CORPORATE GOVERNANCE, FIRM PERFORMANCE AND CHINESE STATE ENTERPRISE REFORM

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CORPORATE GOVERNANCE, FIRM PERFORMANCE AND CHINESE STATE ENTERPRISE REFORM

ABSTRACT

While corporate governance continues to play an important role in economic development, corporate governance issues are more complex in transition economies than in the developed market economies. Consequently, policy makers in transition economies have been busy attempting to establish a sound corporate governance system in their countries. This study uses China as a laboratory to explore corporate governance issues, as China is not only the most populous economy in the world, it is also undergoing transition from a socialist to a market economy since 1978. The need for strengthening corporate governance in the country has become all the more pressing as rapid economic growth has transformed the economy since especially the 1990s. China experienced a watershed in corporate governance when the split-share structure reform was introduced. Hence, we analyse in this thesis the impact of this reform on board composition, firm performance, and firm risk over the period before and after the introduction of the reform. Firms are classified by ownership into central government, local government, state owned enterprise (SOE) and privately controlled firms based on ultimate controlling shareholders. The study deploys static and dynamic panel data estimation methods to examine the determinants of corporate board composition, relationships between corporate governance mechanisms and firm performance, and the relationships between corporate governance mechanisms and firm risk. The results show that Chinese corporate board composition is jointly determined by the scope of operation (resource dependent theory), monitoring (agency theory), bargaining (power theory), other governance mechanisms (stakeholder theory) and regulations (institution theory). The government was the most important player in constituting board composition before the split-share structure reform was introduced, but independent directors became more important than other governance mechanisms after that. Private

firms and SOEs are more concerned about cost than other factors when adding independent directors. Also, corporate board exerts a positive influence on firm performance once the share of independent directors reached 30 percent. Although the supervisory board can make up for the inadequate number of independent directors, its role became insignificant after the reform. Central government controlled firms show outstanding accounting and market performance. While increasing corporate board size reduced firm risk, its independence increased firm risk. State ownership and ownership concentration increased firm risk after reforms. Overall, the findings confirm the applicability of corporate governance theories to China. Other transition economies can draw lessons from the institutional change that have played a significant role in the evolving Chinese corporate governance system. Government-controlled firms should be more market-oriented so as to reduce the unnecessary influence of political power on firms activities. It also sheds light on the partial privatization approach that may work for other transition economies.

Keywords: corporate governance, firm performance, Chinese state enterprise reform

GOVERNAN KORPORAT, PRESTASI FIRMA DAN REFORMASI PERUSAHAAN PEMERINTAH CHINA

ABSTRAK

Sementara governan korporat terus memainkan peranan penting dalam pembangunan ekonomi, urusan governan di negara-negara peralihan lebih kompleks daripada negara-negara pasaran maju. Dengan itu, pembentuk dasar di Negara-negara perialihan sibuk menegakkan system governan korporat yang kukuh. Kajian ini menggunakan China sebagai makmal untuk meninjau isu governan korporate disebabkan negara ini bukan hanya mempunyai penduduk paling ramai di dunia ianya juga mengalami peralihan daripada ekonomi sosialis kepada ekonomi pasaran sejak 1978. Keperluan untuk mengukuhkan governan korporat di Negara ini telah menjadi penting kerana pertumbuhan ekonomi pesat telah merombak strukturnya semenjak 1990an. China telah mengalami titik peralihan dalam governan korporat apabila struktur pecahan-pegangan diperkenalkan. Oleh kerana itu, kami menganalisis dalam tesis ini kesan reformasi komposisi lembaga, prestasi firma, dan risiko firma pada jangkamasa sebelum dan selepan reformasi ini dilancarkan. Firma dikelaskan berasakan hakmilik kerajaan pusat, kerajaan tempatan, perusahaan milik kerajaan (SOE) dan firma yang dikawal oleh modal swasta berlandaskan pengawal utama pemegang saham. Kajian menggunakan kaedah-kaedah perhitungan data panel static dan dinamik untuk meninjau penentu komposisi lembaga korporat, hubungan antara mekanisma governan korporat dan prestasi firma, dan hubungan antara mekanisma governan korporat dan risiko firma. Penemuan menunjukkan bahawa komposisi lembaga korporat di China ditentukan secara bersama oleh skop operasi (teori pergantungan sumber), pemantauan (teori agensi), tawar-menawar (teori kuasa), dan mekanisma governan lain (teori pemegang taruh) and regulasi (teori institusi). Pemerintah merupakan peserta terpenting dalam pembentukan ahli lembaga sebelum struktur pemegang-pecahan dilancarkan, tetapi pengarah bebas telah menjadi lebih penting setelah struktur baru itu diperkenalkan.

Firma swasta dan SOE lebih mengutamkan kos berbanding dengan factor lain dalam usaha melantik pengarah bebas. Tambahan pula, lembaga korporat berimpak positif ke atas prestasi firma apabila pecahan pengarah bebas sampai 30 peratus. Biarpun lembaga penyeliaan boleh menangani kekurangan pengarah bebas, peranan lembaga ini tidak lagi penting setelah struktur pegangan-pecahan dilancarkan. Firma yang dikawal oleh kerajaan pusat menunjukkan prestasi perakaunan dan pasaran cemerlang. Sementara kenaikan dalam saiz lembaga korporat mengurangkan risiko firma, kenaikan dalam kekebesannya menaikkan risiko firma. Hakmilik kerajaan dan pemusatan hakmilik menambahkan risiko firma setelah reformasi dilancarkan. Pada keseluruhannya, penemuan mengesahkan kesesuaian teori governan korporat keatas gelagat firma di China. Ekonomi peralaihan lain boleh memperolehi pembelajaran daripada perubahan institusi yang telah memainkan peranan penting dalam mengasaskan governan korporat di China. Firma yang dikawal oleh kerajaan perlu lebih berorientasi pasaran untuk mengurangkan pengaruh kuasa politik yang tak perlu keatas kegiatan firma. Ia juga memberi sedikit sebanyak penjelasan kepada pendekatan penswataan separa yang mungkin boleh memberi pengajaran kepada Negara-negara peralihan lain.

Kata kunci: governan korporat, prestasi firma, reformasi perusahaan pemerintah China

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LIST OF SYMBOLS AND ABBREVIATIONS

OECD	Organization for Economic Co-operation and Development
CSRC	China Securities Regulatory Commission
SASAC	State-owned Assets Supervision and Administration Commission of the
R&D	Research and Development
Before	Before the split-share structure reform
After	After the split-share structure reform
SOE	State owned enterprise
Private	Private firm
Central	Central government controlled firm
Local	Local government controlled firm
MOSOE	Market-oriented SOE/ SOE entity controlled firm
N	Number
Mean	Mean Value
Min	Minimum Value
Max	Maximum value
Sd	Standard Deviation
P25	25 percentile
P50	50 percentile
P75	75 percentile
FE	Fixed Effect
OLS	Ordinary Least Squares
GMM	Generalized Method Of Moments

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CHAPTER 1: INTRODUCTION

1.1 Overview of the fundamentals of corporate governance

Corporate governance is a key to corporate success since good corporate governance is associated with better firm performance and firm value (Brown & Caylor, 2004; Conheady, McIlkenny, Opong, & Pignatel, 2014; Sami, Wang, & Zhou, 2011). Weak corporate governance system, on the other hand, may lead to currency depreciation and stock market declines. It was found that the major cause of Asian financial crisis in July 1997 is the inefficient corporate governance system (Johnson, Boone, Breach, & Friedman, 2000). Campos, Newell, and Wilson (2002) found that 80% of investors were willing to invest in companies with good corporate governance at a premium price (Campos et al., 2002). Organization for Economic Co-operation and Development (OECD) enacted a series of corporate governance principles in 1998 to guide its member and non-member countries in evaluating and improving their legal, economic, and political system to improve corporate governance. Therefore, corporate governance has been the focus of investor protection and capital market development in many countries and international organizations.

The concept of corporate governance can be explained from multiple perspectives. From a narrow perspective, corporate governance is the way that investors assure themselves of getting a return for their investment (Shleifer & Vishny, 1997). From a broader perspective, corporate governance is the structure of rights and responsibilities among the parties with a legitimate interest in the firm (Aoki, 2000), including shareholders, creditors, managers, employees, government and the society as a whole.

However, most of the conceptualized corporate governance systems come from the advanced capitalist economies. Corporate governance systems in transitional economies remain a complex, dynamic and controversial issue. Specifically, the Anglo-American corporate governance model known as the market-oriented corporate governance model, is one in which the corporate ownership is highly dispersed among numerous small shareholders. Monitoring and financing tasks are mostly undertaken by highly developed capital markets. However, the German-Japanese corporate governance model or the bank-based model, is one in which most of firms' ownership is highly concentrated in the hands of large shareholders. Despite the highly developed capital markets, banks undertook most of the financing and monitoring activities (Goergen, Manjon, & Renneboog, 2008).

Corporate scandals that occurred in market economies, such as Enron and WorldCom in US, Toshiba in Japan, suggest that even corporate governance models developed by market economies were imperfect. China is a transitional economy characterized by a less efficient market, while have reduced its capacity to check corporate scandals. This issue can be seen in Chinese enterprise Kelon's rise and fall during the split-share structure reform. Hence, to explore how to improve Chinese corporate governance is a very meaningful subject to look at, albeit there is little consensus on the topic.

Wu (1994) had emphasized on the check-and-balance relations between three main corporate participants: shareholders, managers and board directors. He suggested that a perfect corporate governance system should clearly explicate the responsibilities, power, and the interests of shareholders, managers, and board directors. Zhang (1999) focused on the role of corporate ownership arrangement on corporate governance. He argued

that from a narrow perspective, corporate governance issue can be viewed as a series of institutional arrangements regarding the corporate board's functions, structures and shareholder's rights. From a broader perspective, it is a system of law, culture and institutional arrangements to allocate corporate control rights and the residual claim rights. Li (2000) focused on the stakeholders' interests arguing that corporate governance is a governance mechanism for corporate owners to monitor corporate managers, whereas from a broader perspective, it is a series of formal, informal, internal or external mechanisms to balance stakeholders' interests including shareholders, creditors, employees, government and society. Lin (1997) focused on the role played by market discipline on corporate governance and stated that corporate governance is an institutional arrangement for corporate owners to monitor managers and corporate performance. The fundamental structure of corporate governance is both the indirect control and external governance through market competition. The business law and management schools emphasize on the importance role of the legal system played in corporate governance. They proposed that the effectiveness of corporate governance cannot be guaranteed without a strong legal system. Therefore, the government must set up and enforce the legal rules to protect the interests of shareholders, creditors and contractual performance (La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 2000; Porta, Lopez-de-Silane, Shleifer, & Vishny, 1996; Porta, Lopez-De-Silanes, Shleifer, & Vishny, 1997).

1.2 Background of the study

1.2.1 China's state enterprise reform stages

China has transformed its economy from a centrally-planned to market-oriented one, since President Deng's open door policy was initiated in 1978. The market and ownership approaches are two competing approaches that have come into split-share

structure reform. The former approach was based on the belief that the performance of state enterprises can be improved without ownership transfer as long as the product, labor and corporate take-over markets are established and well-functioning. The latter emphasized that private ownership is necessary for the improvement of state enterprises' efficiency, hence, it is necessary to privatize the state enterprises to improve efficiency (Qiang, 2003). There is an extensive theoretical and empirical literature that suggests privatization betters firm performance (Frydman, 1997; Loc, Lanjouw, & Lensink, 2006; Megginson & Netter, 2001; Saul Estrin & Evžen Kočenda, 2009). However, instead of complete privatization like Russia and Eastern Europe (Sun, Tong, & Tong, 2002), Chinese state enterprise reform has followed a gradual path of reducing state ownership but control over important state-owned enterprises (SOEs) is still held by the state.

However, as a transition economy, China's enterprise system is quite different from other countries since it started from being wholly state owned and controlled to varying degrees of state ownership, which has led to the diversification of enterprises' control[1]. Prior to 1978, a majority of Chinese enterprises were state-owned or held as collective entities. However, due to the problems of state control and the objectives of setting up the socialist market economy, Chinese state enterprises (SOEs) have experienced several stages of reforms.

The first stage (1978-1984) was characterized by the expansion of enterprise autonomy. At this stage of the reform, most Chinese economists believed the market reform approach is more suitable to China on the basis of scientific management as important as ownership structure. The Chinese State Council started to reform the SOEs by expanding enterprise autonomy in pilot enterprises in Sichuan province in October

[1] According to the China Securities Regulatory Commission (CSRC), the ultimate controlling shareholders are the investors who, i) hold directly or indirectly 50% of the total outstanding shares, ii) control directly or indirectly 30% of the total voting rights, iii) can use the voting rights to select more than 50% of board directors, iv) have a significant influence over the decision making in shareholder's meeting, and v) other situations recognized by CSRC.

1978, which represented the commencement of Chinese enterprises reform and regime reform. In May 1984, the State Council issued the "Regulations of Further Expanding Autonomy of State-owned Enterprises," to offer SOEs more autonomies in the production and profit retention. Furthermore, the government started promoting the Management Responsibility Contract System (*Cheng Bao Ze Ren Zhi*) in large size SOEs since January 1987, in which management authority was transferred to the enterprises and allowed them to retain some of their profits (Su, 2005). By the end of 1987, about 80% of the large and medium-sized SOEs adopted the Management Responsibility Contract system. By 1989, almost all SOEs adopted this system. The Leasing Management Responsibility Contract system was introduced for small SOEs. A few large SOEs adopted the joint stock system, together with the "dual-track price system", which allowed them to sell their products at market prices (Qian, 2000). The dual-track price system is the intermediate price system between the existing planned pricing system and the free market price system.

Although reforms at this stage brought some positive effects, state enterprises did not perform as well as the joint venture enterprises[2], township, and village enterprises[3]. This happened due to low efficiency, resulting in most SOEs unable to survive the local market competition after losing the government's preferential policy and financial support. In the early 1990s, a lot of state enterprises experienced rollover risks and thus threatened the stability of China's banking system. Consequently, the Chinese government and economists started to realize that ownership structure reform approach is necessary for future reform.

[2] Joint venture is a business enterprise undertaken by two or more persons or organizations to share the expense and profit of a particular business project.

[3] Township, village enterprises are collectively-owned enterprises located in townships or villages.

The second stage (1993-2003) was characterized by the establishment of the Modern Enterprises System. The Third Plenum of the Fourteenth Party Congress in November 1993 passed "the decision on issues concerning the Establishment of a Socialist Market Economic Structure", which explicitly pointed out that the direction of Chinese SOE reform was to set up the Modern Enterprises System with clearly defined property rights, specified responsibilities and authority, separation of government from enterprise management, and scientific management. Privatization of small SOEs occurred on a large scale in 1995. By the end of 1996, over half of the small SOEs were privatized. In 1997, the Fifteenth Party Congress further promoted the privatization of SOEs by putting forward the slogan of "grasping the large, letting go the small" (*Zhua Da Fang Xiao*) (Qian & Wu, 2003). In order to manage the existing SOEs, in 2003, the Tenth National People's Congress affirmed the establishment of the State-owned Assets Supervision and Administration Commission (SASAC) to supervise SOEs and set the future direction of state enterprises reform. The SASAC was set up to represent the state to manage state assets, personnel, and operations of SOEs.

The third stage (2004-present) is characterized by further development of the Modern Enterprises System. SASAC was set up at provincial level in 2004. SASAC at central government level is responsible to manage important SOEs that are crucial to national security and the lifeline of the national economy at central-government level. Other SOEs, on the other hand, are managed by SASAC at the local-government level. Meanwhile, the reform of capital market also proceeded at the same time.

1.2.2 China's capital market reform

China's economic reform suggests that SOEs have to diversify their funding channels, which paved the way for the emergence of the Chinese capital market. The

establishment of the Shanghai and Shenzhen Stock Markets in 1990 and 1991, represents a major milestone of China's capital market development. The capital market has grown rapidly since the promulgation of the Security Law in 1998. Over the past two decades, the number of Chinese-listed firms increased from 10 in 1990 to 2489 in 2013, whereas the total market capitalization of the shares reached 23907.7 billion yuan in 2013.

Chinese domestic shares can be divided into tradable shares and non-tradable shares (split-share structure). Tradable shares can be traded freely in Chinese stock markets, including common A shares, B shares, H shares, and other shares. The rest of the shares are non-tradable shares that cannot be traded without the approval of the relevant regulatory authority including state shares and legal person shares. Each kind of shares has the same voting and cash flow rights, but differs in the nature of holders. State shares can be held by central, local governments and their agencies, including the state asset management bureaus, financial ministries and SOE entities (Qiang, 2003). Legal person shares are held by domestic institutions, such as securities companies, trust and investment companies, funds and foundations in which most of them are ultimately owned by the state. A-shares are issued by Chinese companies listed on the Shanghai and Shenzhen stock exchanges and are traded through the Chinese currency, the Renminbi (RMB). B-shares are exchanged through either US dollars on the Shanghai Stock Exchange or in Hong Kong dollars on the Shenzhen Stock Exchange. They are only traded among foreigners and people from Hong Kong, Macao and Taiwan. Meanwhile, H-shares are listed in Hong Kong and N-shares are listed in New York. Other foreign shares are listed in Singapore and London (Firth, Fung, & Rui, 2007). In order to regulate the Chinese stock market, the State Council set up China Securities and Regulatory Commission (CSRC) in October 1992 as the main regulatory

commission of China's stock markets.

1.2.3 Split-share structure reform

Despite a huge economic boom in the period 2001-2005, Chinese stock markets experienced a dismal period between those years. The benchmark Shanghai Stock Exchange Composite Index dropped more than half (Jiang, Laurenceson, & Tang, 2008). The split-share structure caused several problems that discouraged the non-tradable shareholders to obtain financing through stock markets, which fundamentally depressed the development of Chinese capital markets. Firstly, the problem arises when there is a serious conflict of interests between tradable shareholders and non-tradable shareholders due to the pricing mechanism, in which non-tradable shareholders cannot benefit from any increase in the market price of the shares. Secondly, non-tradable shareholders tend to expropriate tradable shareholders' interests through related party transactions, such as asset sales and product purchase. Thirdly, most of the tradable shareholders are speculative investors, who have little knowledge of the stock markets and the company they invested in, they look for short-term returns rather than long term capital gains. This can be suggested by the high turnover ratio in Shanghai and Shengzhen stock markets which is around 8 times more than that of US, UK, and Japan. Besides that, the stock return volatility in Chinese stock markets are among the highest in the world (Liao, Liu, & Wang, 2014).

Nevertheless, split-share structure reform in 2005 has become an important milestone in China's privatization and transformation towards market-oriented economy. To implement the reform, non-tradable shareholders had to negotiate with tradable shareholders for a satisfied compensation in order to gain liquidity in the stock market. In April 2005, the China Securities and Regulatory Commission (CSRC) issued the

Circular on Relevant Issues Regarding Pilot Programs for Non-tradable Share Reform of Listed Companies, which represents the commencement of the split-share structure reform. In May 2005, the first batch included four pilot firms, which undertook non-tradable share reform initiated by the negotiation between corporate board of directors and non-tradable shareholders. It was then followed by the second batch of 42 pilot firms. The reform became mainstream when the CSRC, SASAC, Ministry of Finance, People's Bank of China and Ministry of Commerce jointly issued the Guideline on the Non-tradable Share Reform of Listed Companies, and CSRC also issued the Measures on the Non-tradable Share Reform of Listed Companies in August 23, 2005. By the end of 2007, 98 percent of the listed firms completed the split-share structure reform representing 98 percent of the total market capitalization (CSRC, 2008).

1.2.4 Legal infrastructure

The importance of the legal system in corporate governance was studied by La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998) who ranked 49 countries on the basis of its quality. Under this framework, Allen, Qian, and Qian (2005) found that China's legal system quality is significantly below average among these countries due to poor legal enforcement and severe corruption problems. Hence, China is deemed to suffer from a weak legal environment like other developing countries. Kato and Long (2006) also found that China lacks a comprehensive set of legal rules and regulations to protect the interests of shareholders. In addition, the Chinese government still retained the power to intervene in the enforcement of the law, demonstrating that China does not have an independent judicial system. Jiang and Kim (2015b) proposed that one of the main reasons for China's weak legal environment is the light punishment imposed on offenders. The Security law stipulated various fines and penalties for the violation of the

securities law in Articles 188-235, but most of the fines are light, being only between 30,000 to 300,000 RMB, and 60,000 to 600,000 RMB. For example, Danhua Chemical Technology paid 1.51 billion RMB to its related party without holding a board meeting or shareholder meeting when it was listed during 2003–2006. The firm also reported several false bank deposits of 205 million and 479 million RMB. However, the firm only received a warning and a small fine of 300,000 RMB for all these wrongdoings. The executives behind those fraudulent activities were only fined 30,000 to 300,000 RMB (Jiang & Kim, 2015b).

Despite the criticism, China has never stopped at improving its legal system. Consequently, the Company law was first promulgated in December 1993. Several amendments were made in 1999, 2004, and 2005. In addition, the Security law was first promulgated in 1999, and was revised in 2006. Company law stipulated the Chinese corporate structure, the responsibility, the liability of the listed company, shareholder, directors and managers. Security law stipulated the rules regarding share issues, exchanges, and corporate acquisition, as well as the penalties of the corporate wrong doings. In 2001, the Code of Corporate Governance for Listed Firms in China was set up based on the OECD principle. In 2001, the Guidelines for Establishing Independent Directors System for Listed Firms stipulated that corporate board must have one third of independent directors by the end of June 2003.

1.2.5 Market condition

In an effective corporate control market, stronger firms can take over weaker firms. It is a powerful corporate governance mechanism since managers have to work hard to avoid losing their jobs and reputation during the takeover. However, this kind of takeover market is inactive in China due to several factors. The first is that state

enterprises cannot sell freely without government permission. Other than that, the concentrated ownership structure has made it difficult for takeovers. Both independent and non-independent directors also do not have incentives to allow corporate takeovers. Therefore, many studies have attributed the inactive corporate control market to the concentrated ownership structure (Allen et al., 2005; Liu, 2006).

In an effective labor market, managers have incentives to work hard to improve their reputation, so that they will get the opportunity to be employed by other companies. However, this kind of market force is lacking in China as managers in state enterprises are appointed by the government, who are more motivated by government policies rather than market. Apart from that, most private enterprises are family firms were prefer to choose managers from within the firm or their family rather than from the market (Jiang & Kim, 2015b). For product market competition in China, managers in both state enterprises and private enterprises have incentives to work hard to make sure that the firm succeeds in product market competition, otherwise, they will lose their jobs and political careers (Jiang & Kim, 2015b).

1.3 Motivation of this study

This study chooses China, the world's largest transition economy, as a research laboratory to study corporate governance issues. As a transition economy, it faces more complex and controversial ownership and performance issues than capitalist economies. Corporate governance system developed by capitalist economies like Anglo-American model and German-Japanese model are not perfect models. Being a transition economy with weak legal infrastructure, inactive labor and product market, and characterized by frequent political intervention, China's corporate governance system is still work in progress. The corporate scandals occurred during the Chinese share structure reform and

privatization process suggests that there is a long way for China to go for further its corporate governance reforms.

Chinese institutional arrangement and corporate environment are unique, unlike Russia that jumped to a market economy immediately. China has followed a gradual or a partial path to transform its economy from a centrally planned to market economies since 1978. During this process, some state enterprises have been fully privatized, while, some have been partially privatized. The split-share structure reform in 2005 greatly privatized Chinese state enterprises, resulting in diversified institution arrangements, including state and private control. For example, state firms enjoyed financial privileges not available to private firms (Wei, Zheng, Liu, & Lu, 2014). Since government has provided political support, banks are willing to lend to state firms (Liang, Lu, & Wang, 2012). Furthermore, state enterprises select CEOs largely based on social and political objectives, whereas private enterprises choose CEOs largely based on their ability to maximize shareholder's wealth (Berkman, Cole, & Fu, 2012).

China's capital market development has been slow. The emergence of Chinese stock market can be traced back to 1990 and 1991 when the Shanghai and Shenzhen stock markets were established. Until the enaction of security laws in 1999, the legal status of Chinese stock market was not formalized. Before the split-share structure reform in 2005, Chinese stock market was hindered by the majority of non-tradable shares that experienced a sluggish time.

China's domestic listed firms have a unique ownership structure that is open to diverse agency problems. Chinese firms were characterized by concentrated ownership, split-share structure and state ownership. Chen, Firth, and Xu (2009) reported that on

average the largest shareholder owns 43.75% of equity in China. Meanwhile, Fan and Wong (2002) reported that the average largest shareholder ownership in East Asia countries is only 25.84% of total equities. Non-tradable shares were tightly controlled by the government so as to leave only less than one third of the total shares to be freely traded. These non-tradable shares have impeded the China's capital market development until the split-share structure reform was launched in 2005. Nevertheless, state ownership is still dominant in most Chinese listed firms, though it was reduced significantly by the reform. Yang, Chi, and Young (2011) found that by the end of 2009, more than 50 % of the listed firm's shares were ultimately owned by the state.

1.4 Problem Statement

The corporate board as the connection between shareholders and managers serves the most important role in corporate governance. How to manage the corporate board composition is a critical question that has received a considerable debate in both developed and developing countries. Especially in China, studies on corporate board's composition, functioning and effectiveness are enduring topics that have produced little consensus. Hence, explaining what determines the corporate board composition is crucial to understand the roles the corporate board can play in a firm's decision-making process. Especially when an economy is under transition, corporate board plays an important role in the enforcement of government regulations.

Besides, Chinese corporate governance has its own characteristics. There is an issue raised on how do these firm-level corporate governance mechanisms and corporate board contribute to firm performance and value creation during the transition period. This topic has been a great concern to investors, creditors, government, and society. For example, a two-tier board structure with a main board and a supervisory board is in

place, which is similar to the structure of German-Japanese corporate governance model. The main duty of the Chinese supervisory board is to supervise the board of directors, but they do not have the rights for dismissing the board of directors (Shan & Round, 2012).

In addition, the corporate board is the key decision-making player, thus enjoys the highest authority in determining corporate operation and investment plans. The extent to which the corporate board and other participants would like to shoulder risks when they make a decision is critical to corporate success and long-term development. Last but not least, the way China should transform their corporate governance system during the economic transition is also considered as a controversial issue and worth studying.

1.5 Research Questions

This research seeks to answer the following questions:

1. What determines corporate board size and independence for firms with different controlling shareholder types and at different periods of the split-share structure reform?
2. What is the relationship between corporate governance mechanisms and firm performance for firms with different controlling shareholder types and at different periods of the split-share structure reform.?
3. What is the relationship between corporate governance mechanisms and firm risk for firms with different controlling shareholder types and at different periods of the split-share structure reform?
4. What implications do the above results have for the efficacy of state enterprise reform?

1.6 Research Objectives

In relation to the above research questions, this research specifically aims to:

1. To study the determinants of corporate board size and independence for firms with different controlling shareholder types and at different periods of the split-share structure reform.
2. To examine the relationship between corporate governance mechanisms and firm performance for firms with different controlling shareholder types and at different periods of the split-share structure reform.
3. To investigate the relationship between corporate governance mechanisms and corporate risk taking for firms with different controlling shareholder types and at different periods of the split-share structure reform.
4. To explore the implications of the results for state enterprise reform.

1.7 Significance of this study

This study is significant in understanding the corporate governance theories as most of the previous studies only explained the findings from the mainstream western theory's perspective. For example, the agency theory assumes that there is a conflict of interests between shareholders and managers. However, China is characterized by a collectivistic culture that is more likely to have a principle-steward relationship, in which a trust-worthy management team exists. Especially in private controlled firms, an interpersonal relationship is a major factor that influences business transactions.

Moreover, this study can benefit government policy makers to further Chinese SOE reforms and corporate governance reforms. Since China's SOE reform approach emphasizes privatization, this study can shed light on the effectiveness of this approach by comparing the corporate governance efficiencies between state and private controlled

firms and between the periods before and after the reform.

Lastly, this study also fills in the gap in literature in the study of the determinants of board composition by introducing the influence of controlling shareholders and state enterprise reform. Furthermore, it extends the current literature on corporate board governance and risk-taking by introducing the independent director's risk preference in different controlling shareholder categories.

1.8 The structure of thesis

The structure of this thesis will be as follows. Chapter 2 reviews the related literature, specifically relevant theories and empirical work. Chapter 3 discusses the methodology of this study and the data used. Chapter 4 investigates the determinants of board composition in China. Chapter 5 examines corporate governance and firm performance. Chapter 6 links corporate governance with firm risk-taking. Chapter 7 represents the conclusions of this study.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter reviews the related literature of this study. To begin with, this chapter briefly explores the corporate governance theories that are applicable to this study. They are agency theory, resource dependency theory, institutional theory, stewardship theory, stakeholder theory, and power circulation theory. Furthermore, this chapter reviews the studies and empirical findings that correspond to the research questions that were stated in Chapter 1.

Specifically, section 2.2 reviews the corporate governance theories, followed by the section 2.3 that discusses the empirical evidence. Section 2.3.1 reviews the studies on determinants of board composition and the related hypotheses, including the scope of operation hypothesis, monitoring hypothesis and the bargaining hypothesis. Section 2.3.2 reviews the effects of Chinese corporate governance characteristics including board structure, ownership structure and CEO's character on firm performance and firm risk. Section 2.4 reviews the related literature regarding the controlling shareholders in China. Finally, the summary of all the findings is illustrated in Section 2.5.

2.2 Theoretical foundations

Several theories are said to apply to the focus of the present research. These are shown below.

2.2.1 Agency theory

Agency theory originates from Berle and Means (1932)'s seminal work on the separation of ownership and control and deals with the most common relationships within the corporation. Shareholders own the company as the principal, whereas

managers control the company's operation as the agent. Agency problems are generated when shareholders and managers have conflicting interests. In order to minimize agency problems, agency theory estimates the most efficient contract to govern the relationships between shareholders and managers (Eisenhardt, 1989). Another type of agency problem exists between the large shareholders and small shareholders. Since large shareholders undertake most of the corporate governance responsibilities, they may expropriate small shareholders' interest and face free rider problems with small shareholders (Shleifer & Vishny, 1986). The agency theory is applied under the assumption that individuals are self-interested, adverse to risk and have limited rationality. Meanwhile, the organization is assumed to have conflicts of interests among corporate participants, and the information asymmetry between shareholders and managers is purchasable (Eisenhardt, 1989).

Agency problems can be mitigated through incentive compensation (Tosi, Katz, & Gomez-Mejia, 1997; Zajac & Westphal, 1994). However, solutions for agency problems in developed economies may not be effective in economies which are undergoing economic transition, since new agency relationships are created during the process of transferring state ownership into other ownerships (Dharwadkar, George, & Brandes, 2000). According to agency theory, the main function of the corporate board is to monitor managers on behalf of shareholders. Effective monitoring can reduce the agency costs incurred when self-serviced managers expropriate shareholders' interest (Hillman & Dalziel, 2003). Hence, the board of directors connecting shareholders and managers has the responsibility to guarantee that managers are acting for shareholders' interest, and ultimately, to minimize the potential agency cost inherent in the separation of ownership and control. Besides, effective monitoring is expected to prevent managers from making decisions that harm shareholders' interests. Tosi et al. (1997) define

monitoring as "observation of an agent's effort or outcomes that is accomplished through supervision, accounting controls, and other devices". It is assumed that monitoring is free of cost, and any kind of monitoring towards an agent will result in gains for a principal, except when an agent's action can have no negative effects on the principal's outcomes.

2.2.2 Resource dependency theory

Since Salancik and Pfeffer (1978)'s publication of "*The External Control of Organizations: A Resource Dependence Perspective"*, which was rooted in Thompson (1967)'s open system view of the organization, the resource dependency theory has become a popular organizational theory. The resource dependency theory recognizes the interdependence between the organization and the external environment. Although organizational behaviors are influenced by external factors and constrained by their context, the organizational controllers can use their power to reduce environmental uncertainty and dependence (Hillman, Withers, & Collins, 2009).

The corporate board is the vehicle through which corporations can absorb important external resources. Corporate board size and composition are not random, but depend instead on the conditions of the external environment (Pfeffer, 1972). Amy Hillman, Cannella, and Paetzold (2000) found that the corporate board is an important linkage between a corporation and its external environment, and firms respond to significant changes in external environment by altering board composition. Hillman and Dalziel (2003) summarized several specific activities of the corporate board, including: (1) providing expertise, advice and counsel; (2) linking the firm to key stakeholders or other important entities; (3) building external relations and diffusing innovation; and (4) aiding in the formulation of strategy or other important firm decisions.

2.2.3 Institutional theory

North (1990) defines institutions as "the rules of the game in a society, or more formally, the humanly devised constraints that shape human interactions". The differential performance of economies over time is fundamentally determined by the way institutions evolve. The institutional theory asserts that agency theory fails to sufficiently explore how corporate governance is shaped by its institutional embeddedness. According to institutional theory, organizations are the way they are for no other reason than the fact that they represent the legitimate way to organize.

Critiques of agency theory have pointed out its 'under-contextualized' nature and hence its inability to accurately compare and explain the diversity of corporate governance arrangements across different institutional contexts (Aguilera & Jackson, 2003). First, agency theory overlooks the diverse identities within the principal-agent relationship, including different types of investors such as state, banks, and families. Second, it overlooks the importance of interdependencies among other stakeholders in the firm. Third, it retains a narrow view of the institutional environment influencing corporate governance (Aguilera & Jackson, 2003).

2.2.4 Stewardship theory

The stewardship theory is different from agency theory in the sense that it assumes managers are not self-interested individuals but have aligned interests with shareholders (Davis, Schoorman, & Donaldson, 1997). Managers are viewed as trustworthy stewards interested in achieving high performance and maximizing shareholders' interests, since they are motivated by intrinsic motivators such as success, recognition, respect and work ethic (Muth & Donaldson, 1998). The principle-steward relationship is more likely to be observed in collectivistic and low-power distance cultures. China is

generally considered to have a collectivistic and low-power distance culture since it was influenced by socialism (Tian & Lau, 2001).

2.2.5 Stakeholder theory

The term "stakeholder" refers to a group of constituents who supply critical resources and have a legitimate claim on the firm. For example, stockholders, creditors, managers, employees, customers, suppliers, local communities and the public are all stakeholders. The stakeholder theory can be seen as a nexus of contracts between all resource holders including both implicit and explicit contractual relationships (Hill & Jones, 1992). It is the broad sense of the management that also recommends attitudes, structures and practices, that taken together, constitute stakeholder management (Donaldson & Preston, 1995).

Three aspects of stakeholder theory have been advanced and justified, namely the descriptive, instrumental, and normative aspects. The descriptive aspect describes the corporation as a constellation of cooperative and competitive interests possessing intrinsic value. The instrumental aspect establishes a framework for examining the connections between the practice of stakeholder management and the achievement of various corporate performance goals. Finally, the most fundamental aspect of stakeholder theory is the normative aspect. It follows the ideas that stakeholders are identified by their interests in the corporation, and the interest of all stakeholders have intrinsic value (Donaldson & Preston, 1995).

2.2.6 Power circulation theory

According to the political theory's perspective of organization, the firm is seen as a political coalition and the executives as its main political broker. Firm behavior

responds to the interests and beliefs of the dominant coalition. The circulation of power emphasizes the internal contests for control and opposition of CEOs, who exercise their influence through formal authorities and informal power (Ocasio, 1994).

Following this theory, some studies argue that corporate board composition is a result of bargaining between the CEO and the rest of the directors. When the CEO is in the dominant coalition, the corporate board tends to be composed of executive directors. In contrast, if shareholders are in the dominant coalition, the corporate board tends to be independent (Combs, Ketchen, Perryman, & Donahue, 2007).

2.3 Empirical Reviews

2.3.1 Determinants of board composition

The literature on the determinants of board structure is generally framed by three basic theories, namely the resource dependent theory, agency theory and power circulation theory. The resource dependent theory argues that the main function of the corporate board is to give advice and information needed to facilitate the firm's decision-making and strategic choices (Hillman & Dalziel, 2003; Pugliese, Minichilli, & Zattoni, 2014). According to agency theory, however, the corporate board functions to monitor the interaction between managers as the agent and shareholders as the principal, and act on behalf of the latter (Fama & Jensen, 1983; Hillman & Dalziel, 2003; Shleifer & Vishny, 1997). The power circulation theory, applied to corporate governance, suggests that CEOs can gain power from a coalition dominated by themselves; however, their power is constrained by a coalition formed by rival directors and executives (Henderson & Fredrickson, 2001; Ocasio, 1994; Shen & Cannella, 2002).

(a) ***The scope of operation hypothesis***

Based on these theories, three basic hypotheses have been formulated. The *scope of operation hypothesis* proposed that board size and independence depend on the amount of advice and resources needed for a firm's daily operations. Larger firms are usually engaged in a larger amount and more diversified activities than the smaller firms, such as operating in different product lines, driving frequent merger and acquisition activities, promoting products in markets of different regions, and possessing more sophisticated financing and governance systems. Hence, larger firms have higher demand towards information resources, including the product, labor, financial market information, social connections with the potential cooperative partners and government officers. Therefore, as firms grow and diversify over time and space, they need a larger specialized board to conduct planning, decision-making, and advising tasks (Coles, Daniel, & Naveen, 2008; Lehn, Patro, & Zhao, 2009). Pfeffer (1972) proposed that the corporate board is a vehicle through which a firm can obtain external resources. Hermalin and Weisbach (1988) suggested that firms with diversified operations need more resources. Booth and Deli (1996) argued that larger firms tend to use their board seats to create connections with external parties due to the higher demand for external contracting relationships.

In addition, the scope of operation also influences the board composition, since firms with a larger scope of operation are usually faced with more serious agency problems than are smaller firms. Hence, more outside directors need to be nominated to monitor managerial behaviour (Coles et al., 2008). Anderson, Bizjak, Lemmon, and Bates (1998) and Mayers, Shivdasani, and Smith (1997) all provide evidence for the important role of outside directors in monitoring managerial behaviour.

(b) ***The monitoring hypothesis***

The main argument of the monitoring hypothesis is that the board size and independence increase with the benefit of board's monitoring function, but decrease with the cost of board's monitoring function (Boone, Casares Field, Karpoff, & Raheja, 2007). Stuart Gillan, Hartzell, and Starks (2004) argue that the firms choose corporate governance mechanisms according to the cost and benefit. Lehn et al. (2009) connect the group decision-making benefit and cost with the group size; a larger board brings the benefit of collective information, which is necessary for board's monitoring and advising activities, meanwhile, it also brings the cost of coordination and problems of free riders. Hence, optimal board size should be the tradeoff between the cost and benefit.

The cost of monitoring in monitoring hypothesis is linked to the firms' growth opportunity. The benefit of monitoring can be attributed to the potential opportunity for managers to extract private benefit at the expense of shareholders. Firms with higher growth opportunities usually operate in an unstable and competitive business environment. Demsetz and Lehn (1985) proposed that the cost of monitoring increases when firms operate in a "noisy" environment. Hence, they need a shrewd and cohesive board of directors with rapid decision-making abilities to improve efficiency. A larger board size faces the cost of coordinating and processing, and the free rider problems render it less effective in firms with high growth opportunities. For example, Lipton and Lorsch (1992) illustrated that in the process of group decision-making, every member is expected to elaborate their views clearly and explicitly in order to reach consensus. A larger group would definitely need more time to arrive at a consensus. Jensen (1993) also suggests that keeping the board smaller can improve the efficiency, hence the optimal board size should be seven or eight members.

The growth opportunities also influence board composition. Firms with higher growth opportunities usually face information asymmetry problems, which affect outside directors' advisory function. Outside directors give advice either with limited information, or acquire and process the necessary information at a higher cost; therefore, it is not optimal for a fast-growing firm to have more outside directors (Adams & Ferreira, 2007; Linck, Netter, & Yang, 2008; Maug, 1997).

(c) ***The bargaining hypothesis***

Hermalin and Weisbach (1998) first proposed the *bargaining hypothesis*, which postulates that the board composition is the result of a CEO's bargain with the rest of the board directors. A CEO's bargaining power comes from his/her ability to influence the potential appointment of board directors. Directors appointed through the CEO would be more inclined to stand with the CEO; thus, a powerful CEO faces less monitoring. Hermalin and Weisbach (1998) argue that any external determinants of board composition became inactive when the corporate insiders constrain the selection of outsiders. Arthur (2001) found supporting evidence that the proportion of inside directors enhances the CEO's bargaining power, leading to a less independent board. Baker and Gompers (2003) also suggested that the proportion of independent directors decreases with CEO's power, whereas increases with outside shareholders. Roosenboom (2005) verified the bargaining hypothesis by showing a negative relationship between board independence and managerial power at the time of initial public offering. Boone et al. (2007) further provided evidence that board independence drops with managers' influence, but grows with constrains on managers' influence.

Empirical work addressing these hypotheses shows a lack of uniformity, suggesting that the effect of these determinants vary across different institutional settings. Guest

(2008) studied the determinants of board structure in the United Kingdom and found the board structure is less determined by monitoring related factors. In contrast, Lehn et al. (2009) suggested that board structure in the United States is determined by the tradeoff between the benefits of information brought by additional directors and the coordination costs they engender. Linck et al. (2008) also found similar results in that board composition is consistent with the cost and benefit of the board's monitoring and advising role. In another study, Russia's board structure is primarily determined by the bargaining-related variables and the country's particularity as a transition economy (Iwasaki, 2008). Similarly, Arthur (2001) found that in Australia, the CEO's bargaining power increases the number of inside directors on the board. Malaysia's board structure is determined by the scope of operation and only board size is determined by the monitoring factors (Germain, Galy, & Lee, 2014). Corporate board structure in Taiwan is sensitive to changes in the firm and CEO characteristics as well as government regulations (Chen, 2014). Despite the determinants of corporate board structure in China having been studied by Chen and Al-Najjar (2012), the relevance of the study is debatable as it was based only on the period from 1999 to 2003, that is, before the Chinese split-share structure reform. Mak and Roush (2000) found that in New Zealand, board independence is positively related to firms' growth opportunities (cost of monitoring).

2.3.2 Corporate governance mechanisms, firm performance and firm risk

Board structure, ownership structure and CEO's influence are the most important corporate governance mechanisms, and also the focus of this study. The following section reviews the influence of these mechanisms on firm performance and firm risk.

2.3.2.1 Board structure

(a) ***Board independence***

The effectiveness of board monitoring is highly related to board composition. Board monitoring becomes less effective when the board consists primarily of insiders or dependent outsiders, such as current or former managers, employees, directors who have business, family or social relationships with the CEO. Thus, board independence is key to the effectiveness of board monitoring (Lynall, Golden, & Hillman, 2003).

Independent directors, as the outside party, are considered an important corporate governance mechanism, serving primarily to monitor managerial behaviours and stand up for the interests of minority shareholders. Chinese board independence has become an mandatory requirement since the CSRC issued the "Guidelines for introducing independent directors" in 2001, stipulating that by the end of June 2002, Chinese listed firms must have two independent directors and by the end of June 2003, Chinese listed firms must have at least a third independent director. According to the CSRC's regulation, independent directors are those who have no relations with the company that may bias their judgement. Specifically, (1) their immediate family members are not permitted to work for or own a significant stake in the company or any controlling shareholder's other companies, (2) their immediate family members cannot provide consulting services to the company, (3) at least one of the independent directors must have an accounting background, (4) they must serve a term of three years and a maximum of two consecutive terms, (5) they cannot serve as an independent director for more than five firms (Zhu, Ye, Tucker, & Chan, 2015). Tricker (2011) suggested that "the more independent a director is, the less he or she knows about the company and its industry. The more a non-executive director knows a company's business, organization,

strategies, markets, competitors, and technologies, the less independent he or she may become."

The Chinese government believed that board independence maximizes the shareholders' interests and improves firm performance. However, empirical results are mixed regarding the effects of board independence on firm performance in China. Wang (2014)'s study documented about 30 selected studies, only half of which support the positive effects of board independence on firm performance, whereas the other studies provided contrary results. They found that Chinese board independence cannot improve firm performance, and the role of independent directors is mainly advisory-based rather than monitoring-based. This is because firstly, independent directors are information inferior compared to inside directors. Secondly, it is difficult for independent directors to be absolutely independent; in fact, since insiders can select independent directors based on the regulatory requirement, this renders board independence "quack corporate governance" (Romano, 2004).

In more recent Chinese board independence studies, both Li, Lu, Mittoo, and Zhang (2015) and Liu, Miletkov, Wei, and Yang (2015) found consistent positive results between percentage of independent directors and firm performance. Studies conducted in western countries, on the other hand, have failed to find a positive relationship between board independence and firm performance. Hsu and Wu (2013) found that in the United Kingdom, the likelihood of corporate failure increases with the proportion of independent directors. Bhagat and Black (2001) also challenge the positive effect of board independence in the United States and found that firms with more independent directors do not perform better than others. Faleye, Hoitash, and Hoitash (2011) and Kim, Mauldin, and Patro (2014) also found that board independence did not contribute

to firm performance in the United States. However, Black and Kim (2012) provide empirical evidence that the requirement of 50 percent outside directors improved firm performance and market values in Korea. In South Africa, board independence contributes to firm performance (Muniandy & Hillier, 2014). In Chile, the percentage of outside directors positively affects firm market value and performance (Lefort & Urzúa, 2008).

For firm risk, independent directors can exert their influence over corporate risk-taking through monitoring managerial behaviors and advising managers on designing and executing corporate strategies (Li et al., 2015). In general, outside directors facilitate a firm's borrowing, information acquisition and alliance formation. Therefore, board independence is more likely to result in firms with both resources and risk. Besides, independent directors represent the interests of small shareholders, who can be risk neutral since they can diversify their investment, and are willing to accept any project that may gain net present value regardless of the risk (Deutsch, Keil, & Laamanen, 2011). Brick and Chidambaran (2008) found a negative relationship between board independence and firm risk. Since risky firms are usually associated with greater information asymmetry between managers and shareholders, thus, independent directors find it difficult to monitor risky firms. Minton, Taillard, and Williamson (2011) found that larger boards and lower levels of board independence are associated with lower levels of risk-taking. However, Cheng, Hong, and Scheinkman (2010) found that board independence does not affect corporate risk-taking. Dionne and Triki (2005) suggested that the New York Stock Exchange requirement regarding a majority of independent directors is not necessary for shareholders' wealth and risk management.

(b) ***Supervisory board***

The 1993 Chinese company law stipulates that Chinese listed firms and non-listed joint-stock firms should adopt a two-tier board structure with a board of directors and a supervisory board. The board of directors is the decision-making organ, whereas the supervisory board is the monitoring organ. Unlike the supervisory boards in Europe, Chinese supervisory boards and board of directors are in the same organizational hierarchy; hence, both of them are appointed and held responsible for the shareholders' meeting, which is the highest power organ of the listed firms. The supervisory board should consist of at least three persons including representatives of employees and shareholders, but excluding managers, directors and financial controllers. The Chinese supervisory board is aimed at making up for the deficiencies of the existing corporate board system, it enjoys independence from the CEO and in some cases from the chairman of the board (Dahya, Karbhari, & Xiao, 2002). The main function of the supervisory board is to monitor the board of directors and executives, as well as provide advice for the firm's operations.

The 1993 company law prescribed the responsibilities of the supervisory board, but failed to define their legal power. Unlike German and Japanese supervisory boards, the Chinese supervisory board does not have the right to appoint and dismiss board directors, which weakens its efficiency as a corporate governance mechanism. Xiao, Dahya, and Lin (2004) found that a Chinese supervisory board's function depends on various factors, including the firm's ownership structure, political influence, relationships with independent directors, and its own characteristics. Most Chinese supervisory boards perform as an honored guest, a friendly advisor, an independent watchdog or a censored watchdog. Dahya, Karbhari, Xiao, and Yang (2003) interviewed the Chinese supervisory boards and suggested that most of the supervisory

boards are not truly independent, and there is a strong need to improve the functioning of the supervisory board. Hu, Tam, and Tan (2010) argue that the Chinese supervisory board is hindered by the ownership concentration and weak external governance environment; these conditions inhibit the positive governance role that improves firm performance.

The Chinese company laws established in 1999, 2004, 2005 and 2006 have made several amendments, which have greatly improved the functions of the supervisory board. Supervisory boards now have the rights to propose the dismissal of board directors or top managers, and can propose to curb top managers' compensation. Meanwhile, they are allowed to attend board of directors' meetings and raise questions (Ding, Wu, Li, & Jia, 2010). Ding et al. (2010) found that before the enactment of the 2006 company law, a supervisory board did not affect managers' compensation; after the enforcement of company law 2006, however, both supervisory board size and meeting frequency impact managers' compensation significantly.

(c) ***Board size***

The 2005 Chinese company law stipulates that Chinese listed firms must have about 5 to 19 board directors. Lipton and Lorsch (1992) advocate that limiting board size is beneficial to firm performance; when board size exceeds 10 persons, it becomes difficult for directors to hold candid discussions on the firm performance. Thus, the optimal board size should be around 8 to 9 persons. Supporting this, Yermack (1996) found empirical evidence that small board size is more effective in American industrial enterprises by showing the negative relationship between board size and Tobin Q. The incentives for CEOs are found to be stronger with small boards; this is because board size increases with the incremental cost such as coordination, communication and free

riding. Research on Finnish firms by Eisenberg, Sundgren, and Wells (1998) supported the negative relationship between board size and firm performance. Chen, Evans, and Nagarajan (2008) also suggested that a smaller board improves the firm's accounting and market performance when takeover intensity is stronger that before the United States launches anti-takeover law. Guest (2009) supports the argument that large boards are ineffective due to poor communication and decision-making in the United Kingdom. Mak and Kusnadi (2005) also found that the negative relationship between board size and firm performance exists in Singapore and Malaysia.

For firm risk, the negative relationship between board size and firm risk-taking was initially supported by social psychology studies (Moscovici & Zavalloni, 1969), that a larger group is less likely to make extreme decisions since it takes more compromise in order to reach consensus (Sah & Stiglitz, 1986; Sah & Stiglitz, 1991). The members within the group have different judgement and information processing abilities that are costly for communication. Group decisions reflect compromise between different members. With regard to risk-taking, a large group is unlikely to accept risky projects because it needs to secure a majority acceptance within the group. Chen (2008) found that in the United States, larger boards are associated with lower variability in firm performance, including stock return, ROA and Tobin Q as well as other investment and financial activities, such as acquisition and R&D spending. Wang (2012) found that the size of a corporate board is more important than its composition in determining high-risk investments like R&D, whereas low-risk investments such as property, plant and equipment were not affected by board size. Nakano and Nguyen (2012) found that in Japan, a large board reduces performance volatility and bankruptcy risk. However, in New Zealand and China, a large board is associated with greater risk-taking (Huang & Wang, 2015; Koerniadi, Krishnamurti, & Tourani-Rad, 2013).

2.3.2.2 CEO's influence

(a) ***CEO duality***

Chinese CEOs are not the ultimate corporate controllers like CEOs in America. In China, it is common that all the general managers are denoted as CEOs who are top managers of the firm. In most cases, the board chairman has more power than CEOs to control and run firms, since the board chairman is the firm's legal representative selected by the shareholders. CEO duality refers to a practice where the CEO and board chairman positions are held by the same person. CEO duality has been a controversial corporate governance phenomenon, hotly debated over the past two decades because it was regarded as a "double-edged sword" (Finkelstein & D'Aveni, 1994). The positive "edge" can be supported by the stewardship theory, which proposes that CEO duality brings about a stronger leadership. Thus, faster decision-making and improved managerial efficiency can be realized through CEO duality. The negative "edge" can be explained by the agency theory, because CEO duality gives extra power to CEOs which weakens monitoring of managers' self-serving behaviour (Krause, Semadeni, & Cannella, 2013).

CEO duality becomes a contentious issue when it comes to firm performance. Some studies have found that CEO duality has no effect on firm performance (Baliga, Moyer, & Rao, 1996; Daily & Dalton, 1992, 1993). Other studies have found contrasting evidence regarding its effects. Some studies found positive effects on firm performance (Boyd, 1995; Brickley, Coles, & Jarrell, 1997), while others found negative effects (Chen, Cheung, Stouraitis, & Wong, 2005; Daily & Dalton, 1994; Rechner & Dalton, 1991).

Boyd (1995) argues that CEO duality is beneficial when there is an environmental uncertainty, since the united command and execution would facilitate firms in speeding up decision-making processes necessary for dealing with environmental uncertainty. When the environment is stable, on the other hand, separate CEO and chairman positions would reduce opportunistic behaviour by the CEO. However, in general, CEO non-duality raises the cost associated with information delivery between CEO and board chairman (Brickley et al., 1997). He and Wang (2009) suggested that the cost is magnified especially when firms need a large amount of knowledge asset; CEO duality enhances the already positive relationship between knowledge asset and firm performance.

Besides, CEOs' risk preference is fundamental for corporate development. Specifically, managers and CEOs' risk-taking attitude depends on diversified factors including job security, personal reputation, stock incentives and compensation. Most managers and CEOs prefer projects that have lower risk (March & Shapira, 1987), since they have to be responsible for corporate insolvency and financial distress when taking on risky projects. Kim and Buchanan (2008) found a negative relationship between CEO duality and firm risk-taking. In contrast, Li and Tang (2010) found a positive relationship between CEO duality and firm risk-taking because CEO duality strengthens CEO hubris, which increases risk-taking.

There is an increasing trend to separate the positions of CEO and board chairman in China since it could provide more effective monitoring against CEOs' self-serving behaviour (Yang et al., 2011). According to the power circulation theory, top management tends to use power to dominate the board by choosing loyal directors from

within rather than the independent directors from outside; ultimately, this results in avoiding power contests between rivals (Combs et al., 2007).

(b) ***CEO tenure***

Recent research tends to align CEOs' characters with firm performance. CEO tenure has been characterized as life cycles, and CEOs' contribution towards firm performance was suggested to be inverse U-shaped (Hambrick & Fukutomi, 1991; Henderson, Miller, & Hambrick, 2006; Miller & Shamsie, 2001). Hambrick and Fukutomi (1991) proposed that new CEOs face knowledge shortage at the very beginning, but as they become familiarized with their jobs and organizations and gained experience, they gradually start to contribute to firm performance. However, after reaching a certain point, the CEO becomes increasingly insular with regard to the outside environment and overly committed to their earlier paradigm, resulting in a downtrend in firm performance.

Henderson et al. (2006) argue that CEOs' within-firm learning is affected by the stability of the environment. They found that in a stable food industry, the firm performance increases steadily with CEO tenure, with the downturn occurring only after 10 to 15 years. In contrast, in a dynamic computer industry, the CEO starts with the best performance, and then declined steadily over time.

Chen and Zheng (2014) summarized four interpretations regarding CEO tenure, including power, human capital investment, experiences and career concerns. Firstly, CEO tenure is an important ingredient for building CEO power. Power is defined as the capacity of individual actors to achieve their will (Finkelstein, 1992). CEOs initially rely on other executives for corporate knowledge and insight, but they develop their leadership skills gradually over time and eventually can exert profound influence on the

firm (Shen, 2003). Secondly, CEOs' experience also increases over time. Thirdly, CEOs' human capital investment in specific firms increases with CEO tenure (Buchholtz, Ribbens, & Houle, 2003). A CEO develops firm-specific knowledge only valued within a particular firm; a long CEO tenure thus constrains the diversity of the CEO's human capital investment (Chen & Zheng, 2014). Fourthly, the CEOs' concern about their future career development decreases with their tenure (Gibbons & Murphy, 1991).

There are two competing arguments regarding the effect of CEO tenure on corporate risk taking. On one hand, CEO tenure increases managerial power and experience as their social capital and knowledge accumulates over time. It is likely that CEOs with long tenure may undertake risky projects; this is because the possibility of the losses associated with risky projects reduces with the CEOs' accumulated learning, skills and refinement of risk-taking behaviours (Simsek, 2007). Chen and Zheng (2014) found that the declined career concerns and the accumulation of tenure combine to increase CEOs' incentives to undertake risky projects.

(c) ***CEO age***

CEO age has a significant impact on firm performance because the CEO's career concern reduces as they are approaching the age of retirement (Antia, Pantzalis, & Park, 2010). CEOs who are approaching retirement tend to be more "myopic"; since they pay less attention to the firm income after their retirement, good investments may be rejected because of "myopia" (Campbell & Marino, 1994). Besides, the aging process changes an individual's physical and psychological condition, which in turn affects their decision-making, strategic choice, risk preference, motivations and leadership. Zhang (2010) found that CEO age is negatively related to firm growth and market value. A

CEO's age also influences their risk-taking decisions. Bertrand and Schoar (2002) found that older CEOs tend to be more conservative in decision-making.

2.3.2.3 Ownership structure

(a) ***Managerial ownership***

Cho (1998) analyzed a sample of Fortune 500 manufacturing firms and found that managerial ownership influences firm values through the corporate investment. The agency theorists suggest that managerial ownership aligns the interests of managers and shareholders, as well as motivates managers to work towards value maximization, leading to improved firm performance (Jensen & Meckling, 1976). Agency theory implies that increased managerial ownership can improve firm performance. However, Morck, Shleifer, and Vishny (1988) suggested that when managerial ownership is high, these managers tend to be entrenched in their mindsets, and their actions may be out of the shareholders' control. Managers may believe that the benefits brought by the perquisites (such as the use of a company car, subsidies in travel, reimbursements of entertainment for business purposes) may outweigh the losses in firm value. In addition, high ownership gives managers sufficient power to pursue their own interests without discipline from other ownership (Short & Keasey, 1999). McConnell and Servaes (1990) found a curvilinear relationship between the managerial ownership and firm performance, and the negative effects start from about 40% to 50% managerial ownership. Chen (2001) found that managerial shareholdings improve firm performance in Chinese listed firms. Li, Moshirian, Nguyen, and Tan (2007) found supporting evidence that managerial ownership positively affects firm performance in privatized state-owned enterprises. Gao and Kling (2008) suggested that giving senior managers stock incentives can help reduce tunneling and improve firm performance.

Since managers are more concerned about their job security, compensation, and future career development, most of them are adverse to risk. Coles, Daniel, and Naveen (2006) found that managerial risk-averse behaviour may reduce firm risk-taking, but the equity-based compensation encourages managers to take more risk. Low (2009) found supporting evidence that low firm risk exists with low equity-based managerial compensation. Kim and Lu (2011) found that the relationship between CEO ownership and risk-taking is inverse U-shaped; R&D expenses increase at low levels of ownership but risk-taking is reduced at high levels of ownership.

(b) ***Ownership concentration***

The corporate board has the responsibility to advocate for the shareholders' interests, especially when the ownership is dispersed. However, in most Asian companies, ownership is usually concentrated in the hands of a few large shareholders (Jiang, Lee, & Yue, 2010). Wruck (1989) proposes that ownership concentration is beneficial to firm value if block holders use their voting power to facilitate the value-increasing takeover or efficiently manage the corporate resources. In contrast, ownership concentration is harmful to firm value when block holders insulate managers from market discipline and takeover threats. On the positive side, ownership concentration is an effective corporate governance mechanism that contributes to firm performance, especially when the corporate context lacks market discipline and a perfect legal system (Claessens & Djankov, 1999). When ownership is highly concentrated[4], minority shareholders find it costly to monitor the management, since minority shareholders share relatively little of the firm's revenue and they have little knowledge about corporate governance. Most of them are "free rider" investors. Hence, large shareholders who have more interest in the firm assume more responsibilities in monitoring management (Shleifer & Vishny, 1997). If they cannot monitor the management themselves, they can expedite third-party

[4] Ownership concentration refers to the concentration of ownership rights that are jointly owned by several large shareholders.

takeover by sharing their gains with bidders. Therefore, ownership concentration minimizes agency problems between shareholders and managers (Li, 1994). The main agency problem under the concentrated ownership structure is among large shareholders and minority shareholders, due to possible conflicts of interest (Yang et al., 2011). Minority shareholders are more flexible in diversifying their investments with a short-term horizon, while large shareholders will be more concerned about the firm's long-term and sustainable development. Large shareholders usually utilize other corporate governance mechanisms to monitor the firm, such as improving incentive compensation and conducting direct supervision. In China, large shareholders always involve themselves in major corporate decision-making and managerial processes (Gul, Kim, & Qiu, 2010). Hence, board independence and ownership concentration tend to substitute each other in terms of monitoring (Lefort & Urzúa, 2008).

On the negative side, large shareholders may use their power to expropriate minority shareholders' interest through collusion with top managers, which is known as "tunneling" and harms firm performance. Heugens, Van Essen, and van Oosterhout (2009) summarized three types of tunneling practices. First, self-dealing and related-party transactions enable large controlling shareholders to transfer firm resources to other entities. Second, large shareholders can increase their share in the firm through minority-disadvantaging transactions, such as dilutive share issues and insider trading. Third, they can expropriate minority shareholders' interests by setting their own compensation at a rate beyond market level (Johnson, La Porta, Lopez, de, & Silanes, 2000). There are also studies which have found no significant relationship between ownership concentration and firm performance. Omran, Bolbol, and Fatheldin (2008) and Chen et al. (2005) only found a weak relationship between ownership concentration and firm performance.

Theoretically, there are mixed possibilities between ownership concentration and firm risk-taking. On one hand, large shareholders can maximize firm values by promoting high-risk, high-return investment. Koerniadi et al. (2013) found that in New Zealand, multiple large shareholders turn to this step of inducing higher levels of risk-taking. Demsetz and Villalonga (2001) found that there is a positive relationship between ownership concentration and firm-specific risk. On the other hand, large shareholders have the authority and incentive to monitor managerial behaviours; managers therefore tend to implement conservative financial strategies in the interest of job security. It is especially when the stock market condition is poor that large shareholders are less likely to diversify their investment, leading to lower risk-taking to safeguard their property (John, Litov, & Yeung, 2008).

(c) ***State ownership***

Due to the partial privatization being only partial, state ownership remains an important issue in China despite the introduction of economic reforms in 1978. State-owned enterprises have remained important custodians of the government to protect the interests of the masses (Zhang & Rasiah, 2015). However, state ownership leads to more serious agency problems, as state shareholders have the incentive to abuse state assets for their own interest (Wang, 2003). The dominance of state ownership may result in a divergence in the allocation of capital resources for non-profit uses such as maintaining higher employment rates. In addition, due to the lack of effective external monitoring over management, the controlling power would ultimately fall into the hands of directors and managers who bear minimal risk for their decisions, as they are largely insulated from the discipline of the market (Oliver, Qu, & Wise, 2014).

Wei and Varela (2003) found that state ownership is detrimental to firm performance in newly privatized Chinese firms. Sun, Tong, and Tong (2002) complements the empirical evidence, finding that the relationship between government ownership and firm performance is inverted U-shaped, which suggests that a certain amount of state ownership is optimal. Yu (2013) also found a U-shaped relationship between state ownership and firm performance. Despite state ownership having been criticized for its inefficiency due to its negative effect on firm performance (Gunasekarage, Hess, & Hu, 2007; Hovey, Li, & Naughton, 2003; Xu & Wang, 1999), the Chinese government is still cautious in its privatization process. Some state-owned enterprises (SOEs) were fully privatized, while others were still controlled by the Chinese government or its agencies, through either retaining ownership before they went public or purchasing tradable shares from the open market.

For firm risk, Boubakri, Cosset, and Saffar (2013) contend that state ownership reduces firm risk-taking, because government shareholders have the objective of maintain a lower unemployment rate and social stability. They would endeavor to ensure long tenure of power rather than focus on complete profit maximization; therefore, firms with high state ownership are less likely to engage in risky investments. The government has the intention to stabilize big business groups, which are the key providers of middle-income jobs (Fogel, Morck, & Yeung, 2008).

2.3.3 The impact of split-share structure reform

The impact of split-share structure reform has been widely studied. Hou, and Lee (2012) examined its impact on foreign share discount puzzle in China, and found that before the reform, the state shareholder has little incentives to cooperate with private shareholders to ensure managers work towards firm's market value maximization,

because the state hold a majority of non-tradable shareholders that denied any wealth effects from stock price movement. After the reform, the interest alignment between state and private shareholders encouraged their cooperation in the monitoring managerial behaviors. They also imply that this significant institutional reform has benefited minority shareholders. Hou, Kuo, and Lee (2012) found that the split-share structure reform strengthen the corporate governance incentives of state shareholders. The reform increased the stock price informativeness of Chinese listed firms. Their findings imply that the split-share structure reform is beneficial for information environment and minority shareholders. Supporting this, Liao, Liu, and Wang (2014) also suggested that the market mechanism adopted by this reform mitigates the information asymmetry between state and private shareholders.

Beltratti, Bortolotti, and Caccavaio (2012) examined the impact of this reform on Chinese stock market and conclude that this reform is particularly beneficial for small stocks, stocks with poor historical stock returns and stocks issued by firms with low transparency and poor corporate governance. Liu, Uchida, and Yang (2013) studied the impact of this reform on cash dividend payment, they found that Chinese controlling shareholder's cash dividend preference is attribute to the illiquidity of their shares rather than the non-tradability of the shares. Firth, Lin, and Zou (2010) found evidence that during this reform non-tradable shareholders (majorities are state) have incentives exert a political pressure on tradable shareholders (majorities are institutional investors) to accept the terms for the reform. The tradable shareholders finally bow to the political pressures and help state enterprises done the reform quickly with low cost.

2.4 Controlling shareholders

Based on controlling shareholders, four types of enterprises can be distinguished, namely, (1) market-oriented state-owned enterprises (SOEs) (MOSOE), such as China National Petroleum Corporation, China Power Investment Corporation and Sinosteel Corporation, (2) SOEs affiliated to central government agencies (Central), central state assets management bureaus and state councils, such as China Great Wall Computer Shenzhen Company Limited, China Merchants Property Development Company Limited, (3) SOEs affiliated to local government agencies (Local), local state assets management bureaus and local government, such as Guangzhou Automobile Group Company Limited, Shanghai Pharmaceuticals Holding Company Limited, and (4) firms controlled by individuals (Private), such as Suning Commerce Group Company Limited and Zhejiang Busen Garments Company Limited.

The central government controlled firms are the focus of Chinese economic reforms and are strictly monitored by the central government (Xu, 2004). The CEOs and chairmen of these firms are usually carefully selected by the central government on the basis of their leadership qualities, since most of them are in line to be promoted to the rank of Minister (Chen et al., 2009). Local government controlled firms are less closely monitored by the central government since they are located in regions far from the Chinese Communist Party's power center in Beijing. The distance makes central government enforcement of regulations difficult (Chen et al., 2009), but local governments do have the right to set up their own regulations to manage local state assets.

Both central and local government controlled firms are less likely to be driven totally by the profit motive since the officials of Chinese government agencies are public

servants. Their promotion depends on how well they implement government instructions, and they receive fixed salaries. Even though they have the right to select managers and directors, as well as approve investment plans proposed by management, they are nevertheless prohibited from direct management as the ultimate corporate controllers. They also have no residual cash flow rights, as all dividends are submitted to the Minister of Finance. Therefore, the main agency problems of government-controlled firms arise from controlling shareholders and minority shareholders (Berkman et al., 2012).

In contrast, market-oriented state enterprises are likely to pursue profits and enjoy a degree of autonomy from the state as they can retain after-tax profits. Since managers typically receive monetary rewards based on firm performance, the incentive compensation mechanism helps mitigate agency problems between controlling and minority shareholders (Berkman et al., 2012).

Private enterprises are firms controlled directly by individuals, and have mushroomed since China began opening up its economy in 1978. Since they function like their counterparts in the developed countries, they are likely to show market-oriented conduct with strong commercial motivation (Wei et al., 2014). The government has limited supervisory power over private enterprises, and hence, these firms are likely to maximize shareholder wealth as they can select a management team based on performance criteria (Berkman et al., 2012).

Central, Local, and MOSEs are state-controlled firms that enjoy financial privileges not available to private firms, while private firms are more likely to be influenced by market forces and resemble their counterparts in developed countries (Wei et al., 2014).

Banks are willing to lend to state-controlled firms since the government would share the losses with the banks if the firms were unable to repay the loans (Liang et al., 2012). The Chinese government also provides political and financial support, such as a reduced tax burden and debt-for-equity swap to reduce the debt burden (Sun & Tong, 2003).

2.5 Summary

After a brief review of the related theories and empirical studies, the study found that even though the determinants of board composition have been widely explored, there are some aspects that still lack of in-depth study. First, most of these studies are explained from the perspective of mainstream western theories: agency theory, resource dependent theory and power circulation theory. Second, the majority of these studies pay little attention to the importance of institutional embeddedness and the influence of other stakeholders, especially when the economy was undergoing transformation. Third, most of the conclusions are drawn from research in capitalist economies, such as in the United States and United Kingdom. Fourth, the split-share structure reform in 2005 greatly changed the Chinese institutional environment, thus, conclusions drawn from research prior to 2005 can hardly reflect the current situation. In addition, Chinese corporate governance has its own characteristics that may substitute or complement the corporate board during transition periods.

As for the relationship between corporate governance and firm performance, Firstly, one strand of studies found “linear” relationships, another strand found “non-linear” relationships. There is a lack of consensus among the relevant studies, and most of them only focus on a single dimension of corporate governance, hence paying less attention to the joint effect of different corporate governance mechanisms on firm performance. Secondly, most of the previous studies were focused on the relationships between

corporate governance and firm performance (Hu, Tam, & Tan, 2010; Kang & Kim, 2012; Lefort & Urzúa, 2008; Yu, 2013), and based on perspectives of mainstream theories, such as the agency theory. However, according to the institutional theory, corporate governance practices vary in firms with different controlling shareholders. Therefore, the relationships between corporate governance mechanisms and firm performance in different institutional environment during the Chinese state enterprises reform is an important issue that is still under-examined.

Even though corporate governance and corporate risk-taking is a hotly debated issue, most of the previous studies were focused on the relationship between board size and corporate risk-taking (Ho, Lai, & Lee, 2013; Huang & Wang, 2015; Koerniadi et al., 2013; Nakano & Nguyen, 2012). The independent directors' risk preference in enterprises with different controlling shareholder types, and at different stages of state enterprise reform is still under-examined. Besides, in-depth investigation is also lacking in terms of the risk preference of other stakeholders, such as the government, managers and CEOs.

CHAPTER 3: METHODOLOGY

3.1 Introduction

This chapter briefly describes the research methods and data used for this thesis. The generic method used for this thesis is the quantitative method with statistical analysis. This paradigm is applied because of the key focus of this study is the corporate financial performance, financial risk, cost and benefit, and others. The analysis process is primarily based on firm's financial and corporate governance data disclosed annually in financial report.

The structure of this chapter starts with the exhibition of conceptual framework and flow of analysis in section 3.2. The section 3.3 shows the analytical framework for each analysis chapter. The section 3.4 shows the research design of this study, specifically, research approach, model specification, hypothesis, data, and estimation methods. It is then followed by the section 3.5 that discusses the econometric issues concerned in this study including the multicollinearity, heterogeneity, autocorrelation as well as the endogeneity applied in this study for diagnosis and specification.

3.2 Conceptual framework

The concept of corporate governance can be explained from multiple perspectives as discussed in Chapter 1. Largely, it depends on one' perception of the world (Gillan, 2006). Gillan (2006) argue that corporate governance can be divided into those external to firms and internal to firms.

The figure below shows the conceptual framework of this study, it illustrates the influence of corporate governance mechanisms on firm performance. The corporate

governance structure applied in this study is adapted from the corporate govern models developed by Gillan (2006). Board of directors forms the center of the corporate governance structure that connects shareholders (principle) and CEO (agent). Zhang (1999) view corporate governance as a series of institutional arrangements regarding the corporate board's functions, structures and shareholder's rights. Shareholders, board of directors and CEO (head of managers) are three main corporate participants constitute most important part of corporate governance. Other external governance mechanisms such as law, culture, and politics are not the focus of this study, since this is a single country study that all the listed firms operate in the Chinese context.

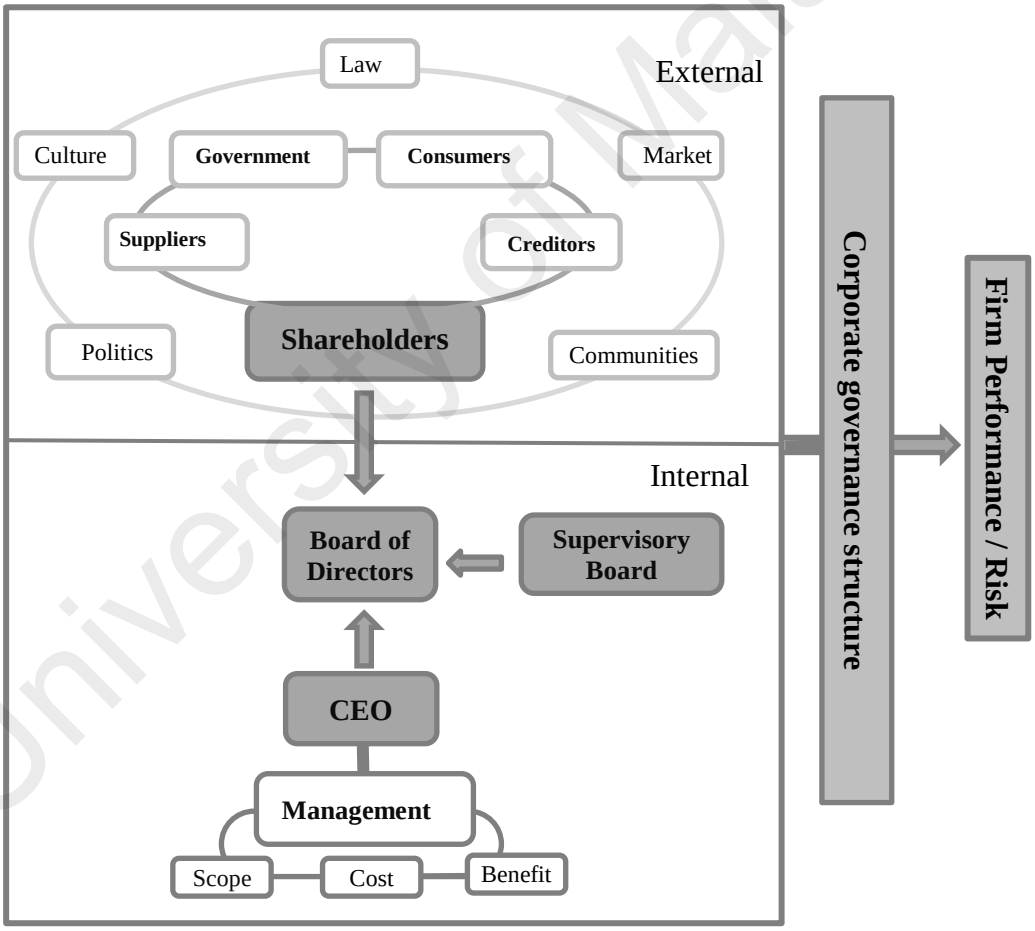

Figure 3.1: Conceptual Framework

Figure 3.2 shows the flow of analysis of this study that illustrates the general idea, scope, circulation of objectives, and rationality. To begin with, the arrow at the top of this chart shows background information about Chinese economic transition, through

which the corporate governance issues are raised. To be specific, due to the economy transition, the state enterprises have to seek financial support from non-state entities, therefore, the ownership structure has been decentralized. During this period, the split-share structure reform in April 2005 has still been the most important milestone of ownership reform in China. Consequently, some state enterprises retained by central government and local government agencies, whereas, some state enterprises are partially privatized in the form of MOSOE, and some are totally privatized.

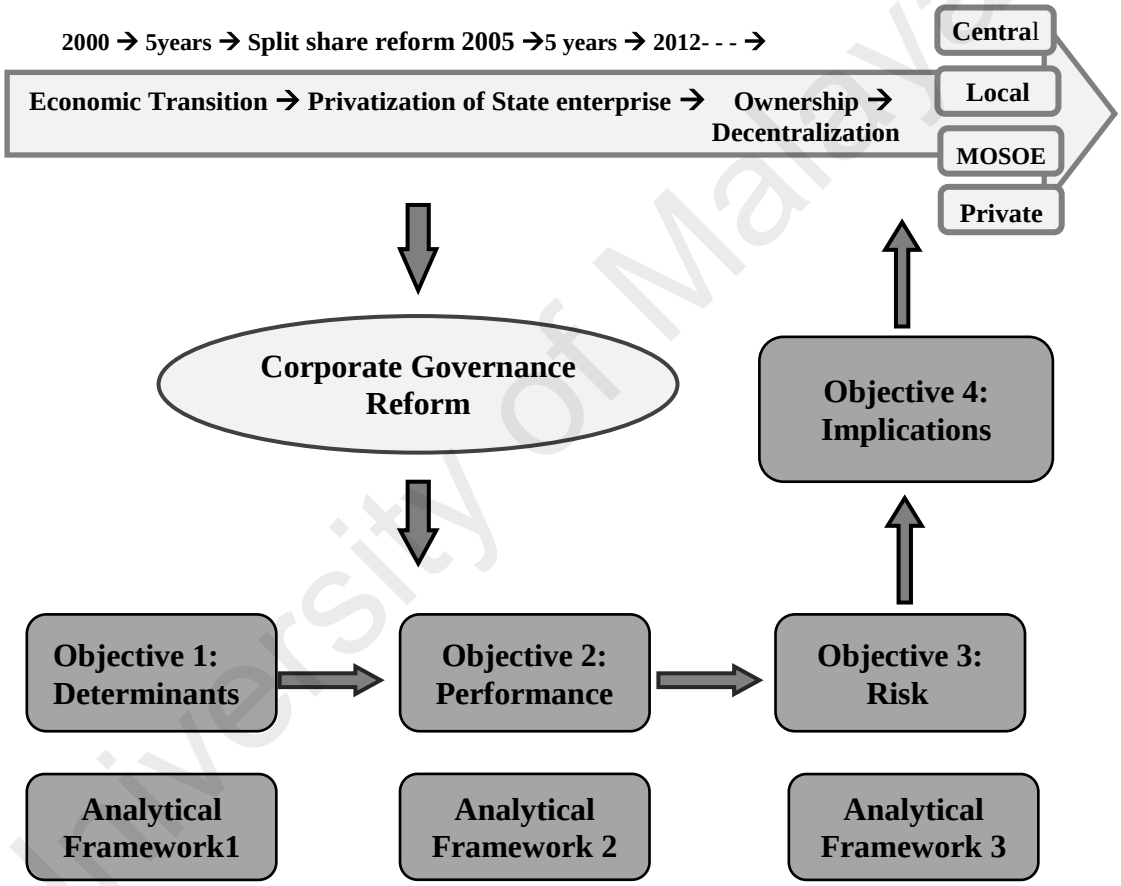

Figure 3.2: Flow of Analysis

From the economic transition background, issues about corporate governance reform are raised. Then, 4 research objectives are proposed to solve these issues, thus suggest for further reforms. Specifically, this study begins with the analysis of the determinants of corporate board composition, which is the most important part of corporate governance, followed by the examination of corporate governance's impact on firm

performance and firm risk. The Objective 1 is crucial for the understanding of the corporate governance structure. The Objective 2 is important for the evaluation of corporate governance efficiency. The Objective 3 is critical for firms' long-term development. Finally, from the analysis of Objective 1 to 3, this study attempts to give suggestions for China and other transition economies to further their state enterprise reform and corporate governance reform. By having this attempt accomplished, the Objective 4 is met. The detailed analysis of these 4 objectives will be discussed further in the following chapters – Chapter 4, Chapter 5, Chapter 6, and Chapter 7.

3.3 Analytical framework

In order to show how these objectives to be achieved, the analytical framework has been developed and shown in **Figure 3.3** to **Figure 3.5** below. To be specific, **Figure 3.3** illustrates the analysis process for determinants of board composition. The left hand factors are potential determinants examined in this analysis. The right hand displays the comparative analysis applied to different sub-samples including different categories of controlling shareholders and the reform periods.

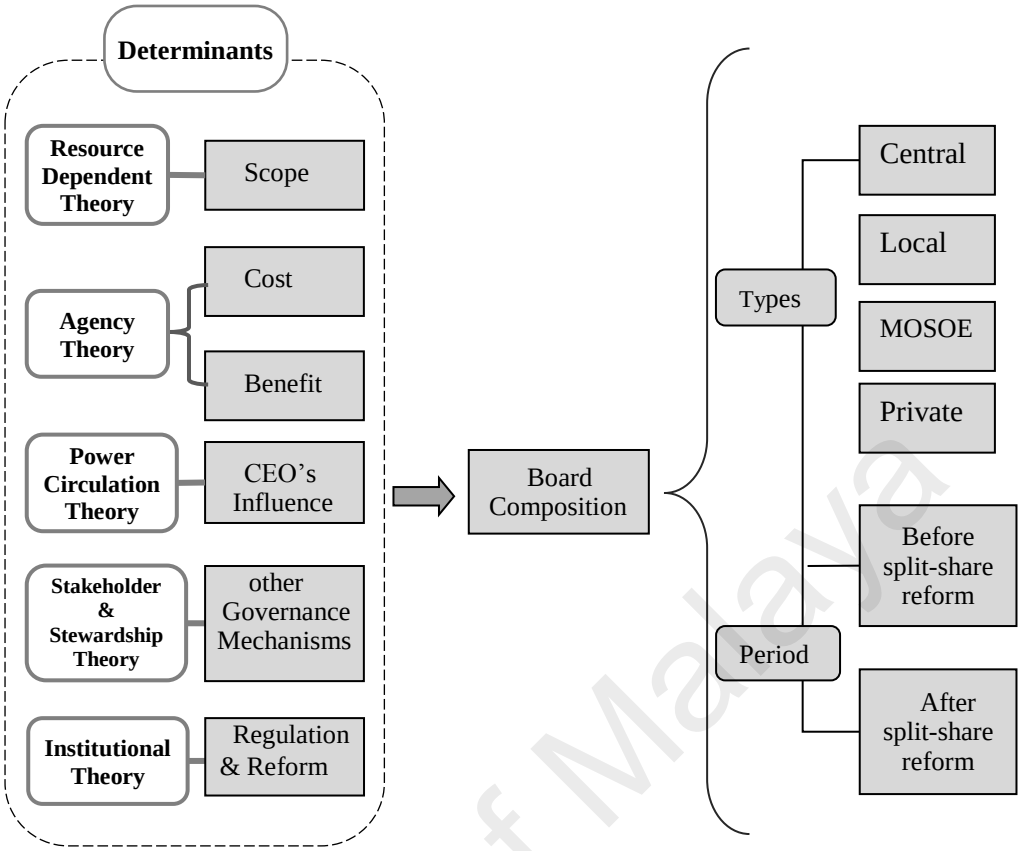

Figure 3.3: Analytical Framework 1

Figure 3.4 shows the analysis process between corporate governance and firm performance. The left hand dimension shows the key factors regarding board structure, ownership structure, CEO's influence and other mechanisms tested in this study. The right hand dimension shows the different institutional environment, through which the analysis was conducted. Similar to the above frameworks, **Figure 3.5** illustrates the analysis process between corporate governance mechanisms and firm risk.

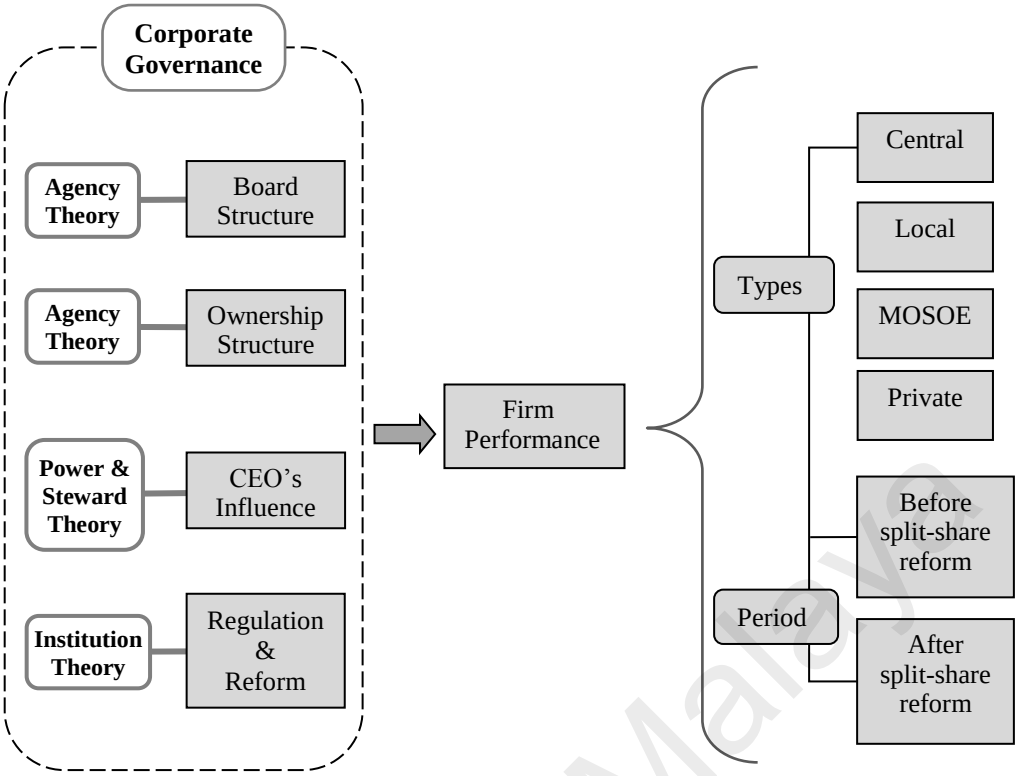

Figure 3.4: Analytical Framework 2

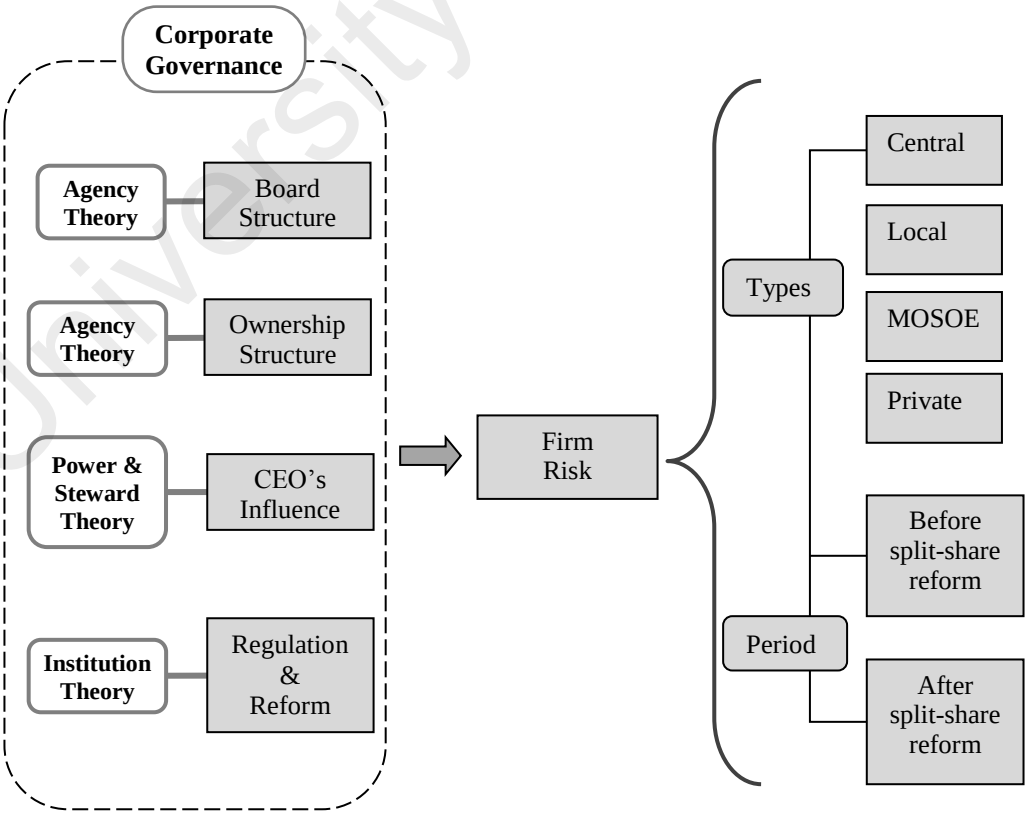

Figure 3.5: Analytical Framework 3

3.4 Research design

This section briefly describes the research approach, hypothesis development, model specification, data, and estimation methods.

3.4.1 Research approach

This study used a quantitative method for several reasons: (1) to explore numerical answers regarding the size of corporate boards, the percentage of independent directors, and firm financial performance, which is a key indicator for investors, shareholders and managers to evaluate efficiency; (2) to compare the numerical changes in firm financial performance and stock return volatility between the 'before reform' period and the 'after reform' period; (3) to test several hypotheses as suggested by relevant theories and previous studies (Muijs, 2010). In order to investigate the influence of the reform on corporate governance, firstly, this study used the parameter *t* test to identify the mean difference between key variables. It suggested that there are empirical differences between firms before and after the reform, as well as between firms with state and private controlling shareholders. Secondly, this study used panel data regression methods to explore the hypotheses.

3.4.2 Hypothesis development

The hypotheses developed in this section are applied to delineated sub-periods as well as to groups of enterprises.

(a) ***Hypotheses regarding determinants of board composition***

Ha1：Board size and board independence are positively related to the scope of the firm's operation for firms with different controlling shareholder types and at different periods of the split-share structure reform.

The scope of operation hypothesis suggests that the size of the corporate board and the proportion of independent directors depend on the scope, complexity, and diversity of the firm's operation (Boone et al., 2007). This is because one of the key functions of the corporate board is to provide resources such as business information, expertise, and social connections (Hillman & Dalziel, 2003). Lehn et al. (2009) suggested that as firms expand in a geographical territory over time, more directors are needed to facilitate the firm's daily operations. Therefore, this study predicts that Chinese corporate board composition is dependent on the scope of the firm's operation – a hypothesis which has been confirmed by many Western studies.

- **The monitoring hypothesis**

Ha2: Board size and board independence are negatively related to the cost of monitoring and positively related to the benefit of monitoring for firms with different controlling shareholders types and at different periods of the split-share structure reform.

The monitoring hypothesis proposes that board size and independence increase with the benefit of monitoring, but decrease with the cost of monitoring. The benefit of monitoring refers to the potential opportunities for managers to extract private benefits. The cost of monitoring can be attributed to a firm's growth opportunities, because fast-growing firms usually face information asymmetry problems that make it difficult for directors to realize their monitoring and advising role. Information asymmetry problems could include insufficient or costly information.

- **The bargaining hypothesis**

Ha3: Board independence is negatively related to the CEO's influence for firms with different controlling shareholder types and at different periods of the

split-share structure reform.

The bargaining hypothesis proposes that board composition is the result of a CEO's bargaining with the rest of the directors. A self-interested CEO prefers less monitoring and low pressure from the corporate board; a corporate board dominated by inside directors who follow the CEO's leadership can facilitate the realization of the CEO's objectives. Hence, a powerful CEO tends to face less monitoring from independent directors.

- **The other corporate governance mechanisms**

Ha4: Corporate governance mechanisms have significant influence on board size and board independence for firms with different controlling shareholder types and at different periods of the split-share structure reform.

Following Chen and Al-Najjar (2012)'s recommendations, this study predicts that supervisory board size, ownership concentration, managerial ownership, state ownership and CEO duality are important corporate governance mechanisms that may significantly affect board size and board independence in China. The main function of the supervisory board is to supervise and monitor the corporate board; therefore, a large corporate board requires a large supervisory board to monitor it. Since the functions of the supervisory board and independent directors overlap to some degree, the supervisory board may substitute independent directors. Managerial ownership in a firm aligns the managers' interests with that of the shareholders. When managers' interests are closely tied to the corporate board's decision-making processes and strategic choices, it would increase managers' concerns about corporate board composition. Therefore, this study predicts that board size increases with managerial ownership, as more directors are needed to distribute managers' interests in the firm. Simultaneously, managerial ownership would reduce board independence, since one of the independent

directors' key functions is to monitor managerial behavior, but managers would not welcome such monitoring.

Ownership concentration represents the cumulative interests of several large shareholders in the firm. High ownership concentration renders large shareholders more concerned about corporate governance as compared to minority shareholders, as large shareholders have more interest in the firm and are willing to undertake more responsibilities in corporate governance. Therefore, the study predicts that ownership concentration increases board size, as more directors are needed to delegate large shareholders' interests. However, independent directors are less preferred by large shareholders, because they may not support large shareholders completely. Minority shareholders' interests may bring them into conflict with large shareholders. State ownership was retained in most Chinese-listed firms. Similar to other shareholders, state shareholders can realize their interests through corporate board decisions. Therefore, they prefer a large and less independent board because their interests differ from that of other domestic investors. CEO duality gives the CEO leadership roles on both the management team and the corporate board. It is likely that CEOs could abuse their power by shaping a smaller and less independent board, on which they could easily exert influence and pursue their own interests at the expense of other shareholders.

(b) ***Hypothesis regarding corporate governance and firm performance***

Hb1: Board structure has significant influence on firm performance for firms with different controlling shareholder types and at different periods of the split-share structure reform.

Board independence in China can hardly result in positive influence on firm performance because of the political intervention that affects the real independence of

the independent directors. Although the government has stipulated that the percentage of independent directors should be at least 33 percent by 2003, Chinese corporate boards are still dominated by insiders, thus increasing the difficulty for independent directors to access corporate information. Thus, this study predicts that board independence has a negative effect on firm performance.

As for board size, it has been proposed that a smaller board is more effective than a larger one, since a larger board may incur the incremental cost of communication, free-rider problems, and slow decision-making, which ultimately harms firm performance. Despite that, a large board can bring in more resources and advice to facilitate the firm's decision-making processes and strategic choices. Lipton and Lorsch (1992) suggested that when board size is more than 10 persons, the board is unable to contribute to firm performance. Therefore, the study predicts that the relationship between board size and firm performance is an inverted U-shaped curve. The supervisory board is set up to back up independent directors, and its efficiency is highly influenced by government policies, the external environment, ownership structure, and its own characteristics (Hu et al., 2010). The Chinese supervisory board does not have the rights to dismiss directors and managers. Therefore, this study predicts that since the Chinese supervisory board cannot improve firm performance, its relationship with firm performance is negative.

Hb2: CEOs have significant influence on firm performance for firms with different controlling shareholder types and at different periods of the split-share structure reform.

A CEO's career concerns and leadership reduce gradually as they approach the age of retirement, as physical and psychological changes in the aging process reduce their

decision-making abilities (Antia et al., 2010). Hence, CEO age may negatively affect firm performance. Besides, the CEO faces information and knowledge shortage in the initial year of his tenure. As time goes by, the CEO gradually familiarizes himself with the job and firm-specific knowledge, which in turn contributes to improved firm performance. After a certain time, however, the CEO tends to focus on the firm's internal culture and become insulated from the outside environment, which harms firm performance. Thus, CEO tenure and firm performance may follow a U-shaped curve. Furthermore, when the CEO and the chairman of the board is the same person, it leads to stronger leadership, faster decision-making and improved management efficiency. During an economic reform, the corporate environment is unstable, and the professional manager market in China is such that CEOs face difficulties getting a new job if they are dismissed. Thus, CEO duality is predicted to be favorable for value maximization.

Hb3: Ownership structure has significant influence on firm performance for firms with different controlling shareholder types and at different periods of the split-share structure reform.

State ownership, managerial ownership and ownership concentration represents ownership structure in the focus of this study. State ownership has been criticized for its inefficiency in improving firm performance, because it lacks effective external monitoring. Such firms face more serious agency problems between government and domestic shareholders. Since the government has non-profit purposes for public firms, value maximization is not necessary for state shareholders. Thus, state ownership may negatively affect firm performance. Managerial ownership connects managers' interests with that of the shareholders, which motivates managers to work towards firm value and performance maximization. Hence, firm performance is predicted to increase with managerial ownership. Ownership concentration is an important corporate governance

mechanism in China, where market condition and legal infrastructure are imperfect. Large shareholders undertake most of the corporate governance responsibilities, which is favorable. However, large shareholders may expropriate small shareholders' interests, which is unfavorable. Therefore, ownership concentration may lead to improved firm performance, but firm performance may suffer if ownership is overly concentrated.

(c) ***Hypothesis regarding corporate governance and firm risk***

Hc1: Board structure has significant influence on firm risk-taking for firms with different controlling shareholder types and at different periods of the split-share structure reform.

Consistent with existing research, this study predicts that board size is negatively related to firm risk-taking, because it is difficult for a large decision-making group to reach consensus. Hence, it is less likely for a large board to undertake risky projects. The main function of independent directors is to monitor managerial behaviors. Such monitoring could constrain managers from taking risky projects as managers would tend to be more conservative. Therefore, board independence may reduce firm risk. The main function of the supervisory board is to support independent directors in monitoring the behaviors of board directors and managers. Therefore, a large supervisory board may constrain corporate risk-taking behavior and lead to the implementation of conservative corporate strategies.

Hc2: CEOs have significant influence on firm risk-taking for firms with different controlling shareholder types and at different periods of the split-share structure reform.

A CEO's risk-taking behavior may be constrained by factors like job security, personal reputation and compensation; thus, most of them are adversely affected by

risk. CEO duality gives CEOs extra power and responsibility that leads them to reduce risk-taking since they have to be responsible for the potential losses. Hence, CEO duality is predicted to negatively affect firm risk. As CEOs' knowledge and experience are cumulated over time, it is likely that CEOs with long tenures may undertake risky projects because the possibility of loss decreases with cumulated learning, skills and refinement of risk-taking behaviors. Furthermore, CEOs' concerns about future career development decrease with tenure. Thus, CEO tenure is expected to increase firm risk-taking. Besides, the aging process results in physical and psychological changes that affect CEOs' decision making, strategic choices, risk preference, motivations, and leadership. Thus, older CEOs are predicted to be more conservative than younger ones.

Hc3. Ownership structure has significant influence on firm risk-taking for firms with different controlling shareholder types and at different periods of the split-share structure reform.

In terms of ownership structure, managers tend to be most conservative in risk-taking as they prioritize job security. Managerial ownership gives managers more interest in the firm, thus managerial ownership tends to negatively affect firm risk. State ownership is likely to reduce firm risk-taking, since state shareholders prioritize lower unemployment rates and social stability. Thus, state shareholders are less likely to shoulder risks when they make decisions. Additionally, China is characterized by its concentrated ownership structure. Large shareholders who have more interest in the firm have to undertake most of the corporate governance responsibilities. Due to the poor market condition in China, these large shareholders have found it difficult to diversify their investments. Thus, they tend to be conservative and reduce risk-taking.

3.4.3 Model, variables and measurement

(a) ***Models for Determinants of Board Composition***

Equations (1) to (4) were developed to estimate determinants of board size and board independence, as shown in the following static and dynamic panel equations. Equations (1) and (2) are static panel models that can be estimated by pooled OLS, random effect, and fixed effect based on the Likelihood Ratio (LR) test and Hausman test. Equations (3) and (4) are dynamic panel models that include the past value of dependent variables following an autoregressive process. The main predictors include the scope, cost, benefit, CEO's character, other firm-level corporate governance mechanisms and government regulations. The present study used CEO's character to predict board independence only, as independent directors are the main group with whom CEOs bargain (Chen, 2014). The corporate governance variables in the models were suggested by the Chen and Al-Najjar (2012) study, as these China-specific corporate governance characteristics may have significant impact on board composition. This study used two year dummy variables (govern03, govern08) to capture the effect of government regulations and the reform.

Static panel:

(1) $\text{Board Size}_{it}=\alpha_{it}+\sum_{j=1}^{3}\beta_1\text{SCOPE}_{jit}+\sum_{j=1}^{2}\beta_2\text{COST}_{jit}+\sum_{j=1}^{2}\beta_3\text{BENEFIT}_{jit}+\sum_{j=1}^{5}\beta_4\text{GOVERNANCE}_{jit}+\beta_5\text{govern03}_t+\beta_6\,\text{govern08}_t+\varepsilon_{it}$

(2) $\text{Board Independence}_{it}=\alpha_{it}+\sum_{j=1}^{3}\beta_1\text{SCOPE}_{jit}+\sum_{j=1}^{2}\beta_2\text{COST}_{jit}+\sum_{j=1}^{2}\beta_3\text{BENEFIT}_{jit}+\sum_{j=1}^{2}\beta_4\text{CEO}_{jit}+\sum_{j=1}^{5}\beta_5\text{GOVERNANCE}_{jit}+\beta_6\,\text{govern03}_t+\beta_7\,\text{govern08}_t+\varepsilon_{it}$

Dynamic Panel:

(3) $\text{Board Size}_{it}=\alpha_{it}+\beta_1\text{Board Size}_{it-1}+\beta_2\text{Board Independence}_{it}+\sum_{j=1}^{3}\beta_3\text{SCOPE}_{jit}+\sum_{j=1}^{2}\beta_4\text{COST}_{jit}+\sum_{j=1}^{2}\beta_5\text{BENEFIT}_{jit}+\sum_{j=1}^{5}\beta_6\,\text{GOVERNANCE}_{jit}+\beta_7\text{govern03}_t+\beta_8\,\text{govern08}_t+\varepsilon_{it}$

(4) $\text{Board Independence}_{it}=\alpha_{it}+\beta_1\text{Board Independence}_{it-1}+\beta_2\text{Board Size}_{it}$

$+\sum_{j=1}^{3}\beta_3\text{SCOPE}_{jit}+\sum_{j=1}^{2}\beta_4\text{COST}_{jit}+\sum_{j=1}^{2}\beta_5\text{BENEFIT}_{jit}+\sum_{j=1}^{2}\beta_6\text{CEO}_{jit}+$

$\sum_{j=1}^{5}\beta_7\text{GOVERNANCE}_{jit}+\beta_8\text{govern03}_t+\beta_9\text{govern08}_t+\varepsilon_{it}$

Board size (*lnboardsize*) and board independence (*boardinde*) are frequently-examined board composition variables. The detailed measurements of these variables are explained in Table 3.1, and the selection of these variables is explained as follows:

- The scope of operation (SCOPE)

This study used three variables to capture the scope of a firm's operation, including firm size (*firmsize*), firm age (*firmage*), and firm's long-term debt ratio (*longdebt*). These variables have also been used in previous studies to measure scope of operation (Chen, 2014; Linck et al., 2008).

- Cost of board monitoring (COST)

The cost of board monitoring increases with firms' growth opportunities and information asymmetry, as elaborated upon in Chapter 2. This study used Tobin Q (*tobinq*) and stock return volatility (*sdreturn*) within one year as a proxy for the monitoring cost. This followed Guest (2008)'s study of determinants of board structure. Firms with higher growth opportunities usually face information asymmetry problems, which are costly for the corporate board to monitor.

- Benefit of board monitoring (BENEFIT)

The benefit of monitoring refers to the potential opportunity for managers to extract private benefit. According to Boone et al. (2007) and Chen (2014), this study uses free

cash flow ratio (*fcf*) and industry concentration (*hhi*) as a proxy for the benefit of monitoring (Boone et al., 2007). The free cash flow increases the managerial discretionary expenditure (Linck et al., 2008), which managers can curtail for personal use without disrupting the firm's short-term profitability and operations. The industry concentration subjects managers to less market discipline, which in turn heightens the potential private benefit of the managers.

- CEO's influence (CEO)

Following Linck et al. (2008)'s study, this present study used two factors as a proxy for CEO's influence. CEO tenure (*ceotenure*) is measured by the number of years since an individual was appointed as CEO. CEO's age (*ceoage*) is the measure of the CEO's time to retire.

- Corporate governance characteristics (GOVERNANCE)

The key corporate governance mechanisms used to estimate board composition are state ownership (*state*), managerial ownership (*manage*), ownership concentration (*concen10*), CEO duality (*duality*), and supervisory board size (*supersize*). As suggested by Chen and Al-Najjar (2012), these are the most representative Chinese corporate governance characteristics that mainly substitute or complement the corporate board.

- Regulation and reform

The "Guidelines for introducing independent directors" (governs 03), which came into force in June 2003, is one of the most importance government regulations. Another government regulation is the split-share structure reform, which ended in December 2007 (govern08). Time effects are assumed to be the same across all firms.

(b) ***Models for Corporate Governance and Firm Performance***

Equations (5) to (6) below illustrate the influence of corporate governance mechanisms on firm performance. The static models exhibit both "linear" and "non-linear" models. The predictors are board structure, ownership structure, CEO's character, and government regulations. The dynamic model captures the impact of past firm performance on current firm performance.

Static panel:

(5) $\text{Performance}_{it} = \alpha_{it} + \sum_{j=1}^{3} \beta_1 \text{ Board structure}_{jit} + \sum_{j=1}^{3} \beta_2 \text{Ownership Structure}_{jit} + \sum_{j=1}^{3} \beta_3 \text{CEO}_{jit} + \sum_{j=1}^{7} \beta_4 \text{Controls}_{jit} + \beta_5 \text{govern03}_t + \beta_6 \text{ govern08}_t + \varepsilon_{it}$

Dynamic Panel:

(6) $\text{Performance}_{it} = \alpha_{it} + \beta_1 \text{ Performance}_{it-1} + \sum_{j=1}^{3} \beta_2 \text{Board structure}_{jit} + \sum_{j=1}^{3} \beta_3 \text{Ownership structure}_{jit} + \sum_{j=1}^{3} \beta_4 \text{CEO}_{jit} + \sum_{j=1}^{7} \beta_5 \text{Controls}_{jit} + \beta_6 \text{govern03}_t + \beta_7 \text{ govern08}_t + \varepsilon_{it}$

Performance is measured by accounting performance (*roa* and *roe*) and market performance (*tobinq*). The independence variables are grouped into board structure, ownership structure, CEO's influence and other control variables.

- Board structure

Board size (*lnboardsize*), board independence (*boardinde*) and supervisory board (*supersize*) are the board structure variables measured in this study. China uses a two-tier board structure that includes a main board of directors and a supervisory board. The supervisory board is composed of representatives of shareholders and employees that are mainly responsible for monitoring.

- Ownership structure

The managerial ownership (*manage*), state ownership (*state*) and ownership concentration (*concen10*) are most representative of Chinese ownership structure characteristics during the sample period. Although other types of ownership also exist, they are not dominant. The management shareholdings have emerged as an effective corporate governance mechanism. State ownership is still retained and ownership is highly concentrated in Chinese listed firms.

- CEO's influence (CEO)

This study used three factors to capture CEO's influence. CEO tenure (*ceotenure*) is the number of years since an individual was appointed as CEO. CEO's age (*ceoage*) is the measure of the CEO's time to retire. CEO duality (*duality*) is the situation where the CEO is also the chairman of the board.

- Controls

This study also controlled some variables that may influence firm performance. Following previous studies (Li, Lu, Mittoo, and Zhang, 2015; Liu, Miletkov, Wei, and Yang, 2015; Conheady, McIlkenny, Opong, & Pignatel, 2014), firm size, firm age and long-term debt represent firm's scope of operation. Stock return volatility and free cash flow ratio represent the cost of monitoring are added in the regression analysis. Other variables included are sales growth and fixed assets expenditure.

(c) ***Models for Corporate Governance and Firm Risk***

Similar to previous models, equations (7) to (8) show static and dynamic models that estimate the influence of corporate governance mechanisms on firm risk-taking. The main variables used are the same as in previous models.

Static panel:

(7) $\text{Firms risk}_{it} = \alpha_{it} + \sum_{j=1}^{3} \beta_1 \text{ Board structure}_{jit} + \sum_{j=1}^{3} \beta_2 \text{Ownership structure}_{jit} + \sum_{j=1}^{3} \beta_3 \text{CEO}_{jit} + \sum_{j=1}^{3} \beta_4 \text{Controls}_{jit} + \beta_5 \text{govern03}_t + \beta_6 \text{ govern08}_t + \varepsilon_{it}$

Dynamic Panel:

(8) $\text{Firm risk}_{it} = \alpha_{it} + \beta_1 \text{ Firm risk}_{it-1} + \sum_{j=1}^{3} \beta_2 \text{Board structure}_{jit} + \sum_{j=1}^{3} \beta_3 \text{Ownership structure}_{jit} + \sum_{j=1}^{3} \beta_4 \text{CEO}_{jit} + \sum_{j=1}^{3} \beta_5 \text{Controls}_{jit} + \beta_6 \text{govern03}_t + \beta_7 \text{ govern08}_t + \varepsilon_{it}$

- Firm risk

As presented in classical decision theory, risk is most commonly conceived as reflecting variation in the distribution of possible outcomes, their likelihoods, and their subjective values (March & Shapira, 1987). Based on Chen and Zheng (2014)'s suggestion, the present study used stock return volatility to capture firm risk instead of using specific policies such as debt ratio and R&D expenses. Firm risk is measured by monthly stock return volatility within one year, which is considered the total risk (Huang & Wang, 2015).

- Controls

Firm size, ROA and Tobin Q are controlled to estimate firm risk-taking. A large firm is expected to be less risky, since it is able to diversify firm risk through different product lines. Besides, firms with higher ROA and Tobin Q are usually associated with high growth opportunity and high risk (Nguyen, 2011).

Table 3.1: Summary of measurement of variables

Variable name	Symbol	Measurement
Board Size	boardsize *(person)*	The total number of directors on corporate board.
	lnboardsize	Natural logarithm of boardsize. The transformation of board size is based on the literature review about determinants of board size and board independence studies. Most research did the log transformation of board size (Chen, & Al-Najjar, (2012).
Board independence	boardinde *(ratio)*	The number of independent directors divided by total number of directors.
Supervisory board	supersize *(person)*	The number of supervisory directors on the supervisory board.
Firm Size	firmsize	Measured by the total assets (CNY) with natural logarithm.
Firm Age	firmage *(Year)*	Counted since the firm was established.
Long debt	longdebt *(ratio)*	Long term debt over total debt.
Stock return volatility	sdreturn	The standard deviation of monthly stock return within 12 months of one year.
Tobin Q	tobinq *(ratio)*	The equity and debt in market value scaled by the total assets in book value.
Free cash flow	fcf *(ratio)*	Net earnings before interest and tax (EBIT) minus depreciation and amortization divided by total assets.
Herfindahl index	hhi *(ratio)*	Measure of industry concentration or product market competition. The Herfindahl index of an industry is ranging from 0 to 1, it is calculated by the sum of the squared market shares of each firm within the same industry. The market share of each firm is measured by the firm sales over the industry sales.
CEO age	ceoage *(Year)*	The CEO's age.
CEO tenure	ceotenure *(Year)*	The number of years since CEO had been appointed.
CEO duality	duality	Equals to 1 when a CEO is also the board chairman, 0, otherwise.
Managerial ownership	manage	The proportion of shares held by the top managers.
Ownership concentration	concen10	The cumulative proportion of shares held by the top 10 largest shareholders.
State ownership	state	The proportion of shares held by the government shareholders.
Tobin Q	tobinq *(ratio)*	The equity and debt in market value scaled by the total assets in book value.
ROA	roa *(ratio)*	The net income scaled by total assets.
ROE	roe *(ratio)*	The net income scaled by total equity.
Sales growth	sale_grow *(ratio)*	The sales growth over the last year.
Capital expenditure	fa_expen *(ratio)*	The expenditure in acquire fixed asset scaled by total assets.
Regulation	govern 03	Equals to 1 if the year of observations is equal to or larger than 2003, and it is 0 otherwise.
Reform	govern 08	Equals to 1 if the year of observations is equal to or larger than 2008, and it is 0 otherwise.

3.4.4 Sample and selection of data

The sample of this study consists of 444 firms that have been continuously listed in the Shanghai and Shenzhen stock markets during the year 2000 to 2012. This sample period was selected as it covers 5 years before (2000-2004) the split-share structure reform and 5 years after (2008-2012) the reform, which enables the researcher to conduct the comparative analysis between before and after reform. Besides, the legal status of Chinese stock market was formalized through the enforcement of the security laws in July 1999, which means that before the year 2000, Chinese stock market was not well organized and properly supervised.

The sample was selected based on several criteria. Firstly, this study only looked at the continuously listed firms during the sample period, because one of the main objectives of this study is to evaluate the effect of the government regulations and reforms on firm-level behaviors. It is difficult to capture these effects through the inactive listed firms. For this study, the baseline sample is the 1088 Chinese public listed firms in 2000, after matching with firms listed in the year between 2001 and 2012, 496 firms remained. Secondly, the financial firms such as banks, insurance companies, financial institutions (7 firms) were excluded from this study as they follow different governance procedures and the interest rate is not decided by those financial firms. Thirdly, firms controlled by government universities, research institutions, government media agencies (27 firms) were not included in this study. This is because they are non-profit organizations in which their revenues are retained for research and innovation or cultural promotion, rather than distributing to shareholders. Fourthly, firms without complete data information (18 firms) during the sample period were eliminated, including those did not have a complete accounting period of 12 months, and those accounting year was not ended at the 31st December.

The total sample of this study was also divided into several sub samples that covered the before reform period between 2000 and 2004, the reform period between 2005 and 2007, and the after reform period between 2008 and 2012. Based on the ultimate controlling shareholder categories[5], this study further classified state enterprises into those controlled by central government agencies, local government agencies, SOE entities as well as the private. All of the financial data and corporate governance data used in this study were available in the companies' annual reports that were gathered from the China Stock Market Accounting Research Database and the CCER Database developed by GTA Information Technology Company Limited and SinoFin Financial Information Company Limited.

3.4.5 Panel data estimation

Panel data were used here because they are more accurate in econometric estimation than cross section data and time series data separately. Panel data usually contain more degrees of freedom and variability than cross-sectional data which neglect the time effect, or time series data which disregard the individuality of the entity. Hence, panel data have a greater capacity for capturing the complexity of economic issues than a single cross-section or time series data set. In addition, panel data are able to control for unobserved individual heterogeneity, such as culture, policies, regulations and others (Baltagi, 2008). Panel data also face some challenges including the data collection issues like non-response, as well as methodological issues like endogeneity and the heterogeneity issues (Hsiao, 2007). Based on the characteristics of the panel data set, several estimation methods were applied in this study.

[5] According to the China Securities Regulatory Commission (CSRC), the ultimate controlling shareholders are the investors who, i) hold directly or indirectly 50% of the total outstanding shares, ii) control directly or indirectly 30% of total voting rights, iii) can use the voting rights to select more than 50% of board directors, iv) have significant influence over the decision making in shareholder's meeting, and v) other situations recognized by CSRC.

(a) ***Pooled OLS regression (or Constant Coefficient Model)***

The pooled Ordinary Least Squares regression simply pooled all the observations together. It assumes that all the explanatory variables are strictly exogenous and the error term is independently and identically distributed. It can be considered as an ideal model from their perfect assumptions of the data set. Even though, in reality, it is difficult to be perfect, but the OLS model provides a benchmark for other models to develop more realistic assumptions.

The Pooled OLS model equation can be illustrated as follows:

$BS_{it}=\beta_1+\beta_2 S_{it}+\beta_3 O_{it}+u_{it}$

(β_1 represents each individual firm and each time point which have the same intercept value. i represents i^{th} firm, t represents t^{th} time point, u_{it} is the error term. The BS represents board size is the dependent variable, S represents supervisory board size, O represents ownership concentration).

(b) ***Fixed effects regression model***

The term "fixed effects" (FE) implies that each individual firm has their own character and this character does not vary across time. There are three methods to estimate the fixed effect model. The first method is the Lest Squares Dummy Variable Model that captures the individuality of the entities by including the entity dummy variables and allowing each entity to have its own intercept value. This kind of dummy variable technique becomes impossible when there are too many entities in the sample that result in a situation called perfect collinearity (Gujarati, 2009).

The model can be illustrated as below:

$BS_{it}=\beta_{1i}+\beta_2 S_{it}+\beta_3 O_{it}+u_{it}$

(Note that β_1 is subscribed to *i* which means that each entity has its own intercept.)

The second method is the fixed effect Within Group estimator that is designed to eliminate the charaters of each individual entity so that the pooled OLS can be applied to estimate the model. To eliminate the individuality, it calculates the mean values of variables within the entity at first, then, subtracts the mean values from the original values.

The model can be illustrated as follows:

$bs_{it}=\beta_2 s_{it}+\beta_3 o_{it}+u_{it}$

(Note that *bs,s,o* represent the mean value of BS,S,O within the entity. The intercept value of each entity was wiped up at the same time.)

Lastly, the First Difference is another estimator to eliminate the individuality by taking into account of the successive differences. The observation of 1st entity was subtracted from the 2nd entity, then, the 2nd entity from the 3rd entity, and so on.

$\Delta BS_{it}=\beta_{1i}+\beta_2 \Delta S_{it}+\beta_3 \Delta O_{it}+\Delta u_{it}$

(Note that: Δ represents the first difference operator. $\Delta BS_{it} = BS_{it} - BS_{it-1.}$)

However, both the within group method and first difference method were not able to control for the effect of time-invariant variables. The validity of the fixed effect model can be diagnosed by the F test, where the null hypothesis is that all the differential intercepts are equal to 0. If the null hypothesis cannot be rejected means that there is no difference in the intercept values, therefore, the researcher has to pool all the observations together by using OLS to estimate. Otherwise, the fixed or random effect model have to used.

(c) ***Random effect model***

The random effect (RE) model is different from the fixed effect model in a way it deals with the individuality. The term randomness means that the variation between

entities is random and is reflected in the error term. The random effect model treats the intercept β_{1i} as random with a mean value of β_1 and a random error of ε_i, shown as: $\beta_{1i}=\beta_1+ \varepsilon_i$

The model is therefore transformed into:

$BS_{it}=\beta_1+\beta_2 S_{it}+\beta_3 O_{it}+w_{it}$ (where $w_{it}= \varepsilon_{i.}+ u_{it}$)

ε_i represents an individual specific error with a zero mean and constant variance. u_{it} represents the error combined both cross section and the time series, which is also named as idiosyncratic term. w_{it} is not correlated with the explanatory variables.

The Likelihood Ratio (LR) test is used to check the whether the data can be pooled together, the null hypothesis is that OLS nested in fixed effect model, if it is rejected, it suggests that each entity has its own characteristics and cannot simply pooled them together.

The Hausman test compares applicability of the fixed effect model and random effect model. The null hypothesis is that there is no systematic difference between fixed effect model and random effect model. If it is rejected, the fixed effect model is more appropriate than random effect.

The Lagrange Multiplier test can assist Hausman test to decide whether the random effect is more optimal than the fixed effect model. The null hypothesis of the Lagrange Multiplier test is that there are no random effects, and if it is rejected, means that the random effect is not better than the fixed effect in estimating the model.

3.5 Dealing with data concerns

(a) ***Multicollinerity***

This study chose two (2) widely used methods in detecting the problem of multicollinearity in multivariate regression. The first is to look at the correlation matrix between independent variables. If the correlation between two variables is greater than 0.8, it means that these two variables are overlapping to a large extend, therefore, one of them needs to be dropped. Another popular way is based on the VIF (The variance inflation factor) indicator. The higher the VIF value, the more likely is there a multicollinearity problem. If a variable has a VIF value more than 10, it means that the variable has serious collinear problems and must be removed (Gujarati, 2009).

(b) ***Heteroscedasticity***

One of the important assumptions of OLS regression is that the error term has constant variances, or homoscedastic. Otherwise, it faces the heteroscedasticity problem and the OLS estimate becomes not optimal as OLS gives equal weight to all the observations regardless whether the error term has larger variances and smaller variances. The Breusch-Pagan tests can be used to detect the heteroscedasticity problem. The null hypothesis is that the error variances are all equal. Using the white's robust standard error, the heteroscedasticity problems can be mitigated (Williams, 2015).

(c) ***Autocorrelation***

Autocorrelation occurs when the error terms of the regression u_{t+1}, u_{t+2}, u_{t+3} are correlated with each other, which violate the assumptions in classical OLS regression. The detection of autocorrelation can be realized in Wooldridge test. The existense of autocorrelation can be handled by the dynamic regression models or using the Newey-West standard error.

(d) ***Endogeneity***

To address the various endogeneity problems, Baltagi (2014) proposed that the instrumental variable methods and generalized methods of moment (GMM) has became a standard practice nowadays. One of the main assumptions of classical OLS regression is that all the regressors are strictly exogenous, which are not correlated with the error term. Violation of this assumption will result in the endogenous problem. Therefore, it is necessary to introduce instrument variables which are highly related to the endogenous regressor but not affected by the error term. In the first stage of the Two Stage Least Squares (2SLS), it estimated the endogenous variable using the instrumental variables. Then, it used the estimated value for our main regression instead of the original value.

Dynamic panel data estimation was applied when the current value of dependent value depends on its past value. The Dynamic panel data method was developed with the belief that the instrumental variable methods cannot fully explore the information in dynamic panel data. The Generalized Method of Moments (GMM) in dynamic panel data estimation developed by Arellano and Bond (1991) has proved to be more efficient. The key argument of the Arellano and Bond estimator is that the essential instruments are within the model equation. The endogenous variables can be instrumented by its past values as well as external instruments. Roodman (2006) further developed the Arellano and Bond estimator by allowing additional features, such as that the instruments can further be classified by "IV-style" and "GMM-style". There are two important diagnositic tests in GMM estimator, one is Sargan or Hansen test for the validity of instruments, and another is the AR(2) test of second order serial correlation.

(e) ***Heckman's sample selection model***

Heckman's sample selection model is a significant statistical procedure that address the problem of selection bias, which is a statistical error caused by the bias in determining a portion of sample for experiment. He provided a theoretical framework that models the dummy endogenous variable that estimates the probability of a participant being in one out of two conditions indicated by the endogenous dummy variable. A sample selection model always involves two equations, (1) regression equation that determining the outcome variable, and (2) selection equation that modeling the selection process of a portion of sample indicated by the dummy endogenous variables.

The treatment effect model has two unique characteristics, first, the dummy endogenous variable (W_i) entered into the regression equation directly. Second, the outcome variable Y_i is observable in both $W_i = 1$ and $W_i = 0$.

(1) Regression equation: $Y_i = \beta X_i + \delta W_i + \varepsilon i$

(2) Selection equation: $W_i = \gamma Z_i + u_i$

The treatment effect model assumes that the correlation between two error terms εi and ui is nonzero. This can be detected through the LR test, if $P<0.05$ means that the assumption is met. The overall goodness of fit of the model is examined by the Wald test, if $P<0.05$ means that the covariate used in the model may be appropriate (Guo & Fraser, 2014).

3.6 Summary

This chapter reviews the methods used in this thesis include the conceptual framework and research design. The important econometric concerns regarding multicollinearity, heteroscedasticity, autocorrelation and endogeneity were discussed in detail. The sampling strategy and data collection methods applied in this study were explained in this chapter. In addition, this study applied different panel data estimation methods, which greatly increased the accuracy of the estimation. To address the various endogeneity problems. Following Wintoki, Linck, & Netter, (2012), who applied GMM estimator to alleviate endogeneity concern in corporate governance research. The study also uses dynamic GMM estimator to ensure that endogeneity problems is mitigated in this thesis.

CHAPTER 4: DETERMINANTS OF BOARD COMPOSITION

4.1 Introduction

Corporate board is at the center of corporate governance. Especially during the economic transition, corporate board played an important role in enforcement of government regulations. In 2001, China Securities Regulatory Commission issued "Guidelines of Introducing Independent Directors", which stipulated that by the end of June 2003 Chinese listed firms must have at least one third independent directors in the corporate board. During the split-share structure reform in 2005, corporate board was an important connection, through which the non-tradable shareholders are able to negotiate with tradable shareholders for liquidation. Therefore, understanding what determines the board composition is crucial for the understanding of roles that corporate board played in corporate governance during the economic reform.

This chapter aimed to examine six categories of determinants including the scope, cost, benefit, CEO's character, firm level corporate governance mechanisms, and government regulation effects. The analysis process started from the descriptive analysis as specified in section 4.2, which described the nature of variables used in this study and the correlation matrix. Section 4.3 shows the t test of board size and board independence between before and after the reform, as well as between state and private enterprises. This is followed by section 4.4, which displays the graphical image of board size and board independence. Section 4.5 illustrates the determinants of board size and board independence in China while section 4.6 compared the determinants of board size before and after the reform, and different controlling shareholders. Finally, section 4.7 summarized all the findings in this chapter.

4.2 Description of variables

This section describes the nature of the key variables investigated in this study, which includes the distribution and correlations of the variables. **Table 4.1** shows the descriptive statistics of the key variables used in this study. The rest of the descriptive statistics of different subsamples are shown in Appendix. In order to get rid of the influence of extreme values and outliers, all the variables are winsorized at 1%.

Table 4.1: Descriptive statistics of the data

	Pool	N	Mean	Min	Max	Sd	P25	P50	P75
Board Size/ Independence	boardinde	5772	0.298	0	0.556	0.132	0.286	0.333	0.364
	boardsize	5772	9.283	5	15	2.14	8	9	11
	lnboardsize	5772	2.213	1.609	2.890	0.237	2.079	2.197	2.398
SCOPE	firmage	5772	8.318	7	9	0.615	8	8	9
	firmsize	5772	21.554	19	25	1.171	21	21	22
	longdebt	5772	0.148	0	0.735	0.179	0.004	0.077	0.229
COST	tobinq	5772	1.626	0.772	6.887	0.972	1.066	1.304	1.792
	sdreturn	5772	0.125	0.039	0.347	0.058	0.084	0.110	0.151
BENEFIT	fcf	5772	0.039	-0.629	0.361	0.148	0	0.054	0.116
	hhi	5772	0.115	0.019	0.860	0.138	0.050	0.070	0.123
CEO's influence	ceotenure	5772	3.737	1	13	2.700	2	3	5
	ceoage	5772	46.385	32	62	6.633	42	46	51
Governance	supersize	5772	4.118	2	9	1.338	3	3	5
	concen10	5772	0.561	0.222	0.879	0.146	0.458	0.572	0.669
	state	5772	0.256	0	0.750	0.255	0	0.221	0.493
	manage	5772	0.014	0	0.296	0.040	0	0.002	0.011
Others	sale_grow	5772	0.222	-0.710	4.464	0.618	-0.025	0.125	0.311
	fa_expen	5772	0.054	0.000	0.261	0.055	0.013	0.036	0.075
	roa	5772	0.023	-0.348	0.202	0.074	0.009	0.028	0.054
	roe	5772	0.036	-1.366	0.393	0.209	0.017	0.062	0.110
Note: All the variables are winsorized at 1%.									

The definition and measurement of these variables are explained in Chapter 3. **Table 4.2** shows the correlation matrix of the key variables investigated in this chapter where it is evident that the highest correlation coefficient is 0.5098 between firm age and board independence, which suggested that there is no serious multicollinearity issue in this analysis. This is because it is greatly lesser than 0.8 as suggested by the rule of thumb. We also checked the value of Variance Inflation Factor (VIF) in each regression model to make sure that the multicollinearity is not a serious problem.

Table 4.2: Correlation matrix

	boardinde	lnboardsize	supersize	firmage	firmsize	longdebt	tobinq	sdreturn	fcf	hhi	ceotenure	ceoage	concen10	duality	state	manage	sale_grow
boardinde	1																
lnboardsize	-0.0989	1															
supersize	-0.1192	0.316	1														
firmage	0.5098	-0.068	-0.0726	1													
firmsize	0.2167	0.2226	0.1288	0.1508	1												
longdebt	0.0455	0.0687	0.0866	0.0326	0.3091	1											
tobinq	0.0158	-0.1262	-0.0806	0.1608	-0.3581	-0.1631	1										
sdreturn	0.2281	-0.0679	-0.0688	0.2244	-0.0296	-0.0516	0.2309	1									
fcf	-0.0138	0.0568	0.0473	-0.0592	0.0856	-0.0409	-0.0831	-0.0604	1								
hhi	0.0063	0.0412	-0.0259	0.0224	-0.0725	0.0019	0.0765	0.0479	0.0234	1							
ceotenure	0.2264	0.0221	-0.0184	0.2215	0.1853	0.0459	0.0069	0.0539	0.0226	-0.0026	1						
ceoage	0.0717	0.0234	0.0065	0.0881	0.1373	0.0501	0.0226	0.0167	0.0122	0.0001	0.2999	1					
concen10	-0.2133	0.1313	0.1119	-0.3989	0.0843	0.0482	-0.1821	-0.1348	0.0731	-0.0245	-0.181	-0.0289	1				
duality	-0.0106	-0.0757	-0.0865	0.057	-0.0972	-0.0374	0.0537	0.0157	-0.0301	-0.0576	0.1314	0.1703	-0.1207	1			
state	-0.2626	0.1138	0.1919	-0.4601	-0.0076	0.0365	-0.2251	-0.1017	0.0737	-0.0056	-0.1679	-0.0031	0.4508	-0.0995	1		
manage	-0.021	0.0673	0.0037	0.0474	0.1543	0.033	-0.0418	-0.032	-0.0029	-0.0374	0.1586	0.1196	-0.1199	0.1022	-0.0949	1	
sale_grow	0.008	-0.0009	-0.0238	-0.0042	0.0573	0.0403	0.0192	0.053	-0.0658	-0.0114	-0.0401	-0.0419	0.0534	-0.0233	0.0096	-0.0112	1
fa_expen	-0.0664	0.0913	0.0859	-0.1338	0.1628	0.3098	-0.0914	-0.1317	0.2215	0.0373	0.0176	0.0105	0.1182	-0.0485	0.0947	0.0269	0.0439

4.3 Variations of board composition and other corporate governance mechanisms during the reform

The t test shown in **Table 4.3** and **Table 4.4** suggested that statistically most of the investigated variables vary significantly before and after the reform, as well as between state and private enterprises. Hence, the comparative analysis in section 4.3 is plausible.

Table 4.3 exhibits the t test of mean differences of key variables between before reform and after reform period. It shows that most of the variables investigated in this study vary significantly before and after the reform, except for Herfindahl index, duality, managerial ownership, sales growth, ROA and ROE. For board structure, the study found that board size reduced around one person after the reform. In contrast, the percentage of independent directors increased about 17 percent, which means that Chinese listed firms adjust board composition to fulfill government regulations, but kept the board size unchanged.

For the scope of operation, the study found that firm size, firm age and level of long-term debt ratio increased significantly after the reform. The cost of monitoring including Tobin Q and stock return volatility decreased significantly, but the benefit of monitoring in terms of free cash flow ratio increased. Besides, the average CEO age and tenure also increased after the reform. As for the investigated corporate governance variables in this study, the study found that the average supervisory board size decreased slightly. The ownership concentration of the largest 10 shareholders decreased 10 percent from 0.614 to 0.506 and state ownership decreased 25 percent from 0.369 to 0.116, which suggested that the split-share structure reform had decentralized ownership from large shareholders to small shareholders, from state shareholders to non-state shareholders and individuals.

Table 4.3: t test of mean difference of key variables between the before (2000-2004) and after (2008-2012) reform

	Reform	N	Mean	Mean Difference	t statistics
boardinde	Before	2220	0.196		
	After	2220	0.369	-0.173***	-49.817
lnboardsize	Before	2220	2.234		
	After	2220	2.190	0.044***	6.145
supersize	Before	2220	4.300		
	After	2220	3.950	0.353***	8.834
firmage	Before	2220	7.850		
	After	2220	8.760	-0.904***	-64.618
firmsize	Before	2220	21.170		
	After	2220	21.970	-0.795***	-23.512
longdebt	Before	2220	0.138		
	After	2220	0.166	-0.028***	-5.170
tobinq	Before	2220	1.445		
	After	2220	1.869	-0.424***	-14.741
sdreturn	Before	2220	0.096		
	After	2220	0.135	-0.039***	-28.428
fcf	Before	2220	0.044		
	After	2220	0.028	0.016***	3.526
hhi	Before	2220	0.111		
	After	2220	0.118	-0.006	-1.528
ceotenure	Before	2220	2.810		
	After	2220	4.580	-1.773***	-22.766
ceoage	Before	2220	45.250		
	After	2220	47.710	-2.453***	-12.371
concen10	Before	2220	0.614		
	After	2220	0.506	0.108***	25.910
duality*	Before	2220	12.39%		
	After	2220	13.24%	-0.85%	-0.853
state	Before	2220	0.369		
	After	2220	0.116	0.253***	37.390
manage	Before	2220	0.010		
	After	2220	0.020	-0.001	-1.154
sale_grow	Before	2220	0.237		
	After	2220	0.201	0.036	1.952
fa_expen	Before	2220	0.060		
	After	2220	0.048	0.012***	7.431
roa	Before	2220	0.023		
	After	2220	0.025	-0.002	-2.489
roe	Before	2220	0.028		
	After	2220	0.045	-0.016	-1.024
Note:* test of difference in proportions.					

Table 4.4 displays the t test of mean difference of key variables between the state and private enterprises. It shows that most of the variables vary significantly between state and private enterprises except for the CEO duality.

Table 4.4: t test of mean difference of key variables between the state and private enterprises

		N	Mean	Mean Difference	t
boardinde	State	4220	0.286		
	Private	1552	0.331	-0.045***	-13.055
lnboardsize	State	4220	2.236		
	Private	1552	2.151	0.085***	12.468
supersize	State	4220	4.290		
	Private	1552	3.660	0.624***	17.966
firmage	State	4220	8.240		
	Private	1552	8.520	-0.276***	-16.149
firmsize	State	4220	21.650		
	Private	1552	21.300	0.344***	9.919
longdebt	State	4220	0.154		
	Private	1552	0.133	0.021***	3.983
tobinq	State	4220	1.550		
	Private	1552	1.833	-0.283***	-8.46
sdreturn	State	4220	0.122		
	Private	1552	0.133	-0.011***	-6.201
fcf	State	4220	0.046		
	Private	1552	0.019	0.027***	5.625
hhi	State	4220	0.117		
	Private	1552	0.111	0.005	1.338
ceotenure	State	4220	3.670		
	Private	1552	3.900	-0.230***	-2.692
ceoage	State	4220	46.770		
	Private	1552	45.320	1.451***	7.083
concen10	State	4220	0.578		
	Private	1552	0.513	0.065***	15.3
duality*	State	4220	10.36%		
	Private	1552	18.69%	-8.3%***	-7.605
state	State	4220	0.334		
	Private	1552	0.045	0.288***	60.427
manage	State	4220	0.010		
	Private	1552	0.020	-0.008	-5.403
sale_grow	State	4220	0.204		
	Private	1552	0.271	-0.067***	-3.131
fa_expen	State	4220	0.056		
	Private	1552	0.047	0.010***	6.065
roa	State	4220	0.023		
	Private	1552	0.024	-0.001	0.5731
roe	State	4220	0.032		
	Private	1552	0.046	-0.014	2.1755
Note:* test of difference in proportions.					

On average, state enterprises have about 28.6 percent independent directors, while private enterprises have 33.1 percent independent directors. For the scope of operation, the state enterprises tend to have greater firm size and long-term debt than private enterprises. This is due to the Chinese state enterprise reform is start at privatization of

small SOEs, while keep the large SOEs. For cost of monitoring, private enterprises have higher Tobin Q and stock return volatility than state enterprises. For the benefit of monitoring, state enterprises have higher free cash flow ratio. This means that managers in state enterprises enjoy more discretionary expenditure. Meanwhile, CEOs in state enterprises tend to be elder than those in private enterprises but CEO's tenure is not. This is likely because the owner of private enterprises tend to install themselves in private firms, thus, CEO usually has longer tenure. As for the investigated corporate governance variables, the study found that state enterprises have greater supervisory board, ownership concentration and state ownership than private enterprises, but managerial ownership in private enterprises tends to be higher. This suggests that private enterprises encourage managers better than state enterprises.

4.4 Trend of board size and board independence during the reform

Figure 4.1 describes the trend of board size during the period between 2000 and 2012. It is found that board size reaches the highest point between 2002 and 2003. This phenomenon can be attributed to the government regulations towards increasing independent directors on the board where by the end of June 2003, Chinese listed firms must have at least one third of independent directors. Thus, the board size tends to increase with the independent director regulations. After the year 2003, the board size decreased gradually over the years, which means that Chinese firms were adjusting its board to reach the optimum size about 8 to 9 person as Lipton and Lorsch (1992) advocated. In addition, the study found that state enterprises tend to have a larger board size than private enterprises. State enterprises usually have a board size of 9 to 10 persons, while private enterprises usually have 8 to 9 persons.

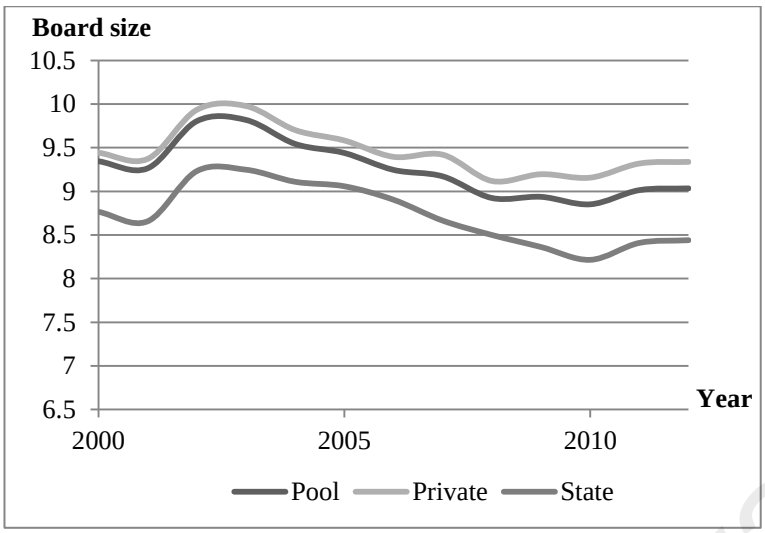

Figure 4.1: Trend of Board size

Figure 4.2 illustrates the trend of board independence during the period between 2000 and 2012. It is found that with the influence of government regulations on adding independent directors was manifested, board independence increased dramatically since 2001 when CSRC issued the guidelines of introducing independent directors in corporate board. After the year 2003, the trend of board independence goes up slowly over time. It seems that Chinese firms increase board independence only because of the pressure from the government. Besides, the private enterprises tend to have greater board independence than the state enterprises.

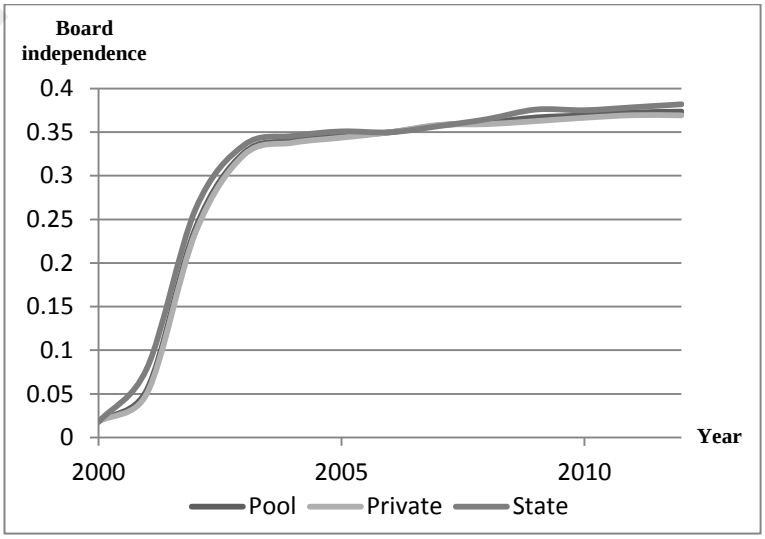

Figure 4.2: Trend of Board independence

4.5 Determinants of board size and board independence

This section discusses the determinants of board size and board independence. It is found that some of the hypotheses developed in chapter 3 are accepted and some are not. The regression methods shown in this section include the pooled OLS, fix and random effect, as well as the dynamic two-step GMM estimation. Both methods are estimated with robust clustered standard error, which is a widely used method to minimize the impact of heteroscedasticity. Besides, the model was also estimated by the dynamic GMM methods with robust standard error, which accounted for the endogeneity issues.

4.5.1 Determinants of board size

Table 4.5 illustrates the determinants of board size during the period between 2000 and 2012 using different estimation methods. According to the LR test ($P<0.05$), it rejected the null hypothesis of OLS nested in fixed effect model, which suggests that each firm has its own character and cannot simply pooled them together. As suggested by Hausman test ($P<0.05$), the fixed effect model is more suitable than the random effect since the assumption of difference in coefficients are not systematic is rejected. Therefore, the analysis of this model is mainly based on the fixed effect model. To guarantee endogeneity issue will not bias the estimation, this study further applied the GMM method, which has suggested being more efficient in deal with the endogeneity problem in corporate governance study (Wintoki, Linck, & Netter, 2012). The results from GMM method are highly consistent with the fixed effect method in terms of the coefficient sign. Furthermore, this study applied the white's robust standard error in all the estimations to assure that the heteroscedasticity problem is mitigated.

Table 4.5: Determinants of board size

	OLS	FE	GMM
Scope			
firmage	-0.0123	0.0185	-0.000584
	(0.0263)	(0.0223)	(0.0196)
firmsize	0.0506***	0.0259**	0.0253*
	(0.00903)	(0.00840)	(0.0126)
longdebt	-0.0223	-0.0248	-0.0103
	(0.0393)	(0.0305)	(0.0261)
Cost			
tobinq1	-0.000210	-0.00289	-0.00634
	(0.00544)	(0.00369)	(0.00327)
sdreturn	-0.138**	-0.118**	0.0411
	(0.0493)	(0.0378)	(0.0345)
Benefit			
fcf	0.0307	0.0190	0.00974
	(0.0193)	(0.0137)	(0.0156)
hhi1	-0.0261	-0.0249	-0.0916
	(0.0302)	(0.0434)	(0.0687)
Governance			
supersize	0.0543***	0.0560***	0.0319**
	(0.00518)	(0.00543)	(0.0123)
concen10	0.103*	0.131*	0.0233
	(0.0506)	(0.0476)	(0.0392)
duality	-0.0241	-0.0280*	-0.0215
	(0.0171)	(0.0118)	(0.0133)
state	-0.0122	-0.0216	-0.0203
	(0.0270)	(0.0231)	(0.0180)
manage	0.385*	0.232*	-0.190
	(0.162)	(0.106)	(0.104)
govern03	0.0164	0.0127	0.0210
	(0.0128)	(0.0113)	(0.0228)
govern08	-0.0462***	-0.0457***	-0.00585
	(0.0119)	(0.00907)	(0.00585)
$lnboardsize_{t-1}$			0.450***
			(0.0727)
boardinde			-0.709***
			(0.199)
_cons	0.967***	1.229***	
	(0.267)	(0.232)	
N	5772	5772	4884
adj. R^2	0.191	0.189	
Hansenp			0.206
AR(2) p			0.208
Standard errors in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$			

Consistent with the scope of operation hypothesis, generally, Chinese board size is positively related to the firm size in both OLS, FE and GMM methods. It suggested that a larger firm with greater scope of operation needs a larger board to monitor managerial

behaviors, and providing information and expertise to facilitate the firm's daily operations. It also reflects that corporate board is an important resource provider for Chinese listed firms.

For monitoring hypothesis, the cost of monitoring reduces board size significantly with respect to stock return volatility. The benefit of monitoring did not show significant effect on board size as expected. It means that Chinese firms considered more on cost than benefit when constituting corporate board. To be specific, Tobin Q as a proxy of firm's growth opportunity tends to shrink the board size, although its effect is not significant. It can reflect a current situation in China where a fast growing firm faces the challenge of fast decision-making and information acquiring cost when competing with its counterparts. Thus, an efficient smaller board is more appropriate. Similarly, the stock return volatility represents the total risk which reduces the corporate board size significantly. This suggested that when the corporate environment is uncertain, the information asymmetry entail a high cost for a corporate board to monitor managerial behaviors, hence, the board size reduced.

For the investigated corporate governance variables, firstly, it is found that board size is positively related to the supervisory board size. This is because the main function of supervisory board is to monitor and advise the corporate board, thus, a large board needs a large supervisory board. Secondly, ownership concentration is found positively related to board size. This is because ownership concentration increased the interests of large shareholders, who have more interest in the firm and have more concerns regarding corporate governance issues. Thus, ownership concentration results in a large board size to delegate large shareholders' interests. Thirdly, we found that CEO duality tend to reduce board size, this is likely because the CEO duality gives CEOs the

leadership roles in both management team and corporate board. It is likely that CEOs could abuse his or her power by shaping a smaller and less independent board, where he/she could easily exert influence and pursue his/her own interests. Fourthly, managerial ownership turns to improve board size, since managers' concerns about the corporate board composition increase with managerial ownership. Therefore, the study predicts that board size increases with managerial ownership. Finally, the state ownership have no significant effects on board size.

As for the government regulation effects investigated in this study, the study found that Chinese government regulations of "Guidelines for Introducing Independent Directors" did not have significant influence on corporate board size. This suggested that Chinese firms introduced the independent directors to replace the inside directors and keep the board size nearly unchanged. The Chinese corporate board had gradually transformed from insider-dominated to more outsider-dominated pattern. The split-share structure reform that ended in 2007 was found to have significant negative effects on board size. It suggested that the market-oriented reform reduces board size, since a smaller board size is faster in decision making and more efficient in market competition.

4.5.2 Determinants of board independence

Table 4.6 illustrates the determinants of board independence with different regression methods, and all the regressions were estimated with robust standard error. According to the LR test ($P<0.05$), the panel regression methods are more suitable than the pooled OLS ($P<0.05$). Furthermore, the Hausman test suggested that the fixed effect is better than the random effect methods.

Table 4.6: Determinants of board independence

Scope	**OLE**	**FE**	**GMM**
firmage	0.0155***	0.0272***	0.000651
	(0.00251)	(0.00302)	(0.00419)
firmsize	0.00394***	0.00603*	0.00765*
	(0.00103)	(0.00253)	(0.00333)
longdebt	0.00190	0.0107	0.000865
	(0.00586)	(0.00993)	(0.0120)
Cost			
tobinq	-0.000993	-0.00506***	-0.00324**
	(0.00106)	(0.00138)	(0.00117)
sdreturn	0.0172	0.00415	0.0502**
	(0.0160)	(0.0162)	(0.0176)
Benefit			
fcf	-0.00182	0.00364	0.00103
	(0.00787)	(0.00802)	(0.00823)
hhi	-0.00608	-0.0350	0.0487
	(0.00702)	(0.0229)	(0.0561)
CEO's Influence			
ceoage	-0.000353*	-0.000737**	0.000114
	(0.000168)	(0.000278)	(0.000412)
ceotenure	0.000453	0.000921	0.0000728
	(0.000332)	(0.000566)	(0.000747)
Governance			
supersize	-0.00430***	-0.00613**	0.000279
	(0.000831)	(0.00202)	(0.00581)
concen10	-0.00861	-0.0698***	-0.0446
	(0.00768)	(0.0164)	(0.0308)
duality	-0.00396	0.00263	-0.00772
	(0.00340)	(0.00522)	(0.0142)
state	-0.00637	-0.0109	-0.00601
	(0.00537)	(0.00688)	(0.0110)
manage	-0.0572*	-0.0789	0.0750
	(0.0228)	(0.0406)	(0.116)
Govern03	0.227***	0.216***	0.125
	(0.00396)	(0.00337)	(0.0675)
Govern08	0.0126***	0.00185	0.00184
	(0.00227)	(0.00282)	(0.00236)
lnboardsize			-0.121***
			(0.0319)
$boardinde_{t-1}$			0.141
			(0.0893)
_cons	-0.0548	-0.116*	
	(0.0286)	(0.0530)	
N	5772	5772	4884
adj. R^2	0.663	0.706	
hansenp			0.143
ar2p			0.225

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

For the scope of operation hypothesis, it is found that board independence increases with firm size and firm age significantly. This suggested that as the firm grew and diversified over time and territories, more independent directors are needed to monitor managerial behaviors. This is because firms with greater scope of operation usually face more serious agency problems than smaller ones. Independent directors can monitor managerial behaviors and mitigate agency problems better than inside directors. Hence, board independence increases with the scope of operation.

For monitoring hypothesis, the study found that board independence decreases with the cost of monitoring (tobinq). This is because a fast growing firm with high Tobin q is costly for independent directors to gain information and perform monitoring activities. Therefore, a fast growing firm tends to reduce independent directors to save cost. For bargaining hypothesis, the study found that CEO's age exerts a negative influence on board independence, which means that an elder CEO with reputation has more bargaining power, and corporate board is more likely to be dominated by insiders.

As for the investigated corporate governance variables in this study, firstly, the supervisory board has a negative effect on board independence. This is because independent directors and supervisory board have similar function where both are responsible for monitoring managers' and directors' behaviors. Thus, the supervisory board is able to substitute the independent directors. Secondly, ownership concentration has a negative effect on board independence. This means that large shareholders tend to substitute independent directors in monitoring managerial behaviors. Large shareholders who have more interests in the firm will assume more responsibilities in the corporate governance than minority shareholders who have less interest in the firm. Due to the conflict of interests with minority shareholders, high ownership concentration unites

large shareholders together to shoulder more responsibilities in corporate governance, thus, independent directors are substituted.

Finally, The Chinese government regulation of "Guidelines for introducing independent directors" promoted board independence significantly in China. After that, the split-share structure reform has the tendency to shrink board independence within the firm as shown in fixed effect model.

4.6 Comparison of the determinants of board size and board independence during the reform

This section compares the determinants of board size and board independence before and after the split-share structure reform, and between private and state enterprises. The state enterprises further are classified into those controlled by central government, local government, and SOE entity. The regression method used for the comparison is the fixed effect estimation with robust clustered standard error. Fixed effect methods addresses endogeneity problems due to the unobserved and time-invariant heterogeneities, which is more effective than pooled OLS. Besides, we follow the method applied by Li, Lu, Mittoo, and Zhang (2015)'s study, which also use fixed effect method to compare the effectiveness of corporate governance in state and private enterprises in China.

4.6.1 Determinants of board size and board independence: a comparison between before and after the split-share structure reform

Table 4.7 compared the determinants of board size and board independence before and after the split-share structure reform. For determinants of board size, the study found that board size increases with firm age, supervisory board size decreases with

CEO duality before the reform, but not after the reform. It suggested that supervisory board played an important role in backing up main board of directors to monitor managerial behaviors before the reform, but its effect is not important after the reform. CEO duality resulted in a smaller board only before the reform, which means that CEO's leadership increases his or her bargaining power over a smaller board to facilitate his or her own interest. After the reform, firms are more concerned about cost of monitoring than before.

As for the determinants of board independence, the study found that prior to reform, board independence was positively related to the scope of operation while after the reform, scope of operation is no longer a significant determinant. In addition, board independence is negatively related to Tobin Q before the reform, and positively related to Tobin Q after the reform. Before the reform, better market performance was associated with higher cost of monitoring due to the information asymmetry and acquisition problem. After the reform, Chinese listed firms became more market-oriented because the reform encourages Chinese domestic investors to be more concern about corporate governance issues. Therefore, board independence increases with Tobin Q after the reform.

As for the investigated corporate governance variables, the study found that supervisory board and managerial ownership have negative effects on board independence before the reform. It means that independent directors can be substituted by other firm-level corporate governance mechanisms before the reform. In contrast, after the reform, the role of independent directors in corporate governance improved, therefore, other corporate governance mechanisms cannot substitute it.

Table 4.7: Determinants of board size and board independence: a comparison between before and after the split-share structure reform

	Board Size		Board Independence	
	Before	**After**	**Before**	**After**
Scope				
firmage	0.0396**	-0.00664	0.139***	0.00452
	(0.0141)	(0.0105)	(0.00977)	(0.00327)
firmsize	0.0209	-0.0107	0.0409***	0.00402
	(0.0151)	(0.0105)	(0.0105)	(0.00273)
longdebt	-0.0428	-0.0245	-0.00776	0.00282
	(0.0452)	(0.0364)	(0.0288)	(0.00939)
Cost				
tobinq	-0.0100	-0.0147*	-0.140***	0.00349**
	(0.0171)	(0.00575)	(0.0163)	(0.00114)
sdreturn	-0.0133	0.0538	-0.0189	-0.0273
	(0.137)	(0.0800)	(0.0915)	(0.0217)
Benefit				
fcf	0.0107	-0.0105	-0.0120	-0.000151
	(0.0249)	(0.0270)	(0.0197)	(0.00649)
hhi	0.124	0.129	-0.135	0.0157
	(0.163)	(0.0785)	(0.0987)	(0.0259)
Governance				
supersize	0.0333**	-0.0324	-0.0171**	-0.00522
	(0.0121)	(0.0170)	(0.00592)	(0.00407)
concen10	-0.00196	0.0784	-0.227	-0.0374
	(0.206)	(0.0818)	(0.177)	(0.0199)
duality	-0.0481*	-0.0234	-0.0123	0.00664
	(0.0206)	(0.0193)	(0.0173)	(0.00631)
state	0.0479	-0.00376	-0.127***	0.0100
	(0.0611)	(0.0237)	(0.0377)	(0.00743)
manage	-0.0273	-0.00258	-1.081**	0.0554
	(0.433)	(0.101)	(0.389)	(0.0306)
CEO's Influence				
ceoage			-0.00157	0.000431
			(0.000961)	(0.000317)
ceotenure			0.0198***	-0.000124
			(0.00326)	(0.000625)
_cons	1.334***	2.584***	-1.250***	0.252***
	(0.382)	(0.253)	(0.297)	(0.0640)
N	2220	2220	2220	2220
R^2	0.036	0.031	0.513	0.027

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

4.6.2 Determinants of board size: a comparison of controlling shareholders

Table 4.8 compares the determinants of board size between state enterprises and private enterprises. For scope of operation hypothesis, the study found that Chinese central government controlled enterprises and SOE entity controlled enterprises decide

their board size based on the firm size, whereas, local government controlled and private enterprises are not.

Table 4.8: Determinants of board size: a comparison of controlling shareholders

	Private	Central	Local	MOSOE
Scope				
firmage	0.0399	-0.112	-0.0162	-0.00451
	(0.0492)	(0.0626)	(0.0328)	(0.0287)
firmsize	0.0187	0.0435**	0.0208	0.0417**
	(0.0149)	(0.0158)	(0.0156)	(0.0129)
longdebt	-0.0305	0.0341	-0.0235	-0.0492
	(0.0490)	(0.0657)	(0.0556)	(0.0451)
Cost				
tobinq	-0.00742	0.00730	-0.00266	0.00110
	(0.00505)	(0.00758)	(0.00605)	(0.00759)
sdreturn	-0.111	0.00202	-0.0860	-0.139
	(0.0655)	(0.0781)	(0.0613)	(0.0878)
Benefit				
fcf	0.0330	0.0350	0.00583	0.0243
	(0.0208)	(0.0479)	(0.0224)	(0.0246)
hhi	-0.0583	-0.0187	-0.0331	-0.0267
	(0.0658)	(0.0485)	(0.0444)	(0.0509)
Governance				
supersize	0.0632***	0.0421**	0.0582***	0.0465***
	(0.0111)	(0.0134)	(0.00818)	(0.00778)
concen10	0.121	0.114	0.131	0.0120
	(0.0715)	(0.127)	(0.0824)	(0.0807)
duality	-0.0433*	-0.0824*	-0.0456*	-0.00807
	(0.0170)	(0.0330)	(0.0216)	(0.0204)
state	0.0588	-0.0261	-0.0508	0.0104
	(0.0629)	(0.0389)	(0.0294)	(0.0307)
manage	0.244*	-0.223	0.393	0.0421
	(0.119)	(0.164)	(0.266)	(0.348)
govern03	0.0215	0.0639**	0.0313	0.00786
	(0.0233)	(0.0244)	(0.0216)	(0.0150)
govern08	-0.0610**	-0.00474	-0.0310**	-0.0389*
	(0.0193)	(0.0164)	(0.0120)	(0.0161)
_cons	1.169*	1.923***	1.603***	1.188***
	(0.479)	(0.424)	(0.411)	(0.361)
N	1552	458	1916	1846
adj. R^2	0.1587	0.1607	0.1877	0.1742

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

As for the investigated corporate governance variables, the study found that supervisory board size is the key determinant of board size in all types of firms. It means that the role of supervisory board was significant for all types of firms in terms of backing up the main board of directors. Besides, the study found that CEO duality

tends to entrench CEO in the firm by forming a smaller board in both private enterprises, central government controlled and local government controlled enterprises. In private enterprises, the founders tend to install themselves as the CEO or board chairman. This gives them the power to bargain for a smaller board size. In contrast, in central government and local government controlled enterprises, CEO and board chairman are government officials. They are most likely promoted in government agencies, and get the power through CEO duality by forming a smaller board size. For managerial ownership, the study found that the incentive alignment between managers and shareholders through managerial ownership has significant positive effects on board size in private enterprises. This suggested that managers in private enterprises are more likely to express their concern in corporate governance through board delegations, and leading to a larger board size.

For the government regulation effect, the study found that the government regulations of "Guidelines for introducing independent directors" increased the board size in central government controlled enterprises. It means that central government controlled enterprises increased independent directors without adjusting the board size. Besides, the split-share structure reform tends to reduce the board size significantly in all types of firms except the central government controlled firms, which means that the share structure reform did not affect the board structure in central government controlled enterprises.

4.6.3 Determinants of board independence: a comparison of controlling shareholders

Table 4.9 compares the determinants of board independence with different controlling shareholders. For the scope of operation hypothesis, the study found that

board independence is significantly determined by firm age, which means that older firms with greater scope of operations tend to employ more independent directors in all types of firms.

Table 4.9: Determinants of board independence: a comparison of controlling shareholders

	Private	Central	Local	MOSOE
Scope				
firmage	0.0981***	0.0627**	0.0977***	0.191***
	(0.0232)	(0.0205)	(0.0157)	(0.0214)
firmsize	0.0114	-0.00479	0.0146*	0.0140
	(0.00800)	(0.00846)	(0.00589)	(0.00905)
longdebt	0.00968	0.0226	-0.0137	0.000619
	(0.0232)	(0.0336)	(0.0175)	(0.0281)
Cost				
tobinq	-0.00498*	-0.000790	-0.00112	-0.0191***
	(0.00206)	(0.00259)	(0.00215)	(0.00453)
sdreturn	0.00310	0.0126	-0.0261	-0.0309
	(0.0283)	(0.0394)	(0.0265)	(0.0424)
Benefit				
fcf	-0.00517	-0.00968	0.0254*	-0.0116
	(0.0131)	(0.0126)	(0.0129)	(0.0181)
hhi	0.00667	-0.0425	-0.00275	-0.104*
	(0.0574)	(0.0268)	(0.0364)	(0.0466)
CEO's Influence				
ceoage	-0.000379	-0.000625	-0.000987*	-0.000636
	(0.000517)	(0.000576)	(0.000455)	(0.000623)
ceotenure	-0.000715	-0.00112	0.00160*	0.00351**
	(0.00118)	(0.00127)	(0.000726)	(0.00133)
Governance				
supersize	-0.00232	-0.00806	-0.0117***	-0.0000850
	(0.00359)	(0.00712)	(0.00311)	(0.00455)
concen10	-0.0545	-0.00607	-0.0516	-0.0257
	(0.0285)	(0.0528)	(0.0300)	(0.0455)
duality	0.00297	0.0229**	0.0104	0.0103
	(0.00973)	(0.00800)	(0.00713)	(0.0149)
state	0.0382	0.0304	0.0254**	-0.00209
	(0.0285)	(0.0163)	(0.00962)	(0.0158)
manage	-0.0510	0.163**	-0.150	-0.877**
	(0.0483)	(0.0573)	(0.0935)	(0.283)
govern03	0.170***	0.134***	0.210***	0.160***
	(0.00924)	(0.0109)	(0.00826)	(0.00741)
govern08	-0.00503	0.00988	-0.0173**	-0.0609***
	(0.00623)	(0.00686)	(0.00533)	(0.00924)
_cons	-0.824***	-0.143	-0.870***	-1.601***
	(0.150)	(0.166)	(0.155)	(0.198)
N	1552	458	1916	1846
adj. R^2	0.596	0.207	0.627	0.630

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

As for the cost of monitoring, the study found that only private enterprises and SOE entity controlled state enterprises are concerned of cost when adding independent

directors. This is because private enterprises and SOE entity controlled state enterprises are more profit-oriented, hence, reducing costs can help them improve efficiency. On the other hand, the government controlled enterprises have objectives such as to improve employment rate, improve state fiscal revenue and social stability. It is easier for government controlled enterprises to get financial support from government. Furthermore, Chinese domestic investors believe that the government will not expropriate their interests. Thus, government controlled firms are less concerned about the cost. As for the benefit of monitoring, the study found that only local government controlled and market-oriented state enterprises consider the benefit of monitoring when adding independent directors.

For CEO's influence, the study found that CEO's age tends to reduce board independence in local government controlled firms, which means that elder CEO tends to entrench himself by forming a less independent board to pursue his own interests in local government controlled firms, which are located far from central government's power center Beijing. CEO tenure was found to positively affect board independence in local government controlled enterprises and market-oriented state enterprises. This suggested that CEOs with long tenure in local government controlled and market-oriented state enterprises require more independent directors to monitor their behaviors. CEOs are less likely to use the power to reduce board independence.

For the corporate governance variables investigated in this study, the study found that in private enterprises, other corporate governance mechanisms can hardly affect board independence. In central government controlled enterprises, CEO duality and managerial ownership increases board independence, means more independent directors are needed for monitoring managerial and CEO behaviors. Independent directors could

be substituted by supervisory board in local government controlled firms, by managerial ownership in market-oriented state enterprises.

As for the investigated regulation effect, The "Guidelines for introducing independent directors" increased board independence in all types of firm. The study found that the slit-share structure reform reduced board independence in local government controlled and market oriented state enterprises. However, board independence in the central government controlled and private enterprises was unaffected by the share structure reform.

4.7 Summary

This study examined the determinants of board size and board independence in China, and compared the determinants before and after the split-share structure reform, as well as different controlling shareholders. The influence of the scope of operation, monitoring cost and benefit, CEO's influence, another firm-level corporate governance mechanisms, as well as the effects of government regulations were investigated in this study. It contributes to the body of Chinese corporate governance studies by applying the most comprehensive analytical framework to the periods before and after the split-share structure reform. Both static and dynamic estimation methods have been used. Overall, the study found that Chinese board size and independence are jointly determined by the scope of operation, cost and benefit of monitoring, CEO's influence and other governance factors. Among these factors, the government was the most important player in constituting corporate boards before the split-share structure reform; after the reform, board independence became more important than other governance factors. In addition, when constituting corporate boards, private and market-oriented state enterprises are more concerned about cost than are government-controlled enterprises.

As for the investigated corporate governance variables, the study found that board size increases with supervisory board size, ownership concentration and managerial ownership, whereas, board independence decreases with supervisory board size, ownership concentration, managerial ownership and state ownership. It suggested that other corporate participants who have more interest in the firm tend to substitute independent directors. They incline to add inside directors rather than the independent directors to facilitate their own interests.

Besides, the study found that the Chinese board composition is highly determined by government regulations. Chinese board independence increased significantly with CSRC regulations by having at least one third independent director by June 2003, whereas, board size was almost unaffected by this regulation. It suggested that Chinese listed firms reduced the insider directors and increased independent directors at the same time to meet the government's requirement. In addition, the split-share structure reform which ended in 2007 reduced both board size and board independence, suggested that the ownership decentralization through releasing shares would result in a smaller and less independent board. Despite the overall trend of board independence growing slightly after the reform (Figure 4.2), the speed declined dramatically.

After comparing the determinants across periods and controlling shareholders, the study found that the impact of these determinants differed. Before the reform, board independence determined by the cost of monitoring, and other corporate governance mechanisms such as supervisory board size and managerial ownership. After the reform, board independence is no longer affected by most of the investigated factors. Furthermore, the study found that private enterprises and market-oriented state enterprises are more concerned about cost when adding independent directors than

government controlled firms. Then, CEO's influence in terms of age and tenure, and leadership in terms of CEO duality only has significant influence in state enterprises. Other corporate governance mechanisms have little influence on board independence in private enterprises, suggesting that board independence is an important mechanism for private enterprises and the share structure reform did not affect board independence in private enterprises.

Briefly, the Chinese government regulations and legal enforcement played an important role in the constituting of the corporate governance system during the transition period that cannot be neglected in the future corporate governance studies. Besides, the government policy of decentralizing the non-tradable shares to revitalize the capital market changed Chinese board composition and the way Chinese listed firms constitute their corporate board. The trend of board composition became stable with low growing speed after the reform, and the market performance became a promoting factor of board independence after the reform.

In terms of corporate control, the study found that Chinese government strategy of decentralizing state enterprises as reflected in "grabbing large and letting go small" shows positive effects toward market orientation reform, since only private and market oriented state enterprises considered cost saving when constituting corporate board, whereas, central and local government controlled firms are not. Finally, this study provides the empirical evidence for corporate governance theories that the institutional arrangement is an important factor when analyzing the relationships between shareholders and managers.

CHAPTER 5: INFLUENCE OF CORPORATE GOVERNANCE MECHANISMS ON FIRM PERFORMANCE

5.1 Introduction

Ownership structure, board structure and CEO characteristics are important internal corporate governance mechanisms. However, literature concludes with mixed results on the issue and varies across different countries and institutional environments resulting in their influence on firm performance being unclear. Analysing the effectiveness of these corporate governance mechanisms and their joint effect is crucial for transition economies like China to further corporate governance and state enterprise reforms.

This chapter analyses the influence of board structure, ownership structure and CEO characteristics on firm performance during the Chinese economic transition. In section 5.2, we discuss both "linear" and "non-linear" relationships between corporate governance variables and firm performance. It analyses the "linear" effect of board structure, ownership structure and CEO characteristics on firm accounting performance (ROA, ROE) and market performance (Tobin Q) in section 5.2.1. The results are robust in the sense that both OLS, fixed effect, and system GMM regression methods showed highly consistent results. Section 5.2.2 checks the "non-linear" relationships which have also been estimated by researchers (Al Farooque, Van Zijl, Dunstan, & Karim, 2007). Section 5.3 examines the joint effect of different corporate governance mechanisms, e.g. board independence and ownership concentration, on firm performance. Section 5.4 examines the effect of different controlling shareholders including the central government, local government, SOE entity and private shareholders on firm performance through the treatment effect model. The findings indicate that controlling shareholder types vary in their influence on firm performance. Section 5.5 compares the

effectiveness of corporate governance mechanisms in reference to different controlling shareholders. Section 5.6 compares the effectiveness of corporate governance mechanisms before and after the split-share structure reform. Section 5.7 concludes the chapter with a summary of the findings

5.2 Influence of corporate governance mechanisms on firm performance

5.2.1 Linear estimation

The regression analysis of the relationship between corporate governance mechanisms and firm performance (Including ROA, ROE and Tobin Q) is shown in Tables 5.1 and 5.2 and illustrates the linear and non-linear results respectively. To guarantee the robustness of the empirical results, several estimation methods, namely, OLS, fixed effects, and dynamic system GMM methods with the White's clustered robust standard error are used to estimate the impacts of board structure, ownership structure, CEO characteristics and government regulations on firm performance. The use of fixed effects is based on the Hausman Test ($P<0.05$) and LR test ($P<0.05$), which are disused in Chapter 3. The study found that all the methods displayed highly consistent results. The model has no serious multicollinearity problem since the highest correlation coefficient is 0.5 between board independence and firm age (shown in Table 4.2). The study also checked the VIF value to ensure the multicollinearity issue will not affect the robustness of our results.

According to the "linear" model results in **Table 5.1**, the study found that board independence as a symbol of good corporate governance negatively affects firm performance in terms of ROA, ROE and Tobin Q. This suggests that Chinese independent directors are not effective in improving firm performance. It can be explained by several reasons. Firstly, Chinese independent directors lack incentives to

serve the company. The CSRC requires that independent directors cannot hold a significant number of shares. Meanwhile, there are no explicit rules regarding the independent director's compensation, which are primarily monetary-based such as the annual pay, allowance for transportation and for attending conferences, and they rarely receive stock incentives. Secondly, independent directors are less accountable for corporate future development since they have no right to participate in corporate operations directly and cannot provide consultancy advice. Assessment of their performance is not based on how much they contribute to firm performance. Thirdly, independent directors can hardly be independent in fact. The selection of independent directors is affected by a CEO's power. Powerful CEOs find it easier to handpick the "independent" directors who will not challenge their leadership (Shivdasani & Yermack, 1999). In the Chinese context, the government still leads corporate governance, and there is a high possibility that independent directors are politically influenced and represent government interests rather than shareholders (Wang, 2015). Fourthly, the key agency problem in China is between the controlling large shareholders and minority shareholders since the ownership is highly concentrated rather than dispersed like Western countries. The monitoring role of independent directors is minimised when there is no serious conflict between managers and shareholders. Although the supervisory board can make up for the deficiency of independent directors, its positive impact is only in terms of accounting performance. As suggested by Hu et al. (2010), a Chinese supervisory board hindered by large shareholders and weak external governance mechanisms can hardly exert a positive influence on firm performance.

Table 5.1: Corporate governance mechanisms and firm performance—Linear estimation

	ROA			ROE			Tobin Q		
Board structure									
	OLS	**FE**	**GMM**	**OLS**	**FE**	**GMM**	**OLS**	**FE**	**GMM**
boardinde	-0.0360**	-0.0364**	-0.00422	-0.346**	-0.316**	-0.229*	-0.0842	-0.592***	0.338
	(0.0134)	(0.0132)	(0.0149)	(0.108)	(0.108)	(0.114)	(0.186)	(0.138)	(0.190)
lnboardsize	-0.00323	0.00532	0.0120	0.00285	0.109	0.0475	0.0385	-0.113	-0.140
	(0.00578)	(0.00797)	(0.0108)	(0.0454)	(0.0737)	(0.0908)	(0.0900)	(0.0866)	(0.119)
supersize	0.00135	-0.000898	0.000931	0.00693	0.0111	0.0304*	0.0193	0.00140	0.0401
	(0.00109)	(0.00158)	(0.00197)	(0.00702)	(0.0130)	(0.0151)	(0.0147)	(0.0207)	(0.0274)
Ownership structure									
state	-0.00759	-0.0141	-0.0128	0.0528	0.0150	-0.0157	-0.399***	-0.656***	-0.651***
	(0.00608)	(0.00722)	(0.00768)	(0.0422)	(0.0508)	(0.0523)	(0.0704)	(0.101)	(0.0963)
manage	0.536*	-0.00747	-0.0339	3.548**	-0.913	-0.604	0.533	8.520*	-3.524
	(0.230)	(0.300)	(0.234)	(1.220)	(1.542)	(1.624)	(3.364)	(3.849)	(3.838)
concen10	0.0451***	0.0984***	0.0466**	0.0921	0.495***	0.125	-0.0455	-0.514*	-0.408*
	(0.0122)	(0.0151)	(0.0149)	(0.0853)	(0.126)	(0.138)	(0.158)	(0.202)	(0.199)
CEO's character									
ceoage	-0.0000965	-0.000313	-0.000279	-0.00176	-0.00182	-0.00336	0.00748**	0.00414	0.0216***
	(0.000221)	(0.000299)	(0.000407)	(0.00136)	(0.00238)	(0.00299)	(0.00262)	(0.00312)	(0.00427)
ceotenure	0.00218***	0.00104	0.00136*	0.0185***	0.0112**	0.0153***	0.00298	-0.00272	-0.00180
	(0.000497)	(0.000550)	(0.000528)	(0.00325)	(0.00408)	(0.00415)	(0.00725)	(0.00661)	(0.00819)
duality	-0.00684	-0.000127	0.00651	-0.0394	-0.00771	0.0162	-0.0505	0.0236	-0.0486
	(0.00371)	(0.00445)	(0.00595)	(0.0344)	(0.0402)	(0.0554)	(0.0516)	(0.0522)	(0.0893)
Controls									
firmage	-0.00353	-0.00118	0.000238	-0.0480	0.00133	-0.0589	0.0910	0.398***	-0.0279
	(0.00413)	(0.00663)	(0.00480)	(0.0298)	(0.0504)	(0.0348)	(0.0489)	(0.0925)	(0.0552)
firmsize	0.0113***	0.00298	0.00781***	0.0751***	0.0562*	0.0629***	-0.369***	-0.506***	-0.226***
	(0.00164)	(0.00299)	(0.00172)	(0.0151)	(0.0255)	(0.0154)	(0.0332)	(0.0482)	(0.0306)

Table 5.1 continued

longdebt	-0.0240**	-0.00643	-0.0105	0.0116	0.0758	0.0168	-0.319**	-0.0924	-0.0658
	(0.00759)	(0.00915)	(0.00759)	(0.0444)	(0.0574)	(0.0535)	(0.0985)	(0.110)	(0.0832)
sdreturn	-0.0688***	-0.00214	0.00724	-0.538**	-0.242	-0.0927	3.071***	3.007***	3.236***
	(0.0200)	(0.0195)	(0.0194)	(0.166)	(0.167)	(0.166)	(0.269)	(0.242)	(0.249)
fcf	0.0475***	0.0388***	0.0303**	0.187	0.135	0.0732	-0.174	-0.115	-0.0805
	(0.0109)	(0.0108)	(0.0116)	(0.0996)	(0.103)	(0.121)	(0.0927)	(0.0907)	(0.109)
fa_expen	0.149***	0.120***	0.0566*	0.485*	0.570**	0.332	1.269***	0.869**	0.312
	(0.0285)	(0.0291)	(0.0289)	(0.229)	(0.193)	(0.218)	(0.268)	(0.287)	(0.270)
sale_grow	0.0245***	0.0246***	0.0214***	0.121***	0.126***	0.0987***	0.0920***	0.0862***	-0.00286
	(0.00190)	(0.00212)	(0.00231)	(0.0136)	(0.0166)	(0.0147)	(0.0270)	(0.0241)	(0.0349)
govern03	0.000278	0.00221	0.00297	0.0458	0.0310	0.0490	-0.241***	-0.246***	-0.0276
	(0.00424)	(0.00406)	(0.00387)	(0.0359)	(0.0381)	(0.0352)	(0.0508)	(0.0391)	(0.0313)
govern08	0.00626	0.0127***	0.000347	0.0302	0.0520	0.0210	0.542***	0.405***	0.0335
	(0.00350)	(0.00385)	(0.00311)	(0.0269)	(0.0323)	(0.0244)	(0.0456)	(0.0495)	(0.0465)
roa_{t-1}			0.260***						
			(0.0295)						
roe_{t-1}						0.141**			
						(0.0443)			
$tobinq_{t-1}$									0.449***
									(0.0386)
_cons	-0.211***	-0.0882	-0.210***	-1.276***	-1.767***	-1.097**	8.018***	9.507***	5.026***
	(0.0496)	(0.0629)	(0.0543)	(0.360)	(0.487)	(0.415)	(0.708)	(1.088)	(0.728)
N	5772	5772	5328	5772	5772	5328	5772	5772	5328
adj. R^2	0.137	0.092		0.067	0.041		0.292	0.258	
Hansen P			0.0836			0.159			0.0891
AR(2) P			0.0700			0.764			0.897
Note: Standard errors in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$									

Furthermore, board size has no significant influence on firm performance. CEO tenure improves a firm's accounting performance significantly. This suggests that the CEOs learned and familiarised with the firm's operation and their jobs gradually over time, leading to the improvement in the firm's accounting performance but not the firm's market performance. This is likely because CEOs with long tenure tend to overly commit to a fixed paradigm as they lose touch with the outside environment (Hambrick & Fukutomi, 1991), but market conditions are dynamic and difficult for them to anticipate and respond to (Henderson et al., 2006). The study found that a CEO's age positively affects a firm's market performance suggesting that older CEOs were more able to capture the market information than the younger ones..

State ownership has negative effects on a firm's market performance, since the government has non-profit objectives, which may conflict with domestic investors. Therefore, state ownership is not an effective corporate governance mechanism to protect the non-government shareholders' interests. It is unfavourable to a firm's market performance due to its restrictions on trading as the state shares have to be measured based on book value.

Managerial ownership improved firm performance as expected. It suggests that the incentive alignment between shareholders and managers motivated managers to work towards improving firm performance. Ownership concentration as an important internal governance mechanism was found to improve a firm's accounting performance ROA and ROE, but reduce the market performance Tobin Q. This is because the large shareholders have more interest in the firm and frequently participate in corporate governance, decision-making, strategic choice and the management process. Thus, ownership contribution improves a firm's accounting performance (ROA, ROE), which

is consistent with Li et al. (2015) findings. However, it accelerated the horizontal agency problems between large shareholders and small shareholders. Large shareholders have long-term orientations towards firm performance, whereas small shareholders may pursue short-term gains. Small shareholders having little equity interests found it difficult to contribute to corporate governance. They are mainly "free riders", who can easily transfer their investment. They pay less attention to corporate governance and long-term development. There is every possibility that the large shareholders may expropriate small shareholders' interest (Heugens et al., 2009). Hence, ownership concentration is detrimental to a firm's market performance (Tobin Q).

Among the effects of the investigated government regulations, the study found that the split-share structure reform had significantly improved firm accounting and market performance. This suggests that the market-oriented share structure reform is improving firm performance since the government intervention reduced and enabled firms to be more profit oriented and value maximising. The regulation of "guidelines for introducing independent directors" has no significant effect on a firm's accounting performance, but negatively affects its market performance. This provides additional evidence that the independent director system is detrimental to firm performance.

5.2.2 Non-linear estimation

Beside the above linear estimation, we further checked the U-shaped relationships estimated by Al Farooque et al. (2007). We do this by adding the squared terms to the linear models to check the changes in signs of the coefficients. The results are shown in **Table 5.2** below.

Table 5.2: Corporate governance mechanisms and firm performance— Non-linear estimation

	ROA		TobinQ	
Board structure				
boardinde	-0.122***	(0.0297)	-2.118***	(0.265)
boardinde^2	0.193**	(0.0664)	3.547***	(0.686)
lnboardsize	0.0145	(0.0886)	-0.625	(0.832)
lnboardsize^2	-0.000719	(0.0197)	0.146	(0.184)
supersize	-0.000936	(0.00159)	0.00122	(0.0208)
Ownership structure				
state	-0.0321	(0.0213)	-1.343***	(0.266)
state^2	0.0324	(0.0352)	1.201**	(0.422)
manage	-2.001	(1.030)	13.53	(13.22)
manage^2	75.19*	(35.76)	-199.1	(443.0)
concen10	0.0804	(0.0650)	0.182	(0.938)
concen10^2	0.0180	(0.0615)	-0.620	(0.856)
CEO's character				
ceoage	-0.00425	(0.00259)	0.0125	(0.0285)
ceoage^2	0.0000425	(0.0000278)	-0.0000921	(0.000308)
ceotenure	0.00240	(0.00132)	-0.000740	(0.0154)
ceotenure^2	-0.000134	(0.000115)	-0.000181	(0.00150)
duality	-0.000944	(0.00439)	0.0156	(0.0527)
Controls				
firmage	0.00427	(0.00724)	0.497***	(0.0989)
firmsize	0.00267	(0.00306)	-0.513***	(0.0480)
longdebt	-0.00774	(0.00910)	-0.112	(0.108)
sdreturn	-0.00337	(0.0197)	3.027***	(0.246)
fcf	0.0382***	(0.0108)	-0.122	(0.0900)
fa_expen	0.118***	(0.0291)	0.888**	(0.284)
sale_grow	0.0245***	(0.00211)	0.0832***	(0.0239)
govern03	0.00218	(0.00407)	-0.245***	(0.0383)
govern08	0.00990*	(0.00401)	0.354***	(0.0521)
_cons	-0.0434	(0.129)	8.992***	(1.577)
N	5772		5772	
adj. R^2	0.095		0.265	
Standard errors in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$				

Overall, the study found that board independence and state ownership show negative effects on firm performance (consistent with the linear estimation in Table 5.1), but their squared terms have the opposite effects. It suggests that their relationships with firm performance are likely to be U-shaped. Whereas, the effects of ownership concentration, managerial ownership, CEO age and CEO tenure on firm performance tend to be monotonic due to the insignificant coefficients of the squared terms. To confirm the U-shaped relationship between board independence, state ownership and

firm performance, we conducted the u-test (Kostyshak, 2015) using Stata software as shown **Table 5.3.**

Table 5.3: U test (board independence and firm performance)

	ROA		**Tobin Q**	
	Lower bound	Upper bound	Lower bound	Upper bound
Interval	[0, 0.545]		[0, 0.545]	
Slope	-0.121	0.088	-2.148	1.785
t-value	-4.045	1.816	-8.179	3.335
P>t	0.0000	0.0350	0.000	0.000
Extreme point:	0.315		0.298	

The study found that statistically, the U-shaped relationship is significant between board independence, ROA and Tobin Q as the turning point is 0.315 and 0.298 respectively. It means that more than 31.5% and 29.8% of independent directors are positively related to firm performance. Otherwise, it is negative. Although the ROE and state ownership also show significant coefficient in the regression, statistically their U-shape is not significant.

To observe the trend of board independence and firm performance graphically, Figures 5.1-5.3 show the trends of firm performance for the different ranges of board independence. The horizontal axis shows the ranges of board independence, whereas, the bars show the mean value of ROA, ROE and Tobin Q. Visually, both ROA and ROE declined to its lowest value of between 25% to 30% of independent directors. They reached its highest point at about 45% to 50% of independent directors, and the second largest value is between 5% to 10% of independent directors. It means that board independence can improve firm performance only after reaching 30%. From the trend lines, it notices that the relationships between board independence and ROA and ROE are U-shaped. As for Tobin Q, its pattern also seems U-shaped. The peak value appeared at around 40% to 45% independent directors with the second highest value

between 5% to 10%, whereas the lowest one falls between 20% to 30% of independent directors.

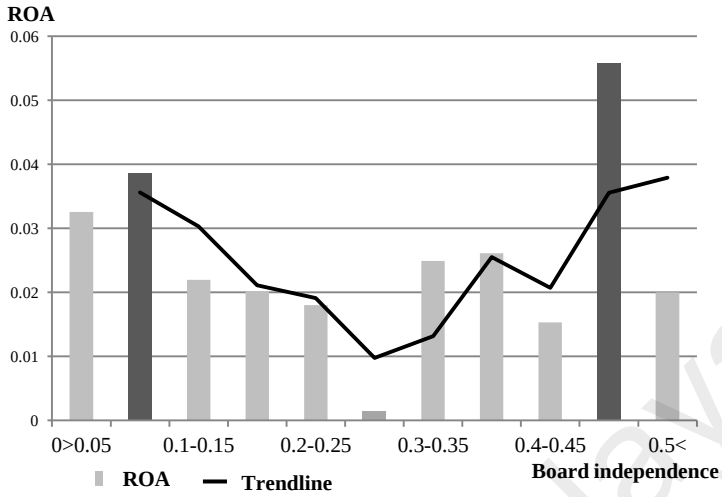

Figure 5.1: Board independence and ROA

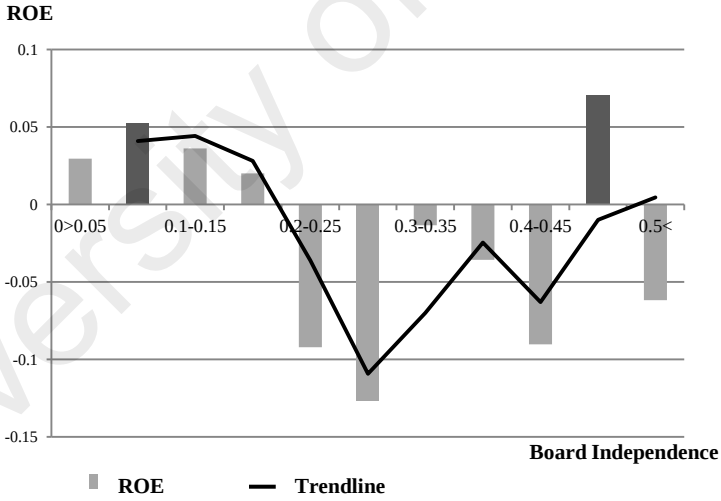

Figure 5.2: Board independence and ROE

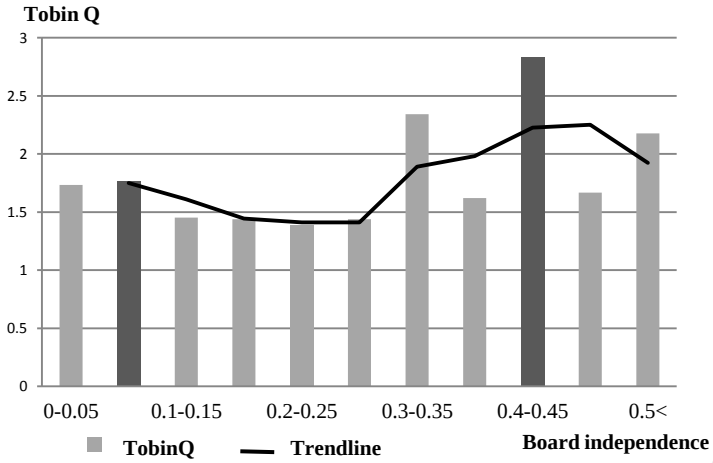

Figure 5.3: Board independence and Tobin Q

5.3 Joint effect of board structure, ownership structure and CEO characters on firm performance

Besides the individual effect of board structure, ownership structure, and CEO characteristics on firm performance as discussed in the earlier sections, we further examined the effects of board independence in the presence of ownership concentration, state ownership, and CEO tenure with the fixed effect estimation methods. The interactive terms were added in the regression models, and the results are illustrated in **Table 5.4.**

For the firm's accounting performance, the study found that board independence has a negative impact and ownership concentration has a positive impact (consistent with the results in section 5.2.1) but their joint effect is not significant. It suggests that the large shareholders are not able to let independent directors make concessions since the current independent director system suffers from many drawbacks that constrain large shareholders' positive governance role. Specifically, independent directors find it difficult to bring to bear useful market information and effective advice to help large shareholders to make decisions to improve firm performance, and independent directors

represent the small shareholders' interests that may conflict with large shareholders' interests leading to an insignificant joint effect on firm performance.

Table 5.4: Joint effect of ownership structure, board structure and CEO characters on firm performance

	ROA		ROE		TobinQ	
boardinde	-0.0538*	(0.0222)	-0.555***	(0.165)	-0.419	(0.242)
state	-0.0154	(0.0114)	-0.0165	(0.0792)	-0.221	(0.145)
boardinde×state	0.00590	(0.0321)	0.119	(0.241)	-1.511***	(0.390)
manage	-0.0471	(0.605)	0.0690	(3.240)	17.03	(9.397)
boardinde×manage	0.219	(1.649)	-2.535	(8.385)	-25.41	(23.10)
concen10	0.103***	(0.0153)	0.516***	(0.128)	-0.435*	(0.207)
boardinde×concen10	-0.0893	(0.0668)	-0.338	(0.381)	0.142	(0.793)
ceotenure	-0.00105	(0.00157)	-0.0150	(0.00972)	-0.0467*	(0.0181)
boardinde×ceotenure	0.00593	(0.00435)	0.0761**	(0.0267)	0.125*	(0.0526)
lnboardsize	0.00667	(0.00773)	0.114	(0.0718)	-0.0794	(0.0848)
supersize	-0.000813	(0.00159)	0.0118	(0.0129)	0.00479	(0.0206)
ceoage	-0.000296	(0.000299)	-0.00176	(0.00237)	0.00448	(0.00309)
duality	0.000342	(0.00445)	-0.00328	(0.0401)	0.0232	(0.0524)
firmage	0.00183	(0.00696)	0.0121	(0.0546)	0.443***	(0.0987)
firmsize	0.00278	(0.00301)	0.0543*	(0.0258)	-0.515***	(0.0484)
longdebt	-0.00597	(0.00917)	0.0805	(0.0575)	-0.0887	(0.109)
sdreturn	-0.00307	(0.0195)	-0.247	(0.168)	3.017***	(0.241)
fcf	0.0384***	(0.0107)	0.133	(0.102)	-0.119	(0.0898)
fa_expen	0.122***	(0.0290)	0.581**	(0.193)	0.899**	(0.287)
sale_grow	0.0246***	(0.00213)	0.125***	(0.0166)	0.0883***	(0.0242)
govern03	0.00230	(0.00411)	0.0360	(0.0389)	-0.233***	(0.0385)
govern08	0.0115**	(0.00399)	0.0478	(0.0331)	0.372***	(0.0491)
_cons	-0.110	(0.0660)	-1.773***	(0.498)	9.135***	(1.116)
N	5772		5772		5772	
adj. R^2	0.092		0.041		0.262	
Standard errors in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$						

The joint effect of board independence and CEO tenure was found to positively affect firm performance (ROE, Tobin Q). This suggested that an experienced CEO with long tenure could mitigate the drawbacks of independent directors to improve performance. CEOs with long tenure are usually familiar with the within-firm paradigm, but lack outside information. Independent directors as an outside party can bring the "new blood", thus leading to improved firm performance. Besides, independent

directors as an outside party represent small shareholders to the monitoring managerial behaviours (and CEO) and render them to work towards profit maximisation.

The joint effect of board independence and state ownership worsen the firm's performance. This is likely because board independence can be easily influenced by the government, especially when the government has ownership in the firm. Since the government has non-profit objectives, its joint effect with independent directors can adversely affect the firm's performance.

5.4 Influence of controlling shareholders on firm performance

In addition to firm ownership and performance, this study analysed the impact of different controlling shareholder types on firm performance. Since the Chinese government decentralised its state enterprises based on the type of enterprise, such as the "grabbing large and letting go small", hence, the type of controlling shareholders is not randomly happened, but determined by the firm's characters. Therefore, this study used the Heckman-selection model to examine the influence of controlling shareholder types on firm performance. The Wald test suggests that the overall goodness of fit of the model is appropriate.

The empirical results according to the treatment effect model based on accounting performance ROA (results for ROE are also available and showed consistent results) and market performance (TobinQ) are shown in **Table 5.5**. These results offer empirical evidence that not only the amount of ownership but also the types of controlling shareholders can exert a significant effect on firm performance.

Table 5.5: Effect of different controlling shareholders on firm performance

	ROA				Tobin Q			
boardinde	-0.0269*	-0.0360**	-0.0179	-0.0257*	-0.491**	-0.233	-0.583***	-0.403**
	(-2.14)	(-2.87)	(-1.43)	(-2.08)	(-3.13)	(-1.48)	(-3.75)	(-2.64)
lnboardsize	0.00947*	0.00585	0.0110*	0.00263	-0.367***	-0.246***	-0.331***	-0.208***
	(2.03)	(1.25)	(2.36)	(0.57)	(-6.38)	(-4.20)	(-5.66)	(-3.63)
supersize	0.00153*	0.00111	0.00198**	0.00199**	-0.000843	0.00934	-0.00174	0.00947
	(1.98)	(1.46)	(2.58)	(2.61)	(-0.09)	(0.98)	(-0.18)	(1.00)
ceoage	-0.0000939	-0.000128	-0.0000626	-0.000116	0.00222	0.00499*	0.00409*	0.00573**
	(-0.60)	(-0.83)	(-0.40)	(-0.76)	(1.16)	(2.57)	(2.10)	(3.02)
ceotenure	0.00269***	0.00265***	0.00268***	0.00244***	-0.00977*	-0.00863	-0.0125*	-0.00730
	(6.81)	(6.81)	(6.79)	(6.38)	(-2.04)	(-1.76)	(-2.51)	(-1.54)
duality	-0.0113***	-0.00991***	-0.0119***	-0.00945**	0.0702	0.0345	0.0499	0.000543
	(-3.76)	(-3.32)	(-3.97)	(-3.26)	(1.90)	(0.92)	(1.32)	(0.02)
state	-0.00350	0.000258	-0.00728	-0.000228	-0.527***	-0.500***	-0.419***	-0.343***
	(-0.76)	(0.05)	(-1.53)	(-0.04)	(-9.31)	(-8.39)	(-7.16)	(-5.35)
manage	0.998***	0.828***	1.067***	0.660**	-12.75***	-10.13***	-15.31***	-8.753**
	(4.03)	(3.38)	(4.29)	(2.78)	(-4.14)	(-3.29)	(-4.92)	(-2.99)
concen10	0.0725***	0.0651***	0.0648***	0.0482***	-0.571***	-0.497***	-0.340***	-0.263**
	(9.56)	(8.55)	(8.20)	(6.45)	(-6.19)	(-5.17)	(-3.51)	(-2.85)
govern03	-0.00196	-0.00261	0.00399	0.00298	-0.184***	-0.132**	-0.305***	-0.274***
	(-0.49)	(-0.66)	(0.96)	(0.76)	(-3.71)	(-2.63)	(-6.08)	(-5.67)
govern08	0.00732**	0.00565*	0.0128***	0.0134***	0.246***	0.427***	0.286***	0.365***
	(2.97)	(2.31)	(5.17)	(5.55)	(8.23)	(13.81)	(9.31)	(12.15)
Central	0.0408***				1.537***			
	(5.45)				(29.49)			
Local		0.0847***				-1.272***		
		(18.79)				(-26.35)		
MOSOE			0.0397***				-0.970***	
			(4.91)				(-17.16)	
Private				-0.0787***				1.302***
				(-17.49)				(29.32)
_cons	-0.0459***	-0.0522***	-0.0661***	0.000189	2.910***	2.776***	3.143***	1.895***
	(-3.69)	(-4.19)	(-5.30)	(0.01)	(18.84)	(17.68)	(20.22)	(11.93)
The selection process:								
	Central	**Local**	**MOSOE**	**Private**	**Central**	**Local**	**MOSOE**	**Private**
firmage	0.356***	0.172***	-0.983***	0.625***	0.208***	0.0861*	-0.974***	0.699***
	(5.25)	(4.59)	(-23.57)	(14.49)	(3.66)	(2.41)	(-24.58)	(16.42)
firmsize	0.292***	0.163***	0.0342	-0.239***	-0.00349	0.287***	0.173***	-0.408***
	(12.76)	(11.23)	(1.75)	(-14.88)	(-0.16)	(19.89)	(9.74)	(-25.36)
longdebt	-0.223	-0.164	-0.0474	0.129	-0.228	0.259**	0.279**	-0.196*
	(-1.41)	(-1.81)	(-0.43)	(1.31)	(-1.77)	(2.96)	(2.78)	(-2.03)
sdreturn	1.846***	-0.328	-2.240***	0.724**	2.639***	-1.890***	-3.574***	2.340***
	(4.18)	(-1.21)	(-6.66)	(2.65)	(7.76)	(-7.10)	(-11.56)	(8.85)
fcf	0.411*	0.564***	0.392**	-0.552***	0.0271	0.247*	0.288*	-0.324**
	(2.00)	(5.20)	(3.01)	(-5.22)	(0.18)	(2.40)	(2.53)	(-3.18)
fa_expen	-0.434	1.813***	-0.815*	-0.372	0.102	-0.0991	-2.060***	1.456***
	(-0.83)	(6.54)	(-2.19)	(-1.24)	(0.25)	(-0.36)	(-6.55)	(5.02)
sale_grow	0.0650	0.151***	0.102**	-0.107***	0.0402	-0.138***	-0.0732**	0.127***
	(1.46)	(6.27)	(2.99)	(-4.32)	(1.37)	(-5.56)	(-2.73)	(5.67)
Industries	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
_cons	-10.81***	-5.262***	7.343***	-1.068*	-3.181***	-7.056***	4.418***	1.771***
	(-16.12)	(-13.29)	(13.83)	(-2.38)	(-5.02)	(-18.31)	(9.09)	(3.85)
LR test P	0.0001	0.0000	0.0005	0.0000	0.0000	0.0000	0.0000	0.0000
Wald test P	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
N	5772	5772	5772	5772	5772	5772	5772	5772
Standard errors in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$,								

Specifically, central government control shows positive effects on both market and accounting firm performance. This is mainly because central government controlled enterprises are usually in strategic monopoly industries that are considered crucial for the country's economic development and people's living standard so that they are tightly supervised by the central government. Among the top 500 Chinese enterprises, more than half are central government controlled enterprises.

The local government and SOE control show positive effects on a firm's accounting performance. Compared to the central government, local governments enjoy a degree of autonomy in managing local state enterprises. First, due to its geographical and administrative distance, the central government finds it difficult to enforce laws and regulations (Chen et al., 2009). Second, officials in the local government are public servants who have few incentives to monitor the local state enterprises, because their remuneration is not based on firm performance but on how well they execute government regulations. Third, the officials have little experience and knowledge about the industry and are not part of the management process. Thus, they cannot evaluate the managerial behaviours in local state enterprises (Berkman et al., 2012). However, local governments can set up their rules and policies to support local SOEs in competing with other regions for national resources. Hence, local government control is beneficial for a firm's accounting performance.

Market-oriented state enterprises are those controlled by the SOE entities themselves. Although political influence still exists, its extent has been reduced since the government only indirectly controls and realises its interests through representation on the corporate board. Market-oriented state enterprises enjoying a degree of autonomy are more likely to be profit oriented, are more familiar with their industry, and managers'

compensation is based on firm performance (Firth, Fung, & Rui, 2006). Thus, the accounting performance is satisfied.

Both local government and SOE entity control appear detrimental to market performance. This is likely because the government controls the state shares and does not allow them to trade freely without permission, and the transfer price is largely based on book value since some of them are non-tradable shares. Therefore, the local government and SOE entities are less likely to be concerned about the market value of the firms, since they cannot benefit from stock price improvement (Firth et al., 2006).

In contrast, the study found that the private control positively affects the firm's market performance, but the accounting performance is poor. This is likely because the private enterprises are more subject to market discipline than state-related enterprises. They receive fewer government subsidies and financing facilities, and therefore, their market performance is crucial for their survival. Their unsatisfactory accounting performance is because of the government privatisation strategy that they prefer to privatise those poorly performing state enterprises to mitigate their pressure from financial assistant and only keep profitable enterprises. Thus, privately controlled enterprises usually have poor accounting performance.

5.5 Influence of corporate governance mechanisms on firm performance: A comparison of controlling shareholders

Since the study has found the controlling shareholders have significant effects on firm performance, we analysed how their corporate governance mechanisms differed in **Table 5.6** with fixed effect estimation methods.

Table 5.6: Corporate governance and firm performance: a comparison of different controlling shareholders

	ROA				TobinQ			
	Private	**Central**	**Local**	**MOSOE**	**Private**	**Central**	**Local**	**MOSOE**
Board Structure								
boardinde	-0.0962**	0.00789	-0.0462	-0.0208	-0.736*	0.558	-0.0152	-0.613***
	(-3.22)	(0.07)	(-1.69)	(-1.08)	(-2.50)	(0.71)	(-0.06)	(-3.81)
lnboardsize	-0.0104	0.0571	0.0125	0.000319	-0.209	-0.269	-0.0611	0.00610
	(-0.82)	(1.42)	(0.67)	(0.03)	(-1.36)	(-0.59)	(-0.40)	(0.05)
supersize	0.00309	0.000745	-0.00383	0.00321	-0.0344	0.155**	0.0268	0.0339
	(0.85)	(0.15)	(-1.40)	(1.34)	(-0.78)	(3.38)	(0.83)	(1.36)
CEO's Character								
ceoage	-0.0000380	-0.00159	-0.000294	0.000132	0.00490	-0.00226	0.00359	0.00377
	(-0.06)	(-1.30)	(-0.60)	(0.30)	(0.79)	(-0.27)	(0.76)	(0.69)
ceotenure	-0.000380	0.00415*	0.000886	0.00126	0.00167	0.0199	-0.000467	-0.0113
	(-0.32)	(2.07)	(0.95)	(1.26)	(0.15)	(1.03)	(-0.05)	(-0.77)
duality	-0.0121	0.0112	0.00276	0.00647	0.0166	0.0968	0.0617	-0.000181
	(-1.30)	(0.49)	(0.30)	(0.63)	(0.20)	(0.54)	(0.57)	(-0.00)
Ownership Structure								
state	-0.0486	0.0144	-0.00943	-0.00109	-1.012**	-0.894***	-1.104***	-0.689***
	(-1.79)	(0.72)	(-0.75)	(-0.10)	(-2.82)	(-4.06)	(-5.21)	(-4.11)
manage	-0.239	1.017	0.176	0.757	5.501	19.05	5.150	30.81
	(-0.75)	(1.33)	(0.29)	(0.59)	(1.23)	(1.90)	(0.52)	(1.20)
concen10	0.0728**	0.00268	0.0987**	0.0964***	-0.838*	0.470	0.0233	-0.287
	(3.15)	(0.05)	(3.12)	(3.44)	(-2.57)	(0.72)	(0.07)	(-0.78)
Controls								
firmage	0.0202	0.0571	0.00169	-0.0132	0.969***	1.394***	0.454**	-0.119
	(1.06)	(1.78)	(0.13)	(-1.42)	(4.00)	(4.22)	(2.87)	(-1.07)
firmsize	0.000124	-0.0231*	0.0139*	0.00327	-0.607***	-0.601***	-0.435***	-0.351***
	(0.03)	(-2.54)	(2.03)	(0.55)	(-6.96)	(-4.57)	(-5.44)	(-4.54)
longdebt	0.0155	0.0175	-0.0402**	0.0195	0.280	-0.0247	-0.519*	0.0220
	(1.00)	(0.58)	(-2.73)	(1.20)	(1.41)	(-0.09)	(-2.45)	(0.18)
sdreturn	0.00686	-0.0299	-0.00894	-0.0253	3.050***	3.034***	3.081***	2.595***
	(0.16)	(-0.76)	(-0.32)	(-0.61)	(6.68)	(4.87)	(8.35)	(5.12)
fcf	0.0474*	0.0312	0.0335	0.0206	0.0356	-0.396	-0.292	-0.119
	(2.32)	(1.59)	(1.80)	(1.18)	(0.24)	(-1.43)	(-1.72)	(-0.80)
fa_expen	0.0784	0.176*	0.0909	0.118**	0.957	0.302	1.078*	0.512
	(1.47)	(2.36)	(1.91)	(2.64)	(1.47)	(0.42)	(2.34)	(1.53)
sale_grow	0.0186***	0.0205**	0.0250***	0.0259***	0.0651	0.331***	0.0715*	0.0422
	(5.91)	(2.69)	(8.66)	(6.14)	(1.48)	(4.04)	(2.14)	(1.61)
govern03	-0.00591	-0.0834*	0.0224	-0.0000666	-0.563***	-1.373***	-0.392***	-0.0143
	(-0.57)	(-2.44)	(1.88)	(-0.01)	(-5.40)	(-4.86)	(-4.48)	(-0.38)
govern08	0.0137	-0.0139	0.000820	0.0105	0.282***	-0.132	0.118	0.532***
	(1.91)	(-1.37)	(0.13)	(1.38)	(3.37)	(-1.15)	(1.80)	(5.56)
_cons	-0.150	0.0540	-0.356*	-0.0351	7.448***	3.953	7.256***	9.822***
	(-1.14)	(0.29)	(-2.47)	(-0.33)	(4.10)	(1.18)	(3.80)	(6.08)
N	1552	458	1916	1846	1552	458	1916	1846
adj. R^2	0.080	0.145	0.086	0.108	0.267	0.276	0.227	0.222

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

The study found that the board independence had negative effects on firm performance only in private and SOE controlled firms. This suggested that the drawbacks of the current independent director system discussed in section 5.1 were mostly applied to private and SOE controlled firms. This is likely because these firms tend to have reliable management and less serious agency problems between managers and shareholders that minimised the benefit of independent directors' monitoring but brought about the additional costs, such as salaries, compensation and allowances. Specifically, in private enterprises, the founders tend to employ trustworthy managers or install themselves as CEO (Chen et al., 2009). For SOE controlled firms, the managers usually receive stock or monetary incentives.

The study also found that CEO tenure has positive effects on firm performance in central government controlled enterprises. It suggests that CEOs with long tenure in central government controlled enterprises are more familiar with their job. Since most central government controlled enterprises are in monopoly strategic industries with less competition and relatively stable environment, their CEOs can learn cumulatively over time in a stable environment (Henderson et al., 2006). Thus, firm performance improves with CEO tenure in central government controlled enterprises.

The ownership concentration has significant positive effects on a firm's accounting performance except in the central government controlled enterprises. This is because the central government controlled enterprises are closely supervised by the central government, and have more political objectives. Therefore, ownership concentration is not an effective governance mechanism in central government-controlled firms, since they all follow government orders. Ownership concentration is detrimental to market performance only in private enterprises since the ownership concentration increased the

horizontal agency problems between large shareholders and small shareholders in private enterprises. The large shareholders are more likely to expropriate small shareholders' interests in private enterprises where government supervision is weaker.

The influence of split-share structure reform on firm performance varies across firms with different controlling shareholders. It only improves market performance in private and market-oriented state enterprises, whereas government controlled enterprises were unaffected by this reform since they have non-profit objectives and less depend on the market for financing. The government regulation effect of "guidelines for introducing independent directors" significantly negatively affected the firm performance in central government, local government and private controlled enterprises meaning that when the regulation was first introduced firm performance suffered.

5.6 Influence of corporate governance mechanisms on firm performance: A comparison of before and after reform

Since the split-share structure reform had a significant influence on firm performance as discussed in the earlier sections, the study examined how the corporate governance changed before and after the split-share structure reform. The results are shown in **Table 5.7** with fixed effect estimation method.

The study found that board independence was negatively related to market performance before the split-share structure reform. After that, board independence starts to show the positive effects, although it is not significant. This is likely because before the split-share structure reform, the ownership is concentrated and less than one-third shares are allowed to be traded freely. Independent directors representing the minority tradable shareholders' interests are more easily influenced by the large

controlling shareholders and found it difficult to contribute to corporate governance. Before the share structure reform, the board independence system was newly introduced so that independent directors were not familiar with their jobs and the market conditions, leading to poor firm performance.

Table 5.7: Corporate governance mechanisms and firm performance: A comparison of before and after reform

	ROA				TobinQ			
	Before		After		Before		After	
Board Structure								
boardinde	-0.00820	(0.0165)	-0.0234	(0.0468)	-0.469***	(0.0945)	0.593	(0.535)
lnboardsize	0.00495	(0.0101)	-0.0112	(0.0261)	0.0845	(0.0747)	-0.318	(0.249)
supersize	0.000388	(0.00211)	0.00190	(0.00339)	0.0233*	(0.0110)	-0.0543	(0.0370)
CEO's Character								
ceoage	-0.000431	(0.000501)	-0.000337	(0.000720)	0.00332	(0.00251)	0.00199	(0.00742)
ceotenure	0.000148	(0.00140)	0.000296	(0.000838)	-0.00895	(0.00797)	-0.00119	(0.00973)
duality	0.00946	(0.00697)	-0.000241	(0.00899)	0.0383	(0.0466)	-0.0581	(0.0853)
Ownership Structure								
state	0.00201	(0.0154)	0.00685	(0.0132)	0.0569	(0.0986)	-1.419***	(0.177)
manage	-0.136	(0.867)	-0.341	(0.406)	26.23	(15.41)	5.514	(4.190)
concen10	0.244***	(0.0503)	0.0815*	(0.0338)	1.530***	(0.448)	0.620	(0.381)
Controls								
firmage	-0.0417***	(0.0113)	0.0198	(0.0276)	-0.511***	(0.0669)	1.147***	(0.336)
firmsize	0.0180	(0.00974)	0.00479	(0.00796)	-0.341***	(0.0612)	-0.954***	(0.0939)
longdebt	-0.00495	(0.0119)	-0.00992	(0.0186)	0.138	(0.0877)	0.152	(0.196)
sdreturn	-0.0227	(0.0485)	-0.109*	(0.0430)	1.121**	(0.407)	0.0989	(0.466)
fcf	0.0212	(0.0125)	0.0330*	(0.0166)	-0.0733	(0.0586)	-0.0868	(0.157)
fa_expen	0.115**	(0.0378)	0.0454	(0.0540)	0.156	(0.183)	-0.0915	(0.561)
sale_grow	0.0223***	(0.00305)	0.0202***	(0.00362)	-0.0171	(0.0214)	0.0914*	(0.0372)
_cons	-0.182	(0.182)	-0.243	(0.222)	11.23***	(1.354)	13.28***	(2.225)
N	2220		2220		2220		2220	
adj. R^2	0.119		0.070		0.481		0.215	

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

The study found that before the share structure reform, the supervisory board tended to improve firm performance significantly. This is because independent directors and the supervisory board shared the same function (elaborated in Chapter 4). Thus, when independent directors were ineffective, the supervisory board played the key monitoring function and improved firm performance. State ownership was found to have an adverse effect after the split-share structure reform mainly because after the split-share structure reform, enterprises became more market oriented. The retained state ownership harmed the market performance since the government has non-profit purposes and state shares

cannot trade without permission. Similarly, ownership concentration was found to be unimportant after the reform, since the reform decentralised the shares and reduced the large shareholders' power and interests rendering them less effective in the corporate governance.

5.7 Summary

Overall, the study provides additional empirical evidence for both "linear" and "non-linear" strands of corporate governance and firm performance studies based on Chinese reforms. For board structure, the study found that board independence tends to negatively affect firm performance due to its weaknesses in incentives, responsibilities and objective. However, after it reaches the turning point at around 30%, it starts to show positive influence. Although the linear effect of board independence is negative, the CEOs with the longer tenure can mitigate the drawbacks of independent directors resulting in a positive joint effect. For ownership structure, the study found that state ownership is negatively related to a firm's market performance, and its joint effect with independent directors made it worse. Although the ownership concentration is good for improving firm performance, it is weakened by board independence leading to an insignificant joint effect. For CEO influence, the study found that an older CEO is beneficial for a firm's market performance and CEOs with long tenure are good for a firm's accounting performance. For government regulation effects, the study found that enforcement of board independence harmed firm performance, but the share structure reform has positive impacts. It suggests that the ownership structure reform is more helpful than the board structure reform in China.

The above estimations differed when the study made comparisons between different controlling shareholders. Board independence is detrimental to firm performance only

in private and market-oriented state enterprises. Ownership concentration is irrelevant in central government controlled enterprises. CEO tenure positively affects firm performance only in central government controlled enterprises.

Also, the effectiveness of corporate governance mechanisms varies before and after the share structure reform. Before the reform when independent directors were first introduced and showed negative impact, the supervisory board, which had similar functions as independent directors contributed to firm performance significantly. It shows that the two-tier board structure with one main board and one supervisory board provided the double guarantee on firm performance in that period.

When it comes to the influence of controlling shareholders, the study found that central government control is beneficial to both accounting and market performance. Local government and SOE entity control can improve a firm's accounting performance, but harm its market performance. It means that the constraints on free share trading limited the firm's concern about the stock market. Private control shows positive effects on market performance, but the accounting performance is unfavourable.

Briefly, the varied performance of firms with different governance characteristics, including board independence, CEO characters and ownership concentration show that many factors have been at work in shaping firm performance. Some factors, such as supervisory boards, the many types of state enterprises, and the implementation of the split-share reform, are unique to China, and add a degree of complexity to Chinese firm performance as shown by the above results.

CHAPTER 6: INFLUENCE OF CORPORATE GOVERNANCE MECHANISMS ON FIRM RISK-TAKING

6.1 Introduction

The corporate board is the key decision-making organ in an enterprise. In China, the extent to which it shoulders risk during the economic transition is critical for a firm's long-term development. This chapter analyses the effect of corporate board structure and other governance mechanisms on firm risk-taking.

Section 6.2 shows the effects of board structure, ownership structure and the CEO's influence on firm risk-takings, utilising both linear and non-linear estimations. This is followed by section 6.3, which examines the joint effects of board structure and ownership structure on firm risk-taking. Section 6.4 examines the influence of controlling shareholder types on firm risk-taking through the treatment effect model and found that different controlling shareholders have different impacts on firm risk-taking. Hence, section 6.5 explores the influence of corporate governance mechanisms on firm risk-taking with different controlling shareholder types. Section 6.6 compares the influence of corporate governance mechanisms on firm risk-taking before and after the split-share structure reform. Section 6.7 summarises the findings.

6.2 Influence of corporate governance mechanisms on firm risk-taking

6.2.1 Linear estimation

Table 6.1 shows the direct effect of ownership structure, board structure and CEO characteristics on firm risk-taking. The results from several estimation methods are consistent, and the OLS, fixed effect and GMM methods are estimated with white's robust standard error. The selection OLS, fixed effect and GMM methods are based on

the LR test (P<0.05) and Hausman test (P<0.05), which show fixed effect method is more appropriate. The study found that overall CEO characteristic does not affect the firm's risk-taking behaviour significantly, whereas board structure and ownership structure tend to influence firm risk-taking behaviour significantly.

Table 6.1: Corporate governance mechanisms and firm risk-taking—Linear estimation

	Firm risk					
	OLS		**FE**		**GMM**	
Board structure						
boardinde	0.00880	(0.00825)	0.0114	(0.00772)	0.0706***	(0.00929)
lnboardsize	-0.0127**	(0.00487)	-0.0100**	(0.00330)	-0.00619	(0.00610)
supersize	-0.000150	(0.00112)	-0.000518	(0.000550)	-0.00207	(0.00133)
Ownership structure						
state	0.0217***	(0.00508)	0.00890*	(0.00367)	0.0120*	(0.00508)
manage	-0.489	(0.289)	-0.213	(0.204)	-0.417	(0.297)
concen10	-0.0647***	(0.0131)	-0.0174**	(0.00638)	-0.0621***	(0.0118)
CEO's character						
ceoage	-0.000216	(0.000190)	-0.000121	(0.000138)	-0.000301	(0.000237)
ceotenure	0.000132	(0.000414)	-0.000251	(0.000331)	0.000155	(0.000370)
duality	0.00175	(0.00340)	0.00112	(0.00251)	-0.00218	(0.00370)
Controls						
firmsize	0.0117***	(0.00180)	0.00191*	(0.000891)	0.00610***	(0.00102)
roa	-0.0306*	(0.0139)	-0.0676***	(0.0128)	-0.0152	(0.0147)
tobinq	0.0187***	(0.00150)	0.0144***	(0.00139)	0.0140***	(0.00151)
govern03	0.0310***	(0.00241)	0.0342***	(0.00218)	0.0222***	(0.00217)
govern08	-0.0108***	(0.00239)	-0.00240	(0.00186)	-0.0296***	(0.00256)
$sdreturn_{t-1}$					0.401***	(0.0183)
_cons	-0.108**	(0.0399)	0.0721***	(0.0198)	-0.0386	(0.0242)
N	5772		5772		5328	
adj. R^2	0.149		0.136			
Hansen P					0.291	
AR(2) P					0.205	

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

Specifically, board independence is positively related to the firm's risk-taking which is consistent with the results in New Zealand (Koerniadi et al., 2013). This is because the independent directors as an outside party are less responsible for the firm's long-term development. This may induce firms to accept the project with high-risk. As expected, board size is negatively related to a firm's risk-taking, since a large group of decision makers are expected to find it harder to reach consensus in decisions. Thus, it is less likely for them to take more risk.

For ownership structure, the study found that the state ownership positively affects firm risk-taking. It is believed that enterprises with high state ownership have better access to government financial subsidies, better financing and more resources (Faccio, 2006; Li, Meng, & Zhang, 2006; Song, Ai, & Li, 2014). However, these resources are not completely used for value maximisation but some political purpose. For instance, such firms tend to employ managers based on political connection rather than their ability, adding more employees rather than saving labour cost. Hence, political intervention through state ownership increased the uncertainty of stock returns. Ownership concentration reduces firm risk-taking since large shareholders have long-term interests in the firm and tend to induce their corporate boards to undertake less risky projects. Unlike smaller shareholders, who are prone to selling their shares and diversify their investment, large shareholders' view of the firms is more likely to be conservative, especially when the market condition is poor (John et al., 2008).

The government regulation of "introducing independent directors" was found to increase firm risk significantly, suggesting that independent directors increase taking risk at least when they were first reinforced. However, the split-share structure reform was found to reduce firm risk-taking significantly, which suggests that the market reform through share liberalisation was effective.

6.2.2 Non-linear estimation

The study also checked the potential U-shaped relationship between corporate governance mechanisms and firm risk-taking. The study found that board independence and state ownership are likely to have a U-shaped relationship with firm risk-taking. The non-linear regression results are shown in **Table 6.2**. This is followed by the U-test

in Table 6.3 suggesting that statistically, the U-shaped relationship between board independence , state ownership and risk-taking exists.

Table 6.2: Corporate governance mechanisms and firm risk-taking—Non-linear estimation

	Firm risk	
Board structure		
boardinde	-0.0622**	(0.0210)
boardinde^2	0.156***	(0.0414)
lnboardsize	0.0183	(0.0400)
lnboardsize^2	-0.00581	(0.00910)
supersize	-0.000824	(0.000585)
Ownership structure		
State	0.0834***	(0.0108)
State^2	-0.126***	(0.0175)
manage	-0.299	(0.188)
concen10	-0.00674	(0.0322)
concen10 ^{2}	0.00293	(0.0294)
CEO's character		
ceoage	-0.00000893	(0.000117)
ceotenure	-0.000129	(0.000297)
duality	-0.000109	(0.00226)
firmage	0.0122***	(0.00247)
firmsize	-0.00355***	(0.000777)
longdebt	-0.00793	(0.00444)
fcf	-0.0113*	(0.00499)
fa_expen	-0.0762***	(0.0136)
sale_grow	0.00590***	(0.00113)
govern03	0.0285***	(0.00309)
govern08	0.00244	(0.00203)
_cons	0.0755	(0.0513)
N	5772	
adj. R^2	0.1222	
Standard errors in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$,		

The U test suggested that the relationship between state ownership and firm risk tend to be inverse U-shaped. When the state ownership beyond 33 percent, the state ownership start to negatively affect firm risk. This is might because of the state has objectives of maintaining social stability, thus when the state ownership approaches the majority shares, it start to exert negative influence on firm risk.

Table 6.3: The U test (Board independence, State ownership and Firm risk)

	Firm risk			
	Board Independence		State Ownership	
	Lower bound	Upper bound	Lower bound	Upper bound
Interval	[0, 0.545]		[0, 0.75]	
Slope	-0.06224	0.108184	0.083446	-0.10515
t-value	-2.96766	3.849114	7.693477	-6.40179
P>t	0.001507	0.0000599	0.0000	0.0000
Extreme point:	0.199		0.332	

Besides the formal statistical tests, we also draw the bar chart to illustrate the relationship between board independence, state ownership and firm risk in Figure 6.1 and 6.2. The horizontal axis shows the ranges of board independence and state ownership respectively, the vertical axis shows the mean value of firm risk measured by stock return volatility in each range. The details about the number of observations, and mean values in each range are attached in Appendix. From the charts, the study found that board independence exerts positive impacts on firm risk after reaching 20% of independent directors, which is consistent with the prediction of the U-test.

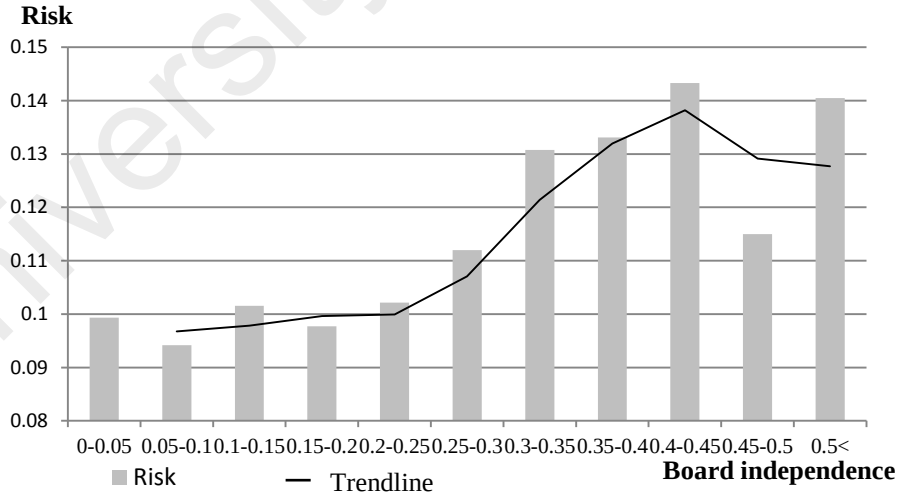

Figure 6.1: Board independence and firm risk

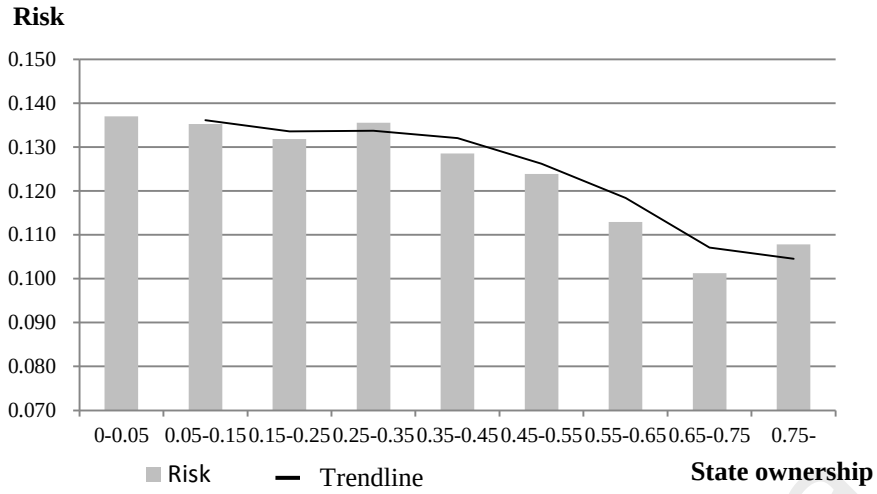

Figure 6.2: State ownership and firm risk

6.3 Joint effects of board structure and ownership structure on firm risk-taking

Since the study has found that board structure and ownership structure significantly affect firm risk-taking, it analysed the joint effect of board structure and ownership structure on firm risk-taking in **Table 6.4** the with fixed effect estimation methods.

The study found that the interactive term of ownership concentration and board size are negatively related to the firm risk-taking, suggesting that when ownership is concentrated, a larger board tends to reduce risk-taking to protect large shareholders' interests in the firm. As discussed in earlier sections, large shareholders have long-term interests in the firm and tend to be conservative in decision-makings and are averse to risk. Meanwhile, a larger corporate board is less likely to make extreme decisions, so that their joint effect reduces risk-taking.

Table 6.4: Joint effect of board size and ownership concentration on firm risk-taking

	Firm risk			
	OLS		FE	
boardinde	0.0122	0.0118	0.0101	0.00994
	(0.00774)	(0.00796)	(0.00814)	(0.00845)
lnboardsize	-0.0114***	-0.0122***	-0.0134**	-0.0135**
	(0.00316)	(0.00319)	(0.00463)	(0.00480)
concen10	-0.0159*	-0.0157*	-0.0633***	-0.0671***
	(0.00639)	(0.00648)	(0.0132)	(0.0135)
state	0.00851*	0.00981**	0.0210***	0.0238***
	(0.00360)	(0.00376)	(0.00504)	(0.00508)
lnboardsize ×concen10		-0.0802***		-0.133***
		(0.0232)		(0.0330)
boardinde ×concen10		-0.0504		-0.0776
		(0.0501)		(0.0475)
lnboardsize ×state		0.00773		0.0103
		(0.0147)		(0.0172)
boardinde × state		0.0585**		0.0832***
		(0.0217)		(0.0222)
firmsize	0.00154	0.00168	0.0110***	0.0111***
	(0.000879)	(0.000895)	(0.00172)	(0.00175)
roa	-0.0687***	-0.0701***	-0.0297*	-0.0298*
	(0.0127)	(0.0129)	(0.0137)	(0.0138)
tobinq	0.0143***	0.0145***	0.0186***	0.0188***
	(0.00139)	(0.00137)	(0.00149)	(0.00149)
govern03	0.0340***	0.0333***	0.0311***	0.0301***
	(0.00217)	(0.00220)	(0.00239)	(0.00242)
govern08	-0.00265	-0.00168	-0.0109***	-0.00946***
	(0.00183)	(0.00190)	(0.00237)	(0.00238)
_cons	0.0738***	0.0727***	-0.105**	-0.104**
	(0.0191)	(0.0199)	(0.0385)	(0.0397)
N	5772	5772	5772	5772
adj. R^2	0.136	0.138	0.149	0.154

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

The joint effect of state ownership and board independence shows positive effects on firm risk-taking, which suggests that independent directors accelerated risk-taking when state ownership is high. This is plausible because both government shareholder and independent directors are both promoting firm risk-taking that is consistent with our discussions in section 6.1. Thus, when a firm has concurrent high board independence and high state ownership, the firm risk will increase.

6.4 Influence of controlling shareholder types on firm risk-taking

Besides ownership, this study analysed the effect of controlling shareholder types on firm risk-taking. The Heckman selection model was applied to determine the selection

process of controlling shareholder types. Table 6.3 shows the effect of private, local government, central government and SOE control on firm risk-taking.

Table 6.5: Influence of controlling shareholder types on firm risk-taking

	Firm risk			
boardinde	0.0109	0.00753	0.0113	0.00685
	(0.00926)	(0.00943)	(0.00947)	(0.00936)
lnboardsize	-0.00850*	-0.0162***	-0.0115**	-0.0145***
	(0.00347)	(0.00344)	(0.00353)	(0.00350)
supersize	-0.0000247	-0.000677	-0.000247	-0.000457
	(0.000576)	(0.000565)	(0.000580)	(0.000577)
state	0.00872*	0.00543	0.00543	0.00674
	(0.00387)	(0.00343)	(0.00358)	(0.00351)
manage	-0.399*	-0.502**	-0.352	-0.532**
	(0.180)	(0.182)	(0.187)	(0.189)
concen10	-0.0159**	-0.0367***	-0.0253***	-0.0253***
	(0.00566)	(0.00555)	(0.00576)	(0.00574)
ceoage	0.0000454	-0.000100	-0.0000396	-0.0000649
	(0.000115)	(0.000115)	(0.000117)	(0.000117)
ceotenure	-0.000297	-0.000489	-0.000441	-0.000560
	(0.000291)	(0.000288)	(0.000298)	(0.000299)
duality	-0.000316	0.00353	0.00171	0.00209
	(0.00220)	(0.00222)	(0.00226)	(0.00227)
govern03	0.0328***	0.0305***	0.0342***	0.0307***
	(0.00291)	(0.00299)	(0.00301)	(0.00298)
govern08	0.00337	-0.00286	0.00306	-0.000376
	(0.00184)	(0.00182)	(0.00185)	(0.00185)
Private	0.0800***			
	(0.00345)			
Central		0.0928***		
		(0.00350)		
Local			-0.0562***	
			(0.00471)	
MOSOE				-0.0628***
				(0.00417)
_cons	0.0994***	0.158***	0.156***	0.172***
	(0.00962)	(0.00918)	(0.00942)	(0.00940)
The selection process:				
	Private	**Central**	**Local**	**MOSOE**
firmsize	-0.0980***	0.241***	0.0828***	-0.149***
	(0.0158)	(0.0203)	(0.0159)	(0.0164)
roa	-0.0897	-1.192***	-0.111	1.073***
	(0.203)	(0.283)	(0.221)	(0.224)
tobinq	0.200***	0.240***	-0.176***	-0.306***
	(0.0160)	(0.0205)	(0.0203)	(0.0206)
Industries	Yes	Yes	Yes	Yes
_cons	0.850*	-6.981***	-1.709***	3.347***
	(0.353)	(0.468)	(0.361)	(0.366)
LR test P	0.0000	0.0000	0.0000	0.0000
Wald test P	0.0000	0.0000	0.0000	0.0000
N	5772	5772	5772	5772
Standard errors in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$				

The study found that private control increases firm risk possibly because private enterprises are more likely to be market-oriented and that managers in these enterprises receive an explicit monetary reward based on firm performance that greatly increased their incentives to accept high-risk high-return investments. Meanwhile, private investors can use their shares as collateral for personal loans (Firth et al., 2006). Hence, they have incentives to maximise the share price by choosing projects with short-term gains that may entail higher risks resulting in higher stock return volatility.

The central government control increases firm risk likely because central government controlled firms are politically connected firms. As suggested by Boubakri, Mansi, and Saffar (2013), political connections accelerate firm risk-taking, since the government has political objectives and may expropriate private properties. Bliss and Gul (2012) also suggested that in the relationship-based economies like Malaysia, the politically connected firms show higher risk because the government misuses the state assets to reward their supporters for winning votes. In China, officials in government agencies are public servants who have little experience and incentive to supervise SOEs. Their only responsibility is to execute government decisions, instructions and support the Chinese Communist party leadership. Their remuneration and promotion are not related to firm value or dividend payout, but on how well they perform government policies.

The central government-controlled enterprises had been criticised for its scandals and wrongdoings. For example, the National Audit Office reported the serious misbehaviour of 17 central government-controlled enterprises in May 2011 including high office expenses, excessive compensation, and invisible welfare, e.g. children employment, employee house and cheaper utilities. In October 2014, the State Council further illustrated several scandals of central government-controlled firms, such as the transfer

of state assets at lower prices and corruption. Such examples suggest that central government control is risky.

However, local government-controlled enterprises and market-oriented SOEs can reduce firm risk, since both enjoy a degree of freedom. Local governments' fiscal revenue depends on local SOEs. The local governments have incentives to give priority to the stability of local SOEs and leaving political objectives as secondary. However, the source of the central government's fiscal revenue is broader. The political objectives toward central SOEs are much greater than the local ones. The market-oriented SOEs can retain the after-tax profit for their own use. It enjoys the benefit from both government and market support. Investors are more willing to invest in these SOEs since they feel that the state will not expropriate shareholders' interests. Therefore, the market-oriented SOEs are less risky.

6.5 Influence of corporate governance mechanism on firm risk-taking: a comparison of controlling shareholders

Since we found that controlling shareholder types have significant effects on firm risk-taking, we discussed how the corporate governance differed in firms with different controlling shareholder types. **Table 6.6** compares the influences of corporate governance mechanisms on firm risk-taking in different controlling shareholder types using the fixed effect model.

Table 6.6: Influence of corporate governance mechanism on firm risk-taking: a comparison of controlling shareholders

	Firm risk			
	Private	**Central**	**Local**	**MOSOE**
Board structure				
boardinde	0.0240	0.0201	-0.0194	0.00399
	(0.0201)	(0.0868)	(0.0204)	(0.0109)
lnboardsize	-0.0222	0.00737	-0.0140	-0.00787
	(0.0114)	(0.0289)	(0.0113)	(0.00901)
supersize	0.00216	0.00203	0.000369	-0.00154
	(0.00256)	(0.00720)	(0.00242)	(0.00159)
Ownership structure				
state	-0.0383*	0.0832***	0.0702***	0.0369***
	(0.0190)	(0.0203)	(0.00975)	(0.00883)
manage	-0.751	-0.805	-0.582	2.898*
	(0.405)	(1.003)	(0.676)	(1.304)
concen10	0.00609	-0.271***	-0.170***	-0.0774**
	(0.0235)	(0.0384)	(0.0283)	(0.0255)
CEO's character				
ceoage	0.000457	-0.0000913	-0.000570	-0.000351
	(0.000472)	(0.000827)	(0.000414)	(0.000285)
ceotenure	0.000162	0.00217	0.000763	0.000739
	(0.000929)	(0.00136)	(0.000726)	(0.000817)
duality	-0.00780	0.00592	-0.00185	0.0148*
	(0.00604)	(0.0167)	(0.00679)	(0.00700)
firmsize	0.00814*	0.00713	0.0165***	0.00837*
	(0.00401)	(0.00953)	(0.00407)	(0.00405)
roa	-0.0166	-0.0915	-0.0379	-0.0382
	(0.0285)	(0.0513)	(0.0209)	(0.0264)
tobinq	0.0183***	0.0220***	0.0235***	0.0175***
	(0.00258)	(0.00578)	(0.00276)	(0.00326)
govern03	0.0376***	0.0334	0.0342***	0.0120***
	(0.00629)	(0.0180)	(0.00669)	(0.00330)
govern08	-0.0211***	-0.0295**	-0.0114*	0.0136*
	(0.00479)	(0.00954)	(0.00516)	(0.00612)
_cons	-0.0827	0.0268	-0.158	-0.0358
	(0.0920)	(0.236)	(0.0903)	(0.0869)
N	1552	458	1916	1846
adj. *R*2	0.110	0.217	0.144	0.127

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

The study found that state ownership has negative effects on firm risk-taking in private enterprises, which is consistent with the empirical results in Boubakri, Cosset, et al. (2013), but the state ownership in government and SOE-controlled firms show positive effects on firm risk-taking. The findings are consistent with Figure 6.2 whereby after the state becomes a dominant owner it began to show a positive relationship with firm risk-taking. This may be attributed to the different roles of state ownership played

in private and state enterprises. In private enterprises, the state is the minority shareholder; they can express their concern about the corporation through corporate board representatives. This kind of government intervention constrains private firms from taking risky projects since the government wants to maximise the social stability, employment rate, and wages. In contrast, the state is the dominant shareholder in the government-controlled, and market-oriented state enterprises show a positive effect on firm risk. The dominant shareholder may tunnel the gains from risk-taking and let the minorities absorb any potential losses (John et al., 2008).

The ownership concentration was found to negatively affect firm risk-taking in government and SOE-controlled firms, and insignificantly affect firm risk-taking in private controlled firms. This is likely because of the large shareholders who concentrated most of their investment in state enterprises and tend to avoid risk to protect their property and benefit in firms because they are difficult to diversify or withdraw the investment (Faccio, Marchica, & Mura, 2011). In state enterprises, the government-controlled part of the shares are not allowed to be traded freely, and share transactions are closely monitored by the government. In contrast, large shareholders in private firms are much easier to trade their shares in the stock market or withdraw their investment.

Furthermore, the study found that the managerial ownership in market-oriented state enterprises tends to increase firms' risk. It suggests that the managerial equity ownership motivated managers to undertake the risky investment plan (Low, 2009). Firth et al. (2006) found that the firms controlled by SOE entities have strong profit objectives and are most likely to have performance-based incentive compensation. Hence, managerial ownership encourages CEOs to undertake more risk.

6.6 Influence of corporate governance mechanisms on firm risk-taking: a comparison of before and after the reform

The split-share structure reform discussed in Chapter 1 is a major milestone in China's state enterprise reform. It is, therefore, important to determine how this reform affected firm risk-taking behaviour. **Table 6.7** compares the effects of corporate governance mechanisms on firm risk-taking before and after the split-share structure reform with fixed effect method. The study found that with the reform's liberalisation of shares, the state ownership and ownership concentration became positively related to firm risk-taking. It suggests that after the stock market liberalisation, both state and other large shareholders tend to undertake more risk because the share trading is easier through the stock market. Especially for market-oriented state enterprises, the split-share structure reform lets them undertake more risk.

Table 6.7: Influence of corporate governance mechanisms on firm risk-taking: a comparison of before and after the reform

	Firm risk			
	Before		**After**	
Board structure				
boardinde	0.00677	(0.00828)	-0.0305	(0.0324)
lnboardsize	-0.00104	(0.00705)	-0.0138	(0.0147)
supersize	-0.00284*	(0.00141)	0.00270	(0.00255)
Ownership structure				
state	0.00995	(0.0110)	0.0913***	(0.00930)
manage	0.147	(0.711)	-0.245	(0.368)
concen10	0.0587	(0.0337)	0.0867***	(0.0210)
CEO's character				
ceoage	0.0000197	(0.000218)	-0.000761	(0.000442)
ceotenure	0.00000298	(0.000775)	-0.000188	(0.000637)
duality	0.00494	(0.00461)	-0.00611	(0.00598)
firmsize	0.000353	(0.00588)	-0.0370***	(0.00370)
roa	-0.0108	(0.0215)	-0.0436	(0.0232)
tobinq	0.0131*	(0.00510)	-0.00121	(0.00169)
_cons	0.0416	(0.128)	0.967***	(0.0852)
N	2220		2220	
adj. *R*2	0.023		0.197	
Standard errors in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$				

6.7 Summary

Overall, the study found that among the investigated corporate governance mechanisms, ownership structure is more important than board structure and the CEO's influence in determining firm risk-taking behaviour. Specifically, a larger board size reduces firm risk, and this effect became more evident when ownership is concentrated. Meanwhile, the percentage of independent directors increases firm risk, especially when the state ownership is high.

When it comes to the effect of controlling shareholders, the study found that private and central government control increase risk-taking, while local government and SOE entity control reduce risk-taking. Through the comparison of their corporate governance mechanisms, the study found that board governance did not show much difference in its effect on firm risk-taking, but the ownership governance differed. Specifically, state ownership increases risk-taking in government and SOE entity controlled firms but reduces risk-taking in private enterprises. The ownership concentration tends to reduce risk-taking only in government-controlled, and SOE entity controlled firms. However, following the split-share structure reform, both state and other large shareholders tend to shoulder more risk when they make a decision.

CHAPTER 7: CONCLUSION

7.1 Introduction

Corporate governance plays an important role in a country's economic development, since a weak corporate governance system may cause sluggish economic growth, currency depreciation and even financial crises. Corporate governance issues in transition economies are more complex than in developed market economies. How to establish a sound corporate governance system in a transition economy is a concern of policy makers, corporate decision makers and the public in these economies. This study has selected China, the world's largest transition economy, as a laboratory to study corporate governance issues, as it is undergoing an economic transition through partial privatisation of ownership.

The Chinese corporate governance system is similar to the German-Japanese model in the sense that it uses a two-tier board structure with a main board and a supervisory board. However, Chinese supervisory directors are mostly treated as honoured guests or friendly advisers without the power to dismiss errant management personnel (Xiao et al., 2004). To make up for this deficiency, China adopted the Anglo-America model's independent director system to monitor managerial behaviour. The "Guidelines for introducing independent directors" stipulate that by the end of June 2003, Chinese listed firms must have at least one-third independent directors. However, unlike the US and UK that have a majority of external directors (Guest, 2008; Lehn et al., 2009), Chinese corporate boards are dominated by insiders, and as consequence the effectiveness of China's independent director system is in doubt. Besides, China's legal environment is weak due to the light punishment meted out to offenders and corruption. In addition, it lacks an independent judicial system that the government can rely on for the

enforcement of laws and regulations (Jiang & Kim, 2015a). The market for corporate control and labour in China has been inactive because of the concentrated ownership structure, which is dominated by government. Managers are usually appointed by the government instead of being hired on merit from the labour market.

The split-share structure reform of 2005 that converted non-tradable shares into tradable shares is an important milestone in the Chinese enterprise reform that greatly liberalised the Chinese stock markets and the governance of state enterprise. Before the reform, shares were classified as either tradable or non-tradable. The former were freely traded in stock markets at prevailing market prices. However, the latter, held by the state and state entities could not be traded. Consequently, Chinese stock markets experienced a dismal period although the macroeconomy was booming. This is because the non-tradable shares that accounted for more than two-thirds of the total number of shares could not benefit from any share price improvement. The split-share reform of 2005 converted a large proportion of non-tradable to tradable shares. By the end of 2007, 98% of Chinese listed firms, that represented 98% of the total market capitalisation, had completed the split-share structure reform.

This chapter summarises the findings to meet the objectives of the thesis. Firstly, it investigated the determinants of corporate board composition. The corporate board is at the centre of the corporate governance system that monitors managers on behalf of shareholders and providing advice to facilitate corporate operations. Secondly, it examined the relationships between corporate governance mechanisms and firm performance. Thirdly, it evaluated the relationships between corporate governance mechanisms and firm risk. Section 7.2 summarises the study's findings. Section 7.3 draws implications for theory, including agency theory, resource dependent theory,

power circulation theory, stakeholder theory, stewardship theory, and institution theory. Section 7.4 draws implications for policy. Section 7.5 offers direction for future studies.

7.2 Synthesis of findings

This section summarises the findings of the thesis. The study applied both static and dynamic panel estimation methods, compared results before and after the split-share structure reform, and for different controlling shareholders.

7.2.1 Determinants of board composition

This study found supportive evidence for the scope of operation hypothesis, monitoring hypothesis and negotiation hypothesis. Increasing Chinese board size and independence shows positive relationship with the scope of firm's operations, benefit of monitoring, CEO tenure, but a negative relationship with the cost of monitoring and the CEO's age.

Internal governance mechanisms tend to substitute or complement the corporate board. Supervisory board size and ownership concentration are positively correlated with board size, but they are negatively correlated with board independence. However, CEO duality and state ownership do not affect the board composition much. In addition, government regulation and reform played an important role in constituting board composition. The split-share structure reform increased board size and independence significantly. Therefore, the study examined the determinants of board size and independence before and after the split-share structure reform. It was found that before the split-share structure reform, the "Guidelines for introducing independent directors" dramatically increased board independence. After the split-share structure reform, board independence became more important than other governance factors. Besides, the study

found that private and SOE controlled enterprises are more concerned with cost when adding independent directors.

7.2.2 Corporate governance and firm performance

The second research objective investigated how corporate governance mechanisms including board structure, ownership structure and the CEO's characteristics influence firms' accounting and market performance. After examining both "linear" and "non-linear" relationships, it found that the corporate board could exert a positive influence on firm performance when the share of independent directors reaches 30% or more. However, with fewer than 30% independent directors, firm performance is adversely affected. Although the supervisory board can partially make up for the lack of independent directors, its effect becomes insignificant after the split-share structure reform.

Before the reform, ownership concentration was beneficial for accounting and market performance. After the reform, ownership concentration became insignificant, and state ownership was found detrimental to market performance. It is likely because, after the split-share structure reform, the ownership concentration was reduced while the government retained shares that could not be traded.

Because China privatised SOEs based on industries and other characteristics, the findings confirmed that controlling shareholders are an important determinant of firm performance. Central government-owned and controlled firms are usually "strategic" enterprises that show outstanding accounting and market performance. Managers in central government-controlled firms are more likely to be promoted to the higher hierarchies in the government. Hence, a CEO with a long tenure in central government

is found to positively affect firm performance. However, the results shown that local government and SOE controlled enterprises only show good accounting performance but not market performance, suggesting that local governments are less market-oriented. In contrast, the private controlled firms only show good market performance since market performance is crucial to the survival of private firms. Also, the issue of the current independent director system arises mostly with the private and SOE controlled firms since they are more concerned with the cost of monitoring when adding independent directors as discussed in Objective 2.

7.2.3 Corporate governance and firm risk

The third objective examined how board structure, ownership structure and the CEO affect firm risk. The findings show that the size of the corporate board reduces firm risk since a large group is less likely to make extreme decisions. Board independence increases firm risk because independent directors are less responsible for firms' long-term development. For ownership structure, the relationships between state ownership and firm risk was found to be U-shaped. When the state ownership beyond 33 percent, the state ownership start to negatively affect firm risk. This is might because of the state has objectives of maintaining social stability, thus when the state ownership approaches the majority shares, it start to exert negative influence on firm risk. When it comes to the effects of controlling shareholders, both private control and central government control are found increase firm risk, while local government and SOE control tend to reduce firm risk.

The study also analysed the effects of board structure, ownership structure and the CEOs' influence on firm risk with different controlling shareholders. State ownership in private firms is negatively related to firm risk. However, in central government, local

government and SOE controlled firms, state ownership is positively related to firm risk. In contrast, ownership concentration is negatively related to firm risk in central government, local government and SOE controlled firms, because the concentrated ownership structure is more stable, especially when control is in the hands of the government.

Before the reform, ownership did not affect the firm risk significantly. After the reform, both state ownership and ownership concentration were found to increase firm risk. This is because, after the split-share structure reform, both state and large shareholders tend to undertake more risk because share trading had become easier through the stock market.

7.3 Implications for theory

The research offer significant influences to be made on theory, while, China's unique socialist structure provides direct implications to be drawn for transformation economies. They can also be useful for enterprise development in emerging markets.

The agency theory proposed that the main function of a corporate board is to monitor managers on behalf of shareholders. The results show that the monitoring hypothesis is supported since board size and independence are determined by balancing monitoring costs and benefits. However, when we make a comparison between before and after reform, as well as different controlling shareholders, The study found that market-oriented state enterprises and private enterprises concern more about cost of monitoring when adding independent directors since they are more profit-oriented than other firms. This suggested that the agency theory failed to differentiate firm's controlling shareholder types, and assumed all types of firms have motives of profit

maximization. Besides, the main agency problem in China arises between the controlling large shareholders and minority shareholders, that is, the horizontal agency problem (principle-principle problem) (Yang et al., 2011). Ownership concentration and state ownership are still the most important determinants of firm risk and board composition. Especially in government-controlled firms, the conflicts between the government as a shareholder and other shareholders are still serious due to the former's non-profit objectives and political influence.

The resource dependent theory proposes that the main function of a corporate board is to provide resources, including advice and information to facilitate corporate decision-making and strategic choice. The scope of operation hypothesis is supported in this study since board size and independence increase with the scope of operation. However, after the study makes a comparison between before and after the split-share structure reform, we found that the scope is the determinant of board size and independence only before the reform. It means that the corporate board primarily serve as a resource provider before the reform, after the reform, the monitoring role of independent directors increased.

The bargaining hypothesis is based on the power circulation theory, which emphasises the internal power contests between the CEO and the rest of the directors. CEOs with bargaining power prefer corporate boards to be dominated by insiders. In this study, older CEOs have more bargaining power and tend to reduce board independence. This suggested that CEO's bargaining power is related to CEO's age, elder CEOs are more likely to win the power contest. In addition, CEO's bargaining power is also related to the controlling shareholders, especially when controlling

shareholder is the local government, which enjoy a degree of autonomy in supervise local enterprises, elder CEO is more likely to reduce board independence.

From the stakeholder's perspective, corporate governance is a series of formal, informal, internal or external mechanisms to balance stakeholders' interests including those of shareholders, creditors, employees, government and society. This study found that, the government as a stakeholder has an important role to play in Chinese corporate governance. Rules and regulations are introduced by the government to formalise the corporate governance system. Besides, state ownership was found detrimental to firm's market performance in all types of firms, and especially after the reform. This is mainly because of the government's social and political objectives conflict with the shareholders' interests of profit maximisation. Hence, to set up a stakeholder theory based corporate governance in transition economy, it has to balance the interests of government shareholders and other stakeholders.

The institution theory assumes that agency theory fails to sufficiently explore how its institutional embeddedness shapes corporate governance, which defined as the formal or informal rules that shape human interactions. In the case of China, rules, regulations, and reforms have changed the way Chinese firms practice corporate governance. Board independence increased dramatically with the enforcement of "Guidelines for introducing independent directors". The split-share structure reform had a significant influence on the corporate governance and firm performance landscapes. The study found that after the reform, board independence became more important than other governance factors including state ownership and ownership concentration. In addition, the controlling shareholder type has a significant impact on firm performance and firm

risk. The central government and private control increase firm risk, but control by local government and SOEs tend to reduce firm risk.

The stewardship theory is different from agency theory in that it assumes managers are trustworthy stewards rather than self-interested individuals (Muth & Donaldson, 1998). China characterised by a socialist structure where the culture is dominated by low individualism and high collectivism. Managers are more likely to be stewards rather than agents. Managers are either appointed by the Chinese government rewarded by promotion or a reliable person trusted by private investors. Therefore, it is likely that the managers are trustworthy stewards in transition economy. This study found that CEO duality could reduce board size before the reform, but not after the reform, meaning that the CEO was more likely to have been a steward before the reform. Besides, managers have positive effect on board size only in private enterprises, which means that managers concern more about corporate governance issues only in private enterprises.

7.4 Implications for policy

What implications do the above findings have for policy? In general, the findings have significant influence on Chinese corporate governance reform as well as state enterprise reform, given the important role played by government in corporate governance, the government should put in place rules, regulations and an institutional framework to strengthen corporate governance.

Firstly, rules and regulations should help to improve independent directors' and supervisory directors' incentives and expertise. The Chinese government's requirement of 33% independent directors is associated with lowest firm performance. The minimum requirement of independent directors percentage used in other countries like South

Korea and the UK is more than 50% (Black & Kim, 2012). Hence, China is suggested to improve this minimum requirement. Also, independent directors lack the incentives and power to be responsible for corporate development. As a result, board independence tends to negatively affect firm performance. Although the supervisory board can partially compensate for inadequate number of independent directors, the former does not have the right to dismiss managers and directors. As already indicated, they were treated more like honoured guests or friendly advisers with no real power.

Second, the selection of independent directors should be more transparent and fair. CEOs can select independent directors based on the regulations and rules, but it is difficult to guarantee those directors are independent of the CEO's influence. Based on the foregoing analysis, CEO age tends to reduce board independence, especially in local government-controlled firms, which means that the CEO drives the number of independent directors. The power that is conferred on CEOs should be carefully monitored.

Third, government-controlled firms should be more market-oriented and political influence should be limited. Central government-controlled enterprises have shown outstanding market and accounting performance since they are in "strategic" industries that are crucial for the country's long-term development. However, because of strong political influence, these enterprises exhibit the highest firm risk in stock markets. Meanwhile, local government control is beneficial for accounting performance, but market performance has suffered because of the limits of free share trading.

Fourth, incentive plans and evaluation systems should be designed to encourage officials in State Asset Management Bureaus to be more concerned with corporate

governance issues. There must also be effort to improve their expertise in monitoring different industries. Local government-controlled firms actually showed poor market performance with less concern about cost when constituting board composition. Because these officials have political worries and their performance is assessed based on the achievement of these motives, their salaries and compensations are only partially based on market performance.

Fifth, the split-share structure reform that converted non-tradable shares into tradable ones greatly liberalised the Chinese stock market is an important milestone in Chinese state enterprise reform. Nevertheless, further corporate governance reform is necessary to improve market efficiency. There should also be effort to reduce government intervention, especially in local government and SOE controlled enterprises, which show poor market performance. Although central government-controlled enterprises show better market performance, they face the highest firm risk due to political intervention (Boubakri, Cosset, et al., 2013).

This study also suggests that providing one policy may leads to adverse effects that require other policies to compensate. Specifically, Chinese government advocated adding independent directors by enforcing the "Guidelines for introducing independent directors", but it is found that adding independent directors tend to reduce firm performance and increase firm risk. This suggests that in addition to adding independent directors, policies and rules should be in place to ensure these independent directors performed their monitoring role.

Finally, this study sheds light on the economic reform approach that may work for other transition economies like Vietnam, where state enterprises remain a large player

among enterprises. In China, some resource-related industries and industries that significant strengthened the country's security are still dominated by state enterprises, whereas, industries like textile, food manufacture had been largely privatised. For some enterprises, such as in electronics, the government has retained control rights rather than majority ownership. Since this study found both local government and SOE controlled firms reduced firm risk, gradual or partial privatisation is a good strategy to achieve stability for transition countries without a fully developed market and legal infrastructure. The findings provide further justification for retaining a role for government, while expending the role of markets. Both market reform and ownership reform cannot work well without the government's supervision.

At the same time, although the government's strategy of partial privatisation is a good way to achieve stable transition, the firm's market performance has suffered from the retained state ownership and concentrated ownership structure. Privately controlled firms are simultaneously associated with high market performance and high firm risk. This means that rules and regulations should be set up to fully develop the stock markets and ownership structure, such as to make sure that both state and private firms receives equal treatment.

7.5 Implication for future research

The findings of this study can be made more robust by future researchers. First, this study covered five years before and five years after the split-share structure reform (2000 to 2012). Future studies can extend the sample beyond five years. After the year 2012, China arrived at an in-depth area of reform. For example, the pilot reform conducted in Shanghai, where the local government explored diversified ways to manage different types of the state enterprises. In addition, qualitative research like case

studies is recommended for the in-depth analysis of possible differences in governance structure in different locations in China.

Second, this study focused on controlling shareholder types, but future reform can shift to the industries. For example, government support for the textile industry was removed in 1998, when the State Council issued the "Instructions for deepening the structure reform of the textile industry" (Zhang, 2016). However, the textile industry has shown outstanding performance after market-oriented reform thanks to heightened competition (Zhang, 2016). In contrast, strategic industries like coal, electricity, and gas are dominated by monopoly state enterprises, and hence criticised for their inefficiency, corruption, and high price.

Third, this study focuses on firm-level corporate governance during a major phase of state enterprise reform. Future research can shift to external governance, such as market disciplines, laws, regulations, rules, and policies. Besides, future study can focus on the situation faced by and roles that can be effectively played by minority groups to advance firm objectives while protecting their interests. This has not been investigated because, during the research period, managerial ownership, employee ownership, and foreign ownership accounted for a small percentage of total ownership.

Fourth, the joint effect examined in this study only limited to those with significant effects. Besides, although we developed dynamic GMM estimation methods to handle the potential endogeneity problems, but this method failed to give us significant results as the fixed effect method. The future study can apply more of other methods to handle the endogeneity issue.

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LIST OF PUBLICATIONS AND PAPERS PRESENTED

Paper published:

Cheng, Z., Kee-Cheok, C., Rasiah, & Chen, Z (2016). Effective corporate board structure and agency problems: Evidence from China's economic transition. *International Journal of China Studies*, Vol. 7, No. 2, August 2016, pp. 199-214. ---published (**Scopus)**

Cheng, Z., Kee-Cheok, C., Ran, L & Rasiah (2016), Does Governance Reform Help? The Impact of Split-share structure Reform on Corporate Board Structure in Chinese Manufacturing Enterprises. *Malaysian Journal of Economic Studies,* 53(2): 297-313. ---published (**Scopus)**

Cheng, Z., Kee-Cheok, C., & Rasiah (2017), Determinants of board composition and corporate governance in Chinese enterprises since economic reforms started: A comparison of controlling shareholders. The Chinese Economy—accepted (**Scopus**)

Paper presented:

"Board size and Board independence: A comparison between controlling shareholder categories" at the 3rd International Conference on Accounting, Business and Economics on 26th August 2014, Kuala Terengganu.

"Determinants of board Composition and Corporate Governance in Chinese enterprises since Reforms: A comparison of Controlling Shareholders" for presentation at the "Chinese Economy: Past, Present and Future" Conference to be held on December 21, 2015 at Tsinghua University.

"Board independence, state ownership and stock return volatility in Chinese enterprises since reform" at Vietnam the 9th Vietnam Economist Annual Meeting (VEAM 2016)