was employed to capture the influence from the past. Two-step system GMM was used to control for potential sources of endogeneity. In the dynamic model approach, both EM proxies (i.e., EM1 and EM2) showed insignificant association with PAasset and PAsga. Since the static model fails to take endogeneity issue into account, and "endogeneity leads to biased and inconsistent parameter estimates that make reliable inference virtually impossible" (Roberts & Whited, 2013, p. 6), the dynamic model was more appropriate. As a robustness test, this study used a third proxy for EM; the discretionary accruals estimated using a cross-section approach (EM3). EM3 gave the same results as the first two proxies of EM, indicating an insignificant relationship to PA agency costs through the dynamic two-step system GMM model.

The insignificant relationship between PA and EM suggested by the dynamic model contradicts the static model result and Jiraporn et al. (2008) findings. This indicates

that studies relying on static models, which fail to take account of endogeneity

issues, can be biased.

CHAPTER 9 EARNINGS MANAGEMENT AND PP COSTS

9.1 Introduction

Based on the second hypothesis of the PP and EM relationship developed in Chapter 4, this chapter conducts empirical analysis to provide insight into the impact of EM on PP agency costs.

This chapter considers the conflicts between principal and principal as an important component of agency costs in China. As discussed in Chapter 3, Section 3.4, PP agency conflicts between controlling shareholders and minority shareholders are mainly attributed to concentrated ownership. PP agency costs are prevalent in China due to the weak legal protection of minority shareholders, and the concentrated ownership structure. Therefore, in addition to the traditional agency costs between principal and agent, this study examines PP agency conflict.

The structure of this chapter is as follows. Section 9.1 presents the summary statistics, correlations, and the multicollinearity test, for the PP/EM model. In Section 9.2, the fixed-effect OLS and GLS are used in the static model. Then, the two-step system GMM dynamic model is used to control for endogeneity. Section 9.3 provides the multivariate statistics, and Section 9.4 concludes the chapter.

9.2 Preliminary data analysis

This chapter reports and interprets the empirical results of the PP/EM relationship. Six different proxies for PP and two proxies for EM are used in the main test. Hence, there are 12 models to test. Equations (9-1a) to (9-6a) use the discretionary accruals estimated using a time series approach (EM1) as a proxy for EM, and examine the relationships between EM1 and six PP proxies separately.

Among the six PP agency costs proxies, PPincome is the income measurement, while the other five PP proxies are dividend measurements. As discussed in Chapter 5, Section 5.3, for those companies that rarely pay any dividends, dividend measurements of PP costs become invalid, whereas income measurement of PP agency costs acts as an alternative profit distribution metric to capture the extent of PP conflicts.

$$PP_{income_{it}} = a_0 + a_1 EM1_{it} + a_2 board_{size_{it}} + a_3 board_{independence_{it}}$$
$$+ a_4 leverage_{it} + a_5 firm_{size_{it}} + a_6 CEOdualtiy$$
$$+ stock\ exchange\ dummy + industry\ dummy$$
$$+ year\ dummy + \varepsilon \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots. equation\ (9-1a)$$

$$PP_{divpayout_{it}} = a_0 + a_1 EM1_{it} + a_2 board_{size_{it}} + a_3 board_{independence_{it}}$$
$$+ a_4 leverage_{it} + a_5 firm_{size_{it}} + a_6 CEOdualtiy$$
$$+ stock\ exchange\ dummy + industry\ dummy$$
$$+ year\ dummy + \varepsilon \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.. equation\ (9-2a)$$

$$PP_{divsale_{it}} = a_0 + a_1 EM1_{it} + a_2 board_{size_{it}} + a_3 board_{independence_{it}}$$
$$+ a_4 leverage_{it} + a_5 firm_{size_{it}} + a_6 CEOdualtiy$$
$$+ stock\ exchange\ dummy + industry\ dummy$$
$$+ year\ dummy + \varepsilon \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ equation\ (9-3a)$$

$$PP_{divmar_{it}} = a_0 + a_1 EM1_{it} + a_2 board_{size_{it}} + a_3 board_{independence_{it}}$$
$$+ a_4 leverage_{it} + a_5 firm_{size_{it}} + a_6 CEOdualtiy$$
$$+ stock\ exchange\ dummy + industry\ dummy$$
$$+ year\ dummy + \varepsilon \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots..\ldots\ldots equation\ (9-4a)$$

$$PP_{divcf_{it}} = a_0 + a_1 EM1_{it} + a_2 board_{size_{it}} + a_3 board_{independence_{it}}$$
$$+ a_4 leverage_{it} + a_5 firm_{size_{it}} + a_6 CEOdualtiy$$
$$+ stock\ exchange\ dummy + industry\ dummy$$
$$+ year\ dummy + \varepsilon \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots equation\ (9-5a)$$

$$PP_{divearn_{it}} = a_0 + a_1 EM1_{it} + a_2 board_{size_{it}} + a_3 board_{independence_{it}}$$
$$+ a_4 leverage_{it} + a_5 firm_{size_{it}} + a_6 CEOdualtiy$$
$$+ stock\ exchange\ dummy + industry\ dummy$$
$$+ year\ dummy + \varepsilon \dots \dots \dots \dots \dots \dots \dots \dots equation\ (9 - 6a)$$

The second EM proxy (EM2) is the non-operating income to sales ratio, following Bertrand et al. (2002). Discretionary accruals are applied in the standard accounting literature to capture EM levels, whereas EM2 captures the EM through tunneling that is done via non-operating components of profit. Equations (9-1b) to (9-6b) use the second EM proxy (EM2), and examine the relationship between EM2 and six PP agency costs proxies separately.

$$PP_{income_{it}} = a_0 + a_1 EM2_{it} + a_2 board_{size_{it}} + a_3 board_{independence_{it}}$$
$$+ a_4 leverage_{it} + a_5 firm_{size_{it}} + a_6 CEOdualtiy$$
$$+ stock\ exchange\ dummy + industry\ dummy$$
$$+ year\ dummy + \varepsilon \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots equation\ (9 - 1b)$$

$$PP_{divpayout_{it}} = a_0 + a_1 EM2_{it} + a_2 board_{size_{it}} + a_3 board_{independence_{it}}$$
$$+ a_4 leverage_{it} + a_5 firm_{size_{it}} + a_6 CEOdualtiy$$
$$+ stock\ exchange\ dummy + industry\ dummy$$
$$+ year\ dummy + \varepsilon \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots equation(9 - 2b)$$

$$PP_{divsale_{it}} = a_0 + a_1 EM2_{it} + a_2 board_{size_{it}} + a_3 board_{independence_{it}}$$
$$+ a_4 leverage_{it} + a_5 firm_{size_{it}} + a_6 CEOdualtiy$$
$$+ stock\ exchange\ dummy + industry\ dummy$$
$$+ year\ dummy + \varepsilon \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots equation\ (9 - 3b)$$

$$PP_{divmar_{it}} = a_0 + a_1 EM2_{it} + a_2 board_{size_{it}} + a_3 board_{independence_{it}}$$
$$+ a_4 leverage_{it} + a_5 firm_{size_{it}} + a_6 CEOdualtiy$$
$$+ stock\ exchange\ dummy + industry\ dummy$$
$$+ year\ dummy + \varepsilon \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots. equation(9 - 4b)$$

$$PP_{divcf_{it}} = a_0 + a_1 EM2_{it} + a_2 board_{size_{it}} + a_3 board_{independence_{it}}$$
$$+ a_4 leverage_{it} + a_5 firm_{size_{it}} + a_6 CEOdualtiy$$
$$+ stock\ exchange\ dummy + industry\ dummy$$
$$+ year\ dummy + \varepsilon \dots\dots\dots\dots\dots\dots\dots\dots\dots. equation\ (9-5b)$$

$$PP_{divearn_{it}} = a_0 + a_1 EM2_{it} + a_2 board_{size_{it}} + a_3 board_{independence_{it}}$$
$$+ a_4 leverage_{it} + a_5 firm_{size_{it}} + a_6 CEOdualtiy$$
$$+ stock\ exchange\ dummy + industry\ dummy$$
$$+ year\ dummy + \varepsilon \dots\dots\dots\dots\dots\dots\dots\dots. equation\ (9-6b)$$

9.2.1 Summary statistics

Table 9-1 presents the summary statistics for the variables used in equations (9-1a) to (9-6b). The summary statistics of earnings management proxies (EM1 and EM2) and the control variables leverage, board size, board independence, firm size, and CEO duality) are same as for the PA/EM model in Chapter 8. Therefore, this chapter only interprets the PP proxies that are new to the analysis in this chapter.

As for the descriptive statistics of the PA/EM model in Chapter 8, the summary statistics here present the level data after winsorization with 5% probability. Table 9-1 shows that the value of the first PP proxy (PPincome) is quite small, which makes sense as the net operation income is scaled twice using share numbers and total sales to compute the PPincome ratio.

The other five PP agency costs proxies are all dividend-related. The five dividend measures of PP costs have similar means. PPdivpayout has the highest average of approximately 1.026, while PPdivmar has the lowest average of approximately 0.023. Therefore, the means of all the dividend-related PP proxies range between 1.026 and 0.023, with no significant outliers, and meet expectations. The summary

statistics of variables of interest (EM1, EM2, EM3) and controlling variables are

interpreted in Chapter 8. For conciseness, the interpretation is not repeated here.

Table 9-1 Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
PPincome	16,540	2.46e-06	6.38e-06	-4.93e-06	.0000246
PPdivpayout	27,620	1.025994	1.415014	-.2378977	5.591084
PPdivsale	27,561	.0560431	.0507856	.0031288	.1959753
PPdivmar	26,733	.0225581	.0219752	.0006924	.0819821
PPdivcf	27,619	.3193158	.7755575	-1.31536	2.318789
PPdivearn	27,620	.8628858	1.146423	-.2875807	4.470708
EM1	18,772	-2.43e+07	3.47e+08	-9.21e+08	7.12e+08
EM2	27,608	0.0161	0.0236	0.0002	0.0915
EM3	18,821	-2.45e+07	3.52e+08	-9.30e+08	7.25e+08
board_size (person)	23,816	9.232239	2.050819	3	19
board_indepedence	23,797	0.3087	0.1234	0.0000	0.4444
firm_size[ln(total assets)]	27,911	21.4775	1.0901	19.7446	23.8042
Leverage (%)	26,549	0.4665	0.2051	0.1138	0.8363
CEOduality	17,483	0.2036	0.4027	0	1

Note: This table reports descriptive statistics based on all the variables used in this chapter. The number of observations varies because of missing values. For interpretation purposes, the logarithmic form of the variables is not used as the basis of descriptive statistics. Instead, the descriptive statistics of variables are calculated on the basis of levels after 5% winsorization.

9.2.2 Correlation

Table 9-2 presents the pair-wise correlation matrix for the key variables used in the

PP/EM model. In Table 9-2, EM1 (discretionary accruals) shows a significant

positive association with most of the PP costs proxies (correlation coefficients of

0.0271, 0.0742, 0.0714, 0.311, 0.0620 for PPincome, PPdivsale, PPdivpayout,

PPdivmar, and PPdivearn, significant at the 10%, 1%, 1%, 1% and 1% level,

respectively). This suggests that engagement in EM tends to reduce PP agency costs.

EM1 and EM2 are negatively associated with each other with a coefficient of -

0.0914, which is significant at the 1% level. Unlike EM1, EM2 shows insignificant

correlations with most of the PP agency costs proxies. With regard to the control

variables, board size positively associates with all the PP costs proxies, indicating

that large board size tends to reduce PP agency costs. Board independence has a negative relationship with PPdivpayout and PPdivearn (correlation coefficients of -0.0307, -0.0242 significant at the 5% and 10% level respectively), which suggests that more independent boards tend to increase PP costs. Correlation coefficients for firm size also show positive relationships with all the PP proxies (correlation coefficients of 0.0444, 0.139, 0.112, 0.486, 0.0401, 0.124, all significant at the 1% level), indicating that larger firm size tends to mitigate PP agency problems.

The control variable of leverage shows a significant positive relationship with most of the PP cost proxies (coefficients of 0.269, 0.419, and 0.245 on PPdivpayout, PPdivmar, and PPdicearn respectively, all significant at the 1% level). This indicates that distressed companies pay out more dividends and may have a lower level of PP conflicts. Highly distressed companies have a high level of debt and require the manager to be more self-enforcing to generate adequate cash in order to fulfill the company's obligations related to interest payments and loan repayments. This supports the argument presented by Gillan (2006).

The correlation coefficients for CEO duality mostly show significant and negative signs in relation to PP cost proxies (coefficients of -0.0670, -0.0643, -0.138, -0.0260 and -0.0570 on PPincome, PPdivpayout, PPdivmar, PPdivcf, and PPdivearn, significant at the 1%, 1%, 1%, 10% and 1% levels respectively). This indicates that the presence of CEO duality reduces dividend payouts and exacerbates PP agency conflicts.

The potential problem with highly correlated explanatory variables is multicollinearity. Correlation coefficients higher than 0.5 indicate that the independent variables are highly correlated to each other, thus multicollinearity can be problematic in these cases. Table 9-2 shows that the correlation coefficients of independent variables in the estimated models in this chapter are mostly lower than

0.5, thus it is unlikely that multicollinearity is present. However, this study carefully

tests for the presence of multicollinearity through VIFs in subsection 9.1.3.

Table 9-2 Correlation Matrix

	PPincome	PPdivpayout	PPdivsale	PPdivmar	PPdivcf	PPdivearn	EM1	EM2	board_size	board_independence	firm_size	leverage	CEOduality
PPincome	1												
PPdivpayout	-0.0466***	1											
PPdivsale	0.0746***	0.206***	1										
PPdivmar	-0.0503***	0.410***	0.382***	1									
PPdivcf	-0.0111	0.0940***	0.124***	0.130***	1								
PPdivearn	-0.0350**	0.912***	0.208***	0.382***	0.0854***	1							
EM1	0.0271*	0.0742***	0.0714***	0.311***	-0.0176	0.0620***	1						
EM2	-0.0108	0.00898	0.153***	-0.154***	0.0162	0.00290	-0.0914***	1					
board_size	0.00834	0.0912***	0.0423***	0.176***	0.0269*	0.0782***	0.144***	-0.0862***	1				
board_independence	-0.0201	-0.0307**	0.00150	-0.00606	-0.00961	-0.0242*	0.0396***	0.0859***	-0.351***	1			
firm_size	0.0444***	0.139***	0.112***	0.486***	0.0401***	0.124***	0.618***	-0.152***	0.240***	0.0548***	1		
leverage	-0.00130	0.269***	-0.0499***	0.419***	-0.0140	0.245***	0.331***	-0.167***	0.182***	-0.0496***	0.416***	1	
CEOduality	-0.0670***	-0.0643***	-0.00778	-0.138***	-0.0260*	-0.0570***	-0.0940***	0.0925***	-0.150***	0.0893***	-0.153***	-0.196***	1

Note: This table presents pair-wise correlation coefficients for all the variables used in this chapter. The variables are defined in Table 5-3. Asterisks of *, **, ***, indicate significance at the 10%, 5% and 1% level, respectively.

9.2.3 Multicollinearity test

Table 9-3 presents the computed VIFs to test for multicollinearity. The means of VIFs for the variables applied in the PP/EM model are all lower than twice the minimum VIF of each column or the cut-off point of 10 or 5, suggesting that multicollinearity is not a concern in the estimated models.

Table 9-3 Variance inflation factors for multicollinearity test

Variable	VIF					
Equation(1a-6a)	(1a)	(2a)	(3a)	(4a)	(5a)	(6a)
	PPincome	PPdivpayout	PPdivsale	PPdivmar	PPdivcf	PPdivearn
firm_size	1.84	1.78	1.78	1.80	1.78	1.78
board_size	1.25	1.28	1.28	1.28	1.28	1.28
board_in~e	1.17	1.18	1.18	1.18	1.18	1.18
EM1	1.64	1.62	1.62	1.63	1.62	1.62
leverage	1.26	1.18	1.19	1.20	1.18	1.18
CEOduality	1.06	1.06	1.06	1.06	1.06	1.06
Mean VIF	1.37	1.35	1.35	1.36	1.35	1.35
Variable	VIF					
Equation(1b-6b)	(1b)	(2b)	(3b)	(4b)	(5b)	(6b)
	PPincome	PPdivpayout	PPdivsale	PPdivmar	PPdivcf	PPdivearn
firm_size	1.31	1.25	1.25	1.26	1.25	1.25
board_size	1.26	1.26	1.26	1.26	1.26	1.26
board_in~e	1.28	1.18	1.18	1.17	1.18	1.18
EM2	1.05	1.04	1.04	1.04	1.04	1.04
leverage	1.24	1.16	1.16	1.18	1.16	1.16
CEOduality	1.08	1.07	1.07	1.06	1.07	1.07
Mean VIF	1.19	1.16	1.16	1.16	1.16	1.16

Note: This table reports the variance inflation factors calculated for all 12 equations that investigate the PP/EM relationship in this chapter.

9.3 Multiple regression analysis

9.3.1 Heteroscedasticity test

Before proceeding with regression, checks on heteroscedasticity, which violates the OLS assumption, are important. In the presence of heteroscedasticity, OLS estimation is no longer efficient.

As in Chapter 8, the Breusch-Pagan/Cook-Weisberg test is applied to test for the presence of heteroscedasticity. The null hypothesis of the Breusch and Pagan (1979b) and Cook and Weisberg (1983) test for heteroscedasticity assumes constant variance and no presence of heteroscedasticity. As shown in Table 9-4, the chi-squared statistics calculated and the p-values across the equations suggest rejection of the null, indicating the presence of heteroscedasticity in the model, hence the pooled OLS estimation is no longer optimal. The fixed-effect OLS with heteroscedasticity-consistent standard errors is thus employed. A fixed-effect OLS with robust standard errors eliminates unobserved fixed-effects and controls for heteroscedasticity issues in a pooled OLS.

Table 9-4 Breusch-Pagan / Cook-Weisberg test for heteroscedasticity

Breusch-Pagan / Cook-Weisberg test for heteroscedasticity						
H_o: Constant variance						
EM1						
Equation	(1a)	(2a)	(3a)	(4a)	(5a)	(6a)
	PPincome	PPdivpayout	PPdivsale	PPdivmar	PPdivcf	PPdivearn
chi2	787.20	1597.13	1089.70	2304.55	10.93	1329.13
Prob > chi2	0.0000	0.0000	0.0000	0.0000	0.0009	0.0000
EM2						
Equation	(1b)	(2b)	(3b)	(4b)	(5b)	(6b)
	PPincome	PPdivpayout	PPdivsale	PPdivmar	PPdivcf	PPdivearn
chi2	974.55	2576.34	1417.21	3330.06	3.55	2243.02
Prob > chi2	0.0000	0.0000	0.0000	0.0000	0.0594	0.0000

Note: This table reports the results of the heteroscedasticity test. Rejection of the null hypothesis of the Breusch-Pagan/Cook-Weisberg test for heteroscedasticity suggests the presence of heteroscedasticity, and pooled OLS is not optimal.

9.3.2 Static model

This study conducts a Hausman (1978) specification test to choose between the use of a fixed-effect OLS or random-effect OLS. As shown in Table 9-5, p-values across all the models reject the null hypothesis of the Hausman test, thus suggesting the fixed effect OLS is preferred over the random effect OLS. Therefore, a fixed-effect OLS estimation is employed and the results are reported in subsection 9.2.2.1.

Table 9-5 Hausman specification test

Test H_o:	difference in	coefficients not systematic				
EM1						
Equation	(1a)	(2a)	(3a)	(4a)	(5a)	(6a)
	PPincome	PPdivpayout	PPdivsale	PPdivmar	PPdivcf	PPdivearn
chi2	150.77	36.72	196.30	81.99	38.25	14.66
Prob > chi2	0.0000	0.0127	0.0000	0.0000	0.0083	0.0119
EM2						
Equation	(1b)	(2b)	(3b)	(4b)	(5b)	(6b)
	PPincome	PPdivpayout	PPdivsale	PPdivmar	PPdivcf	PPdivearn
chi2	259.21	140.95	320.81	75.92	37.02	132.43
Prob > chi2	0.0000	0.0000	0.0000	0.0000	0.0116	0.0000

Note: This table reports the results of the Hausman test applied to choose between fixed-effect and random-effect OLS. Rejection of the null hypothesis of the Hausman test suggests a fixed-effect OLS estimation is preferred.

9.3.2.1 *Fixed-effect OLS and GLS*

Tables 9-6, 9-7, 9-8, 9-9, 9-10, 9-11, 9-12, and 9-13 report the static model results for the PP/EM relationship. This study applies two different approaches (Fixed-effect OLS and GLS) to estimate the static model. Tables 9-6 and 9-7 present the OLS estimators of EM1 against six different PP proxies. As Table 9-6 and Table 9-7 indicate, apart from the income measurement of PP conflict (PPincome), the dividend measurements of PP conflict all show significant negative associations between EM level and PP proxies. An increase in the dividend measurement is considered a sign of decreasing PP agency conflicts, as the increase in dividend measurement in PP conflict indicates that the company is paying more dividends to shareholders, and less money remains inside, under the majority shareholder's control. Therefore, a negative association between EM and the dividend measure of PP conflicts suggest that the EM activities exacerbate PP conflict.

Tables 9-6 and 9-7 show that EM1 is significantly and negatively related to four dividend measurements of PP cost proxy (PPdivpayout, PPdivmar, PPdivcf, and PPdivearn). Since the reduction in dividend measurement indicates more severe PP

agency conflicts, the fixed-effect OLS estimation suggests that an increase in EM1 tends to increase PP conflicts.

Tables 9-8 and 9-9 use the second measurement of EM (EM2) and report the regression estimators of EM2 against PP proxies using the fixed-effect OLS. Of the six PP conflict proxies, PPdivmar and PPdivcf show insignificant PP/EM relationships. The other four PP proxies (i.e., PPincome, PPdivpayout, PPdivsale, PPdivearn) all show significant and positive relationships between EM2 and PP conflict proxies. Therefore, in general, the fixed-effect OLS estimation suggests that an increase in EM2 reduces PP conflicts, which contradicts the estimation using EM1.

Table 9-6 Fixed-effect OLS estimation, static model, EM1

VARIABLES	(1a)		(2a)		(3a)	
	PPincome		PPdivpayout		PPdivsale	
		t		t		t
EM1	4.68e-08	0.94	-0.0432***	-4.14	0.00673	1.20
	(4.98e-08)		(0.0104)		(0.00559)	
board_size	-1.45e-06*	-1.80	0.0167	0.10	0.132*	1.81
	(8.02e-07)		(0.164)		(0.0725)	
board_independence	1.65e-06	0.72	0.104	0.68	0.251***	3.38
	(2.29e-06)		(0.153)		(0.0743)	
firm_size	-4.65e-07	-1.57	0.243***	5.71	0.342***	19.39
	(2.96e-07)		(0.0426)		(0.0176)	
leverage	-6.89e-06***	-7.32	0.413***	7.45	0.176***	6.61
	(9.41e-07)		(0.0554)		(0.0267)	
CEOduality	3.24e-07	0.98	0.0179	0.30	-0.0293	-1.09
	(3.32e-07)		(0.0599)		(0.0269)	
Constant	1.63e-05**	2.49	-2.449***	-2.63	-9.804***	-12.45
	(6.52e-06)		(0.931)		(0.788)	
Industry dummy	no		no		no	
Stock exchange dummy	no		no		no	
Year dummy	yes		yes		yes	
Observations	8,670		12,412		12,389	
Number of stock	1,697		2,017		2,017	
R-squared	0.038		0.031		0.078	
F statistics	4728.13		16.45		43.80	
Prob > F	0.0000		0.0000		0.000	

Note: This table reports the results of a fixed-effect OLS static model of equations 9-1a, 9-2a, 9-3a. Three PP costs proxies (PPinocme, PPdivpayout, PPdivsale), are used to run the regression against EM1 and the other CG variables. Asterisks of *, **, ***, indicate significance at the 10%, 5% and 1% level, respectively.

Table 9-7 Fixed-effect OLS estimation, static model, EM1 (continue)

VARIABLES	(4a)		(5a)		(6a)	
	PPdivmar		PPdivcf		PPdivearn	
		t		t		t
EM1	-0.0107*	-1.85	-0.0159**	-2.51	-0.0324***	-3.59
	(0.00578)		(0.00633)		(0.00902)	
board_size	0.103	1.37	-0.100	-1.22	0.0514	0.44
	(0.0752)		(0.0822)		(0.117)	
board_independence	0.277***	3.56	0.0475	0.56	0.0593	0.49
	(0.0778)		(0.0843)		(0.120)	
firm_size	0.548***	29.41	0.0660***	3.31	0.174***	6.13
	(0.0186)		(0.0199)		(0.0284)	
leverage	0.522***	18.84	0.0734**	2.44	0.331***	7.71
	(0.0277)		(0.0301)		(0.0429)	
CEOduality	-0.0369	-1.31	0.0306	1.00	0.00661	0.15
	(0.0281)		(0.0305)		(0.0434)	
Constant	-13.96***	-17.22	-0.427	-0.48	-1.631	-1.28
	(0.811)		(0.893)		(1.272)	
Industry dummy	no		no		no	
Stock exchange dummy	no		no		no	
Year dummy	yes		yes		yes	
Observations	12,153		12,412		12,412	
Number of stock	2,012		2,017		2,017	
R-squared	0.343		0.008		0.028	
F statistics	264.43		3.96		14.80	
Prob > F	0.0000		0.0000		0.0000	

Note: This table reports the results of a fixed-effect OLS static model of equations 9-4a, 9-5a, 9-6a. Three PP costs proxies (PPdivmar, PPdivcf, PPdivearn), are used to run the regression against EM1 and the other CG variables. Asterisks of *, **, ***, indicate significance at the 10%, 5% and 1% level, respectively.

Table 9-8 Fixed-effect OLS estimation, static model, EM2

VARIABLES	(1b)		(2b)		(3b)	
	PPincome		PPdivpayout		PPdivsale	
		t		t		t
EM2	2.28e-07***	3.59	0.101***	9.41	0.00234***	6.93
	(6.33e-08)		(0.0107)		(0.000337)	
board_size	-1.48e-06**	-2.01	0.00963	0.07	0.00310	0.68
	(7.37e-07)		(0.142)		(0.00453)	
board_independence	-2.55e-07	-0.35	0.135	1.03	0.00578	1.39
	(7.19e-07)		(0.132)		(0.00417)	
firm_size	-3.55e-07	-1.35	0.265***	7.53	0.0138***	9.36
	(2.63e-07)		(0.0352)		(0.00147)	
leverage	-2.15e-06***	-7.57	0.356***	8.54	0.00654***	3.85
	(2.84e-07)		(0.0417)		(0.00170)	
CEOduality	3.62e-07	1.35	0.0123	0.26	-0.00223	-1.40
	(2.68e-07)		(0.0467)		(0.00160)	
Constant	1.33e-05*	1.75	-2.738**	-2.05	-0.195***	-5.56
	(7.61e-06)		(1.334)		(0.0351)	
Industry dummy	no		no		no	
Stock exchange dummy	no		no		no	
Year dummy	yes		yes		yes	
Observations	11,555		16,890		16,890	
Number of stock	2,109		2,532		2,532	
R-squared	0.032		0.042		0.063	
F statistics	6.78		24.90		24.09	
Prob > F	0.0000		0.0000		0.0000	

Note: This table reports the results of a fixed-effect OLS static model of equations 9-1b, 9-2b, 9-3b. Three PP costs proxies (PPincome, PPdivpayout, PPdivsale), are used to run the regression against EM2 and the other CG variables. Asterisks of *, **, ***, indicate significance at the 10%, 5% and 1% level, respectively.

Table 9-9 Fixed-effect OLS estimation, static model, EM2 (continue)

VARIABLES	(4b)		(5b)		(6b)	
	PPdivmar		PPdivcf		PPdivearn	
		t		t		t
EM2	0.000153	1.25	0.00498	0.95	0.0772***	8.99
	(0.000122)		(0.00524)		(0.00859)	
board_size	-8.14e-06	-0.00	-0.0642	-0.89	0.0205	0.18
	(0.00165)		(0.0725)		(0.117)	
board_independence	0.00354**	2.31	-0.0230	-0.34	0.102	0.95
	(0.00153)		(0.0672)		(0.108)	
firm_size	0.00833***	15.18	0.0512***	2.96	0.193***	6.54
	(0.000549)		(0.0173)		(0.0294)	
leverage	0.00926***	13.60	0.0448*	1.93	0.276***	7.83
	(0.000681)		(0.0232)		(0.0353)	
CEOduality	-0.000569	-1.04	0.000579	0.02	-0.00726	-0.19
	(0.000547)		(0.0255)		(0.0388)	
Constant	-0.138***	-10.14	-0.935**	-2.18	-2.437***	-2.94
	(0.0137)		(0.428)		(0.828)	
Industry dummy	no		no		no	
Stock exchange dummy	no		no		no	
Year dummy	yes		yes		yes	
Observations	16,306		16,890		16,890	
Number of stock	2,482		2,532		2,532	
R-squared	0.339		0.006		0.038	
F statistics	182.19		4.18		21.81	
Prob > F	0.0000		0.0000		0.0000	

Note: This table reports the results of a fixed-effect OLS static model of equations 9-4b, 9-5b, 9-6b. Three PP costs proxies (PPdivmar, PPdivcf, PPdivearn), are used to run the regression against EM2 and the other CG variables. Asterisks of *, **, ***, indicate significance at the 10%, 5% and 1% level, respectively.

In addition to the fixed effect OLS, this study also uses GLS estimation in the static model and the results of GLS estimation are reported in Tables 9-10, 9-11, 9-12, and 9-13.

Tables 9-10 9-11 report the estimators of EM1 against the six different PP proxies using GLS estimation. Consistent with the fixed-effect estimation, EM1 has a significant negative relationship with most PP proxies, except the income measurement of PP proxy (PPincome). Tables 9-12 and 9-13 report the estimators of EM2 on six different PP proxies using GLS estimation. Consistent with the fixed-effect OLS estimation, EM2 shows significant and positive association with all six proxies for PP agency costs.

The potential explanation for the differences in EM1 and EM2 model are two-fold. First, the employment of EM2 (he non-operating income to sales ratio) captures earnings tunneling through non-market based, non-operating related party transactions (e.g., disposal of fixed assets), while EM1 represents the discretionary portion of accruals that identifies management choices. Prior study presents evidence of tunnelling behaviour among Chinese listed companies (e.g., Gao & Kling, 2008; Jiang, Lee, & Yue, 2010), and the positive association between EM2 and PP agency costs suggests the beneficial use of non-operating income. Second, it is important to note that the fixed-effect approach assumes strictly exogenous explanatory variables. In other words, it assumes there is no correlation between explanatory variables and the regression error term. Violating this assumption may lead to unreliable causal inference. For the PP/EM model, the endogeneity issue is highly likely to arise. As Wintoki et al. (2012) emphasize in their paper, endogeneity is especially important when investigating the effect of governance or board structure on performance, due to the dynamic nature inherent in CG variables. Both fixed-effect OLS and GLS estimation fail to take endogeneity sources

(dynamic nature, omitted variables, measurement error) into account, therefore the fixed-effect OLS and GLS statistics do not appear to be the best and most reliable base from which to make causal inferences for this study.

Table 9-10 GLS estimation, static model, EM1

VARIABLES	(1a)		(2a)		(3a)	
	PPincome		PPdivpayout		PPdivsale	
EM1	7.504851E-8	1.44	-0.02472**	-2.19	-0.00184***	-4.42
	5.215999E-8		0.0113		0.000417	
board_size	2.548178E-7	0.60	0.36596***	3.96	0.0148***	4.37
	4.275701E-7		0.0926		0.00339	
board_independence	0.00000203***	3.72	0.52922***	4.49	0.01882***	4.15
	5.447836E-7		0.11799		0.00453	
firm_size	1.046066E-7	1.13	0.0775***	3.88	0.01087***	14.75
	9.226355E-8		0.01998		0.000737	
leverage	-0.00000107***	-8.11	0.48376***	16.88	-0.0126***	-11.61
	1.323487E-7		0.02866		0.00109	
CEOduality	-8.00007E-7***	-5.35	-0.03637	-1.12	0.00158	1.29
	1.49396E-7		0.03236		0.00122	
Constant	-0.00000123	-0.53	-0.67063	-1.34	-0.15787***	-8.18
	0.00000231		0.50008		0.0193	
Industry dummy	yes		yes		yes	
Stock exchange dummy	yes		yes		yes	
Year dummy	yes		yes		yes	
Observations	8,670		12,412		12,389	
Number of stock	1,697		2,017		2,017	
R-squared	0.1365		0.1721		0.1106	
F statistics	54.06		70.76		42.69	
Prob > F	<.0001		<.0001		<.0001	

Note: This table reports the results of the fixed-effect GLS static model of equations 9-1a, 9-2a, 9-3a. Three PP costs proxies (PPinocme, PPdivpayout, PPdivsale), are used to run the regression against EM1 and the other CG variables. Asterisks of *, **, ***, indicate significance at the 10%, 5% and 1% level, respectively.

Table 9-11 GLS estimation, static model, EM1 (continued)

VARIABLES	(4a)		(5a)		(6a)	
	PPdivmar		PPdivcf		PPdivearn	
EM1	-0.00056***	-4.01	-0.04137***	-5.95	-0.04258***	-4.55
	0.00014		0.00695		0.00935	
board_size	0.00576***	5.05	0.04704	0.83	0.2991***	3.94
	0.00114		0.0565		0.07596	
board_independence	0.00454***	2.98	0.02747	0.36	0.30309***	2.98
	0.00153		0.07561		0.10166	
firm_size	0.00903***	36.4	0.09434***	7.68	0.07152***	4.33
	0.000248		0.01229		0.01653	
leverage	0.00805***	22.02	-0.0605***	-3.34	0.42244***	17.35
	0.000365		0.01811		0.02435	
CEOduality	-0.00089**	-2.15	-0.02485	-1.22	-0.00471	-0.17
	0.000412		0.02041		0.02744	
Constant	-0.16961***	-26.1	-0.93292***	-2.9	-0.41701	-0.96
	0.0065		0.32205		0.43302	
Industry dummy	yes		yes		yes	
Stock exchange dummy	yes		yes		yes	
Year dummy	yes		yes		yes	
Observations	12,153		12,412		12,412	
Number of stock	2,012		2,017		2,017	
R-squared	0.4345		0.0182		0.0917	
F statistics	258.73		7.22		34.88	
Prob > F	<.0001		<.0001		<.0001	

Note: This table reports the results of a fixed-effect GLS static model of equations 9-4a, 9-5a, 9-6a. Three PP costs proxies (PPdivmar, PPdivcf, PPdivearn), are used to run the regression against EM1 and the other CG variables. Asterisks of *, **, ***, indicate significance at the 10%, 5% and 1% level, respectively.

Table 9-12 GLS estimation, static model, EM2

VARIABLES	(1b)		(2b)		(3b)	
	PPincome		PPdivpayout		PPdivsale	
EM2	1.92E-07***	4.43	0.07686***	8.49	0.00769***	21.14
	4.33E-08		0.00905		0.000364	
board_size	-6.47E-07*	-1.74	0.37188***	4.77	0.00833***	2.66
	3.72E-07		0.0779		0.00313	
board_independence	2.97E-07	0.6	0.26625***	2.59	0.01163***	2.81
	4.92E-07		0.10299		0.00414	
firm_size	3.04E-07***	4.33	0.09458***	6.44	0.01117***	18.91
	7.02E-08		0.01469		0.00059	
leverage	-5.72E-07***	-5.27	0.55824***	24.56	-0.00839***	-9.19
	1.09E-07		0.02273		0.000913	
CEOduality	-9.41E-07***	-7.35	-0.06302	-2.35	-0.00054	-0.51
	1.28E-07		0.02679		0.00108	
Constant	1.51E-06	0.9	-1.39229***	-3.95	-0.14256***	-10.07
	1.68E-06		0.35237		0.01416	
Industry dummy	yes		yes		yes	
Stock exchange dummy	yes		yes		yes	
Year dummy	yes		yes		yes	
Observations	11,555		16,890		16,890	
Number of stock	2,109		2,532		2,532	
R-squared	0.0650		0.1396		0.1200	
F statistics	30.57		70.07		59.06	
Prob > F	<.0001		<.0001		<.0001	

Note: This table reports the results of a fixed-effect OLS static model of equations 9-1b, 9-2b, 9-3b. Three PP costs proxies (PPincome, PPdivpayout, PPdivsale), are used to run the regression against EM2 and the other CG variables. Asterisks of *, **, ***, indicate significance at the 10%, 5% and 1% level, respectively.

Table 9-13 GLS estimation, static model, EM2 (continued)

VARIABLES	(4b)		(5b)		(6b)	
	PPdivmar		PPdivcf		PPdivearn	
EM2	0.00701**	2.12	0.01807***	7.75	0.04155***	5.58
	0.0033		0.00233		0.00745	
board_size	0.00126**	1.99	0.05008**	2.3	0.31145***	4.86
	0.00064		0.02175		0.06411	
board_independence	-0.0019	-0.86	-0.0521	-1.62	0.18781**	2.22
	0.00225		0.03224		0.08476	
firm_size	0.00762***	61.78	0.03741***	5.28	0.05802***	4.8
	0.00012		0.00708		0.01209	
leverage	0.02308***	41.28	0.10629***	13.04	0.41588***	22.23
	0.00056		0.00815		0.01871	
CEOduality	-0.002***	-9.24	0.11174***	12.14	-0.04961**	-2.25
	0.00021		0.00921		0.02205	
Constant	-0.1531***	-56.21	-0.7882	-0.66	-0.90252***	-3.11
	0.00272		1.19746		0.29	
Industry dummy	yes		yes		yes	
Stock exchange dummy	yes		yes		yes	
Year dummy	yes		yes		yes	
Observations	16,306		16,890		16,890	
Number of stock	2,482		2,532		2,532	
R-squared	0.4890		0.8458		0.1187	
F statistics	574.26		3439.72		58.37	
Prob > F	<.0001		<.0001		<.0001	

Note: This table reports the results of a fixed-effect OLS static model of equations 9-4b, 9-5b, 9-6b. Three PP costs proxies (PPdivmar, PPdivcf, PPdivearn), are used to run the regression against EM2 and the other CG variables. Asterisks of *, **, ***, indicate significance at the 10%, 5% and 1% level, respectively.

9.3.3 Endogeneity test

Considering endogeneity and the dynamic nature of CG, in addition to the OLS and GLS static model, this study applies the dynamic two-step system GMM model to investigate the PP/EM relationship.

Before proceeding with GMM estimations, this study carefully tests for the presence of endogeneity in regressors. The Dubin-Wu-Hausman (DWH) test for all regressors is executed for each model in the PP/EM relationship, under the null hypothesis that all the variables are exogenous. Rejection of the null indicates the presence of endogeneity. The results of the DWH test of endogeneity are shown in Table 9-14.

Table 9-14 shows that the null hypothesis is rejected at all the conventional levels of significance (all p-values are lower than 1%), which suggests that the regressors are not exogenous. Therefore the two-step system GMM model is superior to the static OLS and GLS models.

Table 9-14 Endogeneity test

Model		Robust score (chi2)	p-value
EM1	PPincome	71.5138	(p = 0.0000)
	PPdivpayout	121.197	(p = 0.0000)
	PPdivsale	62.2997	(p = 0.0000)
	PPdivmar	243.465	(p = 0.0000)
	PPdivcf	17.9866	(p = 0.0000)
	PPdivearn	115.677	(p = 0.0000)
EM2	PPincome	100.918	(p = 0.0000)
	PPdivpayout	143.982	(p = 0.0000)
	PPdivsale	105.456	(p = 0.0000)
	PPdivmar	275.818	(p = 0.0000)
	PPdivcf	11.0186	(p = 0.0000)
	PPdivearn	138.552	(p = 0.0000)

Note: This table reports the results of the endogeneity test. The rejection of the null hypothesis suggests the employed regressors are subject to endogeneity issues.

9.3.4 GMM dynamic model

A dynamic GMM model with the first differenced dependent variable is used to take into consideration the unobserved firm-specific effects and endogeneity issues. Since CG variables tend to be persistent and slow-changing, there is a dynamic nature inherent in CG. Past CG characteristics tend to be carried forward, leading to an impact on the current CG characteristics (Harris & Raviv, 2008). Thus, a dynamic model, where lagged performance is used as one of the explanatory variables, should be appropriate in the context of internal CG research (Schultz et al., 2010; Wintoki et al., 2012).

The GMM estimator uses instrumental variables to constrain endogeneity effects. Lags of the endogenous variables function as instrumental variables. In two-step system GMM estimation, the lags of endogenous variables are used as instruments. However, ineffective instrumental variables can lead to serious bias in the estimation, thus it is important to choose the optimal lag length. Serial correlation (or autocorrelation) refers to the case where the residuals for one time period are correlated with the residuals for a subsequent time period. A valid instrument is required to be uncorrelated with the error terms but correlated with the endogenous explanatory variable. If the lags show significant correlation with the error terms or residuals, it is a sign of poor instruments; in this case, further lags should be applied.

Arellano-Bond AR tests in first difference are applied to test the presence of serial correlation in differenced residuals. As discussed in Chapter 8, Arellano-Bond AR(1), AR(2), and AR(3) tests use the first differences of the first lags of residuals, the second lags of residuals, and the third lags of residuals, respectively. The System GMM contains both a levels equation and a differenced equation. The null hypothesis of the Arellano-Bond AR test assumes no serial correlation. The results

of Arellano-Bond tests are reported with the system GMM estimation. As Tables 9-15 to 9-20 show, the second and third lags of residuals tend to have insignificant p-values (i.e., no serial correlation), indicating the second/third lag and beyond are valid instruments for the endogenous variables.

The consistency of the system GMM estimator is very much dependent upon the validity of the instruments variables employed. Sargan and Hansen tests are used to diagnose whether the instrument sets of the model are exogenous and properly specified. The null hypotheses of the Sargan and Hansen tests assume the over-identification restriction of instruments is valid. Rejection of the null of the Sargan and Hansen tests suggests that the instrument set used in the system GMM model is valid or exogenous.

In the GMM dynamic models, most of the coefficients of 1-year lagged PP agency costs are positive and statistically significant, suggesting that past PP agency costs significantly contribute to controlling for unobserved historical factors in the relationship between PP agency costs and EM. This empirical evidence strongly supports the arguments of Wintoki et al. (2012) that there is a dynamic nature inherent in CG circumstances. For two-step GMM, standard errors are typically downward biased (Blundell & Bond, 1998), thus this study employs the Windmeijer (2005) finite-sample correction for the two-step covariance matrix.

Table 9-15 PPincome-EM model, two-step system GMM, dynamic model

VARIABLES	(1a)			(1b)		
	PPincome			PPincome		
		z	P>z		z	P>z
Lagged PPincome	0.873***	4.95	0.000	0.604**	2.47	0.013
	(0.176)			(0.245)		
EM1	8.65e-07	0.80	0.426			
	(1.09e-06)					
EM2				-1.48e-06	-1.49	0.137
				(9.95e-07)		
board_size	5.11e-06	1.35	0.178	-9.73e-06	-0.92	0.360
	(3.80e-06)			(1.06e-05)		
board_independence	-4.09e-07	-0.05	0.960	-5.63e-06	-0.31	0.755
	(8.18e-06)			(1.80e-05)		
firm_size	-1.50e-06*	-1.81	0.070	8.08e-07	0.23	0.819
	(8.28e-07)			(3.53e-06)		
leverage	-3.61e-07	-0.23	0.815	-2.96e-06	-1.20	0.230
	(1.55e-06)			(2.47e-06)		
CEOduality	-8.83e-07	-0.76	0.450	-6.12e-07	-0.33	0.742
	(1.17e-06)			(1.86e-06)		
Constant	5.91e-06	0.36	0.717	5.56e-07	0.01	0.994
	(1.63e-05)			(7.64e-05)		
Industry dummy	Yes			Yes		
Stock exchange dummy	Yes			Yes		
Year dummy	Yes			Yes		
Observations	8,261			10,140		
Number of stock	1,641			1,991		
Number of instruments	34			31		
Wald chi2	913.97			52.87		
Prob > chi2	0.000			0.000		
AR(1)		-4.80	0.000		-3.31	0.001
AR(2)		1.00	0.319		0.77	0.441
Sargan test (chi)		7.64	0.177		3.83	0.281
Hansen test(chi)		7.38	0.194		0.28	0.963

Note: This table reports the results of the dynamic two-step system GMM regression of PP costs (PPincome) on lag 1 of the dependent variable, EM proxies, and other control variables. Asterisks of *, **, ***, indicate significance at the 10%, 5% and 1% level, respectively. The Windmeijer-corrected standard errors are reported in parentheses. The z-statistics are reported for a large sample size, on the basis of Windmeijer-corrected standard errors. The industry dummy, stock exchange dummy, and year dummy are treated as exogenous. The other variables are treated as endogenous. Lag2 and beyond of the endogenous variables are employed as instruments.

Table 9-16 PPdivpayout-EM model, two-step system GMM, dynamic model

VARIABLES	(2a)			(2b)		
	PPdivpayout			PPdivpayout		
		z	P>z		z	P>z
Lagged PPdivpayout	0.714***	3.28	0.001	0.885***	3.79	0.000
	(0.218)			(0.234)		
EM1	-0.401	-0.96	0.335			
	(0.416)					
EM2				0.216	1.28	0.202
				(0.169)		
board_size	0.0550	0.05	0.961	0.495	0.52	0.601
	(1.123)			(0.945)		
board_independence	-0.838	-0.46	0.647	-1.530	-0.79	0.432
	(1.828)			(1.947)		
firm_size	0.359	1.14	0.256	0.219*	1.92	0.055
	(0.316)			(0.114)		
leverage	0.491	1.22	0.221	0.00654	0.02	0.982
	(0.401)			(0.285)		
CEOduality	0.202	0.58	0.561	0.197	0.54	0.589
	(0.347)			(0.366)		
Constant	-0.0488	-0.01	0.989	-6.076**	-2.17	0.030
	(3.656)			(2.803)		
Industry dummy	yes			yes		
Stock exchange dummy	yes			yes		
Year dummy	yes			yes		
Observations	12,384			15,591		
Number of stock	2,017			2,484		
Number of instruments	35			35		
Wald chi2	734.83			392.29		
Prob > chi2	0.000			0.000		
AR(1)		-4.81	0.000		-5.22	0.000
AR(2)		3.55	0.000		3.60	0.000
AR(3)		0.34	0.732		0.86	0.388
Sargan test (chi2)		6.81	0.449		4.95	0.666
Hansen test (chi2)		5.71	0.574		4.03	0.777

Note: This table reports the results of the dynamic two-step system GMM regression of PP costs (PPdivpayout) on lag 1 of the dependent variable, EM proxies, and other control variables. Asterisks of *, **, ***, indicate significance at the 10%, 5% and 1% level, respectively. The Windmeijer-corrected standard errors are reported in parentheses. The z-statistics are reported for a large sample size, on the basis of Windmeijer-corrected standard errors. The industry dummy, stock exchange dummy, and year dummy are treated as exogenous. The other variables are treated as endogenous. Lag3 and beyond of the endogenous variables are employed as instruments.

Table 9-17 PPdivsale-EM model, two-step system GMM, dynamic model

VARIABLES	(3a)			(3b)		
	PPdivsale			PPdivsale		
		z	P>z		z	P>z
Lagged PPdivsale	0.695***	4.64	0.000	0.577***	4.90	0.000
	(0.150)			(0.118)		
EM1	-0	-0.05	0.962			
	(8.22e-11)					
EM2				-0.00432	-0.77	0.441
				(0.00561)		
board_size	0.00504	0.23	0.822	-0.00257	-0.09	0.928
	(0.0224)			(0.0284)		
board_independence	-0.0822	-0.52	0.601	-0.139	-1.56	0.118
	(0.157)			(0.0886)		
firm_size	-0.000469	-0.04	0.966	0.00180	0.24	0.808
	(0.0111)			(0.00742)		
leverage	-0.00858	-0.36	0.718	0.00313	0.33	0.741
	(0.0238)			(0.00945)		
CEOduality	-0.00904	-0.67	0.500	-0.0185*	-1.70	0.089
	(0.0134)			(0.0109)		
Constant	0			-0.160	-0.68	0.496
	(0)			(0.236)		
Industry dummy	Yes			yes		
Stock exchange dummy	Yes			yes		
Year dummy	Yes			yes		
Observations	12,434			15,569		
Number of stock	2,020			2,484		
Number of instruments	33			31		
Wald chi2	2245.88			356.23		
Prob > chi2	0.000			0.000		
AR(1)		-5.41	0.000		-5.38	0.000
AR(2)		0.75	0.454		0.44	0.658
Sargan test (chi2)		4.81	0.186		2.37	0.499
Hansen test (chi2)		5.15	0.161		1.35	0.716

Note: This table reports the results of the dynamic two-step system GMM regression of PP costs (PPdivsale) on lag 1 of the dependent variable, EM proxies, and other control variables. Asterisks of *, **, ***, indicate significance at the 10%, 5% and 1% level, respectively. The Windmeijer-corrected standard errors are reported in parentheses. The z-statistics are reported for a large sample size, on the basis of Windmeijer-corrected standard errors. The industry dummy, stock exchange dummy, and year dummy are treated as exogenous. The other variables are treated as endogenous. Lag2 and beyond of the endogenous variables are employed as instruments.

Table 9-18 PPdivmar-EM model, two-step system GMM, dynamic model

VARIABLES	(4a)			(4b)		
	PPdivmar			PPdivmar		
		z	P>z		z	P>z
Lagged PPdivmar	0.952***	8.25	0.000	0.764*	1.85	0.064
	(0.115)			(0.413)		
EM1	-0.529*	-1.74	0.081			
	(0.303)					
EM2				-0.664	-1.26	0.209
				(0.529)		
board_size	-1.162	-1.25	0.211	-0.00807	-0.18	0.857
	(0.930)			(0.0448)		
board_independence	-1.720	-1.10	0.270	0.0982	0.75	0.453
	(1.559)			(0.131)		
firm_size	0.452*	1.77	0.076	-0.00214	-0.51	0.608
	(0.255)			(0.00417)		
leverage	0.175	0.59	0.554	0.00955	0.95	0.344
	(0.296)			(0.0101)		
CEOduality	-0.184	-0.66	0.511	0.0184	0.84	0.399
	(0.279)			(0.0219)		
Constant	-1.402	-0.45	0.653	0.213*	1.83	0.067
	(3.122)			(0.116)		
Industry dummy	yes			yes		
Stock exchange dummy	yes			yes		
Year dummy	yes			yes		
Observations	11,820			14,854		
Number of stock	2,006			2,473		
Number of instruments	33			31		
Wald chi2	2225.31			1741.49		
Prob > chi2	0.000			0.000		
AR(1)		-5.16	0.000		-2.41	0.016
AR(2)		1.11	0.266		0.86	0.390
Sargan test (chi2)		3.39	0.640		1.46	0.692
Hansen test (chi2)		1.46	0.918		1.27	0.736

Note: This table reports the results of the dynamic two-step system GMM regression of PP costs (PPdivmar) on lag 1 of the dependent variable, EM proxies, and other control variables. Asterisks of *, **, ***, indicate significance at the 10%, 5% and 1% level, respectively. The Windmeijer-corrected standard errors are reported in parentheses. The z-statistics are reported for a large sample size, on the basis of Windmeijer-corrected standard errors. The industry dummy, stock exchange dummy, and year dummy are treated as exogenous. The other variables are treated as endogenous. Lag2 and beyond of the endogenous variables are employed as instruments.

Table 9-19 PPdivcf-EM model, two-step system GMM, dynamic model

VARIABLES	(5a)			(5b)		
	PPdivcf			PPdivcf		
		z	P>z		z	P>z
Lagged PPdivcf	0.198	0.68	0.494	0.536*	1.78	0.076
	(0.290)			(0.302)		
EM1	-0.194	-1.37	0.170			
	(0.141)					
EM2				0.995	0.20	0.841
				(4.953)		
board_size	0.251	0.67	0.506	0.633	1.39	0.165
	(0.377)			(0.456)		
board_independence	0.139	0.24	0.812	2.391	1.03	0.302
	(0.584)			(2.316)		
firm_size	0.241**	2.08	0.038	0.0331	0.52	0.600
	(0.116)			(0.0632)		
leverage	0.104	1.12	0.263	-0.0372	-0.17	0.861
	(0.0924)			(0.213)		
CEOduality	0.0138	0.13	0.893	-0.0193	-0.12	0.901
	(0.102)			(0.156)		
Constant	-1.663	-1.61	0.108	-2.836	-1.57	0.116
	(1.036)			(1.802)		
Industry dummy	yes			yes		
Stock exchange dummy	yes			yes		
Year dummy	yes			yes		
Observations	12,383			15,732		
Number of stock	2,017			2,484		
Number of instruments	35			35		
Wald chi2	173.04			274.35		
Prob > chi2	0.000			0.000		
AR(1)		-2.33	0.020		2.91	0.004
AR(2)		0.58	0.559		1.49	0.137
Sargan test (chi2)		6.77	0.453		2.83	0.900
Hansen test (chi2)		4.30	0.744		3.65	0.819

Note: This table reports the results of the dynamic two-step system GMM regression of PP costs (PPdivcf) on lag 1 of the dependent variable, EM proxies, and other control variables. Asterisks of *, **, ***, indicate significance at the 10%, 5% and 1% level, respectively. The Windmeijer-corrected standard errors are reported in parentheses. The z-statistics are reported for a large sample size, on the basis of Windmeijer-corrected standard errors. The industry dummy, stock exchange dummy, and year dummy are treated as exogenous. The other variables are treated as endogenous. Lag2 and beyond of the endogenous variables are employed as instruments.

Table 9-20 PPdivearn-EM model, two-step system GMM, dynamic model

VARIABLES	(6a)			(6b)		
	PPdivearn			PPdivearn		
		z	P>z		z	P>z
Lagged PPdivearn	0.624**	2.48	0.013	0.754***	3.14	0.002
	(0.252)			(0.240)		
EM1	-0.407	-1.28	0.201			
	(0.319)					
EM2				0.0714	0.56	0.576
				(0.128)		
board_size	-0.286	-0.33	0.740	0.494	0.68	0.498
	(0.861)			(0.728)		
board_independence	-0.0753	-0.06	0.956	-0.161	-0.11	0.909
	(1.356)			(1.407)		
firm_size	0.382	1.54	0.123	0.136	1.58	0.115
	(0.248)			(0.0863)		
leverage	0.414	1.31	0.189	0.0251	0.11	0.913
	(0.315)			(0.228)		
CEOduality	0.0290	0.11	0.916	0.0315	0.11	0.913
	(0.276)			(0.289)		
Constant	0.987	0.35	0.726	-3.898	-1.41	0.158
	(2.810)			(2.763)		
Industry dummy	yes			yes		
Stock exchange dummy	yes			yes		
Year dummy	yes			yes		
Observations	12,384			15,591		
Number of stock	2,017			2,484		
Number of instruments	35			35		
Wald chi2	537.16			484.57		
Prob > chi2	0.000			0.000		
AR(1)		-3.94	0.000		-4.60	0.000
AR(2)		2.46	0.014		2.76	0.006
AR(3)		0.69	0.491		1.18	0.237
Sargan test (chi2)		9.97	0.191		8.38	0.137
Hansen test (chi2)		7.66	0.364		5.36	0.374

Note: This table reports the results of the dynamic two-step system GMM regression of PP costs (PPdivearn) on lag 1 of the dependent variable, EM proxies, and other control variables. Asterisks of *, **, ***, indicate significance at the 10%, 5% and 1% level, respectively. The Windmeijer-corrected standard errors are reported in parentheses. The z-statistics are reported for a large sample size, on the basis of Windmeijer-corrected standard errors. The industry dummy, stock exchange dummy, and year dummy are treated as exogenous. The other variables are treated as endogenous.Lag3 and beyond of the endogenous variables are employed as instruments.

The dynamic GMM model presents different estimators compared to the static fixed-effect OLS and GLS models. Tables 9-15, 9-16, 9-17, 9-18, 9-19, and 9-20 report the results of two-step system GMM conducted on six different measurements of PP agency costs. Table 9-15 reports the model that uses the income measurement of PP agency costs (PPincome) as the dependent variable, and uses EM metrics combined with other control variables as explanatory variables. In each PP agency costs proxy, two different EM measurements (EM1 and EM2) are applied. It is noticeable that both of the EM estimators no longer suggest a significant impact on PPincome in the GMM dynamic model. The other five PP agency costs models using dividend measurements also present consistent results.

Tables 9-15 to 9-20 show that all of the significant coefficients on EM estimator estimated in the static model have become insignificant in the two-step system GMM model. The OLS and GLS static models can lead to biased and inconsistent results with the presence of endogenous explanatory variables, but the dynamic GMM model is not susceptible to the endogeneity issue. According to the Hausman test, the explanatory variables in this study are endogenous; therefore, the GMM estimation is more reliable for interpretation purposes and more appropriate to draw conclusions from.

In Table 9-18 where the PPdivmar ratio is used as the dependent variable, EM1 shows a negative association with the PP cost proxy, and is significant at the 10% level (coefficient of -.529, p-value = 0.081). This suggests the increase in EM1 is positively and significantly associated with the severity of PP agency conflicts. However, this result is not supported by the other dividend measurement of PP costs, and lacks robustness to draw any conclusion.

In light of the recent techniques developed to address the endogeneity issues that are prevalent in CG studies, the potential biases in the static model cast doubt on conclusions drawn without addressing the endogeneity issue. Overall, in comparison to the static model, the results of the two-step system GMM model suggest that engagement in EM activities in China does not play an important role in explaining the agency costs of companies.

9.4 Multivariate analysis

This section uses multivariate statistics to test the overall impact of EM combined with other independent variables on the dependent variables set of PP agency costs. The four tests used are Wilks' Lambda, Pillai's Trace, Hotelling-Lawley trace, and Roy's greatest root.

Table 9-21 Multivariate test

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Source	EM1			EM2			
		F	Prob>F		F	Prob>F	
W	0.6249***	116.24	0.0000	0.5839***	177.06	0.0000	a
P	0.3969***	99.60	0.0000	0.4511***	150.94	0.0000	a
L	0.5657***	132.47	0.0000	0.6541***	202.31	0.0000	a
R	0.4981***	700.45	0.0000	0.5557***	1031.90	0.0000	u
Residual	8437			11141			

Note: This table reports the results of multivariate statistics, where W = Wilks' lambda; L = Lawley-Hotelling trace; P = Pillai's trace; R = Roy's largest root; e = exact, a = approximate, u = upper bound on F. Multivariate statistics test the joint impact of the set of explanatory variables on the group of dependent variables. Rejection of the null indicates significance.

The F statistics of the multivariate tests are presented in Table 9-21. Columns (2)-(4) report the test results of EM1 combined with the other control variables on the set of combined dependent variables. Columns (5)-(7) report the test results of EM2 combined with the other control variables on the set of combined dependent variables. The results of all four multivariate analyses show that the set of

independent variables (EM and controlling variables) jointly has a significant influence on the set of dependent variables (PP agency costs).

9.5 Robustness check

This section conducts a robustness check on the estimations reported in Section 9.2.4. A robustness check uses an alternative measurement of discretionary accruals. As discussed in Chapter 5, the first EM proxy, EM1, is discretionary accruals estimated using a time-series approach. In this section, discretionary accruals, labelled EM3, are identified using a cross-sectional model, and re-estimated using the two-step system GMM model[10] to check whether the results remain consistent. As with EM1, the absolute value of discretionary accruals estimated cross-sectionally (EM3) is computed to measure the degree of EM.

As reported in Tables 9-22, 9-23, 9-24, 9-25, 9-26, and 9-27, the coefficients of 1-year lagged PP agency costs are positive and statistically significant, suggesting that past PP agency costs significantly contribute to controlling for unobserved historical factors in the relationship between PP agency costs and EM. This is consistent with the results reported in Section 9.2 using the other two EM proxies, and provides strong evidence of the dynamic nature inherent in CG circumstances.

---

[10] The fixed-effect OLS and GLS result of PP/EM3 model is available in Appendix 6 and Appendix 8. The fixed-effect OLS is chosen based on the Hausman test, which is available in Appendix 4.

Table 9-22 Robustness check of the relationship between PPincome and EM estimated using cross-sectional analysis: two-step system GMM estimation

(1)	(2)	(3)	(4)
VARIABLES	PPincome		
		z	P>z
Lagged PPincome	0.790***	3.96	0.000
	(0.280)		
EM3	1.61e-06	0.97	0.330
	(1.65e-06)		
board_size	-1.82e-06	-0.32	0.748
	(9.27e-06)		
board_independence	-1.02e-05	-0.61	0.541
	(2.07e-05)		
firm_size	-5.50e-07	0.13	0.895
	(2.80e-06)		
leverage	-1.61e-06	-0.75	0.453
	(2.39e-06)		
CEOduality	6.10e-07	0.54	0.586
	(1.41e-06)		
Constant	0		
	(0)		
Industry dummy	yes		
Stock exchange dummy	yes		
Year dummy	yes		
Observations	8,315		
Number of stock	1,649		
Number of instruments	30		
Wald chi2(27)	68.62		
Prob > chi2	0.000		
AR(1)		-3.01	0.003
AR(2)		1.33	0.183
Sargan test (chi2)		0.87	0.352
Habseb test (chi2)		0.30	0.583

Note: This table reports the results of the dynamic two-step system GMM regression of PP costs (PPincome) on lag 1 of the dependent variable, EM proxy, and other control variables. Discretionary accrual estimated through cross-sectional analysis is used as an EM proxy. Asterisks of *, **, ***, indicate significance at the 10%, 5% and 1% level, respectively. The Windmeijer-corrected standard errors are reported in parentheses. The z-statistics are reported for a large sample size, on the basis of Windmeijer-corrected standard errors. The industry dummy, stock exchange dummy, and year dummy are treated as exogenous. The other variables are treated as endogenous. Lag2 and beyond of the endogenous variables are employed as instruments.

Table 9-23 Robustness check of the relationship between PPdivpayout and EM estimated using cross-sectional analysis: two-step system GMM estimation

(1)	(2)	(3)	(4)
VARIABLES	PPdivpayout		
		z	P>z
Lagged PPdivpayout	0.706***	3.21	0.001
	(0.220)		
EM3	-0.484	-1.08	0.280
	(0.448)		
board_size	0.122	0.11	0.913
	(1.118)		
board_independence	-0.728	-0.38	0.703
	(1.912)		
firm_size	0.423	1.26	0.208
	(0.336)		
leverage	0.524	1.17	0.242
	(0.448)		
CEOduality	0.171	0.48	0.631
	(0.355)		
Constant	0.180	0.04	0.964
	(4.023)		
Industry dummy	Yes		
Stock exchange dummy	Yes		
Year dummy	Yes		
Observations	12,398		
Number of stock	2,018		
Number of instruments	35		
Wald chi2(27)	716.15		
Prob > chi2	0.00		
AR(1)		-4.79	0.000
AR(2)		3.27	0.001
AR(3)		0.66	0.511
Sargan test (chi2)		8.79	0.268
Hansen test (chi2)		7.04	0.425

Note: This table reports the results of the dynamic two-step system GMM regression of PP costs (PPdivpayout) on lag 1 of the dependent variable, EM proxy, and other control variables. Discretionary accrual estimated through cross-sectional analysis is used as an EM proxy. Asterisks of *, **, ***, indicate significance at the 10%, 5% and 1% level, respectively. The Windmeijer-corrected standard errors are reported in parentheses. The z-statistics are reported for a large sample size, on the basis of Windmeijer-corrected standard errors. The industry dummy, stock exchange dummy, and year dummy are treated as exogenous. The other variables are treated as endogenous. Lag3 and beyond of the endogenous variables are employed as instruments.

Table 9-24 Robustness check of the relationship between PPdivsale and EM estimated using cross-sectional analysis: two-step system GMM estimation

(1)	(2)	(3)	(4)
VARIABLES	PPdivsale		
		z	P>z
Lagged PPdivsale	0.637***	6.33	0.000
	(0.101)		
EM3	6.59e-11	0.99	0.323
	(6.67e-11)		
board_size	0.00320	0.12	0.901
	(0.0257)		
board_independence	-0.397**	-2.41	0.016
	(0.165)		
firm_size	-0.00885	-0.75	0.455
	(0.0119)		
leverage	0.00191	0.06	0.949
	(0.0298)		
CEOduality	-0.0205**	-2.11	0.035
	(0.00971)		
Constant	0.307	1.29	0.197
	(0.238)		
Industry dummy	Yes		
Stock exchange dummy	Yes		
Year dummy	Yes		
Observations	12,455		
Number of stock	2,021		
Number of instruments	33		
Wald chi2(27)	395.94		
Prob > chi2	0.000		
AR(1)		-6.36	0.000
AR(2)		0.56	0.576
Sargan test (chi2)		5.40	0.145
Hansen test (chi2)		3.85	0.278

Note: This table reports the results of the dynamic two-step system GMM regression of PP costs (PPdivsale) on lag 1 of the dependent variable, EM proxy, and other control variables. Discretionary accrual estimated through cross-sectional analysis is used as an EM proxy. Asterisks of *, **, ***, indicate significance at the 10%, 5% and 1% level, respectively. The Windmeijer-corrected standard errors are reported in parentheses. The z-statistics are reported for a large sample size, on the basis of Windmeijer-corrected standard errors. The industry dummy, stock exchange dummy, and year dummy are treated as exogenous. The other variables are treated as endogenous. Lag2 and beyond of the endogenous variables are employed as instruments.

Table 9-25 Robustness check of the relationship between PPdivmar and EM estimated using cross-sectional analysis: two-step system GMM estimation

(1)	(2)	(3)	(4)
VARIABLES	PPdivmar		
		z	P>z
Lagged PPdivmar	1.424***	3.16	0.002
	(0.451)		
EM3	-0.592	-1.35	0.177
	(0.438)		
board_size	-0.980	-0.47	0.636
	(2.070)		
board_independence	-5.171	-1.05	0.292
	(4.911)		
firm_size	1.077**	2.29	0.022
	(0.469)		
leverage	-0.196	-0.26	0.794
	(0.750)		
CEOduality	-0.292	-0.60	0.546
	(0.483)		
Constant	-16.66*	-1.72	0.086
	(9.700)		
Industry dummy	yes		
Stock exchange dummy	yes		
Year dummy	yes		
Observations	11,839		
Number of stock	2,010		
Number of instruments	31		
Wald chi2(27)	736.24		
Prob > chi2	0.000		
AR(1)		-3.53	0.000
AR(2)		1.37	0.172
Sargan test (chi2)		0.73	0.866
Hansen test (chi2)		0.29	0.962

Note: This table reports the results of the dynamic two-step system GMM regression of PP costs (PPdivmar) on lag 1 of the dependent variable, EM proxy, and other control variables. Discretionary accrual estimated through cross-sectional analysis is used as an EM proxy. Asterisks of *, **, ***, indicate significance at the 10%, 5% and 1% level, respectively. The Windmeijer-corrected standard errors are reported in parentheses. The z-statistics are reported for a large sample size, on the basis of Windmeijer-corrected standard errors. The industry dummy, stock exchange dummy, and year dummy are treated as exogenous. The other variables are treated as endogenous. Lag2 and beyond of the endogenous variables are employed as instruments.

Table 9-26 Robustness check of the relationship between PPdivcf and EM estimated using cross-sectional analysis: two-step system GMM estimation

(1)	(2)	(3)	(4)
VARIABLES	PPdivcf		
		z	P>z
Lagged PPdivcf	0.264	0.68	0.497
	(0.388)		
EM3	-0.0234	-0.10	0.917
	(0.225)		
board_size	0.255	0.52	0.602
	(0.489)		
board_independence	-0.685	-0.84	0.399
	(0.812)		
firm_size	0.0868	0.49	0.625
	(0.177)		
leverage	-0.0888	-0.40	0.692
	(0.224)		
CEOduality	0.0648	0.42	0.678
	(0.156)		
Constant	-2.621	-1.27	0.204
	(2.063)		
Industry dummy	yes		
Stock exchange dummy	yes		
Year dummy	yes		
Observations	12,397		
Number of stock	2,018		
Number of instruments	35		
Wald chi2(27)	166.40		
Prob > chi2	0.000		
AR(1)		-1.81	0.070
AR(2)		0.66	0.507
Sargan test (chi2)		4.87	0.676
Hansen test (chi2)		4.75	0.690

Note: This table reports the results of the dynamic two-step system GMM regression of PP costs (PPdivcf) on lag 1 of the dependent variable, EM proxy, and other control variables. Discretionary accrual estimated through cross-sectional analysis is used as an EM proxy. Asterisks of *, **, ***, indicate significance at the 10%, 5% and 1% level, respectively. The Windmeijer-corrected standard errors are reported in parentheses. The z-statistics are reported for a large sample size, on the basis of Windmeijer-corrected standard errors. The industry dummy, stock exchange dummy, and year dummy are treated as exogenous. The other variables are treated as endogenous. Lag2 and beyond of the endogenous variables are employed as instruments.

Table 9-27 Robustness check of the relationship between PPdivearn and EM estimated using cross-sectional analysis: two-step system GMM estimation

(1)	(2)	(3)	(4)
VARIABLES	PPdivearn		
		z	P>z
Lagged PPdivearn	0.491**	2.23	0.026
	(0.220)		
EM3	-0.107	-0.37	0.709
	(0.287)		
board_size	0.141	0.17	0.866
	(0.831)		
board_independence	-0.855	-0.59	0.552
	(1.439)		
firm_size	0.154	0.70	0.484
	(0.221)		
leverage	0.234	0.69	0.491
	(0.340)		
CEOduality	0.00519	0.02	0.985
	(0.279)		
Constant	-1.920	-0.72	0.472
	(2.672)		
Industry dummy	yes		
Stock exchange dummy	yes		
Year dummy	yes		
Observations	12,398		
Number of stock	2,018		
Number of instruments	35		
Wald chi2(27)	501.45		
Prob > chi2	0.000		
AR(1)		-4.12	0.000
AR(2)		2.19	0.028
AR(3)		0.40	0.688
Sargan test (chi2)		10.73	0.151
Hansen test (chi2)		7.98	0.334

Note: This table reports the results of the dynamic two-step system GMM regression of PP costs (PPdivearn) on lag 1 of the dependent variable, EM proxy, and other control variables. Discretionary accrual estimated through cross-sectional analysis is used as an EM proxy. Asterisks of *, **, ***, indicate significance at the 10%, 5% and 1% level, respectively. The Windmeijer-corrected standard errors are reported in parentheses. The z-statistics are reported for a large sample size, on the basis of Windmeijer-corrected standard errors. The industry dummy, stock exchange dummy, and year dummy are treated as exogenous. The other variables are treated as endogenous. Lag3 and beyond of the endogenous variables are employed as instruments.

9.6 Summary

To address the second research question developed in Chapter 4, this chapter examined the relationship between PP agency costs and EM in listed companies of mainland China.

In this chapter, firstly, static models were used to test the PP/EM relation. The fixed-effect OLS selected by applying the Hausman test, and GLS were used to run regressions on a static model. The results of the static model show significant coefficients on EM, suggesting that engagement in EM has a significant impact on PP agency costs.

However, the fixed effect OLS and GLS models fail to accommodate potential endogeneity issues, and endogeneity does present in this study, according to the DWH test conducted in subsection 9.2.3. Therefore, in addition to the static model, the dynamic two-step system GMM estimation was used to take the endogeneity issue into account, and to avoid spurious regression. Based on agency theory, Jiraporn et al. (2008) relate EM with PA agency costs, and find a significant negative relationship between EM and PA agency costs using a static model. The empirical evidence reported in Chapter 8 demonstrates that failing to take account of the endogeneity issue may lead to biased estimations.

This chapter extended Jiraporn et al. (2008) work by taking PP agency costs into consideration. This is because China, as one of the emerging economies, is characterized by a weak CG system and weak legal protection of minority shareholders. In addition, the ownership of Chinese listed companies is highly concentrated, meaning that minority shareholders' interests can be easily expropriated by controlling shareholders. Therefore, in addition to PA agency costs, PP agency costs are major concerns in CG in China.

The findings of this chapter are consistent with the conclusion of chapter 8 on the PA/EM relationship This chapter showed that in the static model, significant results are obtained, but after moving to the dynamic model, the significant signs reduce to insignificant levels. A robustness test was conducted using an alternative EM proxy. In the robustness test, discretionary accruals estimated using cross-sectional approachl were used in the dynamic model to run a regression against six different PP agency costs proxies. The robustness test results showed consistent results to the models using the other two EM proxies. Therefore, this chapter established there was an insignificant PP/EM relationship and provided evidence that CG studies that fail to take the dynamic nature of CG variables into account can be biased.

CHAPTER 10 CONCLUSION

10.1 Analysis

In this thesis, the relationship between earnings management and agency costs was investigated in both static and dynamic modelling frameworks. This thesis focused on two different types of agency costs: principal-agent and principal-principal agency costs.

Using a static model, the fixed-effect OLS and GLS estimators produced mostly significant relationships between AC and EM. However, in the dynamic model using the two-step system GMM estimator, almost all the significant results weakened into insignificance. A summary of the empirical findings using different models is presented in Table 10-1. The changes in the results suggest that using a static model without addressing endogeneity issues can lead to spurious regressions and biased interpretation.

Table 10-1 A summary of the empirical findings of the thesis

		Static model				Dynamic model		
		Fix-effect OLS		GLS		Two-step system GMM		
		EM1	EM2	EM1	EM2	EM1	EM2	EM3
PA	PAasset	-*	-***	-***	-***	Ø	Ø	Ø
	PAsga	+***	+***	+***	+***	Ø	Ø	Ø
PP	PPincome	Ø	+***	Ø	+***	Ø	Ø	Ø
	PPdivpayout	-***	+***	-**	+***	Ø	Ø	Ø
	PPdivsale	Ø	+***	-***	+***	Ø	Ø	Ø
	PPdivmar	-*	Ø	-***	+**	-*	Ø	Ø
	PPdivcf	-**	Ø	-***	+***	Ø	Ø	Ø
	PPdivearn	-***	+***	-***	+***	Ø	Ø	Ø

This table reports the comparisons between static model results and dynamic model results. Symbols (+), (-), and (Ø) represent positive, negative, and no significant relationships respectively. Asterisks of *, **, ***, indicate significance at the 10%, 5% and 1% level, respectively.

In the dynamic model, the lagged value of the dependent variable was included as an explanatory variable, and the results showed that the lagged value was positively

and significantly related to the current value of the dependent variable. This led to an important finding that there is a dynamic nature inherent in the CG context, CG variables tend to be persistent and slow-changing, and past CG variables have significant influence on the current one.

10.2 Contribution and implication

To the best of my knowledge, this study is the first attempt to investigate the relationship between EM and two different types of agency costs in China. Specifically, this study investigated the relationship between EM, principal-agent and principal-principal agency costs. Principal-agent agency costs are the traditional focus of agency theory, which originated in the developed market with a mostly dispersed ownership structure, a well-regulated financial market, a developed legal system and strong shareholder protection. Unlike the developed markets, in emerging markets, principal-principal agency costs are prevalent due to highly concentrated ownership structures and weak protection of shareholders. In China, the conflict between majority shareholders and minority shareholders is an important subject to study in terms of CG.

This study examined whether EM reduces or exacerbates agency costs (AC) in China, where companies suffer from agency problems. It used both static and dynamic models to test the AC/EM nexus. The results indicated a significant and positive relationship between AC and EM, based on the static model, which suggested opportunistic EM in China. These results are consistent with the suggestions in the literature that EM can be used opportunistically by managers (e.g., Dechow & Sloan, 1991; Guidry et al., 1999; Healy, 1985; Holthausen et al., 1995). However, there was an insignificant relationship between AC and EM when the dynamic model that takes into account endogeneity issues was used. Therefore,

the results suggested that engagement in EM has no significant influence on AC in China. Furthermore, board size, board independence, firm size, leverage, and CEO duality, which are conventionally thought to be important in explaining AC, do not appear to have a significant impact.

This study contributes to the existing literature in two ways. First, it extends the literature beyond developed markets by providing the first empirical evidence of the role of EM in agency conflicts in China, and shows that there is no significant relationship between AC and EM. As AC is a fundamental problem in CG worldwide, this study is expected to be of interest to regulatory and supervisory authorities, investors, and financial analysts. The findings are inconsistent with what is implied by Agency theory, suggesting that CG in China is different, and conventional western market theory may not fully incorporate the CG dilemma in emerging economies. Therefore, in agreement with researchers such as Young et al. (2004), this study suggests that creative solutions need to be explored by countries with emerging economies, to resolve their particular agency conflicts under their own specific institutional contexts. This finding indicates fruitful avenues for future research. Second, this study adds new empirical evidence to support the growing literature on concerns about endogeneity issues in corporate governance studies. Consistent with the prior studies of Wintoki et al. (2012) and Schultz et al. (2010), this study has demonstrated that failing to take endogeneity issues into account can lead to spurious results. Therefore, caution should be exercised when making policy implications based on empirical results that fail to address endogeneity issues. The results of this study should be of great interest to academics involved in researching CG topics that have inherited dynamic natures and endogeneity issues.

10.3 Future research

Despite the contributions mentioned above, this study is subject to certain limitations, many of which may indicate fruitful avenues for future research. First, this study investigated the linkage between EM and agency costs, and the results of the two-step system GMM dynamic model suggest that EM does not have a significant role in mitigating or exacerbating agency conflicts. If EM is not used to influence agency conflicts, it would be interesting for future research to undertake surveys or interviews to explore the management incentives behind EM and what role EM may play in firm performance.

Second, comparisons between more countries or regions could be interesting. Although this study found insignificant linkage between EM and agency costs in mainland China, this may not be the case elsewhere. Leuz, Nanda, and Wysocki (2003) studied EM across 31 countries and found systematic differences in EM across clusters of countries. It would be interesting to expand the current study to more countries and see how the linkage differs in response to different CG circumstances and institutional contexts. Also, the research area of this study focused on mainland China. It is very likely that the Chinese Special Administrative Regions, such as Hong Kong and Macao, would give different results, as Special Administrative Regions have separate political systems from mainland China and operate under a capitalist economy. Investigating the situation in more countries or regions in the future will deepen our understanding about EM, agency conflict and CG.

10.4 Summary

This chapter has concluded the thesis with a summary of the findings, contributions, and limitations. The interests of this thesis were three-fold: (a) whether there is a

significant relationship between EM and agency costs in companies listed in mainland China; (b) whether this relationship persists when the dynamic nature inherent in this relationship is taken into consideration; and (c) whether the PA/EM and PP/EM relationships differ.

The main findings of this thesis suggest that when static modeling approaches are applied to investigate the relationship between EM, PA, and PP agency costs, the results indicated that EM is significantly related to both PA and PP agency costs. However, in the dynamic modeling framework, the relationship was insignificant. Therefore, according to the dynamic model, the relationship between EM and PA and PP agency costs is subject to endogeneity issues.

This thesis contributes to the CG literature in at least two ways. First, to the best of my knowledge, this is the first study to investigate the relationship between EM and agency costs in China. Considering the highly concentrated ownership structure and the fact that China is the largest emerging economy, this study decomposed agency costs into PA and PP costs and examined their relationship to the extent of EM separately. Second, this study used advanced model specification and estimation to take control of the endogeneity issue that is prevalent in corporate governance study.

As discussed earlier in this chapter, this study is subject to several limitations. For example, one could expand the investigation in this study to different and diverse markets and seek to understand the differences. The limitations from which the current study suffers provide immense opportunities for future research endeavours.

REFERENCES

Agrawal, A., & Nagarajan, N. J. (1990). Corporate capital structure, agency costs, and ownership control: The case of all equity firms. *The Journal of Finance, 45*(4), 1325-1331.

Aguilera, R. V., & Cuervo-Cazurra, A. (2004). Codes of good governance worldwide: What is the trigger? *Organization Studies, 25*(3), 415-443.

Aguilera, R. V., Filatotchev, I., Gospel, H., & Jackson, G. (2008). An organizational approach to comparative corporate governance: Costs, contingencies, and complementarities. *Organization Science, 19*(3), 475-492.

Aguilera, R. V., & Jackson, G. (2003). The cross-national diversity of corporate governance: Dimensions and determinants. *Academy of Management Review, 28*(3), 447-465.

Aharony, J., Wang, J., & Yuan, H. (2010). Tunneling as an incentive for earnings management during the IPO process in China. *Journal of Accounting and Public Policy, 29*(1), 1-26.

Ahern, K. R., & Dittmar, A. K. (2012). The changing of the boards: The impact on firm valuation of mandated female board representation. *The Quarterly Journal of Economics, 127*(1), 137-197.

Ahmed, A. S., & Duellman, S. (2007). Accounting conservatism and board of director characteristics: An empirical analysis. *Journal of Accounting and Economics, 43*(2), 411-437.

Alexander, J. A., Fennell, M. L., & Halpern, M. T. (1993). Leadership instability in hospitals: The influence of board-CEO relations and organizational growth and decline. *Administrative Science Quarterly*, 74-99.

Allen, F., Qian, J., & Qian, M. (2005). Law, finance, and economic growth in China. *Journal of Financial Economics, 77*(1), 57-116.

Anderson, T. W., & Hsiao, C. (1982). Formulation and estimation of dynamic models using panel data. *Journal of Econometrics, 18*(1), 47-82.

Ang, J. S., Cole, R. A., & Lin, J. W. (2000). Agency costs and ownership structure. *The Journal of Finance, 55*(1), 81-106.

Antoniou, A., Guney, Y., & Paudyal, K. (2008). The determinants of capital structure: capital market-oriented versus bank-oriented institutions. *Journal of Financial and Quantitative Analysis, 43*(01), 59-92.

Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *The Review of Economic Studies, 58*(2), 277-297.

Arelleno, M., & Bover, O. (1995). Another Look at instrumental variable estimation of error component models. *Journal of Econometrics, 68*(1), 29-51.

Ariff, A. M., Ibrahim, M. K., & Othman, R. (2007). Determinants of firm level governance: Malaysian evidence. *Corporate Governance, 7*(5), 562-573.

Arya, A., Glover, J. C., & Sunder, S. (2003). Are unmanaged earnings always better for shareholders? *Accounting Horizons, 17*, 111.

Asteriou, D., & Hall, S. G. (2015). *Applied econometrics*. Basingstoke, United Kingdom: Palgrave Macmillan.

Backman, M. (1999). *Asian eclipse: Exposing the dark side of business in Asia*. New York, NY: J. Wiley

Bai, C.-E., Du, Y., Tao, Z., & Tong, S. Y. (2004). Local protectionism and regional specialization: evidence from China's industries. *Journal of International Economics, 63*(2), 397-417.

Baker, G. P., & Hall, B. J. (2004). CEO incentives and firm size. *Journal of Labor Economics, 22*(4), 767-798.

Baliga, B. R., Moyer, R. C., & Rao, R. S. (1996). CEO duality and firm performance: What's the fuss? *Strategic Management Journal, 17*(1), 41-53.

Ball, R., & Brown, P. (1968). An empirical evaluation of accounting income numbers. *Journal of Accounting Research*, 159-178.

Banchit, A., & Locke, S. (2011). Principal-principal conflicts: Is it a big problem in ASEAN 4 markets? *International Review of Business Research Papers, 7*(5), 1-15.

Barclay, M. J., & Holderness, C. G. (1989). Private benefits from control of public corporations. *Journal of Financial Economics, 25*(2), 371-395.

Barth, M. E., Landsman, W. R., & Lang, M. H. (2008). International accounting standards and accounting quality. *Journal of Accounting Research, 46*(3), 467-498.

Bartov, E., Gul, F. A., & Tsui, J. S. (2000). Discretionary-accruals models and audit qualifications. *Journal of Accounting and Economics, 30*(3), 421-452.

Bates, T. W., Kahle, K. M., & Stulz, R. M. (2009). Why do US firms hold so much more cash than they used to? *The Journal of Finance, 64*(5), 1985-2021.

Bauer, R., Frijns, B., Otten, R., & Tourani-Rad, A. (2008). The impact of corporate governance on corporate performance: Evidence from Japan. *Pacific-Basin Finance Journal, 16*(3), 236-251.

Baum, C. F. (2010). Models for longitudinal, panel data and mixed models. Retrieved from http://www.economics.adelaide.edu.au/research/seminars/Stata_Lecture3.pdf

Beaver, W. H. (1968). The information content of annual earnings announcements. *Journal of Accounting Research, 6*, 67-92.

Bebchuk, L., Cohen, A., & Ferrell, A. (2008). What matters in corporate governance? *The Review of Financial Studies, 22*(2), 783-827.

Bebchuk, L. A., & Cohen, A. (2005). The costs of entrenched boards. *Journal of Financial Economics, 78*(2), 409-433.

Becker, C. L., DeFond, M. L., Jiambalvo, J., & Subramanyam, K. (1998). The Effect of Audit Quality on Earnings Management. *Contemporary Accounting Research, 15*(1), 1-24.

Beidleman, C. R. (1973). Income smoothing: The role of management. *The Accounting Review, 48*(4), 653-667.

Beiner, S., Drobetz, W., Schmid, F., & Zimmermann, H. (2004). Is board size an independent corporate governance mechanism? *Kyklos, 57*(3), 327-356.

Beneish, M. D. (1999). Incentives and penalties related to earnings overstatements that violate GAAP. *The Accounting Review, 74*(4), 425-457.

Beneish, M. D. (2001). Earnings management: A perspective. *Managerial Finance, 27*(12), 3-17.

Bergstresser, D., & Philippon, T. (2006). CEO incentives and earnings management. *Journal of Financial Economics, 80*(3), 511-529.

Berle, A. A., & Means, G. G. C. (1991). *The modern corporation and private property*. New York, NY: Transaction Publishers.

Bertrand, M., Mehta, P., & Mullainathan, S. (2002). Ferreting out tunneling: An application to Indian business groups. *The Quarterly Journal of Economics, 117*(1), 121-148.

Bhagat, S., & Bolton, B. (2008). Corporate governance and firm performance. *Journal of Corporate Finance, 14*(3), 257-273.

Black, B. S., Jang, H., & Kim, W. (2006). Does corporate governance affect firm value? Evidence from Korea. *Journal of Law Economics and Organization, 222*(2), 366-413.

Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics, 87*(1), 115-143.

Blundell, R., & Bond, S. (2000). GMM estimation with persistent panel data: An application to production functions. *Econometric Reviews, 19*(3), 321-340.

Bound, J., Jaeger, D. A., & Baker, R. M. (1995). Problems with instrumental variables estimation when the correlation between the instruments and the endogenous explanatory variable is weak. *Journal of the American Statistical Association, 90*(430), 443-450.

Boyer, C., Ciccone, S. J., & Zhang, W. (2006). Insider trading and earnings reporting: Evidence of managerial optimism or opportunism? *Advances in Investment Analysis and Portfolio Management*(2), 123-146.

Boyer, R., & Hollingsworth, J. R. (1997). From national embeddedness to spatial and institutional nestedness. In R. Boyer & J. R. Hollingsworth (Eds.), *Contemporary capitalism: The embeddedness of institutions* (pp. 433-484). Cambridge, United Kingdom: Cambridge University Press.

Brada, J. C. (1996). Privatization is transition: Or is it? *The Journal of Economic Perspectives, 10*(2), 67-86.

Brander, J. A., & Poitevin, M. (1992). Managerial compensation and the agency costs of debt finance. *Managerial and Decision Economics, 13*(1), 55-64.

Breusch, T. S., & Pagan, A. R. (1979a). A simple test for heteroscedasticity and random coefficient variation. *Econometrica: Journal of the Econometric Society, 47*(5), 1287-1294.

Breusch, T. S., & Pagan, A. R. (1979b). A simple test for heteroscedasticity and random coefficient variation. *Econometrica: Journal of the Econometric Society*, 1287-1294.

Brockman, P., & Unlu, E. (2009). Dividend policy, creditor rights, and the agency costs of debt. *Journal of Financial Economics, 92*(2), 276-299.

Brooks, C. (2014). *Introductory econometrics for finance*. New York, NY: Cambridge University Press.

Brown, L. D., & Han, J. C. (1992). The impact of annual earnings announcements on convergence of beliefs. *Accounting Review*, 862-875.

Brown, P., Beekes, W., & Verhoeven, P. (2011). Corporate governance, accounting and finance: A review. *Accounting & Finance, 51*(1), 96-172.

Bryman, A., & Bell, E. (2011). *Business research methods* (3rd ed.). Oxford, United Kingdom: Oxford University Press.

Burgstahler, D., & Dichev, I. (1997). Earnings management to avoid earnings decreases and losses. *Journal of Accounting and Economics, 24*(1), 99-126.

Burrell, G., & Morgan, G. (2007). *Sociological paradigms and organisational analysis: Elements of the sociology of corporate life*. Aldershot, England: Ashgate Publishing Limited.

Bushman, R. M., & Smith, A. J. (2001). Financial accounting information and corporate governance. *Journal of Accounting and Economics, 32*(1), 237-333.

Callao, S., & Jarne, J. I. (2010). Have IFRS affected earnings management in the European Union? *Accounting in Europe, 7*(2), 159-189.

Carcello, J. V., Hermanson, D. R., Neal, T. L., & Riley, R. A. (2002). Board characteristics and audit fees. *Contemporary Accounting Research, 19*(3), 365-384.

Carney, M., & Gedajlovic, E. (2002). The coupling of ownership and control and the allocation of financial resources: Evidence from Hong Kong. *Journal of Management Studies, 39*(1), 123-146.

Central Government of China. (2008). *State-owned Assets Law of The People's Republic of China*. Retrieved from http://www.gov.cn/flfg/2008-10/28/content_1134207.htm.

Chang, E. C., & Wong, S. M. (2004). Political control and performance in China's listed firms. *Journal of Comparative Economics, 32*(4), 617-636.

Chen, C., Lin, C., & Lin, Y. (2008). Audit partner tenure, audit firm tenure, and discretionary accruals: Does long auditor tenure impair earnings quality? *Contemporary Accounting Research, 25*(2), 415-445.

Chen, G., Firth, M., Gao, D. N., & Rui, O. M. (2006). Ownership structure, corporate governance, and fraud: Evidence from China. *Journal of Corporate Finance, 12*(3), 424-448.

Chen, G., Firth, M., & Xu, L. (2009). Does the type of ownership control matter? Evidence from China's listed companies. *Journal of Banking & Finance, 33*(1), 171-181.

Chen, K. C., & Yuan, H. (2004). Earnings management and capital resource allocation: Evidence from China's accounting-based regulation of rights issues. *The Accounting Review, 79*(3), 645-665.

Chen, S., Wang, Y., & Zhao, Z. (2007). *Evidence of asset impairment reversals from China: Economic reality or earnings management?* Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=998234

Chen, X., Lee, C. W. J., & Li, J. (2008). Government assisted earnings management in China. *Journal of Accounting and Public Policy, 27*(3), 262-274.

Chen, Y., & Young, M. N. (2010). Cross-border mergers and acquisitions by Chinese listed companies: A principal–principal perspective. *Asia Pacific Journal of Management, 27*(3), 523-539.

Cheung, Y.-L., Jing, L., Lu, T., Rau, P. R., & Stouraitis, A. (2009). Tunneling and propping up: An analysis of related party transactions by Chinese listed companies. *Pacific-Basin Finance Journal, 17*(3), 372-393.

Cho, D. S., & Kim, J. (2003). Determinants in introduction of outside directors in Korean companies. *Journal of International and Area Studies, 10*(1), 1-20.

Choi, J. Y., Salandro, D., & Shastri, K. (1988). On the estimation of bid-ask spreads: Theory and evidence. *Journal of Financial and Quantitative Analysis, 23*(02), 219-230.

Chou, D., Gombola, M., & Liu, F.-Y. (2006). Earnings management and stock performance of reverse leveraged buyouts. *Journal of Financial and Quantitative Analysis, 41*(02), 407-438.

Chtourou, S. M., Bedard, J., & Courteau, L. (2001). *Corporate governance and earnings management*. Retrieved from University of Laval, Quebec, Canada: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=275053

Chung, R., Firth, M., & Kim, J.-B. (2002). Institutional monitoring and opportunistic earnings management. *Journal of Corporate Finance, 8*(1), 29-48.

Clarke, D. C. (2003). Corporate governance in China: An overview. *China Economic Review, 14*, 494-507.

Clarke, J., & Shastri, K. (2000). *On information asymmetry metrics*. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=251938

Clarkson, P. M., Dontoh, A., Richardson, G., & Sefcik, S. E. (1992). The voluntary inclusion of earnings forecasts in IPO prospectuses. *Contemporary Accounting Research, 8*(2), 601-616.

Coffee Jr, J. C. (2004). Gatekeeper failure and reform: The challenge of fashioning relevant reforms. *Boston University Law Review, 84*(2), 301.

Cohen, D. A., Dey, A., & Lys, T. Z. (2008). Real and accrual-based earnings management in the pre-and post-Sarbanes-Oxley periods. *The Accounting Review, 83*(3), 757-787.

Collis, J., & Hussey, R. (2013). *Business Research: a practical guide for undergraduate and postgraduate students*. Basingstoke, United Kingdom: Palgrave Macmillan.

Conger, J. A., Finegold, D., & Lawler, E. E. (1998). Appraising boardroom performance. *Harvard Business Review, 76*, 136-164.

Cook, R. D., & Weisberg, S. (1983). Diagnostics for heteroscedasticity in regression. *Biometrika, 70*(1), 1-10.

Creswell, J. W. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. Los Angeles, CA: SAGE Publications.

Dahya, J., Dimitrov, O., & McConnell, J. J. (2008). Dominant shareholders, corporate boards, and corporate value: A cross-country analysis. *Journal of Financial Economics, 87*(1), 73-100.

Daily, C. M., & Dalton, D. R. (1997). Separate, but not independent: Board leadership structure in large corporations. *Corporate Governance: An International Review, 5*(3), 126-136.

Daily, C. M., Dalton, D. R., & Cannella, A. A. (2003). Corporate governance: Decades of dialogue and data. *Academy of Management Review, 28*(3), 371-382.

Daines, R., & Klausner, M. (2001). Do IPO charters maximize firm value? Antitakeover protection in IPOs. *Journal of Law, Economics, and Organization, 17*(1), 83-120.

Dalton, D. R., Daily, C. M., Johnson, J. L., & Ellstrand, A. E. (1999). Number of directors and financial performance: A meta-analysis. *Academy of Management Journal, 42*(6), 674-686.

Dalton, D. R., Hitt, M. A., Certo, S. T., & Dalton, C. M. (2007). The fundamental agency problem and its mitigation: Independence, equity, and the market for corporate control. *The Academy of Management Annals, 1*(1), 1-64.

Davies, M., & Schlitzer, B. (2008). The impracticality of an international "one size fits all" corporate governance code of best practice. *Managerial Auditing Journal, 23*(6), 532-544.

DeAngelo, H., DeAngelo, L., & Skinner, D. J. (1994). Accounting choice in troubled companies. *Journal of Accounting and Economics, 17*(1), 113-143.

DeAngelo, L. E. (1986). Accounting numbers as market valuation substitutes: A study of management buyouts of public stockholders. *Accounting Review*, 400-420.

Dechow, P. M. (1994). Accounting earnings and cash flows as measures of firm performance: The role of accounting accruals. *Journal of Accounting and Economics, 18*(1), 3-42.

Dechow, P. M., & Skinner, D. J. (2000). Earnings management: Reconciling the views of accounting academics, practitioners, and regulators. *Accounting Horizons, 14*(2), 235-250.

Dechow, P. M., & Sloan, R. G. (1991). Executive incentives and the horizon problem: An empirical investigation. *Journal of Accounting and Economics, 14*(1), 51-89.

Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1995). Detecting earnings management. *Accounting Review*, 193-225.

Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1996). Causes and consequences of earnings manipulation: An analysis of firms subject to enforcement actions by the SEC. *Contemporary Accounting Research, 13*(1), 1-36.

DeFond, M. L., & Jiambalvo, J. (1994). Debt covenant violation and manipulation of accruals. *Journal of Accounting and Economics, 17*(1), 145-176.

Deloitte. (2017). Board of supervisors & stakeholders. Retrieved from https://www2.deloitte.com/cn/en/pages/risk/solutions/cg-supervisory-committee-and-shareholders.html

Demski, J. S. (1998). Performance measure manipulation. *Contemporary Accounting Research, 15*(3), 261-285.

Demski, J. S., Patell, J. M., & Wolfson, M. A. (1984). Decentralized choice of monitoring systems. *Accounting Review*, 16-34.

DePamphilis, D. (2009). *Mergers, acquisitions, and other restructuring activities*. Oxford, United Kingdom: Academic Press.

Dharwadkar, B., George, G., & Brandes, P. (2000). Privatization in emerging economies: An agency theory perspective. *Academy of Management Review, 25*(3), 650-669.

Ding, Y., Zhang, H., & Zhang, J. (2007). Private vs state ownership and earnings management: Evidence from Chinese listed companies. *Corporate Governance: An International Review, 15*(2), 223-238.

Djelic, M.-L. (2007). *Exporting the American model: The post-war transformation of European business*. Oxford, United Kingdom: Oxford University Press.

Dodd, J. L., & Rozycki, J. J. (2008). *Accounting theory: Conceptual issues in a political and economic environment*. Los Angeles, CA: Sage Publications.

Dougherty, C. (2011). *Introduction to econometrics*. Oxford, United Kingdom: Oxford University Press.

Du, X., Lai, S., & Pei, H. (2016). Do Women Top Managers Always Mitigate Earnings Management? Evidence from China. *China Journal of Accounting Studies, 4*(3), 308-338.

Dyck, A., & Zingales, L. (2004). Private benefits of control: An international comparison. *The Journal of Finance, 59*(2), 537-600.

Dye, R. A. (1988). Earnings management in an overlapping generations model. *Journal of Accounting Research, 26*(2), 195-235.

Eisenberg, T., Sundgren, S., & Wells, M. T. (1998). Larger board size and decreasing firm value in small firms. *Journal of Financial Economics, 48*(1), 35-54.

Erickson, M., & Wang, S.-w. (1999). Earnings management by acquiring firms in stock for stock mergers. *Journal of Accounting and Economics, 27*(2), 149-176.

EViews. (2017). Panel unit root testing.   Retrieved from http://www.eviews.com/help/helpintro.html#page/content%2Fadvtimeser-Panel_Unit_Root_Testing.html%23

Faccio, M., Lang, L. H., & Young, L. (2001). Dividends and expropriation. *American Economic Review, 91*(1), 54-78.

Fama, E. F. (1980). Agency problems and the theory of the firm. *The Journal of Political Economy, 88*(2), 288-307.

Fama, E. F., & Jensen, M. C. (1983). Separation of ownership and control. *Journal of Law and Economics*, 301-325.

Fan, J. P., Wong, T. J., & Zhang, T. (2007). Politically connected CEOs, corporate governance, and Post-IPO performance of China's newly partially privatized firms. *Journal of Financial Economics, 84*(2), 330-357.

Feldman, M. S., & Rafaeli, A. (2002). Organizational routines as sources of connections and understandings. *Journal of Management Studies, 39*(3), 309-331.

Fernando, S., & Lawrence, S. (2014). A theoretical framework for CSR practices: integrating legitimacy theory, stakeholder theory and institutional theory. *Journal of Theoretical Accounting Research, 10*(1), 149-178.

Field, L. C., & Karpoff, J. M. (2002). Takeover defenses of IPO firms. *The Journal of Finance, 57*(5), 1857-1889.

Fields, T. D., Lys, T. Z., & Vincent, L. (2001). Empirical research on accounting choice. *Journal of Accounting and Economics, 31*(1), 255-307.

Finkelstein, S., & D'aveni, R. A. (1994). CEO duality as a double-edged sword: How boards of directors balance entrenchment avoidance and unity of command. *Academy of Management Journal, 37*(5), 1079-1108.

Firstenberg, P. B., & Malkiel, B. G. (1994). The twenty-first century boardroom: Who will be in charge? *Sloan Management Review, 36*(1), 27.

Flannery, M. J., & Hankins, K. W. (2013). Estimating dynamic panel models in corporate finance. *Journal of Corporate Finance, 19*, 1-19.

Foo, Y.-B., & Zain, M. M. (2010). Board independence, board diligence and liquidity in Malaysia: A research note. *Journal of Contemporary Accounting & Economics, 6*(2), 92-100.

Frankel, R. M., Johnson, M. F., & Nelson, K. K. (2002). The relation between auditors' fees for nonaudit services and earnings management. *The Accounting Review, 77*(s-1), 71-105. doi:10.2308/accr.2002.77.s-1.71

Friedman, E., Johnson, S., & Mitton, T. (2003). Propping and tunneling. *Journal of Comparative Economics, 31*(4), 732-750.

Gao, L., & Kling, G. (2008). Corporate governance and tunneling: Empirical evidence from China. *Pacific-Basin Finance Journal, 16*(5), 591-605.

Gaver, J. J., & Gaver, K. M. (1993). Additional evidence on the association between the investment opportunity set and corporate financing, dividend, and compensation policies. *Journal of Accounting and Economics, 16*(1), 125-160.

George, T. J., Kaul, G., & Nimalendran, M. (1991). Estimation of the bid-ask spread and its components: A new approach. *Review of Financial Studies, 4*(4), 623-656.

Gillan, S., & Starks, L. T. (1998). *A survey of shareholder activism: Motivation and empirical evidence*. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=663523

Gillan, S. L. (2006). Recent developments in corporate governance: An overview. *Journal of Corporate Finance, 12*(3), 381-402.

Gilson, S. C. (1990). Bankruptcy, boards, banks, and blockholders: Evidence on changes in corporate ownership and control when firms default. *Journal of Financial Economics, 27*(2), 355-387.

Glen, J., Lee, K., & Singh, A. (2001). Persistence of profitability and competition in emerging markets. *Economics Letters, 72*(2), 247-253.

Gompers, P., Ishii, J., & Metrick, A. (2003). Corporate governance and equity prices. *The Quarterly Journal of Economics, 118*(1), 107-156.

Goncharov, I., & Zimmermann, J. (2007). Do accounting standards influence the level of earnings management? Evidence from Germany. *Die Unternehmung, 61*(5), 371-388.

Goodstein, J., Gautam, K., & Boeker, W. (1994). The effects of board size and diversity on strategic change. *Strategic Management Journal, 15*(3), 241-250.

Gormley, T. A., & Matsa, D. A. (2013). Common errors: How to (and not to) control for unobserved heterogeneity. *The Review of Financial Studies, 27*(2), 617-661.

Granger, C. W. (2001). Investigating causal relations by econometric models and cross-spectral methods. *Econometric Society Monographs, 33*, 31-47.

Gray, R., Kouhy, R., & Lavers, S. (1995). Corporate social and environmental reporting: a review of the literature and a longitudinal study of UK disclosure. *Accounting, Auditing & Accountability Journal, 8*(2), 47-77.

Greene, W. H. (2012). *Econometric analysis* (7th ed.). Upper Saddle River, NJ: Pearson Prentice Hall.

Grossman, S. J., & Hart, O. D. (1982). Corporate financial structure and managerial incentives. In J.-J. Laffont (Ed.), *The economics of information and uncertainty* (pp. 107-140). Chicago, IL: University of Chicago Press.

Gschwandtner, A. (2005). Profit persistence in the 'very'long run: evidence from survivors and exiters. *Applied Economics, 37*(7), 793-806.

Guariglia, A., & Yang, J. (2016). A balancing act: managing financial constraints and agency costs to minimize investment inefficiency in the Chinese market. *Journal of Corporate Finance, 36*, 111-130.

Gugler, K., & Yurtoglu, B. B. (2003). Corporate governance and dividend pay-out policy in Germany. *European Economic Review, 47*(4), 731-758.

Guidry, F., Leone, A. J., & Rock, S. (1999). Earnings-based bonus plans and earnings management by business-unit managers. *Journal of Accounting and Economics, 26*(1), 113-142.

Guillen, M. F. (2000). Business groups in emerging economies: A resource-based view. *Academy of Management Journal, 43*(3), 362-380.

Gujarati, D. N. (2009). *Basic econometrics*. Boston, MA: Tata McGraw-Hill Education.

Guler, I., Guillén, M. F., & Macpherson, J. M. (2002). Global competition, institutions, and the diffusion of organizational practices: The international spread of ISO 9000 quality certificates. *Administrative Science Quarterly, 47*(2), 207-232.

Guthrie, J., & Parker, L. D. (1989). Corporate social reporting: a rebuttal of legitimacy theory. *Accounting and Business Research, 19*(76), 343-352.

Haniffa, R. M., & Cooke, T. E. (2005). The impact of culture and governance on corporate social reporting. *Journal of Accounting and Public Policy, 24*(5), 391-430.

Hansen, L. P. (1982). Large sample properties of generalized method of moments estimators. *Econometrica: Journal of the Econometric Society, 50*(4), 1029-1054.

Harford, J., Mansi, S. A., & Maxwell, W. F. (2008). Corporate governance and firm cash holdings in the US. *Journal of Financial Economics, 87*(3), 535-555.

Harris, M., & Raviv, A. (1988). Corporate control contests and capital structure. *Journal of Financial Economics, 20*, 55-86.

Harris, M., & Raviv, A. (2008). A theory of board control and size. *Review of Financial Studies, 21*(4), 1797-1832.

Hart, O. (1995). Corporate governance: some theory and implications. *The Economic Journal, 105*(430), 678-689.

Hauke, J., & Kossowski, T. (2011). Comparison of values of Pearson's and Spearman's correlation coefficients on the same sets of data. *Quaestiones Geographicae, 30*(2), 87-93.

Hausman, J. A. (1978). Specification tests in econometrics. *Econometrica: Journal of the Econometric Society*, 1251-1271.

Haw, I. M., Qi, D., Wu, D., & Wu, W. (2005). Market consequences of earnings management in response to security regulations in China. *Contemporary Accounting Research, 22*(1), 95-140.

Healy, P. M. (1985). The effect of bonus schemes on accounting decisions. *Journal of Accounting and Economics, 7*(1), 85-107.

Healy, P. M., Hutton, A. P., & Palepu, K. G. (1999). Stock performance and intermediation changes surrounding sustained increases in disclosure. *Contemporary Accounting Research, 16*(3), 485-520.

Healy, P. M., & Wahlen, J. M. (1999). A review of the earnings management literature and its implications for standard setting. *Accounting Horizons, 13*(4), 365-383.

Hewa Wellalage, N., & Locke, S. (2011a). Agency costs, ownership structure and corporate governance mechanisms: A case study in New Zealand unlisted small companies. *Journal of Business Systems, Governance and Ethics, 6*(3), 53-65.

Hewa Wellalage, N., & Locke, S. (2011b). Does CEO duality is really matter? Evidence from an emerging market. *Corporate Ownership & Control, 8*(4), 112-122.

Hill, C. W., & Jones, T. M. (1992). Stakeholder agency theory. *Journal of Management Studies, 29*(2), 131-154.

Hill, R. C., Griffiths, W. E., & Lim, G. C. (2008). *Principles of econometrics*. Hoboken, NJ: Wiley

Hillman, A. J., Cannella, A. A., & Paetzold, R. L. (2000). The resource dependence role of corporate directors: Strategic adaptation of board composition in response to environmental change. *Journal of Management Studies, 37*(2), 235-256.

Hillman, A. J., & Dalziel, T. (2003). Boards of directors and firm performance: Integrating agency and resource dependence perspectives. *Academy of Management Review, 28*(3), 383-396.

Ho, L. C. J., Liao, Q., & Taylor, M. (2015). Real and Accrual‐Based Earnings Management in the Pre‐ and Post‐IFRS Periods: Evidence from China. *Journal of International Financial Management & Accounting, 26*(3), 294-335.

Holthausen, R. W., Larcker, D. F., & Sloan, R. G. (1995). Annual bonus schemes and the manipulation of earnings. *Journal of Accounting and Economics, 19*(1), 29-74.

Holtz-Eakin, D., Newey, W., & Rosen, H. S. (1988). Estimating vector autoregressions with panel data. *Econometrica: Journal of the Econometric Society, 56*(6), 1371-1395.

Hoskisson, R. E., Eden, L., Lau, C. M., & Wright, M. (2000). Strategy in emerging economies. *Academy of Management Journal, 43*(3), 249-267.

Huson, M. (1997). *Does governance matter? Evidence from CaIPERS intervention*. Alberta, Canada: Institute for Financial Research, University of Alberta.

Ikram, A. (2013). *Industry-specific discretionary accruals and the accruals anomaly*. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2325722

Im, K. S., Pesaran, M. H., & Shin, Y. (2003). Testing for unit roots in heterogeneous panels. *Journal of Econometrics, 115*(1), 53-74.

Jaggi, B., Leung, S., & Gul, F. (2009). Family control, board independence and earnings management: Evidence based on Hong Kong firms. *Journal of Accounting and Public Policy, 28*(4), 281-300.

Jaggi, B., & Tsui, J. (2007). Insider trading, earnings management and corporate governance: empirical evidence based on Hong Kong firms. *Journal of International Financial Management & Accounting, 18*(3), 192-222.

Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. *The American economic review, 76*(2), 323-329.

Jensen, M. C. (1993). The modern industrial revolution, exit, and the failure of internal control systems. *The Journal of Finance, 48*(3), 831-880.

Jensen, M. C. (2004). The agency costs of overvalued equity and the current state of corporate finance. *European Financial Management, 10*(4), 549-565.

Jensen, M. C. (2005). Agency costs of overvalued equity. *Financial Management, 34*(1), 5-19.

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics, 3*(4), 305-360.

Jensen, M. C., & Meckling, W. H. (1979). *Theory of the firm: Managerial behavior, agency costs, and ownership structure*: Springer.

Jian, M., & Wong, T. (2004). *Earnings management and tunneling through related party transactions: evidence from Chinese corporate groups* (Chinese University of Hong Kong Working Paper). Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.201.1267&rep=rep1&type=pdf

Jian, M., & Wong, T. J. (2010). Propping through related party transactions. *Review of Accounting Studies, 15*(1), 70-105.

Jiang, F., & Kim, K. A. (2015). Corporate governance in China: A modern perspective. *Journal of Corporate Finance, 32*, 190-216.

Jiang, G., Lee, C. M., & Yue, H. (2010). Tunneling through intercorporate loans: The China experience. *Journal of Financial Economics, 98*(1), 1-20.

Jiraporn, P., Miller, G. A., Yoon, S. S., & Kim, Y. S. (2008). Is earnings management opportunistic or beneficial? An agency theory perspective. *International Review of Financial Analysis, 17*(3), 622-634.

John, K., & Senbet, L. W. (1998). Corporate governance and board effectiveness. *Journal of Banking & Finance, 22*(4), 371-403.

Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational Researcher, 33*(7), 14-26.

Jones, J. (1991). Earnings management during import relief investigations. *Journal of Accounting Research, 29*(2), 193-228.

Kao, J. L., Wu, D., & Yang, Z. (2009). Regulations, earnings management, and post-IPO performance: The Chinese evidence. *Journal of Banking & Finance, 33*(1), 63-76.

Kaplan, R. S. (1985). Evidence on the effect of bonus schemes on accounting procedure and accrual decisions. *Journal of Accounting and Economics, 7*(1), 109-113.

Kasznik, R. (1999). On the association between voluntary disclosure and earnings management. *Journal of Accounting Research, 37*(1), 57-81.

Kennedy, V. a., & Limmack, R. (1996). Takeover activity, CEO turnover, and the market for corporate control. *Journal of Business Finance & Accounting, 23*(2), 267-285.

Kim, K. A., Kitsabunnarat-Chatjuthamard, P., & Nofsinger, J. R. (2007). Large shareholders, board independence, and minority shareholder rights: Evidence from Europe. *Journal of Corporate Finance, 13*(5), 859-880.

Kim, W. S., & Sorensen, E. H. (1986). Evidence on the impact of the agency costs of debt on corporate debt policy. *Journal of Financial and Quantitative Analysis, 21*(2), 131-144.

Kinney Jr, W. R., & Libby, R. (2002). Discussion of the relation between auditors' fees for nonaudit services and earnings management. *The Accounting Review, 77*(s-1), 107-114.

Klapper, L. F., & Love, I. (2004). Corporate governance, investor protection, and performance in emerging markets. *Journal of Corporate Finance, 10*(5), 703-728.

Klein, A. (2002). Audit committee, board of director characteristics, and earnings management. *Journal of Accounting and Economics, 33*(3), 375-400.

Kothari, S. P., Leone, A. J., & Wasley, C. E. (2005). Performance matched discretionary accrual measures. *Journal of Accounting and Economics, 39*(1), 163-197.

Krause, R., Semadeni, M., & Cannella, A. A. (2014). CEO duality: A review and research agenda. *Journal of Management, 40*(1), 256-286.

Krishnaswami, S., & Subramaniam, V. (1999). Information asymmetry, valuation, and the corporate spin-off decision. *Journal of Financial Economics, 53*(1), 73-112.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. W. (1998). Law and finance. *Journal of Political Economy, 106*(6), 1113-1155.

La Porta, R., Lopez‐de‐Silanes, F., Shleifer, A., & Vishny, R. (2002). Investor protection and corporate valuation. *The Journal of Finance, 57*(3), 1147-1170.

La Porta, R., Lopez‐de‐Silanes, F., Shleifer, A., & Vishny, R. W. (2000). Agency problems and dividend policies around the world. *The Journal of Finance, 55*(1), 1-33.

Lambert, R. A. (1984). Income smoothing as rational equilibrium behavior. *Accounting Review, 59*(4), 604-618.

Lambert, R. A. (2001). Contracting theory and accounting. *Journal of Accounting and Economics, 32*(1), 3-87.

LaRiviere, J., McMahon, M., & Neilson, W. (2017). Shareholder protection and agency costs: An experimental analysis. *Management Science, 64*(7), 3108-3028.

Lasfer, M. A. (1999). Debt structure, agency costs and firm's size: An empirical investigation.   Retrieved from https://pdfs.semanticscholar.org/e3dd/dba5a143a1779c028923fc781341a7431347.pdf

Lazonick, W., & O'sullivan, M. (2000). Maximizing shareholder value: A new ideology for corporate governance. *Economy and Society, 29*(1), 13-35.

Lee, C.-W. J., Li, L. Y., & Yue, H. (2006). Performance, growth and earnings management. *Review of Accounting Studies, 11*(2-3), 305-334.

Leech, D., & Leahy, J. (1991). Ownership structure, control type classifications and the performance of large British companies. *The Economic Journal, 101*(409), 1418-1437.

Leuz, C., Nanda, D., & Wysocki, P. D. (2003). Earnings management and investor protection: an international comparison. *Journal of Financial Economics, 69*(3), 505-527.

Levin, A., Lin, C.-F., & Chu, C.-S. J. (2002). Unit root tests in panel data: Asymptotic and finite-sample properties. *Journal of Econometrics, 108*(1), 1-24.

Levitt, A. (1998). The numbers game. *The Certified Public Accountant Journal, 68*(12), 14-19.

Li, W., & Zhang, R. (2010). Corporate social responsibility, ownership structure, and political interference: Evidence from China. *Journal of Business Ethics, 96*(4), 631-645.

Li, Y., Niu, J., Zhang, R., & Largay, J. A. (2011). Earnings management and the accrual anomaly: Evidence from China. *Journal of International Financial Management & Accounting, 22*(3), 205-245.

Lin, P. T., Hutchinson, M. R., & Percy, M. (2009). *The role of the audit committee and institutional investors in constraining earnings management: evidence from Chinese firms listed in Hong Kong.* Paper presented at the Proceedings of Accounting & Finance Association of Australia & New Zealand Annual Conference 2009, James Cook University.

Lin, Z. J., Ming, L., & Xu, Z. (2006). The development of corporate governance in China. *Asia-Pacific Management Accounting Journal, 1*(1), 29-47.

Lindblom, C. K. (1994). *The implications of organizational legitimacy for corporate social performance and disclosure.* Paper presented at the Critical perspectives on accounting conference, New York, NY.

Lipton, M., & Lorsch, J. W. (1992). A modest proposal for improved corporate governance. *The Business Lawyer*, 59-77.

Lo, A. W., Wong, R. M., & Firth, M. (2010). Can corporate governance deter management from manipulating earnings? Evidence from related-party sales transactions in China. *Journal of Corporate Finance, 16*(2), 225-235.

Locke, S., & Duppati, G. (2014). Agency cost and corporate governance mechanisms in Indian state-owned companies and privately owned companies-a panel data analysis. *Corporate Ownership & Control, 11*(4), 8.

Loughran, T., & Ritter, J. R. (1995). The new issues puzzle. *The Journal of Finance, 50*(1), 23-51.

Louis, H., & Robinson, D. (2005). Do managers credibly use accruals to signal private information? Evidence from the pricing of discretionary accruals around stock splits. *Journal of Accounting and Economics, 39*(2), 361-380.

Love, I. (2010). Corporate governance and performance around the world: What we know and what we don't. *The World Bank Research Observer, 26*(1), 42-70.

Maddala, G. S., & Wu, S. (1999). A comparative study of unit root tests with panel data and a new simple test. *Oxford Bulletin of Economics and statistics, 61*(S1), 631-652.

Marquardt, C. A., & Wiedman, C. I. (2004). How are earnings managed? An examination of specific accruals. *Contemporary Accounting Research, 21*(2), 461-491.

Mathews, M. R. (1993). *Socially responsible accounting*. London, England: CRC Press.

McGrath, J. (2009). How CEOs work.   Retrieved from
     http://money.howstuffworks.com/ceo.htm

McKnight, P. J., & Weir, C. (2009). Agency costs, corporate governance
     mechanisms and ownership structure in large UK publicly quoted
     companies: A panel data analysis. *The Quarterly Review of Economics
     and Finance, 49*(2), 139-158.

McNichols, M., & Wilson, G. P. (1988). Evidence of earnings management from
     the provision for bad debts. *Journal of Accounting Research, 26*, 1-31.

Mehrhoff, J. (2009). *A solution to the problem of too many instruments in
     dynamic panel data GMM*. Retrieved from
     https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2785360

Miller, P. B., & Bahnson, P. R. (2002). Quality financial reporting. *Journal of
     Accountancy, 193*(4), 70.

Mishra, D. P., Heide, J. B., & Cort, S. G. (1998). Information asymmetry and
     levels of agency relationships. *Journal of Marketing Research*, 277-295.

Mitchell, T. (2008, April 2). Chinese boards' structure 'lead to confusion' [Press
     release]. Retrieved from https://www.ft.com/content/b81b7dc2-00d0-
     11dd-a0c5-000077b07658

Moir, L. (2001). What do we mean by corporate social responsibility? *Corporate
     Governance: The International Journal of Business in Society, 1*(2), 16-22.

Morck, R., Wolfenzon, D., & Yeung, B. (2005). Corporate governance, economic
     entrenchment and growth. *Journal of Economic Literature, 43*(3).

Morris, R. D. (1987). Signalling, agency theory and accounting policy choice.
     Accounting and Business Research, 18(69), 47-56.

Mulford, C. W., & Comiskey, E. E. (2002). The financial numbers game:
     detecting creative accounting practices. *Journal of Accountancy, 194*(6),
     88.

Muth, M., & Donaldson, L. (1998). Stewardship theory and board structure: A
     contingency approach. *Corporate Governance: An International Review,
     6*(1), 5-28.

Nelson, M. W., Elliott, J. A., & Tarpley, R. L. (2002). Evidence from auditors
     about managers' and auditors' earnings management decisions. *The
     Accounting Review, 77*(s-1), 175-202.

Nguyen, T., Locke, S., & Reddy, K. (2014). A dynamic estimation of governance
     structures and financial performance for Singaporean companies.
     Economic Modelling, 40, 1-11.

Ning, Y. (2009). The theoretical framework of earnings management. *Canadian
     Social Science, 1*(3), 32-38.

Noronha, C., Zeng, Y., & Vinten, G. (2008). Earnings management in China: An exploratory study. *Managerial Auditing Journal, 23*(4), 367-385.

O'Sullivan, N., & Wong, P. (1999). Board composition, ownership structure and hostile takeovers: Some UK evidence. *Accounting and Business Research, 29*(2), 139-155.

Parfet, W. U. (2000). Accounting subjectivity and earnings management: A preparer perspective. *Accounting Horizons, 14*(4), 481-488.

Peng, M. W. (2003). Institutional transitions and strategic choices. *Academy of Management Review, 28*(2), 275-296.

Peng, M. W., Lee, S.-H., & Wang, D. Y. (2005). What determines the scope of the firm over time? A focus on institutional relatedness. *Academy of Management Review, 30*(3), 622-633.

Peng, M. W., Wang, D. Y., & Jiang, Y. (2008). An institution-based view of international business strategy: A focus on emerging economies. *Journal of International Business Studies, 39*(5), 920-936.

Peng, M. W., & Zhou, J. Q. (2005). How network strategies and institutional transitions evolve in Asia. *Asia Pacific Journal of Management, 22*(4), 321-336.

Peng, S., & van der Laan Smith, J. (2010). Chinese GAAP and IFRS: An analysis of the convergence process. *Journal of International Accounting, Auditing and Taxation, 19*(1), 16-34.

Penman, S. H. (1996). The articulation of price-earnings ratios and market-to-book ratios and the evaluation of growth. *Journal of Accounting Research, 34*(2), 235-259.

Perry, S. E., & Williams, T. H. (1994). Earnings management preceding management buyout offers. *Journal of Accounting and Economics, 18*(2), 157-179.

Pham, P. K., Suchard, J.-A., & Zein, J. (2011). Corporate governance and alternative performance measures: evidence from Australian firms. *Australian Journal of Management, 36*(3), 371-386.

Pinkowitz, L., Stulz, R., & Williamson, R. (2006). Does the contribution of corporate cash holdings and dividends to firm value depend on governance? A cross‐country analysis. *The Journal of Finance, 61*(6), 2725-2751.

Porta, R., Lopez‐de‐Silanes, F., & Shleifer, A. (1999). Corporate ownership around the world. *The Journal of Finance, 54*(2), 471-517.

Qi, B., Lin, J. W., Tian, G., & Lewis, H. C. X. (2017). The impact of top management team characteristics on the choice of earnings management strategies: Evidence from China. *Accounting Horizons, 32*(1), 143-164.

Qian, Y. (2000). The process of China's market transition (1978-1998): The evolutionary, historical, and comparative perspectives. *Journal of Institutional and Theoretical Economics, 156*(1), 151-171.

Raheja, C. G. (2005). Determinants of board size and composition: A theory of corporate boards. *Journal of Financial and Quantitative Analysis, 40*(02), 283-306.

Rahman, R. A., & Ali, F. H. M. (2006). Board, audit committee, culture and earnings management: Malaysian evidence. *Managerial Auditing Journal, 21*(7), 783-804.

Rajagopalan, N., & Datta, D. K. (1996). CEO characteristics: does industry matter? *Academy of Management Journal, 39*(1), 197-215.

Rajgopal, S., Shivakumar, L., & Simpson, A. (2007). *A catering theory of earnings management*. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=991138

Rangan, S. (1998). Earnings management and the performance of seasoned equity offerings. *Journal of Financial Economics, 50*(1), 101-122.

Reddy, K., Locke, S., & Scrimgeour, F. (2010). The efficacy of principle-based corporate governance practices and firm financial performance: An empirical investigation. *International Journal of Managerial Finance, 6*(3), 190-219.

Renders, A., & Gaeremynck, A. (2012). Corporate governance, principal‐principal agency conflicts, and firm value in European listed companies. *Corporate Governance: An International Review, 20*(2), 125-143.

Renders, A., Gaeremynck, A., & Sercu, P. (2010). Corporate‐governance ratings and company performance: A cross‐European study. *Corporate Governance: An International Review, 18*(2), 87-106.

Riahi-Belkaoui, A., & Jones, S. (2004). *Accounting theory* (5th ed.). London, England: Nelson Thomson Learning.

Richardson, V. J. (2000). Information asymmetry and earnings management: Some evidence. *Review of Quantitative Finance and Accounting, 15*(4), 325-347.

Roberts, M. R., & Whited, T. M. (2012). Endogeneity in empirical corporate finance.

Roberts, M. R., & Whited, T. M. (2013). Endogeneity in empirical corporate finance. In G. M. Constantinides, M. Harris, & R. M. Stulz (Eds.), *Handbook of the economics of finance*. Oxford, England: Elsevier.

Ronen, J., & Yaari, V. (2008). *Earnings management: Emerging insights in theory, practice, and research* (3rd ed.). New York, NY: Springer.

Roodman, D. (2009). A note on the theme of too many instruments. *Oxford Bulletin of Economics and statistics, 71*(1), 135-158.

Roosenboom, P., van der Goot, T., & Mertens, G. (2003). Earnings management and initial public offerings: evidence from the Netherlands. *The International Journal of Accounting, 38*(3), 243-266.

Rosenstein, S., & Wyatt, J. G. (1990). Outside directors, board independence, and shareholder wealth. *Journal of financial economics, 26*(2), 175-191.

Ross, S. A. (1973). The economic theory of agency: The principal's problem. *The American Economic Review, 63*(2), 134-139.

Schipper, K. (1989). Commentary on earnings management. *Accounting Horizons, 3*(4), 91-102.

Schultz, E. L., Tan, D. T., & Walsh, K. D. (2010). Endogeneity and the corporate governance-performance relation. *Australian Journal of Management, 35*(2), 145-163.

Schulze, W. S., Lubatkin, M. H., Dino, R. N., & Buchholtz, A. K. (2001). Agency relationships in family firms: Theory and evidence. *Organization Science, 12*(2), 99-116.

Scott, W. R. (1997). *Financial accounting theory*: Englewood Cliffs, NJ: Prentice-Hall.

Scott, W. R. (2012). *Financial accounting theory* (6th ed.). Upper Saddle River, NJ: Prentice Hall

Scrimgeour, F., & Duppati, G. (2014). Corporate governance in the public sector: dimensions; guidelines and practice in India and New Zealand. *Corporate Ownership & Control, 11*(2), 364.

Seddighi, H. (2013). *Introductory econometrics: A practical approach*. Abingdon, England: Routledge.

Setia‐Atmaja, L. Y. (2009). Governance mechanisms and firm value: The impact of ownership concentration and dividends. *Corporate Governance: An International Review, 17*(6), 694-709.

Shan, Y. G. (2015). Value relevance, earnings management and corporate governance in China. *Emerging Markets Review, 23*, 186-207.

Shleifer, A., & Vishny, R. W. (1986). Large shareholders and corporate control. *Journal of Political Economy, 94*(3, Part 1), 461-488.

Shleifer, A., & Vishny, R. W. (1997). A survey of corporate governance. *The Journal of Finance, 52*(2), 737-783.

Sina Finance. (2006, November 29). The extract of SSE report on China corporate governance [Press release]. Retrieved from http://finance.sina.com.cn/stock/t/20061129/04121068845.shtml

Singh, M., & Davidson III, W. N. (2003). Agency costs, ownership structure and corporate governance mechanisms. *Journal of Banking & Finance, 27*(5), 793-816.

Sloan, R. G. (1996). Do stock prices fully reflect information in accruals and cash flows about future earnings? *Accounting Review, 71*(3), 289-315.

Smith, C. W., & Watts, R. L. (1982). Incentive and tax effects of executive compensation plans. *Australian Journal of Management, 7*(2), 139-157.

Sonnenfeld, J. A. (2002). What makes great boards great. *Harvard Business Review, 80*(9), 106-113.

Spiess, D. K., & Affleck-Graves, J. (1995). Underperformance in long-run stock returns following seasoned equity offerings. *Journal of Financial Economics, 38*(3), 243-267.

Staiger, D. O., & Stock, J. H. (1994). Instrumental variables regression with weak instruments. *Econometrica, 65*(3), 557-586.

State Council of the People's Republic of China. (2008). *Company law of the People's Republic of China*. Retrieved from http://www.gov.cn/flfg/2008-10/28/content_1134207.htm.

Stock, J. H., & Yogo, M. (2002). Testing for weak instruments in linear IV regression. In D. W. K. Andrews (Ed.), *Identification and inference for econometric models* (pp. 80-108). New York, NY: Cambridge University Press.

Stoll, H. R. (1989). Inferring the components of the bid‐ask spread: Theory and empirical tests. *The Journal of Finance, 44*(1), 115-134.

Stolowy, H., & Lebas, M. (2006). *Financial accounting and reporting: A global perspective*. London, England: Cengage Learning EMEA.

Stulz, R. (1988). Managerial control of voting rights: Financing policies and the market for corporate control. *Journal of Financial Economics, 20*, 25-54.

Su, Y., Xu, D., & Phan, P. H. (2008). Principal–principal conflict in the governance of the Chinese public corporation. *Management and Organization Review, 4*(1), 17-38.

Suchman, M. C. (1995). Managing legitimacy: Strategic and institutional approaches. *Academy of Management Review, 20*(3), 571-610.

Suh, Y. S. (1990). Communication and income smoothing through accounting method choice. *Management Science, 36*(6), 704-723.

Sun, N., Salama, A., Hussainey, K., & Habbash, M. (2010). Corporate environmental disclosure, corporate governance and earnings management. *Managerial Auditing Journal, 25*(7), 679-700.

Sundaramurthy, C., Mahoney, J. M., & Mahoney, J. T. (1997). Board structure, antitakeover provisions, and stockholder wealth. *Strategic Management Journal, 18*(3), 231-245.

Sweeney, A. P. (1994). Debt-covenant violations and managers' accounting responses. *Journal of Accounting and Economics, 17*(3), 281-308.

Tabachnick, B. G., Fidell, L. S., & Osterlind, S. J. (2007). *Using multivariate statistics* (5th ed.). Boston, MA: Allyn & Bacon/Pearson Education.

Tang, T., & Firth, M. (2011). Can book–tax differences capture earnings management and tax management? Empirical evidence from China. *The International Journal of Accounting, 46*(2), 175-204.

Teoh, S. H., Welch, I., & Wong, T. J. (1998a). Earnings management and the long‐run market performance of initial public offerings. *The Journal of Finance, 53*(6), 1935-1974.

Teoh, S. H., Welch, I., & Wong, T. J. (1998b). Earnings management and the underperformance of seasoned equity offerings. *Journal of Financial Economics, 50*(1), 63-99.

Tilling, M. V. (2004). *Refinements in legitimacy theory in social and environmental accounting*. Adelaide, Australia: School of Commerce, Flinders University.

Tolbert, P. S., & Zucker, L. G. (1983). Institutional sources of change in the formal structure of organizations: The diffusion of civil service reform, 1880-1935. *Administrative Science Quarterly*, 22-39.

Trueman, B., & Titman, S. (1988). An explanation for accounting income smoothing. *Journal of Accounting Research, 26*, 127-139. doi:10.2307/2491184

Tzur, J., & Yaari, V. L. (1999). Microstructure of firms' disclosure. *Review of Quantitative Finance and Accounting, 13*(4), 367-391.

Ullmann, A. A. (1985). Data in search of a theory: A critical examination of the relationships among social performance, social disclosure, and economic performance of US firms. *Academy of Management Review, 10*(3), 540-557.

United Nations Conference on Trade and Development. (2013). *World investment report 2013*. Retrieved from http://unctad.org/en/publicationslibrary/wir2013_en.pdf

United Nations Conference on Trade and Development. (2017). *World investment report 2017: Investment and the digital economy*. New York, NY: Author.

University of Washington. (2005). Generalized method of moments. Retrieved from https://faculty.washington.edu/ezivot/econ583/gmm.pdf

Vafeas, N. (1999). Board meeting frequency and firm performance. *Journal of financial economics, 53*(1), 113-142.

Van der Laan Smith, J., Adhikari, A., & Tondkar, R. H. (2005). Exploring differences in social disclosures internationally: A stakeholder perspective. *Journal of Accounting and Public Policy, 24*(2), 123-151.

Van Tendeloo, B., & Vanstraelen, A. (2005). Earnings management under German GAAP versus IFRS. *European Accounting Review, 14*(1), 155-180.

Verbeek, M. (2008). *A guide to modern econometrics* (3rd ed.). Hoboken, NJ: John Wiley & Sons.

Villalonga, B., & Amit, R. (2006). How do family ownership, control and management affect firm value? *Journal of Financial Economics, 80*(2), 385-417.

Vogelvang, B. (2005). *Econometrics: Theory and applications with Eviews*. Harlow, England: Pearson Education.

Wang, K., & Claiborne, M. C. (2008). Determinants and consequences of voluntary disclosure in an emerging market: evidence from China. *Journal of International Accounting, Auditing and Taxation, 17*(1), 14-30.

Wang, Y. (2013). 2012 年国有控股上市公司数量达 953 家 总市值占 A 股市场 51% [Press release: In 2012, the number of state-owned listed companies reached 953. The total market capitalization accounted for 51% of the A-share market]. Retrieved from http://www.cs.com.cn/sylm/jsbd/201301/t20130110_3813430.html

Wang, Y., Chen, S. K., Lin, B.-X., & Wu, L. (2008). The frequency and magnitude of earnings management in China. *Applied Economics, 40*(24), 3213-3225.

Warfield, T. D., Wild, J. J., & Wild, K. L. (1995). Managerial ownership, accounting choices, and informativeness of earnings. *Journal of Accounting and Economics, 20*(1), 61-91.

Watts, R. L., & Zimmerman, J. L. (1990). Positive accounting theory: A ten year perspective. *Accounting Review, 65*(1), 131-156.

Wei, G., & Geng, M. (2008). Ownership structure and corporate governance in China: Some current issues. *Managerial Finance, 34*(12), 934-952.

Weir, C., Laing, D., & McKnight, P. J. (2002). Internal and external governance mechanisms: their impact on the performance of large UK public companies. *Journal of Business Finance & Accounting, 29*(5‐6), 579-611.

Weisbach, M. S. (1988). Outside directors and CEO turnover. *Journal of Financial Economics, 20*, 431-460.

Welker, M. (1995). Disclosure policy, information asymmetry, and liquidity in equity markets. *Contemporary Accounting Research, 11*(2), 801-827.

262

White, H. (1980). A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica: Journal of the Econometric Society*, 817-838.

Wild, J. J., Subramanyam, K. R., & Halsey, R. F. (2007). *Financial statement analysis* (9th ed.). New York, NY: McGraw-Hill/Irwin.

Williams, R. (2015). Hteroskedasticity.   Retrieved from https://www3.nd.edu/~rwilliam/stats2/l25.pdf

Windmeijer, F. (2005). A finite sample correction for the variance of linear efficient two-step GMM estimators. *Journal of Econometrics, 126*(1), 25-51.

Wintoki, M. B., Linck, J. S., & Netter, J. M. (2012). Endogeneity and the dynamics of internal corporate governance. *Journal of Financial Economics, 105*(3), 581-606.

Wooldridge, J. M. (2001). Applications of generalized method of moments estimation. *The Journal of Economic Perspectives, 15*(4), 87-100.

Wright, M., Filatotchev, I., Hoskisson, R. E., & Peng, M. W. (2005). Strategy research in emerging economies: Challenging the conventional wisdom. *Journal of Management Studies, 42*(1), 1-33.

Wu, Y. W. (1997). Management buyouts and earnings management. *Journal of Accounting, Auditing & Finance, 12*(4), 373-389.

Xiao, J. Z., Dahya, J., & Lin, Z. (2004). A grounded theory exposition of the role of the supervisory board in China. *British Journal of Management, 15*(1), 39-55.

Xie, B., Davidson III, W. N., & DaDalt, P. J. (2003). Earnings management and corporate governance: The role of the board and the audit committee. *Journal of Corporate Finance, 9*(3), 295-316.

Xie, H. (2001). The mispricing of abnormal accruals. *The Accounting Review, 76*(3), 357-373.

Xu, L. C., Zhu, T., & Lin, Y. m. (2005). Politician control, agency problems and ownership reform. *Economics of Transition, 13*(1), 1-24.

Xu, X., & Wang, Y. (1999). Ownership structure and corporate governance in Chinese stock companies. *China Economic Review, 10*(1), 75-98.

Yan Lam, T., & Kam Lee, S. (2008). CEO duality and firm performance: Evidence from Hong Kong. *Corporate Governance: The International Journal of Business in Society, 8*(3), 299-316.

Yermack, D. (1996). Higher market valuation of companies with a small board of directors. *Journal of Financial Economics, 40*(2), 185-211.

Yi, A., & Davey, H. (2010). Intellectual capital disclosure in Chinese (mainland) companies. *Journal of Intellectual Capital, 11*(3), 326-347.

Yip, E., Van Staden, C., & Cahan, S. (2011). Corporate social responsibility reporting and earnings management: The role of political costs. *Australasian Accounting Business & Finance Journal, 5*(3), 17.

Yoon, S. S., & Miller, G. (2002). Earnings management of seasoned equity offering firms in Korea. *The International Journal of Accounting, 37*(1), 57-78.

Young, M. N., Ahlstrom, D., & Bruton, G. D. (2004). The globalization of corporate governance in East Asia: The "Transnational" solution. *Management International Review, 44*(2), 31-50.

Young, M. N., Peng, M. W., Ahlstrom, D., Bruton, G. D., & Jiang, Y. (2008). Corporate governance in emerging economies: A review of the principal–principal perspective. *Journal of Management Studies, 45*(1), 196-220.

Zattoni, A., & Cuomo, F. (2008). Why adopt codes of good governance? A comparison of institutional and efficiency perspectives. *Corporate Governance: An International Review, 16*(1), 1-15.

Zéghal, D., Chtourou, S., & Sellami, Y. M. (2011). An analysis of the effect of mandatory adoption of IAS/IFRS on earnings management. *Journal of International Accounting, Auditing and Taxation, 20*(2), 61-72.

Zhang, X., Tang, G., & Lin, Z. (2016). Managerial power, agency cost and executive compensation: An empirical study from China. *Chinese Management Studies, 10*(1), 119-137.

Zhao, Z., Anand, J., & Mitchell, W. (2005). A dual networks perspective on inter‐organizational transfer of R&D capabilities: International joint ventures in the Chinese automotive industry. *Journal of Management Studies, 42*(1), 127-160.

Zingales, L. (1998). Corporate governance. In P. Newman (Ed.), *New Palgrave dictionary of economics and the law*. New York, NY: Macmillan.

Zsohar, P. (2012). Short introduction to the generalized method of moments. *Hungarian Statistical Review, 16*, 150-170.

APPENDICES

Appendix 1 Summary of prior studies on earnings management

Study	Topic	Sample	Main findings	Major limitations
Aharony, Wang, and Yuan (2010)	Earnings management and tunneling during the IPO process in China.	198 newly listed Chinese IPO firms on the Shanghai Stock Exchange during the period 1999 to 2001.	In the IPO process, Chinese parent companies manage earnings by related party transactions (RPTs).	The validity of findings depends on the proper measurement of earnings performance and tunneling. The sample period is from 1999 to 2001; the extrapolation of the results should be more recent.
Haw, Qi, Wu, and Wu (2005)	Whether listed Chinese firms manage earnings to meet regulatory benchmarks. Whether regulators and investors consider the quality of earnings in their respective regulatory and investment decisions.	A-share Chinese firms from 1996-1998	In order to meet regulatory benchmarks, managers engage in earnings management by executing transactions involving below-the-line items and using income-increasing accounting accruals. Investors are able to differentiate the quality of earnings and put less value on earnings with a higher possibility of management.	The validity of the findings is limited to the proper estimation of pair-matched control samples. Lacking investigation on other share types in China. The sample period is from 1996 to 1998; the extrapolation of the results should be more recent.

Chen and Yuan (2004)	Whether earnings management decreases the effectiveness of regulations on capital resource allocation.	Companies with rights issue applications made from 1996-1998.	In China, companies manage earnings to meet the accounting threshold (10% return on equity) to get permission to issue additional shares. Firms get rights issue permission through extra non-operating income.	The study is limited to within-group comparisons of companies that have applied for a rights issue. The study only includes non-operating income as an indicator of earnings management. The study assumes that the important objective of capital market regulation is better performance.
Wang, Chen, Lin, and Wu (2008)	The frequencies and magnitudes of earnings management under two different thresholds, zero earnings, and prior earnings.	In the Chinese market from 1997-2004.	The practice of earnings management increases both in frequency and magnitude before 2000. The frequency and magnitude of earnings management are higher when avoiding negative earnings than when reporting increasing earnings. The frequency and magnitude of earnings management in the Chinese market are higher than the US market.	The validity of findings depends on the accuracy of the mixed-normal distribution model used in the study. The sample period is from 1997 to 2004; the extrapolation of the results should be more recent.

Chen, Wang, and Zhao (2007)	To examine both the determinants and consequences of impairment reversals due to its recent developments in standard-setting.	A-share listed companies in non-financial industries from 2003 to 2005.	Managerial opportunism may have reduced the reliability of otherwise value-relevant reversal information.	The validity of findings depends on the accuracy of the return model used in the study. Lacking investigation on the other share types in China.
Ding et al. (2007)	The link between ownership concentration and earnings management practice in 2002.	273 privately-owned and state-owned Chinese companies listed in 2002.	Privately-owned listed companies tend to maximise accounting earnings more. State-owned listed companies have more entrenchment effects than privately-owned listed companies. Both operating-related accrual mechanisms and non-operating transactions are being used by firms to manage earnings.	The "non-operating income over sales" measure makes no distinction between normal gains and losses and abnormal transactions with related parties.
Jaggi and Tsui (2007)	The relationship between insider trading, earnings management, and corporate governance.	Hong Kong firms from 1995 to 1999.	Hong Kong executives manage reported earnings to maximize their private benefits from insider selling. A higher proportion of independent directors (INED) on	The validity of findings depends on the reliability of measurement of earnings management and abnormal trading used in the study.

			corporate boards moderates the positive association between insider selling and earnings management.	
Noronha, Zeng, and Vinten (2008)	Identify the most frequently used earnings management techniques in China and underlying the incentives for firms to engage in earnings management.	Legal corporate entities in Guangdong Province.	The size and form of ownership of companies materially influence earnings management incentives and techniques in China. Public ownership companies have stronger incentives to manage earnings for management compensation. Private ownership companies pay more attention to tax expense savings. Reveals several popular techniques employed in China.	The analysis of earnings management is based on the institutional characteristics of the market. The low response rate to their questionnaires creates a non-response bias. The sample is limited to Guangdong Province.
Jaggi, Leung, and Gul (2009)	The relationship between family control, board independence, and earnings management in Hong Kong firms.	From 1998-2000, Hong Kong firms in Global Vantage database.	A higher proportion of independent non-executive directors (INED) contributes to constraining earnings management.	The validity of findings depends on the use of proper proxies for DAs and accrual quality for earnings quality. The validity of findings depends on the proper estimation of family control of the firm.

			The monitoring effectiveness of INED is reduced in family-controlled firms.	The sample period is from 1998 to 2000; the extrapolation of the results should be more recent.
Kao, Wu, and Yang (2009)	Whether government regulations (two sets of IPO regulations issued between January 1, 1996, and February 11, 1999) contribute to opportunistic behaviour (earnings management, post-IPO performance) by the issuer.	366 firms that issued A-shares for the first time between January 1996 and February 11, 1999.	On average, after the issue of IPO, Chinese firms report a decreasing profit and poor long-run stock performance. IPO pricing regulation based on accounting profit motivates IPO firms to overstate their earnings during the IPO pricing period.	The validity of findings depends on proper estimation of earnings management. The sample period is from 1996 to 1999; the extrapolation of the results should be more recent.
Lin, Hutchinson, and Percy (2009)	Whether monitoring of earnings by audit committee benefits Chinese firms listing in Hong Kong.	A non-random sample of the top 208 firms listed on the HKEX in 2004 to 2008	An audit committee is an important monitoring mechanism as audit committee independence, expertise and size are associated with reduced levels of abnormal accruals. The ownership concentration and the presence of government officials on the audit committee are important determinants of the negative association between audit	The sample size restricts the generalizability of the results.

			committee characteristics and earnings management. No significant associations between the audit committee and abnormal accruals for Chinese firms listed only on the Chinese domestic Stock Exchange.	
Li, Niu, Zhang, and Largay (2011)	Earnings management and accrual anomaly.	A-share firms whose annual data is available on CSMAR from 1998-2002.	The artificial distribution of firm earnings, which has been created by delisting regulation, affects the market pricing of accruals and masks the accrual anomaly.	The validity of findings depends on the accuracy of the "big-bath" proxy. Lacking investigation of the other share types in China. The sample period is from 1998 to 2002; the extrapolation of the results should be more recent.
Tang and Firth (2011)	The relationship between book-tax differences and earnings management, tax management, and their interaction with Chinese-listed companies.	All Chinese B-share firms listed on either the Shanghai or Shenzhen Stock Exchange from 1999-2004 (664 firm-year observations).	Firms with strong incentives for earnings and tax management exhibit high levels of abnormal book-tax differences. Earnings management explains 7.4% of abnormal book-tax differences, tax management explains 27.8% of abnormal book-tax differences, and their interaction explains 3.2% of abnormal book-tax differences.	The validity of findings depends on the accuracy of the measurement of book-tax differences in China. Lacking investigation of the other share types in China.

Appendix 2 Illustration of financial accounting information users
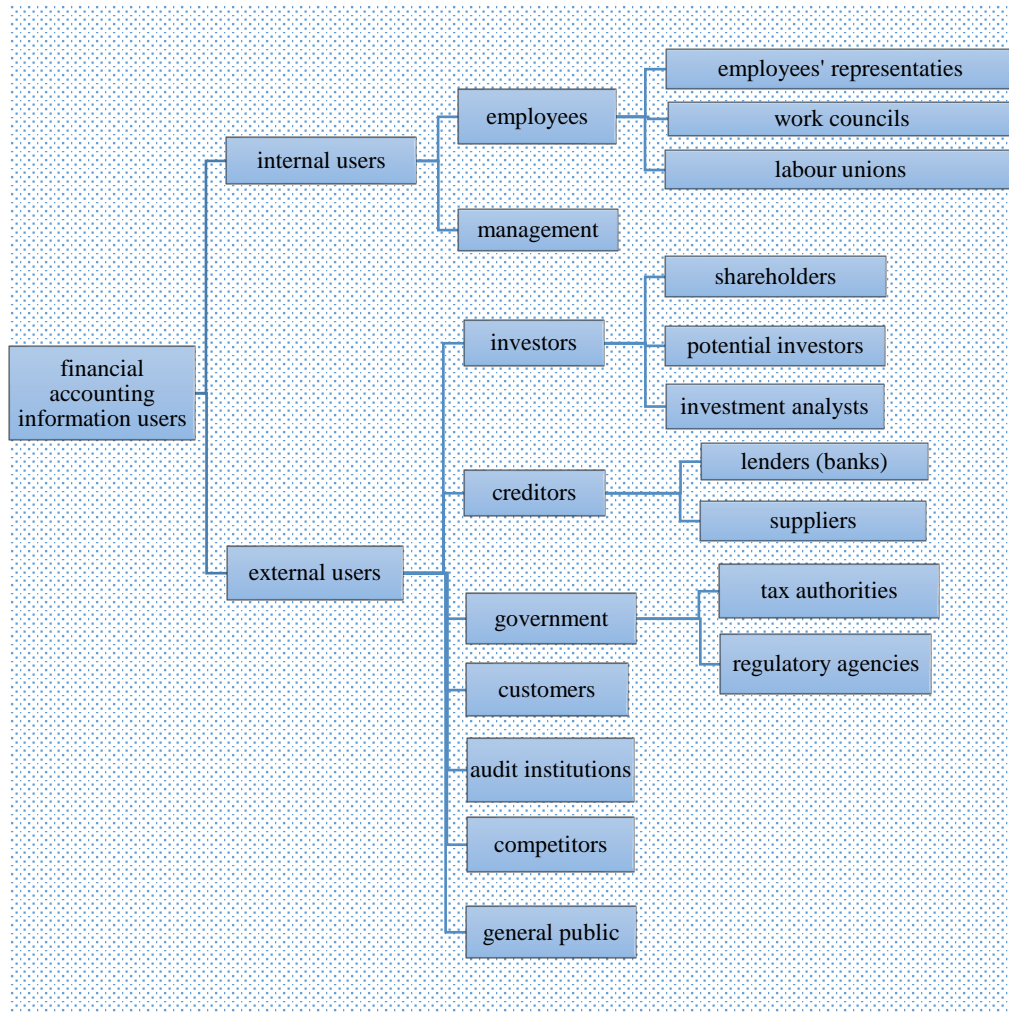
Appendix 3 Potential earnings management techniques or activities

1. **Changing depreciation methods, (e.g., accelerated to straight-line)**
2. **Changing the useful lives used for depreciation**
3. **Changing estimates of salvage value used for depreciation purposes**
4. **Determining the allowance required for uncollectible accounts or loans receivable.**
5. **Determining the allowance required for warranty obligations.**
6. **Deciding on the valuation allowance required for deferred tax assets.**
7. **Determining the presence of impaired assets and any necessary loss accrual.**
8. **Estimating the stage of completion of percentage-of-completion contracts.**
9. **Estimating the likelihood of realization of contract claims.**
10. **Estimating write-downs required for certain investment.**
11. **Estimating the amount of a restructuring accrual.**
12. **Judging the need for and the amount of inventory write-downs.**
13. **Estimating environmental obligation accruals.**
14. **Making or changing pension actuarial assumptions.**
15. **Determining the portion of the price of a purchase transaction to be assigned to acquired in-process research and development.**
16. **Determining or changing the amortization periods for intangibles.**
17. **Deciding the extent to which various costs such as landfill development, direct-response advertising, and software development should be capitalized.**
18. **Deciding on the paper hedge-classification of a financial derivative.**
19. **Determining whether an investment permits the exercises of significant influence over the investee company.**
20. **Deciding whether a decline in the market value of an investment is other than temporary.**
21. **Deciding the valuation on history cost.**

(Source: Mulford & Comiskey, 2002, p. 65)

Appendix 4 Hausman specification test using EM3

Test H_o: difference in coefficients not systematic								
EM3								
Equation								
	PAasset	PAsga	PPincome	PPdivpayout	PPdivsale	PPdivmar	PPdivcf	PPdivearn
chi2	304.76	185.75	155.29	45.71	172.54	56.83	35.84	32.55
Prob > chi2	0.0000	0.0000	0.0000	0.0009	0.0000	0.0000	0.0228	0.0378

Note: This table reports the Hausman test, which is applied to choose between fixed-effect and random-effect OLS estimation. Rejection of the null of the Hausman test suggests fixed-effect OLS estimation is preferred.

Appendix 5 The relationship between PA agency costs and EM3, fixed-effect OLS estimation, static model

VARIABLES	PAasset	t	PAsga	t
EM3	-0.00286*	-1.91	0.00156***	3.14
	(0.00150)		(0.000496)	
wboard_size	0.0110	0.57	0.00291	0.45
	(0.0193)		(0.00641)	
wlboard_independence	-0.0241	-1.22	-0.00513	-0.78
	(0.0198)		(0.00657)	
wfirm_size	-0.0601***	-12.75	-0.0416***	-26.57
	(0.00471)		(0.00157)	
wlleverage	0.00916	1.28	0.0194***	8.06
	(0.00716)		(0.00241)	
ceoduality	-0.00965	-1.34	-0.00141	-0.59
	(0.00719)		(0.00238)	
Constant	1.874***	8.87	1.011***	27.12
	(0.211)		(0.0373)	
Industry dummy	no		no	
Stock exchange dummy	no		no	
Year dummy	yes		yes	
Observations	12,461		12,357	
Number of stock	2,018		2,018	
R-squared	0.045		0.079	
F statistics	24.69		46.32	
Prob > F	0.0000		0.0000	

Note: This table reports the results of the fixed-effect OLS static model. Two PA costs proxies (i.e., PAasset, PAsga) are used to run the regression against EM3 and the other controlling CG variables. EM3 is discretionary accruals estimated using a cross-sectional approach. Asterisks of *, **, ***, indicate significance at the 10%, 5% and 1% level, respectively. Standard errors are reported in parentheses.

Appendix 6 The relationship between PP agency costs and EM3, Fixed-effect OLS estimation, static model

VARIABLES	PPincome	t	PPdivpayout	t	PPdivsale	t	PPdivmar	t	PPdivcf	t	PPdivearn	t
EM3	5.63e-08	1.29	-0.0449***	-4.09	0.000424	1.60	-0.0102*	-1.75	-0.0141**	-2.21	-0.0340***	-3.75
	(4.37e-08)		(0.0110)		(0.000264)		(0.00581)		(0.00636)		(0.00906)	
board_size	-1.41e-06**	-2.45	0.0343	0.24	0.00537	1.61	0.126*	1.68	-0.0994	-1.21	0.0884	0.76
	(5.74e-07)		(0.142)		(0.00333)		(0.0751)		(0.0821)		(0.117)	
board_independence	-4.14e-07	-0.72	0.145	0.99	0.0300***	2.94	0.286***	3.67	0.0212	0.25	0.0880	0.73
	(5.78e-07)		(0.146)		(0.0102)		(0.0779)		(0.0844)		(0.120)	
firm_size	-4.59e-07***	-2.96	0.255***	7.38	0.0117***	14.20	0.559***	29.80	0.0726***	3.63	0.178***	6.23
	(1.55e-07)		(0.0346)		(0.000826)		(0.0188)		(0.0200)		(0.0285)	
leverage	-2.08e-06***	-9.65	0.419***	7.95	0.0201***	6.29	0.511***	18.22	0.0602**	1.97	0.332***	7.64
	(2.15e-07)		(0.0527)		(0.00319)		(0.0280)		(0.0305)		(0.0435)	
CEOduality	4.37e-07**	2.13	0.0316	0.60	-0.00238*	-1.88	-0.0426	-1.51	0.0283	0.93	0.0148	0.34
	(2.05e-07)		(0.0527)		(0.00126)		(0.0281)		(0.0305)		(0.0435)	
Constant	2.72e-05***	4.95	-2.625*	-1.70	-0.198***	-5.19	-14.25***	-17.51	-0.650	-0.73	-1.716	-1.35
	(5.50e-06)		(1.548)		(0.0382)		(0.814)		(0.896)		(1.276)	
Industry dummy	no		no		no		no		no		no	
Stock exchange dummy	no		no		no		no		no		no	
Year dummy	yes		yes		yes		yes		yes		yes	
Observations	8,644		12,427		12,502		12,173		12,427		12,427	
Number of stock	1,696		2,018		2,021		2,015		2,018		2,018	
R-squared	0.030		0.032		0.053		0.345		0.007		0.029	
F statistics	10.71		17.33		27.86		267.19		3.87		15.58	
Prob > F	0.0000		0.0000		0.000		0.000		0.000		0.000	

Note: This table reports the results of the fixed-effect OLS static model. Six PP costs proxies (i.e., PPincome, PPdicpayout, PPdivsale, PPdivmar, PPdivcf, PPdivearn) areused to run the regression against EM3 and the other controlling CG variables. EM3 is discretionary accruals estimated using a cross-sectional approach. Asterisks of *, **, ***, indicate significance at the 10%, 5% and 1% level, respectively. Standard errors are reported in parentheses.

Appendix 7 The relationship between PA agency costs and EM3, GLS estimation using EM3, static model

VARIABLES	PAasset	t	PAsga	t
EM3	-0.00989**	-2.40	0.00459***	3.55
	(0.00413)		(0.00129)	
board_size	0.129***	3.83	-0.0306***	-2.82
	(0.0338)		(0.0108)	
board_independence	-0.103**	-2.26	-0.0324**	-2.36
	(0.0456)		(0.0137)	
firm_size	0.0536***	7.76	-0.0436***	-20.74
	(0.00690)		(0.00210)	
leverage	0.139***	13.46	-0.00159	-0.53
	(0.0103)		(0.00298)	
CEOduality	-0.0254**	-2.04	-0.00211	-0.53
	(0.0125)		(0.00400)	
Constant	-2.847***	-6.24	1.185***	20.34
	(0.456)		(0.0583)	
Industry dummy	yes		yes	
Stock exchange dummy	yes		yes	
Year dummy	yes		yes	
Observations	12,461		12,357	
Number of stock	2,018		2,018	
R-squared	0.182		0.053	
F statistics	106.22		27.59	
Prob > F	0.0000		0.0000	

Note: This table reports the results of the GLS static model. Two PA costs proxies (i.e., PAasset, PAsga) are used to run the regression against EM3 and the other controlling CG variables. EM3 is discretionary accruals estimated using a cross-sectional approach. Asterisks of *, **, ***, indicate significance at the 10%, 5% and 1% level, respectively. Standard errors are reported in parentheses.

Appendix 8 The relationship between PP agency costs and EM3, GLS estimation using EM3, static model

VARIABLES	PPincome	t	PPdivpayout	t	PPdivsale	t	PPdivmar	t	PPdivcf	t	PPdivearn	t
EM3	9.54E-08**	1.84	-0.04754***	-4.17	-0.00143***	-3.46	-0.00047***	-3.35	-0.04171***	-5.92	-0.04591***	-4.84
	(5.18E-08)		(0.01139)		(0.000414)		(0.000142)		(0.00705)		(0.00948)	
board_size	3.97E-07	0.94	0.29606***	3.20	0.01224***	3.64	0.00545***	4.74	0.07603	1.33	0.31633***	4.11
	(4.24E-07)		(0.09243)		(0.00336)		(0.00115)		(0.0572)		(0.0769)	
board_independence	2.11E-06***	3.19	0.21425*	1.76	0.01999***	4.50	0.00483***	3.18	-0.01036	-0.14	0.29215***	2.88
	(5.39E-07)		(0.12203)		(0.00444)		(0.00152)		(0.07552)		(0.10153)	
firm_size	9.50E-08	1.04	0.09908***	4.95	0.00942***	12.94	0.00895***	35.93	0.09754***	7.88	0.08045***	4.83
	(9.15E-08)		(0.02001)		(0.000728)		(0.000249)		(0.01238)		(0.01665)	
leverage	-1.2E-06***	-9.16	0.54694***	18.44	-0.01205***	-11.17	0.00817***	22.14	-0.07188***	-3.92	0.41058***	16.64
	(1.32E-07)		(0.02965)		(0.00108)		(0.000369)		(0.01835)		(0.02467)	
CEOduality	-7.55E-07***	-5.13	-0.00836	-0.25	0.00107	0.89	-0.00112***	-2.73	-0.02174	-1.06	-0.00109	-0.04
	(1.47E-07)		(0.03301)		(0.0012)		(0.000411)		(0.02043)		(0.02746)	
Constant	-2.3E-06	-1.00	-0.85458*	-1.65	-0.13136***	-6.99	-0.16886***	-26.24	-1.1243***	-3.51	-0.64199	-1.49
	(2.26E-06)		(0.5169)		(0.0188)		(0.00643)		(0.31989)		(0.43005)	
Industry dummy	yes		yes		yes		yes		yes		yes	
Stock exchange dummy	yes		yes		yes		yes		yes		yes	
Year dummy	yes		yes		yes		yes		yes		yes	
Observations	8,644		12,427		12,502		12,173		12,427		12,427	
Number of stock	1,696		2,018		2,021		2,015		2,018		2,018	
R-squared	0.1737		0.1057		0.1239		0.4393		0.0378		0.1021	
F statistics	70.76		39.77		47.59		263.68		13.24		38.28	
Prob > F	0.0000		0.0000		0.000		0.000		0.000		0.000	

Note: This table reports the results of the GLS static model. Six PP costs proxies (i.e., PPincome, PPdicpayout, PPdivsale, PPdivmar, PPdivcf, PPdivearn) are used to run the regression against EM3 and the other controlling CG variables. EM3 is discretionary accruals estimated using a cross-sectional approach. Asterisks of *, **, ***, indicate significance at the 10%, 5% and 1% level, respectively. Standard errors are reported in parentheses.

Appendix 9 The corporate governance relationships and structure in Chinese companies