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**Legal Institutions and Financial Markets: The Impact of
Institutions on Corporate Governance and Capital Allocation**

By

Cong Wang



Doctor of Philosophy

The University of Edinburgh

2018

Declaration Page

This is to certify that the work contained within has been composed by me and is entirely my own work. No part of this thesis has been submitted for any other degree of professional qualification.

Signature:

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Abstract

Institutions shape people's behavior and exert fundamental influence on financial markets. In this thesis I examine how financial markets and firms are affected by institutions, paying particular attention to investor protection law and marketization. In the first paper, I examine the impacts of checks on government power on stock market and firm value. Specifically, I propose that better government power check system reduces the risk of firms and investors being expropriated by public officials therefore boost firm value. Based on the revised internal discipline of the Communist Party of China, I find that the promulgation of the internal discipline led to a significant increase in firm value. Furthermore, the increase in market value depends on the vulnerability of firms to expropriation by public officials. Private firms, firms located in provinces with poor institutions, firms that are less influential to local economies and firms without political connections experience the highest increase in value. Taken together, this paper confirm the importance of checks on government power to firm value. The second essay looks at corruption of state-owned enterprises(SOEs) in China. I propose that bribery of SOE managers will be less prevalent in listed SOEs with more state ownership due to the monitoring effect of large shareholders and the monitoring effect is more important for listed SOEs located in provinces with poor institutions. Based on the sample of listed SOEs in China, I find that the number of bribe-taking managers of an SOE is negatively correlated with the proportion of state ownership and the relation is more

prominent in provinces with poor institutions. These results still hold after adjusting for partial observability and imbalance of sample. The second essay confirm the monitoring effect of large shareholders on firm managers. The third essay proposes that better investor protection not only contributes to larger financial markets but also provides firms with more freedom in choosing their capital structure. Based on a sample of listed firms in 64 countries, I find that size of financial markets are positively correlated with the extent to which investors' rights are protected, which is consistent with existing literature. More importantly, I find that the dispersion of capital structure among firms is positively correlated with how well shareholders rights are protected. This finding support my hypothesize that better investor protection enlarges financial markets and therefore allow firms to have more freedom to choose capital structure that meet their needs. However, the relation between creditor protection and dispersion of capital structure among firms is non-linear. The dispersion tend to be lower when creditor protection is too weak or too strong and it peaks when creditor protection is at medium level. This finding support both supply side and demand side view of debt financing. Overall, this thesis presents original evidence on the important role of institutions on financial markets and firm.

Lay Summary

Cross-country differences in the development of financial markets can be explained by the differences in the quality of institutions among various countries. Financial markets are better developed in countries with sound and effective institutions that protect investors from being expropriated. This is because such protection enhances investors' ability to secure the fruit of their efforts and thereby encourages investors to make investments and to finance firms. In this thesis, I conduct three studies that examine the effects of institutions on financial markets. In the first study, I find that improvement in institutions that constrain government power reduces investors' concern of being expropriated by government officials. It thus leads to an increase in firm values as investors are more willing to finance firms. In the second study, I find that the monitoring effect of large shareholders on the behaviour of firm managers is more pronounced in places with weak institutions. This finding supports the argument that institutions and large shareholders complements each other in monitoring firm managers to protect interests of shareholders. The last study examine how institutions affect capital structure of firms. I find that as institutions improve, dispersion of firms' capital structure enlarges. One possible explanation is that institutions affect how much capitals firms are able to raise from financial markets.

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Chapter 1 Introduction

Financial market promotes long-run economic growth by improving investment efficiency (King and Levine, 1993; Wurgler, 2000), increasing savings (McKinnon, 1973; Greenwood and Jovanovic, 1990), encouraging competition (Rajan and Zingales, 2003; Guiso et al., 2004) and allowing firms and industries to expand (Beck et al., 2003; Rajan and Zingales, 1998). Due to its importance to economic growth, substantial efforts have been made in order to explain cross-country differences in financial development.

New institutional economics argues that sound and effective institutions, by imposing restrictions on people, enhance contractual enforcement and property rights protection (North, 1991). Therefore, it reduces transaction costs and thus positively affects economic outcomes. The law and finance theory proposed by La Porta et al. (1998) further assert that institutions that protect investors from being expropriated, which is affected by a country's legal origin, promote financial development by enhancing investors' ability to secure their investment return. Countervailing theories that challenge law and finance theory mainly disagree with it on the question of whether it is legal tradition that fundamentally determines institutions (Acemoglu et al., 2001; Rajan and Zingales, 2003). The argument that sound and effective institutions facilitate financial development is accepted by most researchers (La Porta et al., 2008).

In this thesis, I conduct three studies to further explore the effects of institutions

on financial markets. My investigation on the relation between financial market and institutions fills gaps in existing literature by identifying a new form of institutions that checks government power and boosts firm values and by examining how market-supporting institutions affect the monitoring role of large shareholders on firm managers. I also explore how investor protection institutions affect allocation of capitals in financial market. The following paragraphs briefly summarize remaining chapters of this thesis.

In the third chapter, I identified a new form of institutions that allow government power to be checked thus promotes financial development and boosts firm value. Following the seminal work of La Porta et al. (1997, 1998), substantial studies report that institutions that protect investors from being expropriated by corporate insiders encourage investors to finance firms therefore boost firm value (La Porta et al., 2002). However, corporate insiders is not the only source of expropriation as government can also use its political power to expropriate investors. In many countries, checks and balances system and political competition is introduced as tools for constraining government power and for protecting investors. However, countries such as China, Singapore and South Korea, that are ruled under one-party dictatorship also manage to achieve financial development without conventional tools for constraining government power. I argue that government might build system that allow their power to be checked by themselves instead of by a third party and the system contributes to the development of financial sectors. The

promulgation of the revised internal discipline of the Communist Party of China provides me with a good setting for testing this hypothesis. I find that stock market in China experienced a significant increase in value around the day when the revised internal discipline is promulgated. Furthermore, I also document that firms that are more vulnerable to government expropriation gained a higher increase in market value. This study helps explain economic puzzle of China and provides further evidence to argument that checks on government power is an important determinant of financial development.

Chapter 4 focuses on managerial corruption of firms and the roles of large shareholders and market-supporting institutions on preventing managers from involving in corruption. La Porta et al. (1999) find that except in few countries which provide strong legal protection to outside investors, firms are usually not diffusely owned and tend to have several large shareholders. Shleifer and Vishny (1997) argue that one benefit of having large shareholders is that they have both motivation and ability to monitor managers therefore reduce agency costs. Thus, it is predicted that managers are less likely to behave corruptly in firms that are less diffusely owned. However, empirical evidence on managerial corruption is limited, partly due to the secrecy of corruption. I take advantage of the national wide anti-corruption campaign in China since 2012 to explore whether the existence of large shareholders affects corruption of firm managers and how the effect is influenced by local market-supporting institutions. I find that listed state-owned

enterprises (SOEs) with higher proportion of state ownership are less likely to have bribe-taking managers. The negative relation is more prominent in provinces with weak market-supporting institutions, indicating that ownership structure and institutions complement each other in mitigating agency problem. This study contributes to literature by presenting relatively scarce firm level evidence on determinants of corruption and my findings are consistent with Shleifer and Vishny's (1997) argument that large shareholders are effective monitors of firm managers.

In chapter 5, I extend literature on law and finance theory by examining the effects of legal protection of investors on capital structure of firms. The willingness of investors in financing firms depends on investment return they expect to earn (La Porta et al., 1998). Sound and effective legal institutions that protect investors from being expropriated by corporate insiders reduce investors' potential lost due to expropriation and thereby promote financial development. The enlarged financial markets thus gives firm more freedom in choosing their capital structure as they are less likely to be financially constrained. Existing literature on capital structure focuses largely on the role played by firm attributes. However, little is known about the relation between legal protection of investors and firms' choice of capital structure.

I present empirical evidence that shareholder protection and creditor have different effects on the dispersion of capital structure. Sound and effective legal protection of shareholders' rights leads to larger dispersion in capital structure. This

is consistent with my original hypothesis. However, in terms of creditor rights protection and dispersion in capital structure, the relation is more complex. Specifically, when creditors' rights are too weakly protected or too strongly protected, the dispersion in capital structure is predicted to be lower. The dispersion is the highest when creditor rights protection is at medium level. This finding is consistent with both supply side and demand side view of debt financing.

Chapter 2 Institutional Background

Institutions refers to “humanly devised constraints that structure political, economic and social interactions” (North, 1991). Interactions between people need to be shaped and people’s behaviour need to be constrained because it reduces people’s risk of being cheated by others and thus makes them willing to interact with others. Economic agents (e.g. individuals or firms) are more likely to trade with others when they possess more information regarding their partners’ past performances, when the trade is more repeatable and when then number of players is limited. However, as trade size and volume grow, obtaining complete information of other parties become difficult or even impossible. In order to reduce uncertainty, exchange agreements must be defined and enforced by all parties involved in a transaction. For example, lenders of loans might require borrowers to keep their liquidity above a certain level to control for the risk that borrowers will default.

However, exchange agreements are not reached at no costs. In the previous example, maintaining liquidity might prevent borrowers from making investments in profitable projects. Lenders also incur transaction costs because they have to spend resources (e.g. time, money and labor) to negotiate with and monitor borrowers. Resources that economic agents spend on specifying what is exactly being exchanged and traded and on enforcing corresponding contracts are referred to as transaction costs (North, 1994). It is one of the primary determinants of economic outcomes (e.g. economic growth and financial development) because it affects

overall economic efficiency (North, 1987). When transaction costs are high, economic agents need to spend sizable resources in finding partners to trade with and in negotiating contracts that are acceptable to all parties. In other words, economic agents have to bear considerable costs and economic efficiency is reduced as substantial resources are wasted on collecting information and on enforcing contracts instead of being spent on production. Therefore, economic outcomes depend on the size of transaction costs. Good institutions make economic agents' behaviour more predictable and make it easier for economic agents to recover their loss. Thus it enlarges benefits of trading and reduces costs of defections.

In terms of financial markets, Acemoglu and Johnson (2005) argue that two set of institutions, namely contracting institutions and property rights institutions, play an important role in determining financial markets development. Contracting institutions refer to institutions that support contracts enforcement and facilitate resolution of contract disputes. Property rights institutions refer to institutions that constrain government power and protect economic agents against government expropriation. The importance of contracting institutions and property rights institutions to financial markets has long been emphasized in literature and these theoretical arguments are supported by plenty empirical evidence.

Contracting Institutions and Financial Markets

Aghion and Bolton (1992) argue that financial contracts that investors sign with firms to which they provide capitals are inherently incomplete. That is, decisions

concerning investment projects cannot be fully determined in the initial contracts. Incompleteness of financial contracts brings potential risks to investors as objectives of investors, who are providers of capitals, and that of corporate insiders (owners, managers and controlling shareholders), who are users of capitals, can be very different. Investors' primary goal is often monetary returns while entrepreneurs and managers might prioritize certain non-pecuniary goals. Hurst and Pugsley (2010) report that over 50% of entrepreneurs of small business indicate that non-pecuniary objectives such as taking control of one's own schedule and flexibility of working locations are the main reasons why they start business, and 4% of them choose to become self-employed simply because they cannot find firms who are willing to hire them. Only 34% of respondents report that generating income is the main purpose of their business.

Difference in the goals between investors and firms therefore makes enforcement of financial contracts very important as investors need to be ensured that their money are used and spent in the ways that meet their interest. Furthermore, substantial academic works report that when contracts are poorly enforced, investors are at the risk of being deliberately expropriated by corporate insiders, namely owners of the firms (Demsetz,1983; Faccio et al., 2001; Schack, 2001), managers (Shleifer and Vishny, 1997; Burkart et al., 2003; John et al., 2008) and controlling shareholders (Bae, et al., 2012; Baek et al., 2004; Johnson et al., 2000; Mitton, 2002).

Sound and effective contracting institutions such as low level of legal procedural formalism, low level of legal complexity and few legal procedures in resolving dispute between investors and firms reduce investors' concern that firms in which they invest will behave in ways deviate from predetermined contractual terms (Djankov et al., 2003). Firms' behavior will be better bound and interest of firms and investors are better aligned in countries with sound and effective contracting institutions because costs of failing to implement financial contracts are higher. Therefore investors are more encouraged and willing to finance firms as well as participate in financial markets.

Property Rights Institutions and Financial Markets

Contracting rights institutions promote financial development by reducing investors' potential risks of being cheated by people they interact with. Property rights institutions, on the other hand, mainly deal with risks imposed by government or other politically advantaged elite groups (Acemoglu and Johnson, 2005). The grabbing hand view of government and the predatory theory of state both argue that government is a tool for extracting and transferring resources back to elite groups who have political power (Frye and Shleifer, 1996; North, 1981). Therefore, government is believed to expropriate its citizens in order to maximize its own interests. Although in reality, governments do not always act in ways described in the above two theories, they do impose expropriation risk on citizens thereby exert fundamental impacts on economic outcomes.

Alchian (2008) define property rights as “a socially enforced right to select uses of an economic good”. Property rights define who own an economic good, how the economic good will be used and who have claims on the return of using the economic good. Investors are always at the risk of their investment return being stole by others, such as competitors and government. Without clearly defined and well-enforced property rights, both private assets and investment return of firms can be grabbed by others, especially by government (Shleifer and Vishny, 2002). This reduces return investors expect to earn and thereby discourages investors from making investments. In other words, secured property rights provide investors with incentives to finance firms through securing their investment return. Acemoglu and Johnson (2005) find that well-established property rights institutions have a much stronger effect on a country’s overall level of investment than contracting institutions do. They explain that this is because terms of contracts could be privately negotiated and altered to mitigate weak contracting institutions but the risk of being expropriated by government can hardly be reduced without well-established property rights institutions. Beck, et al. (2008) report that property rights protections increase small and median size firms’ access to external financing because they rely more on commercial or relation-based financing sources. Berkowitz et al. (2015) report that the enactment of property rights law in China leads to a higher increase in market value of firms with more tangible assets as these assets can be used as collateral for bank loans. In other words, property rights promote financial

development by increasing supply of external financing.

Sound and effective property rights institutions also increase demand of external financing by encouraging firms to make investments, especially investments in intangible assets. Claessens and Laeven (2003) argue that compared with tangible assets such as land, buildings and equipment, intangible assets are easier to be stole. They find that firms adjust their investment strategies by making more investments in intangible assets when property rights protection are enhanced. Johnson, McMillan and Woodruff (2003) find that weak property rights institutions deter firms from making investments even when bank loans are available. These findings support the argument that secured property rights increases demand of external financing by making firms more willing to make investments.

Institutions, Corporate Governance and Financial Markets

The theoretical arguments that emphasize the important role of institutions in economic and financial development provide a fundamental explanation to cross-country differences in economic and financial market development. Given the importance of the topic, past decades have witness a growing literature on corporate governance that examines the effects of institutions on financial sectors. Corporate governance mainly deals with the ways in which investors protect their investment return from being stole or grabbed by corporate insiders (Shleifer and Vishny, 1997). As mentioned before, investors, especially those without significant control over firms (e.g. minority shareholders and creditors), cannot take for granted that all their

investment return will finally come back to them. The mismatch between control rights and cash flow rights of firm managers and controlling shareholders motivates them to expropriate other investors for the purpose of pursuing their own interests. Early literature on corporate governance focuses largely on firm-level corporate governance mechanisms including board of directors, ownership structure, management compensation and corporate policies (e.g. dividends and capital structure).

La Porta et al. (1997, 1998) argue that corporate governance depends not only on firm-level corporate governance mechanisms discussed in prior studies but also on legal rules that protect investors against expropriation by corporate insiders. They construct a set of indices that measure how well investors are protected against expropriation by corporate insiders, namely managers and controlling shareholders, and report that countries with institutions that provide strong protection to investors tend to have better developed financial market. In addition to macro-level evidence, they also present micro-level evidence by reporting a positive relation between firms' access to external financing and soundness of investor protection institutions. In particular, they find that in countries with better legal protection of investors, firms have higher market value and higher level of debt. La Porta's et al. (1997, 1998) argument that how well investors are protected by legal rules affects corporate governance and financial markets is referred to as the law and finance theory.

Following the seminal work of La Porta et al. (1997, 1998), substantial studies

document that the quality of institutions affects financial markets at both macro-level and micro-level. La Porta et al. (1999) find that firms are less likely to have large shareholders and more likely to be diffusely held in countries with sound and effective investor protection institutions. They argue that this is because legal protection of investors impose constrains on corporate insiders' ability to expropriate shareholders therefore corporate governance needs not to solely rely on the monitoring effect of large shareholders. Consistent with the law and finance theory, other studies find that strong legal protection of investor is associated with better corporate governance including less earnings management (Leuz et al., 2003; Shen and Chih, 2005; Francis and Wang, 2008), higher firm valuation (La Porta et al., 2002; Pinkowitz et al., 2006; Bris and Cabolis, 2008), more dividend payouts (La Porta et al., 2000), less excess cash holdings (Dittmar et al., 2003), higher top management turnover of poorly performed firms (Volpin, 2002) and better stock price performance during financial crisis (Lemmon and Lins, 2003).

Current studies on the effects of legal institutions on financial market focus largely on legal protection against expropriation by corporate insiders. Besides corporate insiders, government also imposes expropriation risk on investors, especially in developing countries whose institutions are weak. Investors' concern that they are not able to fully secure their investment return makes them less willing to make investments even in profitable projects, and thereby reduces market values of firm and dampens financial market development. More recently, a growing

literature starts to look at how government expropriation and intervention affect firms and financial markets. Cull and Xu (2005) find that government expropriation risk has first order effects on economic and financial development and firms that are more likely to be expropriated by government reinvest less profits. Lin et al.(2010) report that firms investment less in research and development (R&D) and are less innovative when property rights protection is weak. Lin and Wong (2013) argue that the risk of being expropriated by government discourages firms from making investments. Consistent with their argument, they find that firms, especially foreign owned ones, are less likely to make investments in countries with higher level of government intervention. Du et al. (2015) document that higher government expropriation forces firms to diversify into unrelated business areas in order to recover costs they incurred in building relationships with government officials. These studies suggest that government expropriation reduces firm value by reducing their ability to secure investment return and by reducing their willingness in investing in profitable projects. However, studies that directly examine effects of government expropriation on firm is limited. In Chapter 3 and Chapter 4, I contribute to literature by exploring how institutions that constrain government power affect firm value and affect the effectiveness of large shareholders in monitoring firm managers.

Law and finance theory argues that legal protection of investor promotes financial market development by enhancing corporate governance and reducing

investors' risk of being expropriated by corporate insiders. Empirical studies that examine relation between legal protection of investor and financial market development mainly look at how legal institutions affect size and liquidity of financial markets (La Porta, et al., 1997; Beck and Levine, 2005; Brockman and Chung, 2003; Chung, 2006). At firm level, researchers also find how well rights of investors are protected by legal institutions affect firms' choice of capital structure. Himmelberg et al. (2004) report that sound and effective legal protection of shareholders reduce equity risk premium. Therefore, equity financing become cheaper for firms, which leads to a decrease in average leverage of firms as they tend to rely more on equity financing instead of debt financing. Cheng and Shiu (2007) document that the average leverage of firms located in countries with effective creditor rights protection tend to be higher. However, these studies mainly focus on cross-country differences in the average level of capital structure without paying much attention to the differences in capital structure among firms located in the same country. Firms differ with each other in many aspects, including their needs for external financing and optimal capital structures. Therefore, we hypothesize that sound and effective legal protection of investors not only affects the average level of capital structure but also determine the dispersion of capital structure among firms. I extend literature on law and finance theory by exploring how investor protection law affects the dispersion of capital structure among firms in Chapter 5.

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Chapter 3 Government Power Self-Check System and Firm Value: A Natural Experiment from China

Abstract

This paper uses the promulgation of the revised internal discipline of the Communist Party of China (CPC) as a natural experiment to examine the impacts of checks on government power on equity market and firm value. The revised internal discipline, by constraining behaviors of CPC members, especially Chinese government officials', improves property rights protection, legal enforcement and rule of law in China. We propose this improvement in institutions as a result of government power self-checking will invoke a positive reaction in stock market and boost firm value. The findings confirm our prediction. Specifically, we find that return of stock market on the day when the CPC's internal discipline was promulgated is significant higher than the average daily return of Chinese stock market in the same year. Furthermore, stock prices of firms that are privately owned, that are smaller and less important to local economy, that have no political connections, and that locate in provinces with poor legal institutions and powerful government react more positively to the promulgation of CPC's internal discipline. Our findings confirm the importance of checks on government power on the development of financial market and firm value.

3.1 Introduction

Institutions such as social norms and legal rules shape people's behaviors and exert profound influences on the prosperity of a society (North, 1989). The law and finance theory argues that investors' risk of being expropriated by corporate insiders discourages them from financing firms. Therefore, financial markets tend to be underdeveloped and firms are valued lower in countries with weak legal protection of investors against corporate insiders (La Porta, et al. 2002; Bris and Cabolis, 2008; Lemmon and Lins, 2003; Pinkowitz et al., 2006).

Corporate insiders, namely managers and controlling shareholders, are not the only ones who might expropriate investors. Governments play a vital role in a country's economy, especially in developing countries where institutions are weak and underdeveloped. As the ultimate coercive power, the government has the ability and motivation to expropriate its citizens, including firms and investors. Institutions that check government power reduce the risk of expropriation and therefore positively affect economic outcomes, such as economic growth, investment and financial market development (Acemoglu and Johnson, 2005).

Literature on new institutional economics have long been stressing the importance of constraining the power of government (North and Thomas, 1973). Substantial empirical works suggest that effective institutions, such as secured property rights and strong judicial independence allow government power to be checked thereby contributing to financial development and boosting the value of

firms (Beck et al., 2003; Berkowitz et al. 2015; Feld and Voigt, 2003; Johnson et al., 2002). Democracy and political competitions are often viewed as a necessity to maintain such institutions. Countries that lack democracy and political competitions is often viewed as having no effective checks on government power. Thus, they are predicted to remain economically and financially underdeveloped. However, this view is challenged by the rapid and sustained financial growth of China, South Korea and Taiwan over past decades. Allen et al. (2005) find that institutions including laws, government quality, corporate governance and accounting standards, which are commonly regarded as important determinants of financial development, are significantly underdeveloped in China. However, Chinese equity markets have experienced fast growth since their inception in 1990.

Weignast (1993) argues that if government is able to build institutions that support growth, such as providing secured property rights and maintaining judicial independence, it also has the ability to attenuate them. Thus, to some extent, it is the will of government, which determines what institutions will be established, that fundamentally affects financial development (Rajan and Zingales, 2003). Glaeser et al. (2004) assert that this is the reason why countries or regions ruled by dictators (e.g. South Korea, China and Taiwan) are able to get out of poverty and experience fast financial development because their governments are willing to pursue policies that constrain their own power. In other words, some governments can be relatively self-disciplined and are willing to establish institutions that limit their political

power. We define these institutions as government power self-checking system where the ruling party of countries under one-party or dominant-party dictatorship sets rules and regulations that allow government power to be checked. The effect of formal institutions, such as secured property rights, democracy and political competition on financial development and firm value is well-documented. However, the government self-checking system as a means of checking government power and its effect on financial development have received less attention.

In this study, we identify the Communist Party of China's (CPC) internal discipline as part of the government power self-checking system and examine its effect on China's equity market and firm value. The internal discipline is based on the *Constitutions of the Communist Party of China* and thereby imposes no restrictions on citizens who are not members of the CPC. However, most government officials, especially high-level government officials (provincial level or higher), are CPC members who therefore need to abide by the internal discipline. Government officials being caught breaching these rules get punished in various ways, ranging from a warning to being expelled from the CPC. The latter often signals the end of their political careers. Thus, the internal discipline is actually a tool for constraining government power. The first version of the CPC's internal discipline was promulgated on December of 2003. On Oct 12th, 2015, the CPC promulgated a revised version of internal discipline aiming at combating and preventing corruption. By comparing the old (promulgated in 2003) and revised

(promulgated in 2015) versions of the CPC's internal discipline, we find that the revised version contains more rules and imposes stricter penalties. Therefore, it provides us with a good setting to test the effects of the government power self-checking system on equity market and firm value.

We find that the Chinese equity market experienced a significant increase in value on the day the revised internal discipline was promulgated. The average stock return of firms listed on the Main Board was 3.95%, about 40 times as large as that of other days in the same year. The market portfolio that contains all Main Board listed firms gained 8.42% and 11.92% in the 5-day (2 days before and 2 days after) and 11-day window (5 days before and 5 days after), respectively. These results are consistent with investors viewing the promulgation of the CPC's internal discipline as positive economic news.

Firm level regressions affirm that the government power self-checking system is an important complement to weak institutions in China. National Economic Research Institute (NERI) of China constructs a set of province-level indices that measure the quality of market-supporting institutions of each province. Using these indices to distinguish the relative completeness of marketization and the quality of market-supporting institutions in each province of China, we find that cumulative abnormal return is significantly higher for firms in provinces with powerful government and weak market-supporting institutions. These results support our argument that the government power self-checking system serves as an alternative

mechanism to constrain government power and ensure the functioning of financial markets.

We also examine how stock prices of firms react to the news based on firms' vulnerability to government expropriation and needs for sound and effective institutions. Our firm level regressions report higher value gains of firms that are privately owned, located in provinces with poor institutions, small and less important to local economies and politically unconnected. For example, an 1 unit increase in government intervention index is associated with a decrease in 11-day CAR by 0.18%. Given that the difference in government intervention index between province with higher score and lowest score is 22, holding other variables unchanged, the 11-day CAR of firms located in the province with the highest government intervention is predicted to be 3.96% higher than that of firms located in the province with the lowest government intervention. The 11-day CAR of non-SOEs is expected to be 2.1% higher than that of SOEs. The 5-day CAR of firms with politically connected CEOs are predicted to be lower by 0.3% (15% if annualized). These results support our argument that government power self-checking systems boost firm value by mitigating investors' and firms' concerns of being expropriated by government.

Our paper contributes to literature in three ways. Firstly, our study contributes to law and finance theory by presenting empirical evidence that government expropriation risk reduces firm values. La Porta et al. (1998) argue that the

willingness of investors to finance firms depends on how well they are protected from expropriation. Sound and effective company and securities laws limit corporate insiders' abilities to expropriate outside investors, therefore encouraging them to make investments in firms. This ultimately leads to larger financial markets and higher firm value (La Porta et al., 2002; La Porta et al., 2008; Djankov, et al., 2008; Brockman and Chung, 2003; Leuz et al., 2003; Morck et al., 2000). Besides corporate insiders, government is another source of expropriation. Current studies find that the potential risk of being expropriated by government reduces both firms' incentive to make investments and their access to external finance (Berkowitz et al., 2015; Johnson, et al., 2002; Cull and Xu, 2005). We document that the equity market in China experienced an increase in value after the promulgation of the revised internal discipline of CPC, which aims at checking the political power of government officials. Moreover, consistent with our expectation, increase in firm value is positively correlated with firms' vulnerability to government expropriation.

Secondly, our findings contribute to new institutional economics by identifying the government power self-checking system as a new form of institutions that constrains government power and allows financial market to flourish. Contracting institutions and property rights institutions are two indispensable institutions that promote financial development (Acemoglu and Johnson, 2005). Levine (2005) also argues that private property rights are fundamental to individuals' welfare and a country's prosperity. Empirical studies document that enforceable contracts and

secured property rights lead to better economic outcomes at both country level and firm level (Acemoglu et al., 2001; Beck and Levine, 2005; Cull and Xu, 2005; Berkowitz et al., 2015; Johnson et al., 2002). However, fast economic and financial development in China, Taiwan and South Korea challenges the institutions-finance nexus as the one-party or dominant-party system in these countries or regions is supposed to lead to poor contracting and property rights institutions therefore causing stagnated economic growth and underdeveloped financial markets. Allen et al. (2005) argue that reputation and relationships serve as alternative channels for firms to raise funds from investors and for economies to grow. In this study, we find that a government might also establish institutions that check its own power and thus contribute to the development of financial sectors and allow firms to be more highly valued.

Our study also relates to literature on legal enforcement. Current studies relating to law and finance theory mainly focus on using the existence of certain legal rules to measure the quality of legal institutions (e.g. Djankov et al., 2008). However, Bhattacharya and Daouk (2009) argue that, in some circumstances, when legal rules are not properly enforced, it is better not to have them because poor enforcement could even have negative consequences. La Porta et al. (2006) show that private enforcement benefits financial markets while public enforcement has little effect. The promulgation of revised internal discipline of the CPC does not lead to any changes in legal rules but potentially enhances legal enforcement and rule of

law in China. Our study finds that public enforcement could also exert positive effects on equity markets, at least in countries with powerful government.

The next section contains a brief introduction of China's political system and the CPC's internal discipline. Section 3 reviews related literature. In Section 4, we develop 5 hypotheses to be tested. Section 5 describes and summarizes data used in this paper. Section 6 contains a discussion about empirical results and Section 7 concludes.

3.2 Institutional Background

3.2.1 China's Political System and Checks on Government Power

One reason why institutions are weak in China is because of poor legal enforcement as there is a conflict of interest between enforcing law and the monopoly power of the CPC, especially when government officials are engaged in lawsuits (Allen et al., 2005). The monopoly power of the CPC stems from China's political system: single-party system. In China, the CPC is the sole ruling party, and there is very little chance, if none at all, for other political parties to come into power and rule the country. China's single-party system also violates the assumption of checks and balances, which is the conventional way to check government power (Alt and Lassen, 2008). Under the one-party political system, no matter how government branches are divided, it cannot be taken for granted that government branches will check each other as they are led by the same political party and leaders (in China's case, they are the CPC and the leaders of the CPC). Therefore, the one-party system

gives the CPC the monopoly of political power in China and makes its power left unchecked. It thus leads to issues that authoritarian regimes suffer (e.g. less independent judiciary, corruption, arbitrary legal enforcement and a lack of property rights protection) (Xu, 2011).

Due to the monopoly of political power of the CPC, members of the CPC usually enjoy privileges that cannot be obtained by non-party members. Djilas (1959) argues that the CPC has become a new ruling class since the post-revolutionary period and people without political connections usually have to face political and economic discrimination or even overt persecution. For example, during Maoist period, party members of the CPC, especially party leaders, enjoyed a monopoly on certain goods and resources, such as jobs, education opportunities and houses (Dickson and Rublee, 2000). In addition, Xu (2011) points out that the Chinese government is usually deeply involved in business, and there is no clear boundary between government and business. The above two facts make political connections a very attractive resource to firms. This not only induces corruption, as firms without political connections might try to build relationships with government officials or CPC leaders through bribery in order to gain access to privileges, but also leads to unfair competition between private firms and state-owned enterprises. Having realized these problems, recently, leaders of the CPC have greatly emphasized strengthening the internal control of the CPC in order to enhance checks on government power and mitigate the problem of political and economic inequality

between party members and non-party members.

3.2.2 Internal Control of CPC

The CPC has long been emphasizing the importance of its internal control. In its early years, especially in the early 1920s, the focus of the CPC was on recruiting more members, without paying much attention to the quality of existing and potential members. As the number of CPC members grew, corruption started to emerge because some opportunists joined the CPC not for political purposes, but for their personal gains. In August 1926, the central committee of the CPC issued a document named *Firmly Eliminate Corrupted CPC Members*, which is the first document about internal control and anti-corruption. Half a year later, in April 1927, the first internal control department—Central Monitoring Committee (CMC) was established in order to strengthen internal control of the CPC. However, due to historical reasons, 6 out of 10 committee members were dead within the same year and 2 members' whereabouts was unknown. The CMC was then disbanded in December 1927 and was replaced by a smaller and less powerful department named Central Investigation Committee (CIC), with only part of the CMC's power and functions reserved. Although the CMC only existed for several months, it pioneered practice of internal control and checks and balances within the CPC and this model was preserved.

The reason why the CPC relies heavily on internal control instead of legal rules was because before 1949, the CPC was not the ruling party of China. As a result, it

had no power to issue or change legal rules. Thus, internal rules and regulations was an important alternative mechanism that enabled the CPC to improve institutions in areas controlled by them.

In modern China, the Central Commission for Discipline Inspection (CCDI) is the highest internal control institution of the CPC. The main responsibility of the CCDI is to enforce internal rules and regulations to combat corruption and malfeasance of the CPC members. Because the majority of China's government officials are CPC members, CCDI is, in fact, the most important organization that check all CPC organizations, including government organizations, in China. Before the establishment of the CCDI, the control system of the CPC was Central Review Committee over period 1928-1933, the Central Party Affairs Committee during 1933-1945 and Central Control Commission during the years 1945 to 1949. The CCDI was established in 1949, the year in which the People's Republic of China was founded.

Although the CCDI is claimed to be independent of the CPC's executive institutions, such as Central Committee and its Politburo, most of the work of the CCDI is still directed by the top leaders of the CPC. In addition, members of the local CDI were elected by their corresponding committee of the CPC, and higher-level CDI can only endorse or reject the proposal of the committee. Thus, lower level CDI is not only responsible to higher level CDI but also responsible to their corresponding committees of the CPC. This is known as the dual-leadership

system as the early leaders of the CPC believed that loyalty to the party is more important than fighting corruption. Therefore, the lack of autonomy makes CCDI not very effective in checking power of government (Guo, 2014).

Since Hu Jintao's term as the General Secretary of the CPC, the CCDI has undergone reforms to become more independent from party committees below the Central Committee in order to fight corruption more effectively. Specifically, at the 16th National Congress in 2002, the CCDI Secretary (the leader of the CCDI) was appointed as the chief coordinator of all anti-corruption efforts on mainland China. This position was later given the name Central Leading Group for Inspection Work. During Hu Jintao's term, the CCDI's power and influence was increased as reflected by the increased number of Politburo Standing Committee (PSC) members at the CCDI plenary sessions. The CCDI underwent a further reform toward independence under Xi Jinping, who was elected as the General Secretary of the CPC in 2012. Specifically, the CDI across China now operates separately from the party apparatus, with local CDIs only responsible to higher level CDIs. Leaders of CDIs also began to shed concurrent positions so as to avoid conflict of interest and to focus solely on the enforcement of internal discipline.

Furthermore, the CCDI established four discipline and inspection offices since the 18th National Congress. One of them is the Propaganda and Organization Departments of the CCDI, which is the first central-level organization other than the Central Committee. The establishment of these new offices indicates that the CCDI's

independence has increased dramatically. In 2014, the CCDI also established an internal office for the supervision of disciplinary system officials. This office works at ensuring that officials of the CDI follow internal rules and regulations of the CPC. Its officials report directly to the CCDI and are not responsible to other government organizations in which they are located. All of these efforts made are to strengthen the internal control of the CPC.

3.2.3 Internal Rules and Regulations of CPC

Since the 18th National Congress of the CPC, combating corruption and promoting integrity have become an important topic and a priority of the CPC. For example, according to the official website of the CCDI, during 2013 and 2014, 688 government officials were sacked or demoted because of corruption and malfeasance. Among these sacked or demoted government officials, 42 of them are high level officials (provincial level cadres or higher). It should be mentioned that not all of the sacked or demoted officials breached laws. In fact, some of them were sacked or demoted because of unethical rather than illegal behaviors. For instance, Zhao Zhiyong, a member of the Standing Committee of Jiangxi province, was expelled from the CPC because of abusing his power for personal gains. However, he was not prosecuted by court, indicating that what he did only breached internal rules and regulations of the CPC but not Chinese laws.

In recent years, the leaders of the CPC believe that corruption and abuse of political power is a serious problem within the CPC. Several public speeches about

corruption have been made by CPC leaders. On October 12th, 2015, the Political Bureau of the Central Committee of the CPC meeting held by the General Secretary of the CPC and the President of the People's Republic of China Xi Jinping promulgated revised internal rules and regulations called *The Chinese Communist Party Disciplinary Regulations*, aimed at combating and preventing corruption and malfeasance within CPC¹.

In 2003, the CPC issued the first version of *The Chinese Communist Party Disciplinary Regulations*, and the regulations that were issued in 2015 were a revised version of the first set of regulations. The purpose of issuing the first version of *The Chinese Communist Party Disciplinary Regulations* was also to promote integrity and prevent corruption and malfeasance. However, as time elapsed, leaders of the CPC found that the old disciplinary regulations were not comprehensive enough to deal with current complex situations, and there needed to be new stricter ones. The differences between the first version of The Chinese Communist Party Disciplinary Regulations (issued in 2003) and the revised version (issued in 2015) are two-fold. Firstly, punishments for the misconduct already defined in old version of internal discipline have become more severe. Secondly, more actions are defined as misconduct and inappropriate by the revised version.

It is important to note that *The Chinese Communist Party Disciplinary*

¹ During the meeting, CPC also issued a new set of rules called *Chinese Communist Party Standards on Integrity and Self-Discipline*. However, it is very abstract and more like a guideline which depicts ideology instead of a practical set of rules. Thus, the focus of this research is on analyzing *The Chinese Communist Party Disciplinary Regulations*, which is more concrete and practical.

Regulations are not legal rules, and only members of the CPC are required to abide by these rules. The reason is because it is the *Party Constitution of CPC* but not the *Constitution of the People's Republic of China* that serves as the fundamental guidelines for designing the internal discipline. In other words, breaching rules and regulations of *The Chinese Communist Party Disciplinary Regulations* is not an issue for non-CPC members, and even for CPC members it might only be considered as party issues instead of legal issues. However, it does not mean that *The Chinese Communist Party Disciplinary Regulations* and China's legal rules are completely different. In fact, there are many overlaps between them. For example, Chapter IV Article 27 of *Chinese Communist Party Disciplinary Regulations* states that if party members of The CPC are found to have committed graft or pretermission of duty, they should be deprived of party positions, be placed on probation within the party or be expelled from the party, depending on the severity of their misconduct. Chapter VIII Article 382 of the *Criminal Law of the People's Republic of China* defines what is considered as graft and then states that graft is illegal and legal punishment which depends on the seriousness of the circumstances. It can be seen that graft is viewed as an offense both by the CPC internal discipline and by China's legal rules. In other words, if a member of the CPC breaches both the internal discipline of the CPC and the legal rules of China, he/she is subjected to both punishments laid down by the internal discipline of the CPC and the laws of China.

Although rules and regulations of *The Chinese Communist Party Disciplinary Regulations* overlap with some of the legal rules and regulations of China, they are often stricter than legal rules and regulations. Chapter IV Article 32 of *The Chinese Communist Party Disciplinary Regulations* states that party members who minorly breach laws and are not prosecuted by courts should still be deprived of party positions, be placed on probation within the party or be expelled from the party, depending on the severity of their misconduct.

3.2.4 Functions of the New Internal Rules and Disciplines

The promulgation of the revised *The Chinese Communist Party Disciplinary Regulations* improves the protection of property rights in China and the quality of China's legal institutions through three channels². Firstly, it provides checks on the power of government by specifying what kind of behavior is not allowed. Chapter IX Article 105 states that if party members are found to have the following conducts, they should be given warning or serious warning, deprived of party positions, be placed on probation within the party or be expelled from the party, depending on the severity of the situations: 1) Excessively asking for money or labor services from citizens, 2) Withholding money or other properties of citizens or penalizing them in violation of the relevant provisions, 3) Delaying payments to other citizens in violation of the relevant provisions, 4) Charging fees during administrative activities

² The analysis is based on the differences in rules and regulations between old and new version of *The Chinese Communist Party Disciplinary Regulations*

in violation of the relevant provisions, 5) When dealing with affairs regarding citizens, purposely making difficulties for citizens and deliberately asking them for bribes.

Secondly, the revised internal discipline enhances legal enforcement of China by clearly stating that dereliction of duty is not allowed. Chapter X Article 119 states that if CPC leaders of any level are found to intercede with relevant government departments or to influence judicial and law enforcement activities, a serious warning should be given, they should be deprived of their party positions and placed on probation within the party or expelled from the party, depending on the severity of the situation.

Lastly, the internal discipline mitigate conflicts of interest by putting constraints on the activities that CPC members, especially government officials, are allowed to be involved in. Rule of law has long been a critical issue in China since its attempts to get to grips with modernity in late Qing Dynasty (Randell, 2002). During the civil war period, its importance was oppressed by other more critical goals (e.g. consolidating power and fighting against the CPC) of the Republican government led by Chinese Nationalist Party. Rule of law quickly became one of the most important issues again as People's Republic of China (PRC) leaders announced their ambitious goals of modernizing China and establishing a socialist rule-of-law state (Randell, 2002). However, rule of law in China is still very weak because CPC is the sole ruling party. When the interests of CPC members conflict with those of

non-CPC members, member of CPC might abuse their political power in order to protect their own interest.

The new internal discipline, by putting constraints on the type of business activities that current or retired government officials are allowed to participate in, mitigates conflict of interest between member of the CPC and others. Chapter XIII Article 89 states that if retired or resigned CPC leaders of any level are found to have accepted jobs offered by companies or intermediaries belonging to the regions or lines of business previously charged by them, or to have engaged in profit-generating activities which are related to areas they used to be responsible for, a warning or serious warning should be given and they should be deprived of their party position, or placed on probation within the party depending on the severity of the situations.

3.3 Literature Review

Government plays a vital role in economic activities and there are three views of how government interact with other economic agents such as firms and investors (Frye and Shleifer, 1996). The invisible hand model argues that government, in general, are well-organized, free from corruption and benevolent. Reforms of many Eastern European countries, especially those want to join or have already joined the European Union, are guided by this model (Sachs, 1994). The helping hand model asserts that government plays an active role in promoting economic development. They pursue industrial policies, support certain firms while suppressing others and

often build strong and close relationship with entrepreneurs. Government are usually corrupt, but the corruption is controlled and even organized. China, Singapore and South Korea are some of the examples. Lastly, the grabbing hand model asserts that governments are unorganized interventionists. Each independent politician prioritizes their own interest over others' and thus does not follow unified public policy stance. Their power is left highly unchecked which allows them to impose their private wills over commercial disputes and to carry out predatory rules and regulations (Frye and Shleifer, 1996).

The grabbing hand model is believed to be the most detrimental to economic outcomes such as economic growth, financial development and firm valuation. Government officials, like other citizens, are self-interested utility maximisers. That is, they place greater emphasis on their own goals and objectives over the goals of others. As the policy makers and ultimate coercive power of a country, they can easily expropriate others, therefore adversely affecting financial development and firm value when their power is left unchecked. Existing literature identifies three channels through which firm values are affected by the extent to which government power is checked, namely government expropriation, political connections and legal enforcement.

3.3.1 Expropriation Risk and Firm Value

The main objective of investors is to earn monetary return on their investments. The higher the return they expect to earn, the higher the prices they are willing to

pay for financial assets such as shares and bonds. Financial performance of firms which determines how much profits belong to investors determine their investment return. However, there is no guarantee that investors will get all profits which belong to them. In addition, capitals that investors provide to firms through purchasing of financial assets also might not be used by entrepreneurs in ways that maximize investors' interests. This is referred to as expropriation risk, which is when investors' interests are hurt by the behaviour of certain self-interested economic agents. The expropriation risk that investors face determines how much profits will finally come back to them. Faccio et al. (2001) argue that highly concentrated corporate control in East Asia allows controlling shareholders to set unfair term for intra-group sales of goods and services and even for transferring assets. By doing so, controlling shareholders are able to extract high returns even from projects that yield negative profits. Minority shareholders, however, hardly get anything. Therefore, both financial performance and expropriation risk affect the attractiveness of firms to potential investors and thus firm value depends on these two factors. Expropriation risk reduces firm value because it reduces the expected returns or cash flows of investors (La Porta et al., 1997). Corporate insiders and government are the two main sources of expropriation.

3.3.1.1 Expropriation by Corporate Insiders

Financial contracts that investors sign with firms to which they provide capitals are inherently incomplete (Aghion and Bolton, 1992). That is, decisions concerning

investment projects cannot be fully determined in the initial contracts. Moreover, sometimes investors do not even have the ability to negotiate any contracts but to accept contracts that are predetermined by others. For example, minority shareholders cannot decide whether and how much dividend will be paid each year (Allen, 1993). Agency theory further argues that principals (i.e. investors) engage agents (i.e. managers) to provide certain services by delegating some decision-making authority to them (Jensen and Meckling, 1976). However, if agents are self-interested utility maximizers, which is often the case, it is reasonable to assume that they will prioritize their own interests over principals'. The separation of ownership and control in modern diffusely held corporations creates opportunities for agents to pursue their own goals and objectives at the expense of their principals. In other words, when not properly monitored by investors, managers are prone to private benefit extraction. This is referred to as agency problem or more precisely principal-agent problem (Jensen and Meckling, 1976).

La Porta et al. (1999) find that except in few countries with very good protection of investors, firms are seldom widely held. Instead, large and controlling shareholders, usually families or government, are more common. Faccio et al. (2001) also report that family as controlling shareholders is the predominant ownership structure in East Asia and West Europe. These controlling shareholders often have significant control rights and cash flow rights. Through pyramidal ownership and participation in management, they can easily expropriate other shareholders

(Shleifer and Vishny,1997; Liu and Tian, 2012; Villalonga and Amit, 2006; Faccio et al., 2001; Lemmon and Lins, 2003).

The potential risk of being expropriated by managers and controlling shareholders discourages outside investors from financing firms. Investors are less willing to pay for financial assets such as shares and bonds because they are not confident that firms' profits will finally come back to them in the form of dividends or interests. Sound and effective institutions that provide protection against expropriation of corporate insiders mitigate the issue and therefore promote financial development and boost firm values. Following the seminal work of La Porta et al. (1997), substantial studies find that sound legal protection of outside investors boosts values of firms by affecting ownership structure (La Porta et al., 1998, 1999; Claessens, et al., 2002), dividend policies (La Porta et al., 2000) and investment efficiency (Wurgler, 2000).

3.3.1.2 Expropriation by Government

Government is another source of expropriation. Clark (2003) points out that when budgeting for investment projects, investors should not only employ conventional financial analysis techniques but also take into consideration the possibility of the loss caused by a country's social, political and economic environment. Risk of government expropriation is one of the most critical determinants of the political environment. Kobrin (1984) argues that government expropriation often takes the form of formal takeovers, government interventions,

involuntary sales of equity and divestment as a result of renegotiation. Government expropriation reduces firm value by discouraging firms from making investments in potentially profitable projects and by limiting their access to external finance.

3.3.1.2.1 Government Expropriation and Firm Investment

Acemoglu and Johnson (2005) argue that investors often manage to find ways to change terms of formal and informal financial contracts, thereby mitigating private expropriation. For example, a board could design a compensation scheme that aligns the interest of managers with that of shareholders and that provides managers with the incentive to maximize shareholders' value (Bebchuk and Fried, 2003). However, expropriation by government cannot be easily avoided as it is impossible for investors to sign contracts with government that prohibit their expropriation behaviour. Thus, government expropriation has a stronger effect on economic outcomes than the expropriation of corporate insiders (Acemoglu and Johnson, 2005).

To firms, government expropriation is a mere threat and there are no potential gains. Besley (1995) argues that secured property rights, by reducing expropriation risk, provides investment incentives therefore boosting economic growth. When facing a high expropriation risk, firms might give up profitable investment opportunities because of the uncertainty over how much they can finally earn by making those investments (Opp, 2007). As a result, firms in countries with relatively high government expropriation risk tend to make less investment than their

counterparts which operate in countries with relatively low government expropriation risk. Substantial studies present country level evidence that the potential risk of being expropriated by government reduces both domestic investment (Knack and Keefer, 1995; Mauro,1995; Clague et al., 1999) and foreign investment (Li and Resnick, 2003; Jensen, 2003; Harm and Ursprung, 2002; Busse and Hefeker, 2007).

At firm level, Johnson et al. (2002) report that compared with availability of external finance, property rights protection against government expropriation has more fundamental influence on firms' reinvestment decisions. Based on a survey of entrepreneurs in five former Soviet Union countries (Poland, Romania, Slovakia, Ukraine and Russia), they find that firms are reluctant to make investment decisions without secured property rights even when bank loans are available or when firms have abundant retained earnings. Cull and Xu (2005), using a sample of Chinese firms, extend Johnson's et al. (2002) study by dividing property rights protection into government expropriation risk protection and private contracting risk protection. They find that government expropriation risk appears to be the main concern for firm reinvestment, and small firms are more likely to be expropriated by government. Lin et al. (2010) also document that corporate research and development (R&D) is higher when the risk of being expropriated by government is lower.

3.3.1.2.2 Government Expropriation and Firms' Access to External Finance

Government expropriation not only discourages firms from making investments

in profitable projects but also discourages investors to finance firms. Firms have more access to external finance and are valued higher when financial markets are large and active due to higher supply of capitals. However, higher expropriation risk reduces both realized and expected returns of investors. Therefore, it dampens development of financial sectors. Acemoglu et al. (2001) argue that cross-country differences in financial market development can be attributed to different colonization strategies centuries ago. When geographical and disease environment were not suitable for colonizers to settle down, they established extractive states to allow for the transfer of resources back to colonizers. These places often lack property rights and government can easily expropriate its citizens. Financial markets are found to be underdeveloped because of potential expropriation by government (Acemoglu et al., 2001). As a result, firms are valued lower due to a lack of investors. Berkowitz et al. (2015) document that market return on the day property rights law was enacted in China was significantly higher than the average daily return of the same year. Furthermore, firms that face higher expropriation risk (firms with a higher proportion of tangible assets, more cash flow, and weaker political connections) experienced a higher market return. This finding support Acemoglu's et al. (2001) argument that secured property rights allows firms to have more access to equity finance and to be valued higher.

Government expropriation also reduce firms' access to debt financing, including those which need to be secured by collateral. Djankov et al. (2008) argues

that the willingness of creditors to finance firms depends on their ability to seize collateral on firms that fail to repay interests or principals. Creditors' ability to seize collateral of firms that default on loans not only depends on how well contracts are enforced, but also on government's incentive to expropriate firms. If government abuses its political power to expropriate the assets of firms, both firms and creditors will find it difficult to secure collateral underlying loans. Firth et al. (2009) find that banks are more willing to grant loans to firms with government as a minority shareholder partly because they believe these firms will be less likely to be expropriated by government.

3.3.2 Political Connections and Firm Value

The second channel through which government power affects firm value is political connections. The helping hand model of government argues that market competition between firms is shaped by government that has the power to determine which firms will be supported and which firms will be killed (Frye and Shleifer, 1996). Many Asian countries such as China, Malaysia, Singapore and South Korea fit this model and firms often try to obtain support from government by establishing political connections with government officials.

Following the seminal work of Fisman (2001), many studies report that political connections benefit firms in various ways and boost their market value. Firstly, political connections allow firms to have easier access to capitals, especially bank loans. Leuz and Oberholzer-Gee (2006) report that in Indonesia, politically

connected firms are less attracted by foreign capital markets than non-connected firms. The reason is because local government often provides these firms with cheap loans (through state owned banks). Claessens et al. (2008) find, in Brazil, firms that contribute to the elected federal deputies experience a significant increase in leverage during the four-year period after election, indicating that these firms have preferential access to bank loans. Based on Pakistani data, Khwaja and Mian (2005) report political connected firms, on average, obtain 45 percent more loans than non-connected firms even though the default rate of these firms is 50 percent higher. Micco et al. (2007) and Chen et al. (2011) also find evidence showing political connected firm are financially favored and supported by the government.

Another mechanism through which political connections benefit firms is a higher possibility of receiving government bailouts. A cross country study conducted by Faccio (2006) reveals that politically connected firms are more likely to be bailed out by the local government than are their non-connected counterparts. This enables connected firms to have more access to external financing, especially through the debt market because lenders will take the potential bailout into consideration when making lending decisions. Although Boubakri et al., (2012) do not find direct evidence supporting the argument that government is inclined to help politically connected firms that are in financial distress, they argue that the increased leverage ratio of these firms after the establishment of political connections results from lenders' perceived higher possibility of a government bailout.

In countries where there is a lack of well-developed institutions and legal systems, political connections can become more beneficial as it helps firms overcome market and state failure and secure property rights (Li et al., 2008). Sheng et al. (2011) find that firms with political connections can exploit their power gained from these connections by requiring government to enforce business contracts or stop illegal behaviors. Ambler et al. (2001) state that when legal enforcement in a country is relatively weak and inefficient, government involvement, as requested by firms with political connections, can be more efficient than formal legal processes. In addition, studies of political connections in China also find that firms with political connections could have more government subsidies (Chen et al., 2008), lower rent-seeking behaviors by politicians (Chen et al., 2011) and government awarded privileges (Johnson and Mitton, 2003; Gul 2006). Because of these benefits that political connections grant to firms, politically connected firms are usually valued higher than their counterparts without such types of connections (Faccio, 2006).

3.3.3 Legal Enforcement and Judicial Efficiency

Checks on government power also improves rule of law and legal enforcement of a country thereby boosting the value of firms. The grabbing hand model of government argues that poorly checked government power leads to a situation where government officials impose their will over commercial disputes, therefore it damages the enforcement of legal rules and regulations. Firms in countries with poor

legal enforcement face a higher risk as they have to deal with larger uncertainty regarding their legal rights. Bhattacharya and Daouk (2009) argue that it is the enforcement of good legal institutions but not good institutions itself that leads to satisfactory economic outcomes. Moreover, when enforcement of legal rules is weak, in some conditions, the existence of legal rules can be harmful, and it is better not to have them (Bhattacharya and Daouk, 2002). Bhattacharya and Daouk (2009) use insider trading laws of the U.S. and Pakistan to demonstrate the importance of legal enforcement. Specifically, they point out that U.S. is the first country to adopt legal rules that prevent insider trading. Although the phrase insider trading does not appear in the U.S. *Securities Exchange Act* of 1934, there are several important U.S. Supreme Court decisions about insider trading which indicates the success enforcement of the legal rule. In contrast, Part 3 in Chapter II of the *Listed Companies Guidelines of Pakistan* explicitly states that “No person...shall either on his own behalf...deal in securities of a company listed on a stock exchange on the basis of any unpublished price sensitive information”. However, Bhattacharya and Daouk (2009) report that the adoption of this legal rule in Pakistan does not invoke significant market reactions. It was not until the enforcement of anti-insider trading law, as signified by the first prosecutions, that the cost of equity financing decreased dramatically as outside investors finally believed that they were protected by the law.

Modigliani and Perotti (2000) even assert that enforcement of laws tends to be

more important than adoption of laws. They argue that, in term of financial markets, enforcement of securities laws can influence ways through which firms raise funds. When securities laws are poorly enforced, even in countries with many laws aiming at protecting investors, firms will find it difficult to raise funds through equity markets and tend to rely more on debt markets and bank loans. The reason is because without actual enforcement, investors are not fully convinced that they are protected from expropriation. Thus, firms are pushed to financial intermediaries in order to raise capitals (Modigliani and Perotti, 2000). La Porta et al. (1997) document that firms located in countries with appropriate securities laws and high quality enforcement are valued higher. Lerner and Schoar (2005) also provide empirical evidence supporting the argument that legal enforcement is important. Specifically, Lerner and Schoar (2005) report that countries with common law legal origin tend to have better legal enforcement than countries with civil law origin (the quality of legal enforcement is measured by the time needed to resolve contract disputes). Good legal enforcement protects outside investors and allows them to enter complex contracting, which ultimately leads to the prosperity of financial markets. There is also empirical evidence showing that the quality of legal enforcement not only matters for equity markets but also for debt markets. Cristini et al. (2001) document that, in Argentina, the quality of judicial enforcement is positively correlated with the amount of credit allocated to firms. Fabbri (2002) reports that, in Spain, cross-regional differences in the external finance available to

firms can be partly explained by differences in the performances of courts. All these findings indicate that good legal enforcement and an efficient judicial system contribute to the development of financial market and to higher firm values.

3.4 Hypothesis Development

3.4.1 Overall Market Reaction

Literature on the relation between institutions and financial development argues that cross-country differences in financial market development and firm valuation can be explained by the difference in legal institutions (La Porta et al., 1997, 1998; La Porta et al., 2008; Johnson et al., 2002; Acemoglu and Johnson, 2005; Levine, 2005). Sound and effective institutions enhance investors' ability to secure their investment return therefore lead to better developed financial markets and higher firm values. Acemoglu and Johnson (2005) further argue that government imposes higher expropriation risk on investors because it is difficult for investors to find ways other than institutions which check government power to avoid being expropriated by government. Government expropriation discourages firms from making investments in potentially profitable projects because firms are worried that they cannot secure their investment return (Cull and Xu, 2005; Johnson et al., 2002). It also hampers the financial development of a country and makes it difficult for firms to raise funds from financial markets and therefore lowers their value to investors (La Porta et al., 1997).

Due to the lack of democracy and political competition, the power of the

Chinese government is considered not properly checked. In some other Asian countries or regions such as Singapore, South Korea and Taiwan, one political party has overwhelming advantages over other political parties and has ruled the place for quite a long period. Financial markets are predicted to be underdeveloped and firms are predicted to be valued lower in these places. However, past decades have witnessed both China and these countries or regions with dominant party political system experience fast economic and financial growth. Allen et al. (2005) argue that alternative financing and governance mechanisms complement weak checks on government power and allow the economy to flourish.

We propose a new explanation to this paradox by arguing that government power is not left unchecked in China. It is checked through what we call government power self-checking system where the CPC, the sole ruling party, set rules and regulations that constrain power of government officials and prevent it from being abused. The internal discipline of the CPC is part of the system. It imposes restrictions on the behaviour of CPC members and therefore checks power of government officials in China.

The revised internal disciplines of the CPC enhance checks on government power in China through three channels. Firstly, provisions that aim at preventing corrupt behaviour enhance the protection of property rights in China therefore reducing government expropriation. For example, Chapter IX Article 106 states that CPC members are not allowed to harm the general public's autonomy in production

and operation activities. Secondly, the revised internal discipline checks government power by improving legal enforcement in China. Chapter X Article 119 clearly states that intervening judicial and law enforcement activities are prohibited. Thirdly, the revised internal discipline improves the rule of law in China by imposing restrictions on the type of business activities members of the CPC are allowed to participate. This reduces government officials' incentive to get involved in business activities which therefore mitigates the potential for conflicts of interest. For instance, Article 84 Chapter VIII states that CPC members are not allowed to send gifts to government officials including their spouses, children or other relatives exceeding a certain value. Prior studies find that property rights, legal enforcement and rule of law are all important determinants of financial development and market values of firms as they reduce transaction costs and provide incentive for investment (Johnson, et al., 2002; Cull and Xu, 2005; La Porta et al., 1997; Bhattacharya and Daouk, 2009).

The revised internal discipline, by providing checks on government power through the above three channels, is supposed to invoke a positive reaction in the equity market. Thus, we propose the following hypothesis:

Hypothesis 1: Stock market reacts positively to the promulgation of the revised internal discipline.

3.4.2 Stock Return of Firms

Although the promulgation of the revised internal discipline is expected to

invoke a positive reaction in Chinese stock market because it enhances checks on government power, it might not benefit all listed firms in China equally. Firms differ from each other in their risk of being expropriated by government. Firms that are more vulnerable to government expropriation have higher needs for checks on government power. Therefore, these firms are expected to experience a higher increase in market value after the promulgation of the revised internal discipline. We develop the four following hypotheses based on this argument.

3.4.2.1 Local Institutions and Stock Return

Like the development of China's economy, which is not balanced among various regions, the quality of market-supporting institutions is not the same across the whole country. According to the *Governance, Investment Climate and Harmonious Society Survey* by World Bank, legal institutions and investment climate is the best in Southeast China and the worst in Northwest China. This problem stems from China's unique government structure. Xu (2011) depicts the political system in China as a regionally decentralized authoritarian (RDA) regime. Under RDA, political activities such as appointments of government officials are highly centralized. However, economic activities are mainly governed and dictated by subnational or local governments. This unique government structure ensures that local governments have unified goals as they are selected and appointed by the central government. At the same time, it allows local governments to tailor policies based on their own circumstances. RDA together with the unbalanced human capital

development leads to the unbalanced development of institutions among various provinces in China (Xu, 2011).

Firms are less threatened by government in provinces with sound and effective market-supporting institutions because government power is better constrained in these provinces. For example, the *Governance, Investment Climate and Harmonious Society Survey* reports that entrepreneurs are more confident in courts and have to make less informal payments in order to get loans from state owned banks in provinces with better developed market-supporting institutions. Thus, we hypothesize that firms in provinces with weak market-supporting institutions benefit more from the promulgation of the revised internal discipline.

Hypothesis 2: Stock prices of firms in provinces with weak market-supporting institutions react more positively to the promulgation of the revised internal discipline.

3.4.2.2 State Ownership and Stock Return

State owned enterprises (SOEs) used to be the pillars of China's economy. Although SOEs' influence over China's economy is much weaker than before as a result of the rise of private sectors over the past decades, SOEs still play a vital role or even dominant role in many industries and in many provinces. During the partial privatization process, many SOEs sell part of their shares to other investors, including individuals, institutional investors and even foreign investors and become listed SOEs. Because Chinese government is the one of the shareholders of listed

SOEs, it is motivated to protect listed SOEs from being expropriated by others (i.e. managers and other shareholders). However, for those firms without state ownership, they are at the risk of being expropriated by government as the government has no direct stakes in these firms. Du et al. (2015) report that private firms in China often suffer severe government expropriation in the form of higher informal levies, extra-legal payments and entertainment expenses. Only when entrepreneurs in China are willing to bear these extra costs can they establish a relationship with local governments and thus be approved to diversify their business in order to expand their firms (Du et al., 2015).

However, the revised internal discipline might also benefit firms with state ownership, especially SOEs or firms with high percentage of state ownership. Although compared with privately owned firms, firms with state ownership are less concerned of being expropriated by government, the promulgation of the revised internal discipline might reduce the probability that shareholders of firms with state ownership being expropriated by corporate insiders. One of the largest concern of state ownership is that no individuals, including government departments or officials who are directly in charge, are their real owners. As a result, the monitoring of managers in firms with state ownership might become less intensive as people are not that devoted to spend resources and efforts in doing so. Thus, corporate insiders of firms with state ownership might become more motivated to expropriated shareholders for their own interests either because they have less stakes in these

firms or because of less intensive monitoring. The promulgation of the internal discipline is expected to put more constraints on behaviors of managers of firms with state ownership, which are assets of the government. Therefore, it also benefits firms with state ownership and should also invoke a positive reaction to their stock prices.

Given the above discussion, we believe it is an empirical question whether privately owned listed firms or state owned listed firms react more positively to the promulgation of the revised internal discipline. Thus, we develop the following two competing hypotheses.

Hypothesis 3a: The stock prices of privately owned listed firms react more positively to the promulgation of the revised internal discipline than that of state-owned listed firms do.

Hypothesis 3b: The stock prices of state owned listed firms react more positively to the promulgation of the revised internal discipline than that of privately owned listed firms do.

3.4.2.3 Importance to Local Economy and Stock Return

Large firms are less threatened by government expropriation in China. Compared with small firms, large firms provide more employment opportunities, more taxes and so on. Thus, they are more important to local economies than small firms do. Under RDA, economic development achievement is one of the most important criteria for the promotion of government officials in China (Xu, 2011). Hence, local governments have a stronger motivation to protect large firms which

local economies heavily rely on. Chen et al. (2008) even find that local government help listed firms in earnings management to circumvent regulations set by central government in order to attract investment and advance their political careers. Consequently, the need for checks on government power is higher for small firms that is less important to local economy.

Large firms are also more able to build and maintain good relationship with government therefore are less concerned of government expropriation. One of the ways in which firms protect themselves in countries with weak institutions is to build relationships with government. Firms that lack resources (e.g. money and time) to build such a relationship are put into a disadvantaged position. The lack of good relationships with government might prevent firms from getting the necessary supports from government, especially in places with weak institutions. Sheng et al. (2011) report that political ties built by Chinese firms enable firms to require local governments to enforce business contracts or stop illegal behaviour. Ambler et al. (2001) even argue that government involvement is a more effective way to solve disputes for firms with a sound relationship with government.

However, building and maintaining such a relationship is not without cost. Cai et al. (2011) estimate that, on average, Chinese firms spend 3% of their total value added in building and maintaining relationships with government. Therefore, the durability and closeness of relationship with government depend on firms' ability to afford such costs. Cull and Xu (2005) report that, in China, the size of firms is an

important determinant of such relationships as large firms are more able to afford costs incurred in building and maintaining relationships with government. In other words, large firm are more able to build and maintain a good relationship with government.

Because of the unbalanced economic development in China and the unique RDA government structure mentioned above, it makes more sense to compare firms located in the same regulatory regions (i.e. province) rather than with firm located in other regulatory regions. For example, in the sample of this paper, the average total assets of listed firms in Beijing, the capital city and one of the most developed regions of China, are around 82 billion RMB. However, that of Gansu, one of the least developed provinces, is only 206 million RMB (0.21 billion RMB). The huge cross-regional differences in firm size makes it more appropriate to compare firms located in the same region. Furthermore, regional economic activities are mainly governed by local governments instead of the central government. For instance, firms located in Gansu are more likely to interact with Gansu governments instead of the governments of other provinces or cities. Therefore, local government imposes a higher threat to firms than central government or the governments of other provinces. We measure firms' sizes based on their relative size to other firms in the same province, and we define firms that are relatively large compared with other firms in the same province as firms that are more important to the local economy and vice-versa. Based on the above analysis, we propose the following hypothesis:

Hypothesis 4: The stock prices of firms that are less important to the local economy react more positively to the promulgation of the revised internal discipline.

3.4.2.4 Political Connections and Stock Return

Political connections are usually viewed as precious resources to firms in relation-based economies such as Malaysia, South Korea and China. The reason for this is because governments in these countries are more powerful and thus have more influence on economic activities than governments in western free-market style economies. According to the *2015 Doing Business Report* by the World Bank, it takes 11 steps to gain permission from government to start a new business in China, and it takes around 31.4 days to go through all necessary procedures. In contrast, it only takes 1 procedure to start a new business in Canada, and 6 in the U.K. and the U.S. The days required to finish all necessary procedures are about 1, 6 and 5.6 for those countries, respectively.

Existing literature documents that political connections provide various benefits to firms and therefore boost their market values. The political power of government officials is one of the most important determinants of the values of political connections as it affects the amount of benefits that politicians are able to provide to firms. Faccio (2006) finds that political connections are significantly valuable to firms in countries with high levels of corruption while they do not have significant value to firms in countries with low levels of corruption. Other studies find that affiliation to powerful politicians significantly boosts market values and the

financial performance of firms (Jayachandran, 2006; Goldman et al., 2008, 2013). Amore and Bennedsen (2013) further report that doubling the political power of politicians leads to a double in the financial performance of firms that are politically connected to them. The promulgation of the revised internal discipline imposes restrictions on the behaviour of government officials in China and therefore weakens their abilities to provide benefits to politically connected firms. As a result, political connections become less valuable or even burdensome in some extreme cases. Hence, we propose the following hypothesis:

Hypothesis 5: The stock prices of firms without political connections react more positively to the promulgation of the revised internal discipline.

3.5 Data and Methodology

Our sample consists of firms listed on the Main Board (Shanghai Stock Exchange and Shenzhen Stock Exchange) in China over the period 2014-2015. Stock return and financial data of listed firms are collected from the China Stock Market & Accounting Research (CSMAR) database. To mitigate the effect of firm specific information on our empirical results, we exclude firms that release material news including stock split, dividends, seasoned equity offering and M&A announcement within a 3 day event window (1 day before and 1 day after) surrounding the event date (Oct 12th, 2015).

The first half of 2015 has witnessed a significant increase in value of stock market in China. The Shanghai Stock Exchange Composite Index peaked at 5178 on

June 12th then started to decline rapidly. It lost about 40% of its value within 3 months. As a result, 47.2% listed firms' stocks are suspended from trading. These firms are not included in our sample because we do not have their stock return on the event date. Our final sample includes 1154 listed firms.

We follow Lin et al.(2016) and use the market portfolio's raw return to examine the effect of revised internal discipline on the entire equity market. Classic event study looks at common patterns in changes in stock prices in response to their specific news and on their own event dates. Abnormal returns are often used in order to remove the effect of other news that has market-wide implications on stocks prices. However, the promulgation of the revised internal discipline affects all firms, instead of specific firms, at the same time. For this reason, we use market portfolio's raw return around the event date to examine the effect of revised internal discipline on the entire stock market in China.

We use cumulative abnormal return (CAR) in our firm level regressions as an independent variable to explore how different firms react to the promulgation of the revised internal discipline. The market model is used to estimate the abnormal return of firms. We use 200-day estimation window to calculate betas of firms and then use the market model to estimate predicted stock return over the event window. Abnormal return is calculated by subtracting predicted stock return from realized stock return. By adding up abnormal return, we get the CAR over the event window.

We propose that four firm characteristics affect how stock prices react to the

revised internal discipline. Specifically, we predict that the stock prices of firms located in provinces with weak market-support institutions, of firms that are privately owned, of firms that are less important to local economies and of firms that have not built political connections will react more positively to the promulgation of the revised internal discipline due to their higher needs for checks on government power. In order to avoid our results being distorted by extreme values, we did a 99% winsorization on our control variables. In other words, we set data above the 99th percentile to the 99th percentile and data below 1st percentile to 1st percentile. For Tobin's Q and leverage, we did a 95% winsorization because there are much more outliers. We did not winsorize the indices that measure the quality of market-supporting institutions in China.

Table 3.1 presents descriptive statistics of the data and Table 3.2 presents the correlation matrix.

We use six indices constructed by NERI of China to measure the quality of market-supporting institutions in each province. Resource allocation index is based on local government expenditures as a percentage of local GDP. A higher ratio indicates that local government plays a more important role in the resource allocation of the local economy. The index ranges from -23.31 to 10.29, and it is constructed in a way that a higher index indicates that government is less involved in resource allocation. Government intervention index is constructed based on how much time firms need to spend on dealing with government officials. This index

ranges from -12.95 to 9.89 and a higher value means a lower level of government intervention. The non-tax burden index is based on non-tax expenditures that firms incur when doing business, such as payments made in order to get licenses and other administrative fees. It ranges from 12.84 to 15.8. High index means low burden.

The aforementioned three indices capture how powerful local government is. The other three indices we use, namely producer protection index, foreign investment index and intellectual property rights protection index measure the quality of legal institutions. The producer protection index is constructed based on a survey of firms' evaluation of local government's legal enforcement and court's judicial independence. The index ranges from -1.91 to 8.93 and a higher index means better protection. Foreign investment index is based on the ratio of foreign investment (including Hong Kong, Taiwan and Macau) to local GDP. Foreign investors are more sensitive to the quality of local institutions and higher foreign investment might indicate better quality of institutions. Foreign investment index ranges from 0.19 to 10.8 and higher index indicates more foreign investment and better quality of institutions. Lastly, intellectual property rights protection index is based on the ratio of the number of patent applications and the number of approved patents to the number of practitioners in technology industries. The higher the index, the better the legal protection of intellectual property rights. This index ranges from 1.05 to 53.51 and a high index indicates more secured intellectual property rights. All six indices are collected from Fan et al. (2011).

Two variables are used to measure government ownership of listed firms. The first variable named *private* is a dummy variable that takes the value of 1 if the largest shareholder is not a government organization and takes the value of 0 if it is. Secondly, we also use the percentage of shares owned by government as an independent variable to measure government ownership of firms. These data are collected from the CSMAR database.

We use three ways to measure a firm's importance to the local economy. The importance to the local economy (assets) is calculated by dividing a firm's total assets to the sum of total assets of all listed firms in our sample that are located in the same province. The importance to the local economy (sales) and the importance to the local economy (taxes) are calculated in the same way. The financial data of listed firms are collected from CSMAR database.

Lastly, we use two ways to measure the political connections of firms. The first variable is the number of board members who are also CPC members as a percentage of the number of total board members. We define it as party intensity. The higher the ratio, the more likely a firm is politically connected to the Chinese government as CPC is the sole ruling party of China. The second variable, politically connected CEO, is a dummy variable that is equal to 1 if the CEO of the company is a CPC member and equals 0 if the CEO is not a member of CPC. The background of board members and the CEO of listed firms are available at the CSMAR database. Control variables we include in this study are board size, board independence,

Tobin's Q, return on assets (ROA), leverage and total assets. Board size is the number of board members, and board independence is the number of independent board members as a percentage of the number of total board members. Tobin's Q is calculated by dividing the market value of a firm's debt and equity by their book value. ROA is the net income divided by total assets. Leverage is the ratio of total equity to total debts. These data are also collected from the CSMAR database. To mitigate concern that the statistical significance of our firm level regressions is overstated, we cluster standard errors at province level.

<Insert Table 3.1 Here>

<Insert Table 3.2 Here>

3.6 Empirical Results

3.6.1 Reaction of Overall Stock Market

Our empirical results are based on the news that the revised internal disciplines are promulgated on Oct 12th, 2015. Therefore, if there is other news that has market-wide implications, it will make it difficult for us to interpret our results. We first look at internet search volumes of "Internal Disciplines" and compare it with internet search volumes of other terms that have market wide-implications including "Economic Reform", "Economic Development" and "Economic Growth". Figure 3.1 graphs the Baidu search index on these four terms. We find that the search volume of "Internal Disciplines" experiences a dramatic increase in late October while the search volume of three other terms remain quite constant throughout the

whole year. “Internal Disciplines” only becomes the term that has the highest search volume on Baidu among these four terms in October. This indicates that the promulgation of internal disciplines obtained wide-spread public and media attention. We also use the WIND database and Google to search news related to the financial market in China on Oct 12th, 2015. However, we fail to find any other major news in financial markets such as new regulations or changes in interest rate.

<Insert Figure 3.1 Here>

As argued in the previous section, we use raw return instead of abnormal return of market portfolio to examine the reactions of the stock market in China to the promulgation of the revised internal disciplines of the CPC. Figure 3.2 plots the cumulative market return over a 46-day event window [-15, 30]. We find that the cumulative return of market portfolio is significant positive during the event window. This result is consistent with our hypothesis that investors viewing the revised internal discipline as a tool to check government power therefore react positively to its promulgation. In Table 3.3, we also compare the market portfolio’s return on the event date and over two event windows (a 5-day event window and an 11-day event window) with the market portfolio’s return on other days in 2015. The one-day return of the market portfolio on the event date (Oct 12th, 2015) is 3.95%, both statistically and economically higher than the average one-day return of market portfolio in other days of 2015, which is only 0.11%. The cumulative market return (-2, +2) and cumulative market return (+5, -5) show the same pattern. The

cumulative return of the market portfolio over the event window (-2, +2) is 8.42%, much higher than the cumulative stock return of the other days in 2015 with the same event window. When the event window is extended to (-5, +5), the cumulative return of the market portfolio increases to 11.92%, about 10 times higher than that of the other days of 2015. These results support our hypothesis that China's stock market reacts positively to the promulgation of the CPC's internal discipline.

<Insert Figure 3.2 Here>

<Insert Table 3.3 Here>

3.6.2 Local Institutions and Market Reaction

In order to test our second hypothesis, we use the CAR of listed firms over an 11-day event window (5 days before the event date and 5 days after the event date) as a dependent variable. Government power and the quality of legal institutions varies from province to province in China because of its unique government structure (RDA). Thus, firms' stock prices are expected to react differently to the promulgation of the CPC's internal discipline, depending on the extent to which local government's power is checked and the quality of legal institutions.

We first construct a market portfolio for each province which contains all listed firms located in that province. We then take the average of the 5-day event window (CAR (-2, +2)) of firms in the same province to reach the five-day event window CAR of the market portfolio of that province. Figure 3.3 plots the five-day event window CAR of the market portfolio for each province in China. The CAR of the

market portfolio varies greatly among provinces. Consistent with our expectation that investors viewing promulgation of the revised internal discipline as good news, the CAR of the market portfolio is positive for most provinces, except for Xinjiang, Tibet, Qinghai, Shanxi and Hunan. Median CAR is 1%, and the highest CAR is 3.2% (Yunnan).

<Insert Figure 3.3 Here>

We run firm-level OLS regressions to further explore how share prices of firms react to the promulgation of the revised internal discipline, depending on quality of local institutions. We use six indices constructed by NERI as explanatory variables and examine differences in the CAR of firms located in different provinces. Firms located in provinces where government power is relatively unchecked face a higher expropriation risk. Thus, their CAR is expected to be higher around the event date. OLS regression results are presented in Table 3.4. The first three columns of Table 3.4 illustrates how local government power affects the CAR of firms. The coefficients of all three independent variables are negative and statistically significant at 10% level. This result indicates that firms located in provinces with more powerful government experience a higher increase in market value. For example, an 1 unit increase in the resource allocation index is associated with a decrease in CAR of 0.18%. Given that the range of the index is -23.31 to 10.29, holding other things unchanged, the CAR of firms located in provinces with the lowest government involvement in resource allocation (Shandong) is expected to be

lower than that of firms located in provinces with the highest government involvement in resource allocation (Tibet) by 6.05%.

The other three variables, namely producer protection index, foreign investment index and intellectual property rights protection index capture the quality of legal institutions in each province. By checking government's power, the internal discipline also improves legal institutions in China by enhancing legal enforcement and the rule of law. Therefore, firms located in provinces with weak legal institutions are expected to benefit more by the internal discipline. As can be seen from the last three columns of Table 3.4, the coefficient of three indices are statistically significant and are negative. Among the indices, the coefficient of foreign investment is the largest with an 1 unit decrease in the index leading to 0.4% increase in CAR over the 11-day event window. The OLS regression results shown in Table 3.4 support our second hypothesis that firms in provinces with powerful government and weak institutions have higher needs for constraining government power, and therefore investors expect to benefit more from the revised internal discipline.

<Insert Table 3.4 Here>

3.6.3 State Ownership and Market Reaction

Firms differ from each other in their potential risk of being expropriated by a government whose power is not properly constrained. Compared with SOEs, private firms are more likely to be expropriated by government as government has no stakes

in these firms. On the one hand, Chen et al. (2011) find that, in China, private firms in provinces with a less market-oriented economy or with more government discretion in resource allocation are prone to establish political connections with local government to avoid being expropriated. Cull and Xu (2005) also argue that government expropriation is one of the main reasons why private firms are reluctant to reinvest their profits. On the other hand, government are motivated to protect SOEs from being expropriated in order to protect their interests. Cheung et al. (2010) document that firms owned by central government or with central government affiliated directors are protected from being expropriated when having related party transactions. Therefore, private firms are more in need of secured property rights, good legal enforcement and rule of law.

We use two variables to measure state ownership of listed firms. The first one is a dummy variable named *private*, with a value of 1 if a firm's largest shareholder is not government. OLS regression results are presented in Table 3.5. In panel A, the dependent variable is CAR of the 11-day event window (5 days before the event date and 5 days after event date) and in panel B the dependent variable is the CAR of the 5-day event window (2 days before the event date and 2 days after the event date). In the first column, we run univariate regression without adding other control variables. In column 2, we add some firm characteristics, such as profitability, size and leverage as control variables, and in column 3 we add more control variables and cluster standard errors at province level. The coefficient of our variable of interest

are all statistically significant and positive. For example, the OLS regression results in column 3 of panel A indicates that the 11-day event window CAR of firms with government as the largest shareholder is expected to be lower by 2.1%. Regression results in the third column of panel B suggest that having government as the largest shareholder is expected to lead to a decrease in the 5-day event window CAR by 1.6%.

In addition to the dummy variable, we also use a continuous variable which is equal to the percentage of shares owned by government to measure state ownership. OLS regression results are reported in columns 4, 5 and 6 of Table 3.5. The last column of panel A and panel B report that a 1% increase in state ownership is estimated to reduce the 11-day event window CAR and 5-day event window CAR by 0.064% and 0.044% respectively. These results are consistent with our hypothesis that private firms benefit more from the revised internal discipline.

<Insert Table 3.5 Here>

3.6.4 Importance to Local Economy and Market Reaction

In hypothesis 4, we propose that firms that are more important to the local economy tend to face less expropriation risk imposed by local governments for two reasons. Firstly, these firms are usually big firms and thus have more resources than their smaller counterparts to build political connections with local governments to obtain government protection or at least mitigate government expropriation. Secondly, local economic development is one of the most important criteria for

government officials' promotion in China. Thus, when choosing firms to expropriate, local government officials are more likely to expropriate smaller and less important firms instead of bigger and more important ones to ensure their career path will not be severely affected.

We use three variables to capture a firm's importance to the local economy relative to others and test this hypothesis. These three variables reflect three different dimensions of the importance of a firm to the local economy. The importance measured by total assets could capture a firm's contribution to local employment as bigger firms usually have more employees. Importance measured by sales could capture a firm's contribution to local GDP and importance measured by taxes could capture a firm's contribution to local government's income. OLS regression results are presented in Table 3.6, Table 3.7 and Table 3.8. The dependent variable in the first three columns of these tables is the 11-day event window CAR and that of the last three columns is the 5-day event window CAR. In Table 3.6, the variable of interest is the firm's importance to local economy based on its sizes. In Table 3.7, the variable of interest is the firm's importance to local economy based on its sales and in Table 3.8 the variable of interest is the firm's importance to local economy based on its taxes.

The coefficient of all three variables of interest are statistically significant and negative. Specifically, an 1 unit increase in a firm's importance to local GDP is predicted to lead to a decrease of 0.135% in the 11-day event window CAR and a

decrease of 0.056% in the 5-day event window CAR. This is consistent with our expectation that firms which are less important to the local economy have a higher expropriation risk and therefore benefit more from the constraining of government power.

<Insert Table 3.6 Here>

<Insert Table 3.7 Here>

<Insert Table 3.8 Here>

3.6.5 Political Connections and Market Reaction

Having political connections in China not only provides firms with monetary benefits such as more bank loans, government subsidiaries or procurement contracts but also allows them to get non-pecuniary ones. Li et al. (2008) argue that political connections make government more willing to help firms and allow them to mitigate problems such as market failure and weak institutions. For instance, government are more willing to solve disputes regarding business contracts of politically connected firms (Sheng et al., 2011). Francis et al. (2009) find that firms with political connections incur lower costs during their initial public offering (IPO) process. The revised internal discipline, however, might reduce values of political connections by putting constraints on the type of business activities which not only government officials, but also CPC members (i.e. retired government officials) are allowed to participate in. Therefore, government officials or those who are able to help firms build political connections might find it is more difficult or dangerous to provide

benefits to firms as it might threaten their career and reputation.

We use two variables to measure political connections. Firstly, we use the number of board members who are CPC members as a percentage of total number of board members and we name it party intensity. There are two reasons why we use party intensity to measure political connections. First of all, the higher the ratio, the more CPC members a firm's board has and the higher the probability that they have built valuable political connections with government which is ruled by the CPC. Secondly, the revised internal discipline puts restrictions on all CPC members. Therefore, the political power of board members who are not government officials but have political resources such as retired government officials will also be constrained. We also measuring a firm's political connections by looking at whether a firm's CEO is a member of CPC.

OLS regression results are reported in Table 3.9. In the first three columns, we use party intensity as an independent variable, and in the last three columns, a dummy variable that takes the value of 1 if a firm's CEO is a member of the CPC is used as independent variable. Like Table 3.5 and Table 3.6, the dependent variable of panel A is the 11-day event window CAR and that of panel B is the 5-day event window CAR. Column 3 of panel A indicates that a 1% increase in party intensity is estimated to reduce the 11-day event window CAR by 0.031%. Column 6 of panel A suggests that having a politically connected CEO is associated with a decrease in the 11-day event window by 0.6%. These results are also consistent with our expectation

that the revised internal discipline benefits firms without political connections more because they have higher need for constraining government power. We also notice that the coefficient of party intensity is not statistically significant in the third column of panel B. Part of the reason might be that party intensity is highly correlated with state ownership as SOEs tend to have more board members who are also CPC members. Overall, our hypothesis is supported by the OLS regression results.

<Insert Table 3.9 Here>

3.7 Conclusion

The risk of being expropriated by government is one of the determinants of financial development. When facing with higher level of government expropriation, both firms and their investors will become less motivated to make investments because of their concern of not being able to secure their investment return. It thus dampens development of financial sectors and lowers values of firms. In this paper, we identify a new form of institutions, which we name government power self-checking system, that allow government power to be checked and therefore reduce government expropriation risk and promote financial development even in countries with a sole ruling party or dominant political party. We use the promulgation of the CPC's internal discipline as an event study to examine effects of checks on government power on stock market and market value of firms.

On 12th Oct, 2015, the CPC promulgation a revised version of its internal

discipline aiming at imposing restrictions on behaviour of CPC members therefore preventing corruption. The internal discipline improve institution in China by enhancing property rights protection, legal enforcement and rule of law. We find that the equity market in China experienced an increase in value on the event day and over multiple-day periods surrounding the event date. Furthermore, we also document that values of firms that are more vulnerable to government expropriation and that have higher needs for sound and effective institutions (i.e. secured property rights, good legal enforcement and rule of law) increase more. Specifically, we find that the CAR of firms located in provinces with weak market-supporting institutions (powerful government and weak legal protection of firms and investors), firms without state ownership, firms that are less important to the local economy in terms of employment, GDP growth and government income, and firms that are not politically connected is higher. These findings support our argument that checks on government power reduce investors' risk of being expropriated by government and thus promote financial market development and boost market values of firms.

Our findings are consistent with new institutional economics that checks on government power is important for economic outcomes (North and Thomas, 1973). People, when interacting with others, have to spend resources in preventing themselves from being cheated or expropriated by others. This is referred to as the transaction costs. Sound and effective institutions, especially those enhance contract enforcement and secure private property rights reduces transaction costs and thus

promotes economic and financial development (North, 1991). The quality of institutions depends on how well government power is checked to prevent it from being abused by government officials for personal their gains. Therefore, better checks on government power is predicted to lead to better development of financial market. Our findings that market value of firms increases on the event day and around the multiple-day event windows present empirical evidence support the argument.

We extend work of La Porta et al. (1998) by presenting empirical evidence that expropriation risk imposed by government also negatively affects the financial development and values of firms. Law and finance theory proposed by La Porta et al. (1998) argues that investors' concern of being expropriated by corporate insiders discourages them from financing firms therefore leads to lower firm values because the risk reduce investors' expected return. The role of government in expropriating investors is not widely discussed in law and finance theory. Our findings that government expropriation hampers financial development and reduces market values of firms is consistent with Acemoglu and Johnson's (2005) argument that expropriation of government also matters for financial development. The results in our study complements law and finance theory by shedding light on the relation between firm value and institutions other than the legal protection of investors from being expropriated corporate insiders.

However, our study is not without any limitations. Firstly, we do not quantify

changes between the old and revised version of internal discipline. Therefore, we only use the promulgation of the revised internal discipline as an event-study to examine how reduction in potential government expropriation affects the entire stock market and different firms. In other words, our study cannot answer what type of government expropriation matters more and what kind of government self-checking is more effective. Another limitation is that we do not account for how effective the revised internal discipline is being enforced in different provinces or cities in China. The relation between the enforcement of revised internal discipline and market reactions of firms located in different areas might provide extra support for our conclusion. However, we fail to find proxies that allow us to measure how well the revised internal discipline is enforced in different parts of China. We might try to find meaningful and effective measurements to examine the relation.

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3.8 Figures

Figure 3.1 Searching Volume of Possible Compounding Terms

This figure shows the searching volume of Internal Discipline, Economic Development, Economic Growth and Economic Reform on the most popular searching engine Baidu in China. To make the searching volume comparable, they are scaled by their historical high since 2011, when Baidu starts to provide searching volume data.

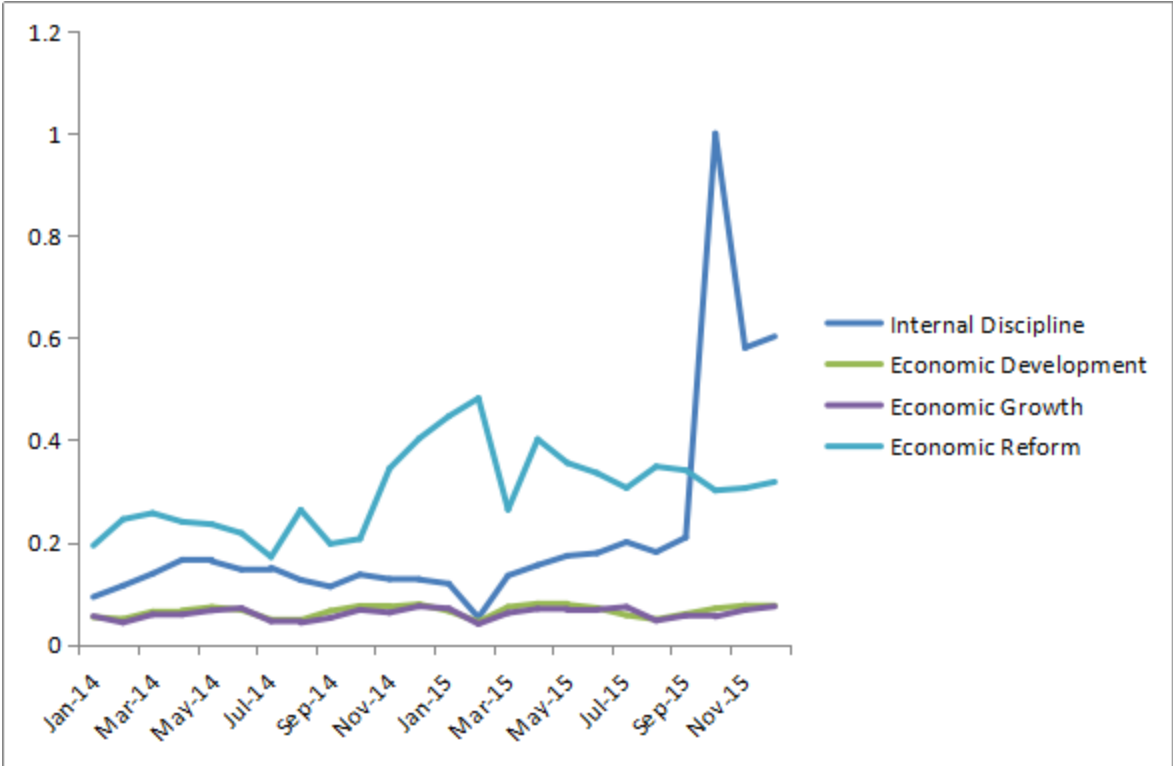


Figure 3.2 Cumulative Market Return around Event Day

This figure plots the cumulative raw return around the event date when revised internal discipline of CPC is promulgated on 12th of Oct, 2015. The starting date is 15 days before event date and the ending date is 30 days after event date.

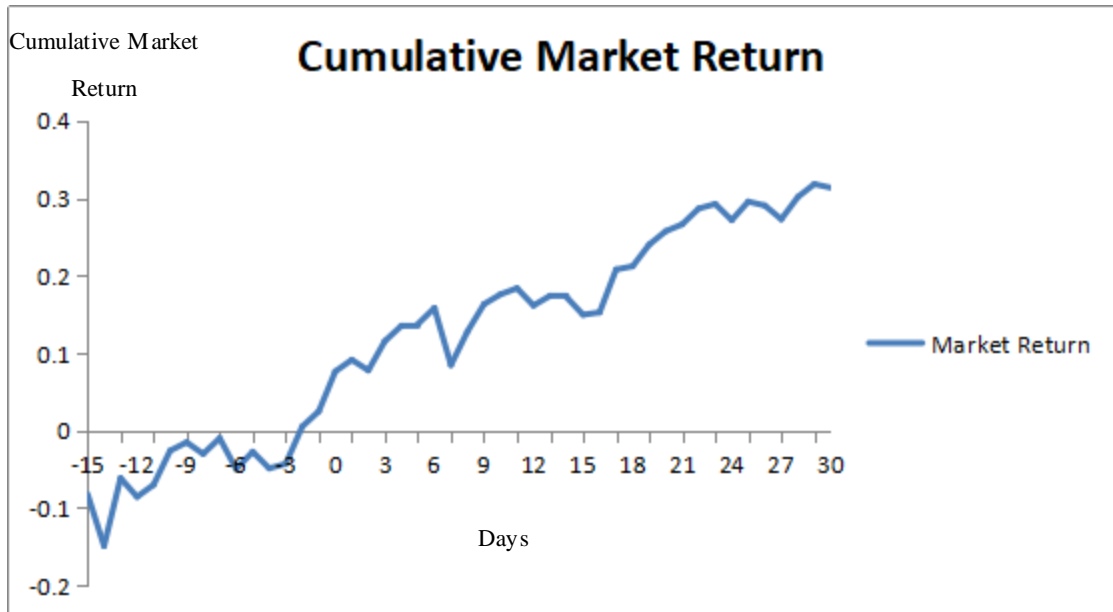
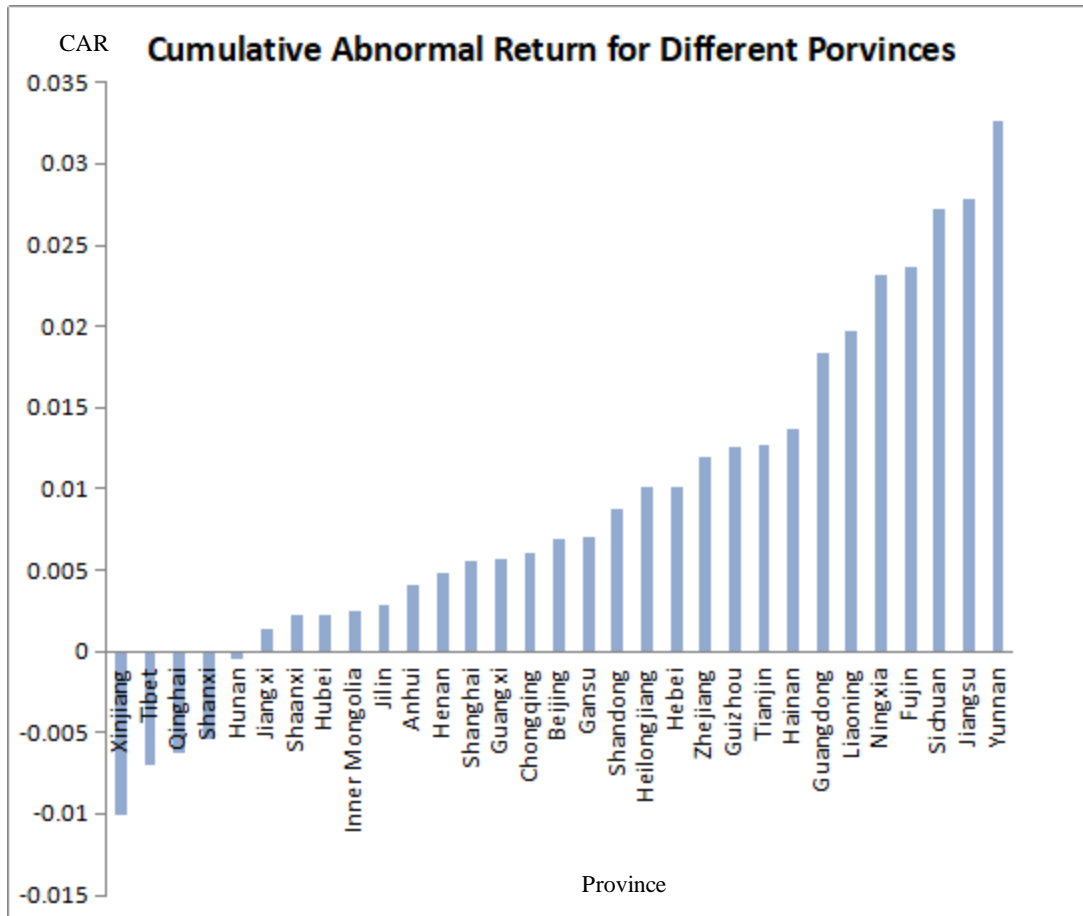


Figure 3.3 CAR of Market Portfolio for Each Province

This figure plots the 5-day event window CAR of market portfolio for each province in China. The event window starts at 2 days before event date and ends at 2 days after event date.



3.9 Tables

Table 3.1 Descriptive Statistics

This table reports descriptive statistics for the data

Variable	Mean	Median	Max	Min	STD	Observations
Dependent Variables						
CAR (-2,+2)	1.64%	0.98%	39.58%	-38.10%	6.33%	1154
CAR (-5,+5)	3.22%	2.32%	70.41%	-45.52%	9.67%	1154
Independent Variables						
Private	0.350	0.000	1	0	0.477	1154
State ownership	23.070	21.930	87.500	0.000	23.300	1154
Importance to Local	0.027	0.006	0.566	0.000	0.063	1154
Importance to Local	0.027	0.006	0.736	0.000	0.064	1154
Importance to Local	0.027	0.004	0.587	0.000	0.077	1154
Politically Connected	0.566	1.000	1.000	0.000	0.496	1154
Party Intensity	0.243	0.182	1.000	0.000	0.227	1154
Resource Allocation	3.056	3.100	10.290	-23.310	3.081	1154
Government Intervention	3.439	2.98	10.000	-12.000	2.993	1154
Non-tax Burden	1.347	1.360	15.800	12.840	0.625	1154
Producer Protection	5.514	5.370	8.930	-1.910	1.827	1154
Foreign Investment	5.591	5.370	9.120	0.280	1.689	1154
Intellectual Property	23.386	12.220	53.510	1.050	20.089	1154
Control Variables						
Board Size	11.479	11.000	26.000	5.000	3.223	1154
Board Independence	0.388	0.375	0.750	0.214	0.775	1154
Tobin's Q	2.954	2.504	4.877	0.307	2.764	1154
ROA	-0.018	0.250	0.182	-0.245	1.430	1154
Leverage	1.975	0.986	4.185	0.075	5.062	1154
Total Assets (billion yuan)	10.700	0.625	2210	0.190	105.86	1154
Marketization Index	7.335	7.390	2.392	11.800	0.380	1154

Table 3.2 Correlation Matrix

This table presents correlation matrix for the variables used in this study. CAR11 is the CAR for event window (-5, +5), CAR5 is the CAR for event window (-2, +2), ra is resource allocation index, gi is government intervention index, ntb is non-tax burden index, pp is protection of producer index, ipp is intellectual property protection, fip is foreign investor protection index, bz is board size, bi is board independence, q is tobin's Q, roa is return on asset, ta is total assets. The notation *, **, *** represent statistical significance at 10%, 5%, and 1%, respectively.

	CAR11	CAR5	ra	gi	ntb	pp	ipp	fip	bs	bi	q	roa	leverage	ta
CAR11	1													
CAR5	0.620***	1												
ra	-0.017	0.007	1											
gi	-0.008	-0.006	0.641***	1										
ntb	-0.056	-0.078**	-0.154***	0.174***	1									
pp	-0.022	-0.026	0.380***	0.882***	0.414***	1								
ipp	-0.008	-0.016	0.315***	0.764***	0.459***	0.808***	1							
fip	-0.036	-0.037	0.371***	0.858***	0.454***	0.977***	0.830***	1						
bs	-0.093**	-0.083**	0.035	-0.019	0.016	-0.032	-0.010	-0.037	1					
bi	-0.032	0.012	0.006	-0.018	0.003	-0.023	-0.018	-0.018	0.027	1				
q	0.015	-0.024	-0.004	-0.015	-0.006	-0.000	-0.021	-0.002	-0.047	0.014	1			
roa	-0.024	-0.037	0.056*	0.069*	0.026	0.030	0.040	0.034	-0.019	0.001	-0.050	1		
leverage	-0.012	0.029	-0.019	-0.028	0.013	-0.036	-0.036	-0.040	0.028	-0.049	0.092**	0.001	1	
ta	-0.084**	-0.070*	-0.000	0.033	0.111***	0.054	0.074*	0.054	0.174***	-0.015	-0.007	0.003	0.096**	1

Table 3.3 Comparison between Event Date and Other Dates in 2015

This table reports the comparison between event date market return and cumulative market return around event date with those of other days in 2015. Market return is the market capitalization weighted average stock return. The difference is statistically significant at 1% level.

	Event Date	Average of other days in 2015	Difference	t-Value	p-Value
Stock Market Return	3.95%	0.11%	3.84%	22.11	<0.001
Cumulative Stock Market Return (-2,+2)	8.42%	0.50%	7.92%	18.96	<0.001
Cumulative Stock Market Return (-5,+5)	11.92%	1.10%	10.82%	16.64	<0.001

Table 3.4 OLS regressions examining the effects of market-supporting institutions on stock returns

This table reports regression results for the effect of market-supporting institutions on CAR around the promulgation date of the revised internal discipline of CPC. Dependent variable is the CAR of the 11-day event window. We use 6 indices constructed by NERI of China to measure institutions. Definition of variables are described in Appendix. Numbers in parenthesis are p-values. The notation *, **, *** represent statistical significance at 10%, 5%, and 1%, respectively.

Dependent Variable: CAR (-5, +5)						
	Government Power			Legal Institutions		
Resource Allocation	-0.002*			Producer Protection	-0.003*	
	(0.053)				(0.067)	
Government Intervention	-0.002*			Foreign Investment	-0.004**	
	(0.063)				(0.017)	
Non-tax Burden		-0.008*		Intellectual Property Rights Protection		-0.001*
		(0.084)				(0.074)
Party Intensity	-0.053**	-0.030**	-0.029**		-0.0299**	-0.031**
	(0.026)	(0.019)	(0.023)		(0.020)	(0.017)
Importance to Local Economy (Total Assets)	-0.151**	-0.127**	-0.107**		-0.121**	-0.130***
	(0.011)	(0.011)	(0.024)		(0.013)	(0.008)
State Ownership	-0.063***	-0.063***	-0.062***		-0.063***	-0.063**
	(0.000)	(0.000)	(0.000)		(0.000)	(0.017)
Tobin's Q	-0.000	-0.000	-0.000		-0.000	-0.000
	(1.000)	(0.973)	(0.996)		(0.989)	(0.990)
Leverage	-0.003	-0.003	-0.003		-0.002	-0.004
	(0.874)	(0.877)	(0.901)		(0.911)	(0.857)
Board Independence	-0.038	-0.037*	-0.040		-0.044	-0.044
	(0.220)	(0.061)	(0.239)		(0.211)	(0.211)
Board Size	-0.002*	-0.002	-0.002*		-0.002*	-0.002**
	(0.079)	(0.211)	(0.061)		(0.055)	(0.046)
ROA	-0.001***	-0.001***	-0.001***		-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)		(0.000)	(0.000)
Total Assets	-0.000**	-0.000**	-0.000**		-0.000**	-0.000**
	(0.011)	(0.013)	(0.015)		(0.014)	(0.016)
Intercept	0.120***	0.106***	0.101***		0.125***	0.136***
	(0.000)	(0.000)	(0.000)		(0.000)	(0.000)
Industry Cluster	Yes	Yes	Yes		Yes	Yes
	Province	Province	Province		Province	Province

Adjusted R2	0.058	0.058	0.058	0.058	0.060	0.058
Observations	1154	1154	1154	1154	1154	1154

Table 3.5 OLS regressions examining the effects of state ownership on stock returns

This table reports regression results for the effect of state ownership on CAR around the promulgation date of the revised internal discipline of CPC. Dependent variable in panel A is the CAR of the 11-day event window and dependent variable in panel B is the CAR of the 5-day event window. Definition of variables are described in Appendix. Numbers in parenthesis are p-values. The notation *, **, *** represent statistical significance at 10%, 5%, and 1%, respectively.

Panel A		Dependent Variable: CAR(-5, +5)				
	(1)	(2)	(3)	(4)	(5)	(6)
Private	0.028*** (0.000)	0.028*** (0.000)	0.021*** (0.000)			
State Ownership				-0.076*** (0.000)	-0.077*** (0.000)	-0.066*** (0.000)
Marketization Index			-0.001 (0.467)			-0.002 (0.244)
Importance to Local Economy (Total Assets)			-0.105*** (0.008)			-0.108*** (0.004)
Party Intensity			-0.039*** (0.007)			-0.030** (0.025)
Tobin's Q		0.000 (0.937)	-0.000 (0.852)		0.000 (0.909)	-0.000 (0.888)
Leverage		0.001 (0.793)	0.001 (0.833)		-0.000 (0.927)	-0.000 (0.942)
Board Size		-0.001 (0.275)	-0.002 (0.116)		-0.002** (0.050)	-0.002 (0.107)
Board Independence		-0.048 (0.192)	-0.041 (0.261)		-0.041 (0.133)	-0.036 (0.277)
ROA		-0.001 (0.596)	-0.001*** (0.007)		-0.001 (0.499)	-0.001*** (0.001)
Total Assets		-0.000*** (0.009)	-0.000*** (0.000)		0.000*** (0.006)	-0.000*** (0.006)
Intercept	0.023*** (0.000)	0.063*** (0.000)	0.082*** (0.004)	0.050*** (0.000)	0.082*** (0.000)	0.119*** (0.000)
Industry Dummy	No	No	Yes	No	No	Yes
Cluster	No	No	Province	No	No	Province
Adjusted R2	0.018	0.033	0.065	0.033	0.049	0.103
Observations	1154	1154	1154	1154	1154	1154
Panel B		Dependent Variable: CAR(-2, +2)				
	(1)	(2)	(3)	(4)	(5)	(6)
Private	0.017*** (0.000)	0.019*** (0.000)	0.016** (0.022)			

State Ownership				-0.046***	-0.040***	-0.039***
				(0.000)	(0.005)	(0.003)
Marketization Index				-0.001		-0.001
				(0.530)		(0.344)
Importance to Local Economy				-0.059*		-0.059**
(Total Assets)				(0.066)		(0.021)
Party Intensity				-0.012		-0.011
				(0.239)		(0.337)
Tobin's Q	-0.000	-0.001***		-0.000	-0.001***	
	(0.115)	(0.000)		(0.137)	(0.000)	
Leverage	0.000	0.000*		0.000	0.000*	
	(0.133)	(0.082)		(0.141)	(0.051)	
Board Size	-0.001	-0.001		-0.001*	-0.001	
	(0.255)	(0.294)		(0.088)	(0.207)	
Board Independence	0.005	-0.007		0.011**	-0.019	
	(0.961)	(0.137)		(0.020)	(0.566)	
ROA	-0.000	-0.000***		-0.000	-0.001***	
	(0.253)	(0.003)		(0.283)	(0.001)	
Total Assets	0.000*	-0.000***		0.000**	-0.000**	
	(0.071)	(0.009)		(0.017)	(0.025)	
Intercept	0.011***	0.019	0.027*	0.044***	0.049***	
	(0.000)	(0.125)	(0.077)	(0.000)	(0.000)	
Industry Dummy	No	No	Yes	No	No	Yes
Cluster	No	No	Province	No	No	Province
Adjusted R2	0.016	0.031	0.043	0.028	0.047	0.061
Observations	1154	1154	1154	1154	1154	1154

Table 3.6 OLS regressions examining the effects of firms' importance to local economy on stock returns

This table reports regression results for the effect of firms' importance to local economy on CAR around the promulgation date of the revised internal discipline of CPC. Dependent variables are the CAR of the 11-day event window and the CAR of the 5-day event window. The independent variable is the firm's importance to local economy based on its size. Definition of other variables are described in Appendix. Numbers in parenthesis are p-values. The notation *, **, *** represent statistical significance at 10%, 5%, and 1%, respectively.

	Dependent Variable: CAR (-5, +5)			Dependent Variable: CAR (-2, +2)		
	(1)	(2)	(3)	(4)	(5)	(6)
Importance to Local Economy	-0.163**	-0.131***	-0.108***	-0.093***	-0.083***	-0.059**
(Total Assets)	(0.045)	(0.007)	(0.004)	(0.002)	(0.005)	(0.021)
Marketization Index			-0.002			-0.001
			(0.244)			(0.344)
State Ownership			-0.066***			0.039***
			(0.000)			(0.003)
Party Intensity			-0.030**			-0.011
			(0.025)			(0.337)
Tobin's Q		0.000	-0.000		-0.002	-0.001***
		(0.737)	(0.888)		(0.177)	(0.000)
Leverage		-0.000	-0.000		0.000	0.000*
		(0.899)	(0.942)		(0.216)	(0.051)
Board Size		-0.001**	-0.002		-0.001*	-0.001
		(0.037)	(0.107)		(0.059)	(0.207)
Board Independence		-0.045	-0.036		-0.013	-0.019
		(0.307)	(0.277)		(0.144)	(0.566)
ROA		-0.002	-0.001***		-0.000	-0.001***
		(0.396)	(0.001)		(0.187)	(0.001)
Total Assets		-0.000	-0.000***		-0.000	-0.000**
		(0.122)	(0.006)		(0.193)	(0.025)
Intercept	0.037***	0.086**	0.119***	0.019***	0.037***	0.049***
	(0.000)	(0.004)	(0.000)	(0.000)	(0.006)	(0.000)
Industry Dummy	No	No	Yes	No	No	Yes
Cluster	No	No	Province	No	No	Province
Adjusted R2	0.010	0.022	0.103	0.008	0.018	0.061
Observation	1154	1154	1154	1154	1154	1154

Table 3.7 OLS regressions examining the effects of firms' importance to local economy on stock returns

This table reports regression results for the effect of firms' importance to local economy on CAR around the promulgation date of the revised internal discipline of CPC. Dependent variables are the CAR of the 11-day event window and the CAR of the 5-day event window. The independent variable is the firm's importance to local economy based on its sales. Definition of other variables are described in Appendix. Numbers in parenthesis are p-values. The notation *, **, *** represent statistical significance at 10%, 5%, and 1%, respectively.

	Dependent Variable: CAR (-5, +5)			Dependent Variable: CAR (-2, +2)		
	(1)	(2)	(3)	(4)	(5)	(6)
Importance to Local Economy (Sales)	-0.173*** (0.000)	-0.146*** (0.002)	-0.130*** (0.005)	-0.078*** (0.008)	-0.064*** (0.010)	-0.049** (0.020)
Marketization Index			-0.010 (0.217)			-0.001 (0.311)
State Ownership			-0.046*** (0.003)			-0.045*** (0.002)
Party Intensity			-0.041* (0.051)			-0.012 (0.333)
Tobin's Q		0.000 (0.830)	-0.001 (0.904)		-0.000 (0.199)	-0.000*** (0.001)
Leverage		-0.001 (0.799)	-0.000 (0.871)		0.001 (0.135)	0.001** (0.049)
Board Size		-0.000** (0.039)	-0.000 (0.101)		-0.001** (0.029)	-0.000* (0.088)
Board Independence		-0.033 (0.416)	-0.035 (0.314)		0.016 (0.656)	0.016 (0.592)
ROA		-0.002 (0.294)	-0.001*** (0.000)		-0.000 (0.310)	-0.001*** (0.004)
Total Assets		-0.000** (0.032)	-0.000*** (0.000)		0.000* (0.060)	-0.000** (0.010)
Intercept	0.037*** (0.000)	0.081*** (0.003)	0.123*** (0.000)	0.019*** (0.000)	0.031*** (0.009)	0.061*** (0.000)
Industry Dummy	No	No	Yes	No	No	Yes
Cluster	No	No	Province	No	No	Province
Adjusted R2	0.012	0.026	0.061	0.005	0.022	0.057
Observation	1154	1154	1154	1154	1154	1154

Table 3.8 OLS regressions examining the effects of firms' importance to local economy on stock returns

This table reports regression results for the effect of firms' importance to local economy on CAR around the promulgation date of the revised internal discipline of CPC. Dependent variables are the CAR of the 11-day event window and the CAR of the 5-day event window. The independent variable is the firm's importance to local economy based on its taxes. Definition of other variables are described in Appendix. Numbers in parenthesis are p-values. The notation *, **, *** represent statistical significance at 10%, 5%, and 1%, respectively.

	Dependent Variable: CAR (-5, +5)			Dependent Variable: CAR (-2, +2)		
	(1)	(2)	(3)	(4)	(5)	(6)
Importance to Local Economy (Taxes)	-0.143*** (0.000)	-0.120*** (0.000)	-0.126*** (0.000)	-0.080*** (0.001)	-0.081*** (0.001)	-0.088*** (0.002)
Marketization Index			-0.001 (0.255)			-0.001 (0.249)
State Ownership			-0.066*** (0.000)			-0.042*** (0.002)
Party Intensity			-0.035** (0.021)			-0.009 (0.139)
Tobin's Q		0.000 (0.688)	-0.000 (0.877)		-0.000 (0.271)	-0.001*** (0.000)
Leverage		-0.001 (0.808)	-0.000 (0.715)		0.000 (0.267)	0.000* (0.053)
Board Size		-0.007** (0.018)	-0.000* (0.073)		-0.001*** (0.000)	-0.017* (0.053)
Board Independence		-0.025 (0.319)	-0.052 (0.201)		0.135 (0.493)	0.014 (0.687)
ROA		-0.000 (0.297)	-0.001*** (0.000)		-0.002 (0.173)	-0.001*** (0.000)
Total Assets		0.000* (0.099)	-0.001*** (0.003)		-0.000 (0.160)	-0.000** (0.024)
Intercept	0.036*** (0.000)	0.081*** (0.000)	0.140*** (0.000)	0.019*** (0.000)	0.031*** (0.003)	0.044*** (0.007)
Industry Dummy	No	No	Yes	No	No	Yes
Cluster	No	No	Province	No	No	Province
Adjusted R2	0.012	0.028	0.069	0.009	0.022	0.065
Observation	1154	1154	1154	1154	1154	1154

Table 3.9 OLS regressions examining the effects of political connections on stock returns

This table reports regression results for the effect of firms' political connections on CAR around the promulgation date of the revised internal discipline of CPC. Dependent variable in panel A is the CAR of the 11-day event window and dependent variable in panel B is the CAR of the 5-day event window. Definition of variables are described in Appendix. Numbers in parenthesis are p-values. The notation *, **, *** represent statistical significance at 10%, 5%, and 1%, respectively.

Panel A		Dependent Variable: CAR(-5, +5)					
	(1)	(2)	(3)	(4)	(5)	(6)	
Party Intensity	-0.053*** (0.000)	-0.045*** (0.004)	-0.030** (0.025)				
Politically Connected CEO				-0.012*** (0.000)	-0.012*** (0.000)	-0.009** (0.019)	
Importance to Local Economy(Total Assets)			-0.108*** (0.004)			-0.133*** (0.006)	
Marketization Index			-0.002 (0.244)			-0.003 (0.277)	
State Ownership			-0.066*** (0.000)			-0.002*** (0.000)	
Tobin's Q		-0.001 (0.605)	-0.000 (0.888)		0.000 (0.258)	-0.000 (0.920)	
Leverage		0.000 (0.999)	-0.000 (0.942)		0.000 (0.987)	-0.000 (0.904)	
Board Size		-0.003** (0.024)	-0.002 (0.107)		-0.003** (0.026)	-0.001 (0.146)	
Board Independence		-0.053 (0.141)	-0.036 (0.277)		-0.030 (0.309)	-0.051 (0.242)	
ROA		-0.001 (0.444)	-0.001*** (0.001)		-0.001*** (0.000)	-0.001*** (0.002)	
Total Assets		0.000*** (0.011)	-0.000*** (0.006)		-0.000*** (0.000)	-0.000*** (0.000)	
Intercept	0.073*** (0.000)	0.104*** (0.000)	0.119*** (0.000)	0.042*** (0.000)	0.094*** (0.007)	0.106*** (0.001)	
Industry Dummy	No	No	Yes	No	No	Yes	
Cluster	No	No	Province	No	No	Province	
Adjusted R2	0.015	0.027	0.103	0.014	0.030	0.063	
Observation	1154	1154	1154	1154	1154	1154	
Panel B		Dependent Variable: CAR(-2, +2)					
	(1)	(2)	(3)	(4)	(5)	(6)	
Party Intensity	-0.021*** (0.009)	-0.030*** (0.002)	-0.011 (0.337)				

Politically Connected CEO				-0.007***	-0.007***	-0.003**
				(0.000)	(0.000)	(0.022)
Importance to Local Economy (Total Assets)			-0.059**			-0.071**
			(0.021)			(0.015)
Marketization Index			-0.001			-0.001
			(0.344)			(0.201)
State Ownership			0.039***			0.044***
			(0.003)			(0.000)
Tobin's Q		-0.001	-0.001***		-0.001	-0.001***
		(0.173)	(0.000)		(0.113)	(0.000)
Leverage		0.000	0.000*		0.000	0.001**
		(0.162)	(0.051)		(0.120)	(0.023)
Board Size		-0.001**	-0.001		-0.000**	-0.005
		(0.011)	(0.207)		(0.033)	(0.153)
Board Independence		0.010	-0.019		0.015	0.017
		(0.638)	(0.566)		(0.367)	(0.616)
ROA		-0.001	-0.001***		-0.001	-0.001***
		(0.216)	(0.001)		(0.250)	(0.000)
Total Assets		0.000**	-0.000**		-0.000**	-0.000**
		(0.042)	(0.025)		(0.034)	(0.020)
Intercept	0.022***	0.039***	0.049***	0.022***	0.026***	0.046***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Industry Dummy	No	No	Yes	No	No	Yes
Cluster	No	No	Province	No	No	Province
Adjusted R2	0.005	0.020	0.061	0.010	0.027	0.060
Observation	1154	1154	1154	1154	1154	1154

3.10 Appendix 1 Definition of Variables

This table reports definition and sources of variables used in this study.

Variable	Definition	Source
CAR(-2, +2)	Cumulative abnormal return of a firm over a 5-day period. The period starts at 2 days before the event date and ends at 2 days after the event date. CAR is calculated by subtracting estimated return from realized return. We use market model and realized return of firms over a 200-day period before event window to calculate estimated return.	CSMAR data base
CAR(-5, +5)	Cumulative abnormal return of a firm over a 11-day period. The period starts at 5 days before the event date and ends at 5 days after the event date. CAR is calculated by subtracting estimated return from realized return. We use market model and realized return of firms over a 200-day period before event window to calculate estimated return.	CSMAR data base
Private	A dummy variable that takes the value of 1 if the largest shareholder of a firm is not a government organization. It takes the value of 0 if the largest shareholder is a government organization.	CSMAR data base
State ownership	A continuous variable that equals to the percentage of shares of a firm owned by government organization.	CSMAR data base
Importance to Local Economy (Total Assets)	The ratio of a listed firm's total assets to the sum of all listed firms' total assets located in the same province. We use it to capture a firm's importance to local employment based on the assumption that larger firms tend to employ more people.	CSMAR data base
Importance to Local Economy (Sales)	The ratio of a listed firm's sales to the sum of all listed firms' sales located in the same province. We use it to capture a firm's importance to local GDP.	CSMAR data base
Importance to Local Economy (Taxes)	The ratio of a listed firm's taxes to the sum of all listed firms' taxes located in the same province. We use it to capture a firm's importance to local government income based on the assumption that majority of a firm's taxes are paid to local government.	CSMAR data base
Politically Connected CEO	A dummy variable that takes the value of 1 if a firm's CEO is a CPC member and takes the value of 0 if not. We collect the data by reading background of listed firms' CEOs in our sample.	CSMAR data base

Party Intensity	A continuous variable that equals to the ratio of number of board members who are CPC member to the number of total board member.	CSMAR data base
Resource Allocation Index	An index based on the ratio of local government expenditure to local GDP. The index is constructed in a way that higher index indicates lower government involvement in resource allocation.	Fan et al. (2011)
Government Intervention Index	An index based on the time that firms need to spend with government officials when doing business. The index is constructed in a way that higher index indicates lower government intervention in market.	Fan et al. (2011)
Non-tax Burden Index	An index based on non-tax expenditures that firms incur when doing business such as payments made in order to get licenses and other administrative fees. The index is constructed in a way that higher index indicates lower non-tax burden.	Fan et al. (2011)
Producer Protection Index	An index based on a survey of firms' evaluation of local government's legal enforcement and court's judicial independence. The index is constructed in a way that higher index indicates better protection of producer.	Fan et al. (2011)
Foreign Investment Index	An index based on the ratio of foreign investment (including Hong Kong, Macau and Taiwan) to local GDP. The index is constructed in a way that higher index indicates higher foreign investment. Higher index indicates better market-supporting institutions based on the assumption that foreign investors are more willing to make investments in province with sound and effective institutions.	Fan et al. (2011)
Intellectual Property Rights Protection	An index based on the ratio of number of patents applications and number of approved patents to practitioners of technology industries. The index is constructed in a way that higher index indicates better intellectual property rights protection based on the assumption better intellectual property rights protection leads to more active patent market.	Fan et al. (2011)
Marketization Index	An index that captures overall marketization reform progress in each province of China. The index is constructed in a way that higher index indicates higher extent to which local economy is market oriented.	Fan et al. (2011)

Board Size	A continuous variable equals the number of board member of a firm	CSMAR data base
Board Independence	A continuous variable equals the ratio of number of independent board member to number of total board member.	CSMAR data base
Tobin's Q	A continuous variable equals the ratio of market value of a firm's debt and equity to its book value.	CSMAR data base
ROA	A continuous variable equals the ratio of net income to total assets.	CSMAR data base
Leverage	A continuous variable equals the ratio of a firm's total equity to its total debts.	CSMAR data base
Total Assets (billion RMB)	A continuous variable equals the value of a firm's total assets. The unit is billion RMB.	CSMAR data base

Chapter 4 Do Large Shareholder and Market Institutions Matter for Corruption of Firm Managers: Evidence from China

Abstract

The literature on firms-level corruption studies largely focuses on bribe-payers, and pays little attention to bribe-takers. In this study, we examine the state-owned enterprises (SOEs) whose managers are caught for taking bribes during China's Anti-Corruption Campaign since 2012. We predict that large shareholders and better legal institutions can prevent SOE managers from taking bribes. We find that increase in the holding of large shareholders and sound and effective market supporting-institutions are correlated with smaller incidence of bribe-taking managers. This is consistent with Shleifer and Vishny's (1986) argument that large shareholders are both motivated and able to monitor managers.

4.1 Introduction

Corruption refers to any act that subverts the public good for private or particularistic gain (Gerring and Thacker, 2004). It has long been a problem not only for developing countries but also for developed countries. The African Union reports that around 25% of all African countries' GDP is lost due to corruption every year, which amounts to more than 148 billion dollars (von K'Orinda-Yimbo, 2008). Medicare and Medicaid, the U.S. health care programme, estimates that 5% to 10% of its budget is wasted because of corruption (CleanGovBiz, 2014). In total, corruption is estimated to cost 2.6 trillion dollars (5% of global GDP) each year (Global Agenda Councils, 2012).

Private-to-public corruption, where government officials are involved, is widely studied in the literature. However, private-to-private corruption has received much less attention³. The past decades have witnessed a spate of ethic scandals in the business world, including Enron, Tyco, Adelphia, and Parmalat which manipulated financial reports, purposely concealed information and used firms' funds for personal gain. These scandals raise the question of whether corruption in the business world has received enough attention (Gopinath, 2008). In this study, we shed light on this issue by focusing on the bribery of firm managers. In particular, we intend to answer the question of whether large shareholders and

³ Argandoña (2003) defines private-to-private corruption as "a manager or employee exercises a certain power or influence over the performance of a function, task or responsibility within a private organization or corporation".

market-supporting institutions, which are the two main corporate governance mechanisms, deter firm managers from taking bribes.

Literature on corporate governance and ownership structure has long been emphasizing the important role played by large shareholders in monitoring firm managers. Managers are often self-interested and prioritize their interests over others'. Thus, they need to be monitored to ensure that they do not pursue their interests at the expense of shareholders (Jensen and Meckling, 1976). Small shareholders do not have large enough stakes in firms that motivate them to absorb the costs of monitoring managers. Large shareholders' interest are better aligned with the interests of firms due to the substantial amount of shares they own. Therefore, large shareholders benefit more from the improved monitoring of firm managers and they are also more willing to spend resources in doing so (Shleifer and Vishny, 1986). Empirical studies have found that large shareholders do impose monitoring pressure on managers and improve corporate governance (Agrawal and Mandelker, 1990; Maug, 1998; Chung, Firth and Kim, 2002; Yafeh and Yosha, 2003). Large shareholders examined in prior studies mainly consist of institutional investors, founding families and holding companies. These large shareholders are profit-oriented and therefore are willing to absorb the costs of monitoring firm managers so long as their gains exceed the costs. However, if large shareholders have goals other than profit maximization, will they still become motivated in monitoring firm managers?

The national wide anti-corruption campaign in China since 2012 provides us with a good setting to conduct this study. The campaign aims at combating corruption not merely of government officials but also of the entire Communist Party of China (CPC). Therefore, not only government officials but also employees of public universities and state-owned enterprises (SOEs) are subject to investigations lead by the Central Committee of Disciplinary Inspection (CCDI). By collecting information of sanctioned members of CPC, we managed to identify 132 bribe-taking managers of Chinese listed SOEs. As the largest shareholder of SOEs, government is not always profit-oriented. For governments, social welfare and political goals are often more important than generating profits (Shleifer and Vishny, 1997). Therefore, bribery of SOE managers in China provides us with the chance to shed light on the question of whether large shareholders who are not always profit-oriented still make efforts in monitoring firm managers.

Our analysis is based on listed SOEs in China over the period 2013-2017. We use the proportion of state ownership (shares owned by government organizations) of a SOE to proxy for the incentive of government organizations in monitoring firm managers. We propose that government organizations, despite not always giving priority to profits, still play an important role in monitoring SOE managers to avoid their interests being hurt. Our hypothesis is supported by empirical results. Our regression results indicate that an 1 percentage increase in state ownership is associated with a 1.95% decrease in the proportion of bribe-taking managers.

We also examine whether sound and effective local market-supporting institutions deter managers from misbehaving and how this interacts with the effectiveness of large shareholders in monitoring managers. Shleifer and Vishny (1997) argue that legal institutions and large shareholders are two important components of corporate governance system. For diffusely owned firms that have no shareholders who have big enough stakes in the firm to fully absorb monitoring costs, legal institutions work as the main corporate governance mechanism to protect investors' interests. This argument is supported by our finding that SOEs located in provinces with weak market-supporting institutions tend to have more bribe-taking managers. Specifically, we find that holding other variables unchanged, the proportion of bribe-taking managers of SOEs located in Zhejiang (the province with the highest score in overall marketization index) is predicted to be 6.89% lower than that of SOEs located in Tibet (the province with the lowest score in overall marketization index). How well legal rights of investors are protected has similar effect on the proportion of bribe-taking managers but the magnitude is only about one third of the magnitude of overall marketization progression. Furthermore, we find that the monitoring effect of large shareholders is more prominent in provinces that lack well-developed market-supporting institutions. For example, 1 unit decrease in overall marketization index is expected to increase the monitoring effect of large shareholders by about 10%. This suggests that legal institutions and large shareholders supplement each other in monitoring firm managers. When legal

institutions are too weak to protect investors' interests, corporate governance relies more on large shareholders. This finding is consistent with findings in literature on corporate governance that ownership tends to be more concentrated in countries with poor legal protection of investors (La Porta, Lopez, and Shleifer 1999; La Porta et al., 1998).

This study contributes to literature on corporate governance by presenting empirical evidence on the role of large shareholders in monitoring firm managers. Shleifer and Vishny (1986) argue that one advantage of having large shareholders is that they can mitigate the free-ride problem in monitoring firm managers. Empirical studies find that large shareholders do put pressure on management teams from many aspects such as cost reduction (Yafeh and Yosha, 2003), earnings management (Chung, Firth and Kim, 2002), and the proposal of corporate policies (Agrawal and Mandelker, 1990). Quantifying corruption of firm managers, this study adds to a new dimension to literature on the relation between large shareholders and the behaviour of firm managers. In particular, our finding that an increase in shares owned by large shareholders is negatively correlated with the number of bribe-taking managers implies that large shareholders improve corporate governance by deterring managers from behaving corruptly.

Our study also contributes to studies on the determinants of corruption by exploring the characteristics of bribe-takers that affects level of corruption. Corruption is a widely studied topic in terms of its causes and consequences. At firm

level, many characteristics of firms including profitability, growth rate, market competition and ownership have been found to affect the level of corruption (Svensson, 2003; Bai, Jayachandran and Malesky, 2015; Nguyen and Van Dijk, 2012). However, most existing evidence has been restricted on private-to-public corruption with firms taking the role of bribe-payers. Anecdotal evidence (e.g. corporate fraud and bribery scandals) suggests that corruption is prevalent in the business world. Researchers also argue that corporate corruption does not receive enough attention as it deserves (Argandoña, 2003; Gopinath, 2008). In this study, we shed light on corporate corruption and find that the monitoring pressure firm managers face reduces their propensity to act corruptly.

Lastly, our study relates to the debate over state ownership. State ownership is often viewed as inefficient as researchers argue that SOE tends to hire excess labor, appoint politically connected employees and forgo profits in order to pursue political goals (Boycko, Shleifer and Vishny, 1996; Krueger, 1990). However, empirical evidence on the relative efficiency of state ownership and private ownership is mixed. Vining and Boardman (1992) and Megginson, Nash and Van Randenborgh (1994) report that SOEs are less efficient and profitable than private firms. On the contrary, Martin and Parker (1995) and Kole and Mulherin (1997) shows that SOEs are not necessarily less efficient. Our empirical finding is that managers are less likely to engage in corruption in listed SOEs with a higher proportion of state ownership, which presents additional evidence that government organizations, when

becoming the largest shareholder of a firm, play an important role in monitoring firm managers.

4.2 Institutional Background

4.2.1 Anti-Corruption Campaign in China

Corruption has long been an issue in China. According to the 2017 Corruption Perception Index constructed by Transparency International, China ranked 77 among 180 countries covered by the index. Its one-party political system, lack of appropriate institutions and media freedom and bureaucrat's monopolistic power granted by central planning economic system are all considered as factors that cause rampant corruption in China (Cao, Wang and Zhou, 2018). Hu and Guo (2001) estimates that 4% to 8% of China's GNP is lost due to corruption. Kim, Li and Tarzia (2018) argue that corruption costs 30 billion USD to listed firms in China.

Having realized corruption's destructive consequences, President Xi Jinping launched an anti-corruption campaign soon after his officially taking office in November 2012. On December 4th, 2012, the *Eight Point Policy* was promulgated by the Political Bureau of the Communist Party of China (CPC) Central Committee, which signalled the start of the anti-corruption campaign in China. Since 2013, CCDI led by Wang Qishan started to send central inspection teams to various provinces in China aiming at inspecting corrupted government officials and other members of the CPC. Government departments, public universities, and SOEs (both listed and unlisted) were all inspected by those teams. The anti-corruption campaign

led by President Xi Jinping is thought to be one of the boldest anti-corruption efforts in the history of the PRC. Before 2012, on average, 6-8 provincial or ministerial level government officials were inspected and arrested each year. However, more than 40 provincial or ministerial level government officials were arrested during year 2013 and 2014 (Zhang, 2018). In addition, the unwritten rule that Politburo Standing Committee (PSC) members are immune to criminal allegations (in Chinese: xin bu shang chang wei) no longer holds as Zhou Yongkang (PSC members), Xu Caihou and Guo Boxiong (top level military leaders) were all arrested and sentenced to prison.

The anti-corruption campaign creates a great amount of interest in studying corruption related topics as it provides a good setting and is a good example of an exogenous shock. Lin et al. (2016) argue that the launch of the anti-corruption campaign was not expected because the *Eight Point Policy*, which signals the start of the anti-corruption campaign in China, was announced 19 days after President Xi Jinping took office. This is unusual because the time when the *Eight Point Policy* was announced was prior to the 3rd Plenum of the 18th Central Committee, when major policies are usually disclosed. In addition, Lin et al. (2016) document a significant increase in the online attention of anti-corruption on the date when the *Eight Point Policy* was promulgated.

Our study uses the number of bribe-taking managers to measure the level of corruption of an SOE. Thus, the validity of our empirical results depends on the

effectiveness of the anti-corruption campaign led by the CCDI. Lin et al. (2016) report that the anti-corruption campaign restricts the use of entertainment and travel costs (ETCs) as self-dealing by top managers of listed SOEs. This leads to an increase in the market value of listed SOEs. Pan and Tian (2017) document that the investment efficiency of SOEs increased after the launch of the anti-corruption campaign. Ke, Liu and Tang (2017) find that the anti-corruption campaign has led to a sharp decrease in the consumption of luxury goods and services by SOEs. Cao, Wang and Zhou (2018) find that the inspection of the CCDI resulted in an increased propensity for firms to suppress bad news. Zhang (2018) argues that the anti-corruption campaign in China has improved the overall environment of corporate governance and he finds that firms are less likely to commit fraud in the post-campaign period. Shu and Cai (2017) report a dramatic decrease in the market value of high-end *Baijiu* companies⁴. The above empirical evidence indicates that the anti-corruption campaign led by the CCDI under President Xi Jinping is not merely a slogan but constitutes an effective effort in combating corruption in China.

4.2.2 State-Owned Enterprises in China

Since 1978, China has been going through a dramatic economic reform aiming at changing its planned economy to a market economy. At the centerpiece of the reform is the decentralization of the macro-economy, liberation of the market and privatization of SOEs. Before 1978, SOEs dominated China's economy in almost

⁴ *Baijiu* is a popular luxury grain liquor used in political networking in China.

every aspect. In China, SOEs accounted for about 80% of total industrial output in 1978 (Lin, Cai and Li, 1998). SOEs were also fully owned and controlled by the Chinese government at that time. All material needed for production was allocated by the government, and SOEs were financed directly by the government or through state-owned banks (Zhong, 2014). Moreover, output, that is what to produce and how much to produce, is also controlled by the government. In other words, managers of SOEs have almost no autonomy at all. The performance of SOEs is disappointing, however, as more than 40% of SOEs were losing money prior to the reform (Lin, Cai and Li, 1998).

Unlike the majority of transitional economies in eastern Europe, China was reluctant to privatize its SOEs at the beginning of its economic reform. SOEs' disappointing performance is attributed to the lack of managers' autonomy and appropriately designed incentive plans. Thus, increasing SOE managers' autonomy in decision making and introducing financial incentives is the focus of early-stage SOE reform (Wang, Xu and Zhu, 2004). The increase in SOE managers' autonomy however creates an agency problem where those managers might use the assets and resources of SOEs for their own interests. In order to solve the issue and align the interest of SOE managers with SOEs', performance-based contracts (PCs) are introduced. Although the efficiency and performance of SOEs are improved, these reforms have their own limitations and are far from success. Shirley and Xu (2001) report that PCs improve the productivity of around half of SOEs that sign these

contracts with managers. However, because most PCs are not appropriately designed, the total efficiency and performance was not significantly improved and in some SOEs they even deteriorated. In other words, PCs fail to mitigate the agency problem between SOE managers and SOEs.

In order to further improve the operating performance of SOEs and to help them raise capital, the Chinese government opened the stock market and has been selling part of the shares of SOEs since the 1990s. This is called partial privatization because the Chinese government is usually still the largest shareholder of listed SOEs. The idea behind partial privatization is that by introducing private and institutional owners, SOEs will become more diffusely held and closer to modern corporations. The listing of SOEs, however, exacerbates the agency problem by further increasing managerial autonomy. This is because although the Chinese government is still the controlling shareholder (the largest shareholder and usually holds more than 50% of SOEs shares), it no longer fully owns SOEs and thus has no full control of it. Moreover, the weak institutions and poor corporate governance in China make it difficult for minority shareholders to monitor managers' behaviour (Bai, et al. 2004). Conyon and He (2011) find that executive compensation and CEO incentives are both lower in SOEs than in private owned firms in China. In addition, managers of poorly performed SOEs are less likely to be replaced than managers of poorly performing private firms. Hou and Moore (2010) report that SOEs that commit fraud are less likely to be punished by regulators than private

fraud-committing firms. Berkman, Cole and Fu (2014) document that the transfer of state ownership to private ownership of Chinese SOEs is associated with an increase in market value and CEO turnover. These findings indicate that the agency problem is a serious issue of SOEs after their partial privatization.

The monopolistic power of SOEs, especially of those in strategically important sectors (i.e. financial and banking industry, energy industry and utility industry), is the source of corruption of SOE managers as it creates huge rents that SOE managers can exploit. However, before reform, SOE managers had almost no autonomy over the operations of SOEs; they did not have the chance to take advantage of SOEs' monopolistic power. The economic reform since 1978, by increasing SOE managers' autonomy and selling shares of SOEs to other shareholders, has weakened the Chinese government's control over SOEs. Therefore, it has created opportunities for SOE managers to utilize their power to benefit themselves. Fan, Wong and Zhang (2007) report that politically connected managers of partially privatized SOEs tend to appoint other government officials as board members and post-IPO performance of these SOEs are inferior to those with managers who are not politically connected. Lin et al. (2016) find that ETCs of SOEs are normally used for managers' perks and self-dealing. Although SOEs in China are more efficient and profitable after partial privatization, the associated increase in power and autonomy of their managers has create a new problem for them -- managerial corruption.

4.2.3 A Typical Bribe-taking Case of SOE Managers in China

Traditional studies on corruption often view firms as bribe-payers who bribe government officials in order to obtain government produced goods and services and political favour (e.g. Shleifer and Vishny, 1993). The political theory of corruption argues that the ultimate source of corruption is power, which creates rents for political advantaged groups to exploit (Bliss and Tella, 1997). SOEs have long been a powerful and influential force in China. Although since its 1978 economic reform, China has claimed to transform its planned economy to a market economy; the Chinese government still maintains control over and shows strong will in continuing controlling its economy in many aspects. SOEs are one of the tools through which the Chinese government controls its economy. Thus, SOEs and SOE managers are usually viewed as representatives of governments. This provides SOE managers with power, even if they do not have any political background, as people might think the decisions they make represent the will of government. Moreover, SOE managers also have control, at least part control, over assets of SOEs. This leads to rent seeking behaviour where SOE managers use the assets of SOEs to benefit themselves.

How SOE managers use their power and extract rents from their position can be illustrated by the following case: Yang Kun was the Vice President of the Agricultural Bank of China during 2009 to 2012. He is accused of taking bribes worth over 30 million RMB during 2005 to 2012, a period when he worked at the

bank. The largest bribe he took was from Li Songxiao, who used to be the Chairman of the Board of the Zhongxin Group, a firm listed on the Hong Kong Stock Exchange (it is renamed as Shanghai Industrial Urban Development Group in 2010). In 2005, due to lawsuits, no bank was willing to grant loans to the Zhongxin Group. Li then approached Yang to seek his help. In the same year, Yang helped the Zhongxin Group solve problems related to its loans from other banks. In 2007, Li sold 9 million shares of the Zhongxin Group to Chen Fucheng, who is the younger brother of Yang's wife, for half of the market price. However, the trade of Zhongxin Group's stock was suspended in 2008 because the Hong Kong Independent Commission against Corruption suspected that the Zhongxin Group had violated the Hong Kong Prevention of Bribery Ordinance. Li then gave 10 million RMB to Chen to compensate for the drop in share value.

In addition to this, Yang is also accused of taking bribes worth 4.18 million RMB from the President of the Guohua Group Wang Yaohui and providing 1.43 billion RMB loans to Guohua Group's real estate project named Blue Harbor. Yu Peidi, the director of Greatown Holding Ltd., also gave Yang a set of wooden furniture worth 400 thousand RMB and 1 million USD in cash in order to obtain his support and get loans from the Agricultural Bank of China for the firm's project in Jiangsu province.

<Insert Figure 4.1 Here>

From this typical corruption case, it can be seen that both the assets and

political influence of SOEs are used by SOE managers in generating bribery income. Yang took advantage of his position as the Vice President of the Agricultural Bank of China to provide loans worth 1.43 billion RMB to Guohua Group, and in return, he received around 4 million RMB. He also used the political influence of the Agricultural Bank of China and his position as the Vice President of the bank in providing benefits to others (i.e. help Zhongxin Group solve loan problems and provide supports to Greatown Holding Ltd for its project in Jiangsu province). In exchange, he took bribes from Li and Yu. The Yang case illustrates the typical features of SOE managerial corruption.

4.3 Literature Review

4.3.1 Large Shareholders and Monitoring of Firm Managers

Agency theory argues that the goals and objectives of shareholders and firm managers, who are not owners of the firm, can be very different. The primary goal of shareholders are often profit maximization; while managers often care more about themselves instead of their principals (i.e. shareholders). The conflict of interest between shareholders and firm managers therefore suggests that firm managers need to be properly monitored in order to prevent them from pursuing their own goals at the expense of shareholders (Jensen and Meckling, 1976; Eisenhardt, 1989).

However, the monitoring of firm managers is a public good. That is, the benefits of improvements in monitoring firm managers are shared pro rata among all shareholders. However, cost incurred in oversight are not shared but has to be

privately absorbed. When a firm is fully owned by only one shareholder, the owner enjoys all the product of his/her efforts in monitoring managers. However, as the number of shareholders increases, partial owners who fulfill the role of monitoring firm managers tend to underinvest in monitoring managerial malfeasance because they bears all the costs but has to share the product of its vigilance with other shareholders (Huddart, 1993). In extreme cases, there can even be no shareholders who are willing to spend resources in monitoring managers (Jensen, 1989). Therefore, it cannot be assumed that managers will be properly monitored without the establishment of an appropriate corporate governance system.

Shleifer and Vishny (1997) argue that legal institutions and concentrated ownership are two main corporate governance systems that allow shareholders to obtain effective control over managers and reduce agency costs. However, the effectiveness of legal institutions depends heavily on court enforcement, which varies greatly from country to country. Courts of the U.S. and Canada are believed to be quite tough on managers and they impose strict legal rules that restrict self-dealing of firm managers. The duty of loyalty of managers to shareholders is accepted in most courts of the Organization for Economic Cooperation and Development (OECD) countries but their will and capability in interfering in business is weaker. For example, Tunc (1991) finds that courts permit managers to personally profit from business opportunities that are offered to the firms they work at. Outside OECD countries, the legal protection of shareholders is generally even

weaker (Shleifer and Vishny, 1997). Furthermore, shareholders' legal rights often cannot be exercised cheaply and easily. For example, in many countries, shareholders are not allowed to vote by mail but are required to attend shareholder meetings. This, in reality, prevents many small shareholders from using their voting rights.

When legal institutions fail to properly protect shareholders and help them mitigate agency problems, they have to rely on concentrated ownership as an alternative way to enhance corporate governance. In other words, small shareholders need to become larger to obtain effective control over managers. The biggest problem of diffusely owned firms is that there are no shareholders whose interests are aligned with firms to the extent that they are willing to absorb all costs incurred in monitoring firm managers. This is referred to as the free-rider problem (Shleifer and Vishny, 1986). Large shareholders of firms with relative concentrated ownership, however, are both motivated and are capable to monitor and put pressure on managers. Due to the substantial amount of shares they have, large shareholders have huge stakes in firms and thereby enjoy a significant share of their product in monitoring managers. Concentrated ownership also makes it easier to achieve concerted actions of shareholders against the malfeasance of managers. Their voting rights granted by the shares they have allow them to put pressure on managers and mitigate agency problems. In extreme cases, they might even replace managers through proxy fights or take over to ensure their interests are respected (Shleifer and

Vishny, 1986).

La Porta et al. (1999) report that with the exception of a few countries with strong and effective legal protection of investors, large firms in most countries are not diffusely held but controlled by families and government. Even in the U.S., which is one of the countries with the most sound and effective legal protection of shareholders, concentrated ownership and large shareholders or even majority shareholders (have 51% shares or more) are not uncommon (Morck, Shleifer and Vishny, 1988; Holderness and Sheehan, 1988). They argue that being a minority shareholder can be costly, especially in countries that offer weak legal protection, as minority shareholders are vulnerable to expropriation.

The monitoring role of large shareholders has been affirmed by many empirical studies. Agrawal and Mandelker (1990) find that firms with a higher proportion of institutional ownership (institutions are block holders) gain higher stock returns when proposing anti-takeover charter amendments. This finding indicates that investors expecting large shareholders play an active role in monitoring managers and will vote consistently in accordance with their interests. Yafeh and Yosha (2003) document that firms with higher ownership concentration spend less resources on activities that provide managers with private benefits. Chung, Firth and Kim (2002) find that firms with large institutional shareholdings are more likely to prohibit managers from changing reported profits towards the managers' desired range of profits. Andres (2008) finds that firms with founding-families as large shareholders

perform better than diffusely-held firms.

4.3.2 Government as Large Shareholders

Existing studies mainly focus on two types of large shareholders, namely institutional investors and families. Governments as large shareholders of firms and their effectiveness in monitoring managers is not widely studied and discussed. Part of the reason is that SOEs are believed to be rare and will ultimately cease to exist (Spicer, McDermott and Kogut, 2000). However, this argument is unfounded. It is estimated that SOEs account for about one fifth of the global equity market value and contribute to around 10% of global gross domestic product (GDP) (Bruton, et al., 2015). Many SOEs are significantly different from what they were decades ago when the government obtained full ownership. As a result of the global wave of privatization since the 1980s, modern SOEs are often a combination of state ownership and private ownership with government remaining as the largest shareholder.

Shleifer and Vishny (1986) and Shleifer and Vishny (1997) in their analysis of large shareholders as effective monitors of firm managers make two assumptions: a) large shareholders are profit-oriented and therefore are economically motivated to monitor managers and b) large shareholders have significant cash flow rights so that they will benefit economically from improved monitoring of firm managers. These assumptions often held for large shareholders discussed in existing literature. However, these assumptions might not hold when the identity of large shareholders

is government organizations.

Firstly, generating profits is often not the main objective and responsibility of government organizations that own substantial shares of SOEs. As a result, it is not clear whether government organizations have enough incentive in spending resources on monitoring firm managers in order to reduce agency costs. The main purpose of governments establishing SOEs is to cure market failure or imperfection (Shleifer, 1998). For example, Tierney (1988) argues that postal services are often provided by governments because governments can require mail to be delivered to remote regions where private postal services providers often find it unprofitable. Therefore, even benevolent governments, who are dedicated to providing goods and services with good quality to their citizens, might not be very motivated in monitoring firm managers because achieving economic efficiency (i.e. minimizing costs and maximizing income) is not their primary goal. Moreover, most governments in reality are not benevolent enough and they often use their control over SOEs as a way to channel benefits to their political supporters in order to secure their current positions (Shleifer and Vishny, 1994). The lack of economic incentive of government in maximizing profits makes it questionable that they spend enough time and efforts in monitoring firm managers.

Government officials who are responsible for monitoring managers of SOEs have little or no cash flow rights of the SOEs. This severely weakens their motivation in fulfilling their responsibilities with due diligence. Shleifer and

Vishny's (1986) argument that large shareholders benefit more from improved monitoring of firm managers because they have more stakes in the firm. This argument is based on the assumption that the proportion of ownership large shareholders have is positively correlated with their claims on the cash flow of the firm. However, in terms of SOEs, it is not always the case. Although state shares are owned by government organizations which have claims on the cash flow of SOEs owned by them, the de facto controllers of SOEs are officials of government organizations. It is these government officials that are responsible for taking care of SOEs, including monitoring managers. However, in most cases, they have little or no claims on the product of their vigilance, at least economically, because state owned shares are not their personal assets. This arguably makes them even less motivated than private small shareholders in monitoring managers.

Claessens and Fan (2002) further point out that government officials who are responsible for monitoring SOE managers are in fact also agents instead of principals of SOEs. SOEs, at least the part owned by government, are public assets whose ultimate owners are citizens of the entire country. However, citizenry is too diffused to impose any material impacts on SOE managers. Therefore, they need agents (i.e. government officials) in SOEs to represent their interests and fulfil the responsibility of monitoring managers. That is, government officials, one of the de facto monitors of SOE managers, are agents instead of principals. Therefore, there is also a potential agency problem that government officials do not act in the best

interests of government organizations and fail to properly monitor managers.

Existing studies on the monitoring effect of large shareholders offer no clear answer to the question of whether when large shareholders are government organizations, they will become as effective as other large shareholders in monitoring firm managers. We intend to shed light on the issue by examining the effect of government organizations in monitoring the bribery of SOE managers.

4.4 Data

Our sample consists of listed SOEs in China during the years 2013-2017. We define SOEs as any firm whose largest shareholder is a government organization. We identify bribe-taking managers of SOEs with the help of the national wide anti-corruption campaign in China since 2012. Since the anti-corruption campaign, the official website of CCDI, which is the top anti-corruption institution in China, discloses information regarding corruption cases they have identified during their inspections in government organizations, SOEs and public universities. This is our main source for identifying bribe-taking managers of SOEs. The information disclosed is quite brief and only includes their names, the SOEs they work at, and the date they are arrested. In most cases, what party sanctions these SOE managers received are also disclosed on the website.

We are aware that relying on a single source for identifying bribe-taking managers of SOEs run the risk of omitting bribery cases. We supplement our search for bribe-taking managers from web search engines such as Google and Baidu

(Baidu is the largest and most widely used web search engine in China), *Law Yearbook of China* and China Judgments Online. The *Law Yearbook of China* was first published in 1987 and updated annually. The manuscripts and materials included in the yearbook are provided by the relevant government departments. The contents are relative comprehensive, informative, accurate and authoritative. However, one limitation of the *Law Yearbook of China* is that it only includes typical cases (one case that is representative to a group of similar cases). The reason is because the book is not published for the purpose of recording corruption cases but to explain legal rules of China. Corruption cases are only used as examples to illustrate related legal rules. Thus, we only use it to supplement our search for bribe-taking SOE managers. China Judgments Online is an online platform for publishing court judgment documents. It is established in 2013 by the Supreme People's Court of China. According to *Supreme People's Court's Several Opinions on Promoting the Construction of the Three Platforms for Judicial Disclosure*, China Judgments Online is the platform for publishing court judgment documents of all national courts. Judgment documents of courts at all levels should be uploaded to China judgment online within 7 days after judgments take effect. However, because China Judgement Online only publish judgement documents of courts in China. Thus, information of bribe-taking SOEs managers who have not yet been trailed by courts will not appear on it. Therefore, we also only use it as a supplement source. In total, we identify 132 bribe-taking managers of listed SOEs over the period

2013-2017.

The personal information of bribe-taking SOE managers is mainly collected by searching their names on Google and Baidu search engines. We are aware of the potential risk that the information we collect online is not authoritative and might contain mistakes. So, we often cross check with several sources and try our best to obtain information from more reliable sources such as Sina, Sohu, Netease, Tencent (these are the four most used news websites in China) and the *New York Times*. The personal information we are able to collect from these sources mainly includes SOE managers' ages, career paths, and education backgrounds. The financial data of listed SOEs is collected from the China Stock Market & Accounting Research (CSMAR) Data Base. Other macro data such as GDP per capita, and GDP growth of each province are collected from the *China Statistical Yearbook*.

We admit that not being convicted of taking bribes does not mean that the manager takes no bribes at all. It can also be the case that the manager takes bribes but does not get caught. In fact, we are not claiming that SOE managers who are not convicted for taking bribes do not take any bribes. Our analysis is based on the assumption that the majority of SOE managers who are not convicted for taking bribes over our sample period took less bribes than those SOEs who are convicted for taking bribes. We believe this is a reasonable assumption.

There are two reasons why our sample period starts in 2013 and ends in 2017. First, our study is based on the anti-corruption campaign in China, which started on

Dec 4th, 2012 as signaled by the promulgation of the *Eight Point Policy* (Lin et al., 2016). The CCDI officially started to dispatch inspection teams to different provinces and government organizations to investigate corruption issues in 2013. Therefore, 2013 was the first year that bribe-taking SOE managers' names appeared on the official website of the CCDI. Thus, it is the earliest year that we can collect data from our main data source.

Secondly, during the years 2013-2016, the CCDI organized ten rounds of inspections and 125 inspection teams were dispatched to different provinces and organizations to investigate corruption. The focus of these ten inspection rounds was on each level of the government departments (central, national, provincial and city level) and on SOEs. In 2017, the CCDI organized another round of inspections, mainly focusing on 29 public universities directly under the control of central government. Unlike the previous ten rounds of inspection, no SOE appeared on the lists of organizations to be investigated. This might signal that the CCDI believes that after four years of intensive inspections, the majority of SOEs, if not all, had been investigated and most corruption cases of SOEs had been identified. Thus, although data availability is the main reason why our data only covers 2013-2017, it is reasonable to assume that our data covers the most serious bribe-taking cases identified by the CCDI during the anti-corruption campaign in China.

Our data are cross-sectional data instead of panel data for two reasons. First of all, an SOE could have managers convicted of taking bribes in different years during

our sample period. For example, Fang Xingguo, the former deputy general manager of Kweichow Moutai Co., Ltd., was arrested in 2014 because of being accused of taking bribes. However, two years (2016) later another deputy general manager, Tan Dinghua, was also accused of taking bribes and was arrested by inspection teams. If we treat our data as panel data, Kweichow Moutai has one bribe-taking manager in 2014, no bribe-taking manager in 2015 and one bribe-taking manager in 2016. However, if we treat our data as cross-sectional data, each firm has only one observation over the entire sample period. In terms of Kweichow Moutai, it has two bribe-taking managers in total. We believe cross-sectional data is more reasonable because the CCDI might need more than one round of inspection to identify all bribe-taking managers of an SOE.

Secondly and more importantly, bribe-taking SOE managers are often accused of taking bribes over a multi-year period prior to the year they were arrested. For example, Zheng Baiping, the former general manager of Hunan Valin Steel Co., Ltd., was accused of taking bribes worth 6.24 million RMB over the period 2004 to 2010. However, he was arrested in 2014. Given that the year when these SOE managers are arrested is often not the year the bribery takes place, it is more reasonable to treat our data as cross-sectional data.

Summary statistics are presented in Table 4.1. We did a 99% winsorization on return on assets, total assets, cash holding, leverage in order to mitigate the negative impacts of outliers on the validity of our regression results. Correlation matrix is

presented in Table 4.2. Surprisingly, we fail to find a statistically significant relationship between bribery of SOE managers, which is measured using the proportion of bribe-taking managers, and our main variables of interests (state ownership and legal institutions). However, the correlation matrix indicates that SOEs with larger size, more cash and more dispersed ownership structure tend to have higher proportion of bribe-taking managers. In terms of correlation between our variables of interest and control variables, we find that SOEs that have higher ROA, that hold more cash, that have listed for longer period and that have high ownership concentration tend to have more state ownership. We believe these results are reasonable. For example, government is more likely to maintain their control over profitable SOEs, therefore it is expected that SOEs with higher ROA have more state ownership. The correlation matrix also shows that provinces with better market-supporting institutions have higher GDP per capita but lower GDP growth. Government is also less corrupted in provinces with better market-supporting institutions.

<Insert Table 4.1 Here>

<Insert Table 4.2 Here>

4.5 Hypothesis Development

Shleifer and Vishny (1997) argue that large shareholders often play an active role in monitoring firm managers to protect their interests because of the huge stakes they have in firms. The more shares large shareholders have, the more incentive they

are in monitoring firm managers because they have more claims on the product of their vigilance. This argument is affirmed by empirical studies that examine the effectiveness of large shareholders in monitoring firm managers (Agrawal and Mandelker, 1990; Maug, 1998; Chung, Firth and Kim, 2002; Yafeh and Yosha, 2003). However, large shareholders in these studies are either institutional investors or family owners. The effectiveness of government as large shareholders in monitoring firm managers is not widely discussed in the literature.

On the one hand, according to Shleifer and Vishny (1986, 1997), substantial shares owned by government organizations align interests of government organizations with that of SOEs. Therefore, like other large shareholders, government organizations actively monitor SOE managers to protect their interests from being hurt. On the other hand, government differs from other large shareholders in that it is not always profit-oriented. One of the reasons why shareholders care about agency problems is that self-interested actions of firm managers might increase costs of shareholders (agency costs) therefore reducing their expected return. In other words, profit-oriented shareholders are motivated to monitor firm managers because they expect they will benefit economically from it. However, the primary objective of government is to solve market imperfection and economic efficiency is often not its priority. Thus, government might not care that much about the self-dealing of firm managers and might under-invest in monitoring them. Furthermore, the de facto monitor of SOE managers on behalf of government

organizations are government officials who have little or no cash flow rights in SOEs. In fact, government officials who are responsible for monitoring SOE managers are also agents and there is no guarantee that government officials will act in ways that meet the best interests of their principals (all citizens of a country). These arguments suggest that government organizations might be poor monitors of managers.

Based on the above discussion, we develop the following competing hypotheses:

H1a: Listed SOEs with a higher proportion of state ownership have fewer bribe-taking managers.

H1b: Listed SOEs with a higher proportion of state ownership have more bribe-taking managers.

Besides large shareholders, legal institutions that protect investors from being expropriated is another important corporate governance mechanism that allows shareholders to monitor firm managers. The contract view of firm argues that shareholders engage managers to help them manage the firm on their behalf through contracting (Jensen and Meckling, 1976). However, contracts that shareholders sign with managers are often incomplete. That is, it is impossible for shareholders to restrict all possible value-destroying actions that managers might take in the initial contracts. Shareholders could exercise their legal rights to protect their interests from being hurt by managerial self-dealing. For example, they can vote on corporate

policies and firm strategies to ensure that these corporate matters represent their best interests. However, these legal rights cannot be exercised without any costs.

The desire and capability of courts in protecting shareholders from being expropriated by firm managers partly determines how well the legal rights of shareholders can be protected and exercised. In countries where shareholders are provided with strong protection against self-dealing of managers (e.g. U.S., Canada and U.K.), managers will become less inclined to make decisions that hurt the interests of shareholders. Thus, even small shareholders will find it relatively easy to put monitoring pressure on managers. Empirically, it is found that sound and effective legal institutions are associated with better corporate governance and less self-dealing of managers (Johnson, et al., 2000; Lemmon and Lins, 2003; La Porta et al., 2000, 2002; Boubakri, Cosset and Guedhami, 2005). Therefore, our second hypothesis is:

H2: Listed SOEs located in provinces with better market-supporting institutions have fewer bribe-taking managers.

Large shareholders have to bear costs in monitoring firm managers. In addition, due to their large stake in the firm, large shareholders are exposed to higher idiosyncratic risks of the firm (Huddart, 1993). Therefore, it is puzzling why some people choose to become large shareholders when small shareholders enjoy the same rate of return, bear no monitoring costs and are able to diversify their investments.

One explanation is that legal institutions are too weak to allow firm managers

being effectively monitored by shareholders who have no significant control over the firm. In order to obtain effective control over firms and put pressure on management teams, small shareholders have to become larger. This argument is consistent with La Porta et al. (1998) and La Porta, Lopez-de-Silanes and Shleifer's (1999) finding that firm ownership tends to be more concentrated in countries lacking effective legal protection of investors. In other words, legal institutions and large shareholders supplement each other in monitoring firm managers. Coombes and Waston (2000) find that institutional investors pay a higher premium for the shares of firms located in countries with weak legal institutions. Chen, Chen and Wei (2009) find that the negative effect of firm-level corporate governance mechanism on the cost of equity is more pronounced when country-level corporate governance is weak. These findings suggest that when shareholders are not well protected by legal institutions, they have to rely more on large shareholders in monitoring firm managers.

Another argument why large shareholders tend to become more effective in monitoring firm managers when institutions are weak is because their exit costs are higher. Sound and effective institutions promote financial development by ensuring investors that their investment return will finally come back to them (La Porta et al., 1997, 1998). Therefore, stock markets tend to be more active and liquid in countries with more protective environments (Brockman and Chung, 2003; Chung, 2006). Increased liquidity makes it easier for large shareholders to sell their stock with less

costs. Thus, their incentive in spending resources on monitoring firm managers might be reduced by the improved liquidity (Bolton and Von Thadden, 1998). In other words, poor liquidity as a result of weak institutions increases large shareholders' commitment in monitoring firm managers.

Based on these two arguments we propose our third hypothesis:

H3: Monitoring the effect of large shareholders is more pronounced when market-supporting institutions are weak.

4.6 Empirical Results

4.6.1 State Ownership and Bribery of SOE Managers

In order to test the competing hypothesis on the monitoring effect of government organizations on SOE managers, we run the following ordinary least squares (OLS) regression on the cross-sectional sample of Chinese listed SOEs:

$$Bribery_i = \alpha_0 + \beta_1 \times Stateownership_i + \sum_{n=1}^n \alpha_{n+1} \times Control_{n,i} + \varepsilon$$

where bribery denotes the proportion of managers who are convicted of taking bribes. This is calculated as the number of bribe-taking managers of an SOE divided by the total number of managers of that SOE. The independent variable state ownership is the proportion of shares owned by government organizations.

Control variables are incorporated in order to account for firm and provincial characteristics. Total assets, leverage, age (the number of years since listing on stock market), return on assets, the amount of cash retained by the SOEs are used as

control variables to account for firm characteristics. In addition, we also control for governance characteristics, namely board independence and affiliation to government. Board independence is calculated as the percentage of independent board members. Affiliation to government is a dummy variable which equals 1 if the SOE is owned by central government and 0 if the SOE is owned by local government.

Our control variables that account for provincial characteristics includes GDP per capita, GDP growth and level of corruption of the provinces where listed SOEs' headquarters are located. The level of corruption is measured by the number of local government officials being arrested during our sample period. Our regressions also include industry fixed effect and standard errors are clustered at provincial level.

Table 4.3 reports the empirical results for our baseline model. In columns 1 and 2, we do not include industry fixed effect, and standard errors are not clustered. The coefficient of state ownership is statistically significant and negative. It indicates that SOEs with more state ownership tend to have lower proportion of bribe-taking managers.

In column 4, we add industry fixed effect and cluster standard error at provincial level. Industry fixed effect are added in order to address the issue that unobserved time-invariant factors simultaneously affect bribery of SOE managers and the proportion of state ownership. Clustering of standard errors at provincial level is to address issue that SOEs located in the same province are more similar to

each other than to other SOEs. Results in column 4 are consistent with that of columns 1, 2 and 3.

<Insert Table 4.3 Here>

Our finding that the proportion of state ownership is negatively correlated with the proportion of bribe-taking SOE managers has two implications. Firstly, because our sample are listed SOEs whose largest shareholder is government organizations, state ownership is the shares owned by the largest shareholder of SOEs. Therefore, the negative and significant coefficient of state ownership indicates that the existence of large shareholders is associated with fewer numbers of bribe-taking managers. This finding is consistent with Shleifer and Vishny's (1986) argument that large shareholders have the incentive and ability to monitor firm managers. In addition, the negative relation between state ownership and the proportion of bribe-taking managers also suggests that the incentive and ability of large shareholders in monitoring managers increases with the shares they have.

However, our results cannot be interpreted as evidence that state ownership improves the overall corporate governance of SOEs. Firstly, we do not include firms without state ownership and diffusely held firm; therefore, we are not able to compare the monitoring effect of government organizations and the monitoring effect of other types of large shareholders such as institutional investors, foreign investors and individual investors. Secondly, the agency problem of firm managers is only part of the corporate governance story. Concentrated ownership as a

corporate governance mechanism has its own costs as large shareholders can expropriate other investors (La Porta et al., 1997). However, this is not the focus of this study. What we find here is that when large shareholders are government organizations, like other large shareholders, they also play a role in monitoring firm managers.

4.6.2 Market Supporting-Institutions and Bribery of SOE Managers

To test our second hypothesis that better institutions help deter managerial corruption, we run the following OLS regression on the cross-sectional sample of listed SOEs:

$$Bribery_i = \alpha_0 + \beta_1 \times QualityofInstitutions_i + \sum_{n=1}^n \alpha_{n+1} \times Control_{n,i} + \varepsilon$$

where the independent variable quality of institutions_i denotes the quality of market-supporting institutions of provinces where SOEs' headquarters are located. We collected this data from Fan, Wang and Zhang (2011). We used three indices constructed by Fan, Wang and Zhang (2011) as our proxy for the quality of institutions of each province in China. Their indices are widely used by studies that relate to the financial markets of China (e.g. Chen et al., 2006; Fan, Wang and Zhang, 2007; Berkowitz, Lin and Ma, 2015).

The three indices we use in this study are overall marketization index, legal protection of producer index and financial marketization index. The overall marketization index measures the quality of overall market-supporting institutions in

China. The Producer Protection Index is constructed based on a survey of firms' evaluation of local government's legal enforcement and a court's judicial independence. Financial marketization index measures the intensity of competition in the financial market and the extent to which government intervenes in the allocation of financial resources among firms.

OLS regression results are shown in Tables 4.4 and Table 4.5. In Table 4.4, we only control for firm and governance characteristics. In Table 4.5, we also control for provincial characteristics. It can be seen from Table 4.4 and Table 4.5 that not all three indices are statistically significant and negative. Specifically, our results suggest that the intensity of competition in financial market and government intervention in allocation financial resources in one province might not have effects on the bribery of SOEs. However, the overall marketization progression and how well firms are protected by law matter. Overall, the negative relationship between the quality of market-supporting institutions and the proportion of bribe-taking managers support our second hypothesis and is consistent with Shleifer and Vishny's (1997) argument that poor institutions weaken the ability of shareholders to monitor firm managers.

<Insert Table 4.4 Here>

<Insert Table 4.5 Here>

4.6.3 Interaction Between State Ownership and Quality of Institutions

In the previous two sections, we find that both large shareholders and the

quality of market-supporting institutions work at monitoring firm managers by preventing them from engaging in bribery. La Porta et al. (1999) argue that the ability of shareholders to monitor management teams depends on how well their rights are protected by laws. In countries with poor institutions, it is not easy for shareholders, especially minority shareholders, to monitor managers and punish managers with inappropriate behaviour. However, large shareholders, who own a significant number of shares can mitigate agency problems because they have enough voting rights to put pressure on management teams or even oust management teams through proxy fights or takeovers (Shleifer and Vishny, 1997). In terms of our study, in provinces where market-supporting institutions are weak, it might be difficult for minority shareholders to monitor managers of listed SOEs. In other words, corporate governance relies more on large shareholders. Thus, the monitoring effect of large shareholders is predicted to be more prominent in provinces with weak market-supporting institutions. We run the following OLS regression on the cross-sectional sample of listed SOEs to explore how the monitoring effect of large shareholders is affected by the quality of market-supporting institutions:

$$Bribery_i = \alpha_0 + \beta_1 \times SO_i + \beta_2 \times QI_i + \beta_3 \times SO_i \times QI_i + \sum_{n=1}^n \alpha_{n+1} \times Control_{n,i} + \varepsilon$$

where SO_i is the proportion of state ownership of a listed SOE and QI_i is the quality of institutions of the province where the SOEs' headquarters are located. Our variable of interest is the interaction term $SO_i * QI_i$. Control variables, fixed effects

and standard error clustering is the same as previous OLS regressions.

Table 4.6 presents regression results. The coefficient of interaction term is statistically significant and positive. Because the overall effect of government on the bribery of SOE managers is affected by the coefficient of state ownership and the coefficient of the interaction term ($\beta_1 + \beta_3 \times QI_i$), the positive coefficient of the interaction term indicates that the monitoring effect of government organizations is more prominent in provinces with weak institutions. For example, regression results in columns 4 of table 4.6 show that a 1 unit decrease in the overall marketization index leads to a 0.159 unit increase in the overall coefficient of state ownership. This finding is consistent with that of La Portas et al. (1999) in that large shareholders and institutions complement each other as corporate governance mechanism.

<Insert Table 4.6 Here>

4.7 Robust Tests

4.7.1 Using Corruption as Dummy Variable

One disadvantage of using a continuous variable as our dependent variable (the number of bribe-taking managers) is that more weight is put on SOEs with large number of bribe-taking managers. This potentially makes our results biased as they might be driven by several large values in the dependent variable. As a robust check, we use a dummy variable that takes the value of one if a SOE has at least one bribe-taking manager and take the value of zero if the SOE has no bribe-taking managers as our dependent variable. We follow studies in corporate fraud by

running probit model to test our hypotheses (we also use logit model and the results are consistent with probit model).

Regression results are presented in Table 4.7. In the first column of Table 4.7, we only include state ownership as our variable of interest. In the second column of Table 4.7, we only include overall marketization index as our variable of interest. In the last column of table 4.7, we include both variables and also the interaction term. The results are consistent with that of the OLS regression in previous sections. For example, the positive sign of the interaction term suggests that the effect of government in deterring managers' bribe-taking activities is more pronounced in provinces with weak market-supporting institutions.

<Insert Table 4.7 Here>

4.7.2 Bivariate Probit Model

One concern of our study is that the bribery of SOE managers is not observed until it is discovered. Specifically, the observed bribe-taking SOE managers is the result of two events: (1) the manager takes the bribe and (2) the bribe-taking activities of the manager has been detected by regulators. Thus, how likely the bribery of SOE managers will be detected could affect the validity of our results. For example, if the bribery of managers of certain type of SOEs is very difficult for regulators to detect, then our results will become biased. This issue is called partial observability.

In order to mitigate partial observability, we follow Wang, Winton and Yu

(2010) and Chen et al. (2006) by using a bivariate probit model. For each firm in our sample, we denote C_i^* as the probability that managers of an SOE will be involved in bribery. We also denote D_i^* as the probability that bribery of SOE managers will be detected. We then have the following reduced form models:

$$C_i^* = \beta_i \times X_{C,i} + \mu_i$$

$$D_i^* = \gamma_i \times X_{D,i} + \varepsilon_i$$

where $X_{C,i}$ is a vector that includes factors that affect the possibility that SOE managers will engage in bribery, and $X_{D,i}$ is a vector that includes factors which lead to the detection of the bribery of SOE managers. Both C_i^* and D_i^* are dummy variables. C_i^* equals 1 if managers of an SOE takes bribe and equals 0 otherwise. D_i^* equals 1 if bribery is detected and equals 0 otherwise. However, we are not able to directly observe C_i^* and D_i^* . Instead, we only observe Z_i which is the product of C_i^* and D_i^* . In other words, Z_i equals 1 if managers of an SOE take bribes and bribery is detected by regulators; otherwise, Z_i equals 0.

$$P(Z_i = 1) = P(C_i^* \times D_i^* = 1)$$

$$P(Z_i = 0) = P(C_i^* \times D_i^* = 0)$$

The log-likelihood function of the model thus becomes:

$$L(\beta, \lambda, \rho) = \sum_{z_i=1} \log(P(Z_i = 1)) + \sum_{z_i=0} \log(P(Z_i = 0))$$

Where ρ is the correlation between μ_i and ε_i . Maximum-likelihood method could be used to estimate the model, and conditions for parameter identifications are: (1) C_i^* and D_i^* do not have exactly the same variables and (2) independent variables have

enough variation in the sample (Wang, Winton and Yu, 2010).

Table 4.8 presents regression results for bivariate probit model. In the first column we do not include the quality of institutions as an explanatory variable, and in the second column, we do not include state ownership as an explanatory variable. In the third column, we include both state ownership, the overall marketization index and their interaction term as explanatory variables. The first half of Table 4.8 (corruption committing model) shows that regression results are consistent with the results we get in OLS and probit regressions in previous sections.

<Insert Table 4.8 Here>

However, one limitation of using the bivariate probit model is that we do not have the theory that helps us identify all factors that affect the probability that the bribery of SOE managers will be detected. Factors that we believe will affect the probability of bribery being detected includes firm characteristics (state ownership, leverage, age, size, profitability, cash holdings and affiliation) and province characteristics (quality of institutions and number of SOEs). These factors are all included as explanatory variables and results are presented in the second half of Table 4.8 (corruption detection model). We, however, fail to find any variables that are statistically significant across all three regressions. This implies that we might omit factors that affect the probability of corruption being detected. Omitting such factors might bias our regression results in the first half of the table. Nevertheless, we still believe that the bivariate probit model could be used as an appropriate

method when partial observability is a potential concern of the event under examination.

4.7.3 Monitoring of Private Larger Shareholders

One alternative explanation of our baseline model results could be that SOEs with a higher proportion of state ownership might have more large shareholders. It is other large shareholders instead of government organizations that work at monitoring listed SOEs' managers. In order to test this hypothesis, we use the proportion of shares held by any shareholders other than government organizations who own more than 5% of shares of the SOE to measure other large shareholders' incentives in monitoring SOE managers. Table 4.9 and Table 4.10 present regression results using OLS and probit model, respectively.

In Table 4.9, the dependent variable is the proportion of bribe-taking managers of each listed SOE included in our sample. We find a negative relationship between shares owned by other large shareholders and the proportion of bribe-taking managers. This finding is consistent with Shleifer and Vishny's (1997) argument that large shareholders are both motivated and capable of monitoring firm managers. However, we also find that coefficient of state ownership is still statistically significant and negative. In addition, the coefficient of shares owned by other large shareholders is much smaller than that of state ownership in absolute value. For example, column 6 of Table 4.9 shows that a 10% increase in shares owned by other large shareholders is only predicted to decrease the proportion of bribe-taking

managers by 0.0086%. This, to some extent, is not economically significant, meaning that the monitoring effect of other large holders is relatively weak in deterring SOE managers from taking bribes. However, a 10% increase in state ownership is predicted to lead to a decrease of 0.33% in the proportion of bribe-taking managers of a SOE. The difference in the size of these two coefficients indicates that in terms of SOEs, government is more effective in monitoring managers than private shareholders in China.

In Table 4.10, we use a dummy variable which equals 1 if an SOE has bribe-taking managers being identified over our sample period and equals 0 otherwise as a dependent variable. We use the probit model to run the regression. The regression results we have in probit regression are consistent with that of OLS regression in Table 4.9. Specifically, The positive sign of the coefficient of state ownership and shares held by other large shareholders indicate that the existence of large shareholders is associated with lower probability that manager will act corruptly. This is consistent with our hypothesis that when large shareholders are government organizations, they also spend resources on monitoring managers of SOEs.

<Insert Table 4.9 Here>

<Insert Table 4.10 Here>

4.7.4 Poisson Regression

As a robust check, we also use the number of bribe-taking managers of an SOE

as our dependent variable. Because these numbers are not continuous, we decided to use Poisson model instead of OLS model to run the regression. The regression results are reported in Table 4.11.

<Insert Table 11 Here>

Our regression results using the number of bribe-taking managers as dependent variable is consistent with our main results.

4.8 Conclusion

The incomplete contracting view of firms points out the conflict of interests between shareholders and firm managers. Managers need to be properly monitored in order to prevent them from pursuing their own benefits at the expense of shareholders. Shleifer and Vishny (1986) argue that large shareholders, who own a sizeable number of shares, are both motivated and capable of putting monitoring pressure on firm managers. Unlike small shareholders, large shareholders have large enough stakes in firms that motivate them to privately absorb costs incurred in monitoring firm managers. Their voting rights, granted by the substantial number of shares, allows them to put pressure on managers. However, most discussion on the monitoring effect of large shareholders focuses either on institutional investors or family owners. Little attention has been paid to the monitor effect of large shareholders when they are government organizations.

We use the proportion of bribe-taking managers of a firm to measure the effectiveness of government organizations in monitoring managers of listed SOEs.

The higher the proportion, the less effectively managers of the listed SOE are being monitored. Based on a sample of listed SOEs over the period 2013-2017, we find a negative relationship between the proportion of bribe-taking managers a listed SOE has and the proportion of state ownership. This result suggests that government organizations make efforts in monitoring managers of firms of which they are one of the large shareholders. We also find that the monitoring effect of government organizations is more pronounced in provinces with weak institutions. This finding further confirms Shleifer and Vishny's (1997) argument that large shareholders compensate for weak institutions in monitoring firm managers.

In this study, we extend existing literature on corporate governance by exploring the effect of large shareholders, when they are government organizations, on preventing managers from engaging in bribery. Many studies report that large shareholders are effective monitors of managers and the existence of large shareholders reduces the risk of shareholders being expropriated by firm managers (Agrawal and Mandelker, 1990; Maug, 1998; Chung, Firth and Kim, 2002; Yafeh and Yosha, 2003). However, it is not clear if large shareholders who are government organizations will still play an active and effective role in monitoring firm managers. Government organizations are different from other large shareholders in that they are not always profit-oriented. Furthermore, it is government officials who represent government organizations that monitor the managers of firms of which government organizations are a large shareholder. Therefore, the de facto monitors (i.e.

government officials) are in fact also agents who have no significant cash flow rights in firms. These two differences between government organizations and other large shareholders thereby question the effectiveness of government organizations in monitoring managers of firms in which they own sizeable shares. We find that listed SOEs with a higher proportion of state ownership tend to have fewer bribe-taking managers. In addition, we also find that the monitoring effect of government organizations, who is the largest shareholders, is more prominent than that of other large shareholders. These results indicate that government organizations have effective monitoring of firms of which they are one of large shareholders.

Our study also relates to law and finance theory which argues that the ability of small shareholders in monitoring firm managers depends on the effectiveness of local institutions (La Porta et al., 1998). Large shareholders play a more important role in mitigating agency problems when institutions are too weak to allow shareholders to effectively monitor firm managers. Specifically, we find that SOEs located in provinces with better market-supporting institutions are less likely to have bribe-taking managers. Furthermore, we also find that the monitoring effect of large shareholder is less prominent in provinces with sound and effective market-supporting institutions. These findings support law and finance theory that small shareholders' ability in monitoring firm managers depends on how well their legal rights are protected by laws.

From the perspective of literature on corruption, our results emphasize the

importance of monitoring in preventing corruption. Literature on firm level corruption focuses largely on how characteristics of firms which are bribe-payers affect level of corruption (Svensson, 2003; Bai et al., 2015). Bribery is an interaction between bribe-payers and bribe-takers. Therefore, bribery not only depends on characteristics of bribe-payers but also on that of bribe-takers. However, existing studies about firm level studies offer little discussion on what and how characteristics of bribe-takers affect bribery. In this study, we find that the monitoring pressure that bribe-takers face deters them from engaging in bribery. By aligning the interest of government organizations which own a sizeable number of shares of listed SOEs with that of listed SOEs, state ownership provides incentives for government organizations to monitor managers of SOEs. The more shares government organizations have, the more motivated they are in monitoring managers of listed SOEs and the higher the level of monitoring pressure these managers faces. Therefore, the less likely managers of listed SOEs will engage in bribery.

However, we are aware that our study have several limitations. one limitation of our study is that our sample only includes listed SOEs. Therefore people need to be cautious when trying to apply our results and conclusions to firms without state ownership. This is because the ways in which SOEs and privately owned firms function and the objectives of private owners and government organizations can be very different. Thus, although we claim we find evidence supporting Shleifer and

Vishny's (1986) argument, we are not arguing that our results can be applied to all kinds of firms without and modification. Another limitation of our study is that we cannot perfectly solve the partial observability problem. Although we collect data on bribery cases through various sources and follow literature on corporate fraud by using bivariate probit model, there is still the possibility that we might miss several bribery cases or they are not identified by the CCDI during our sample period. However, we believe that the anti-corruption campaign provides us with a good setting to conduct the analysis and the partial observability will not make our results completely invalid.

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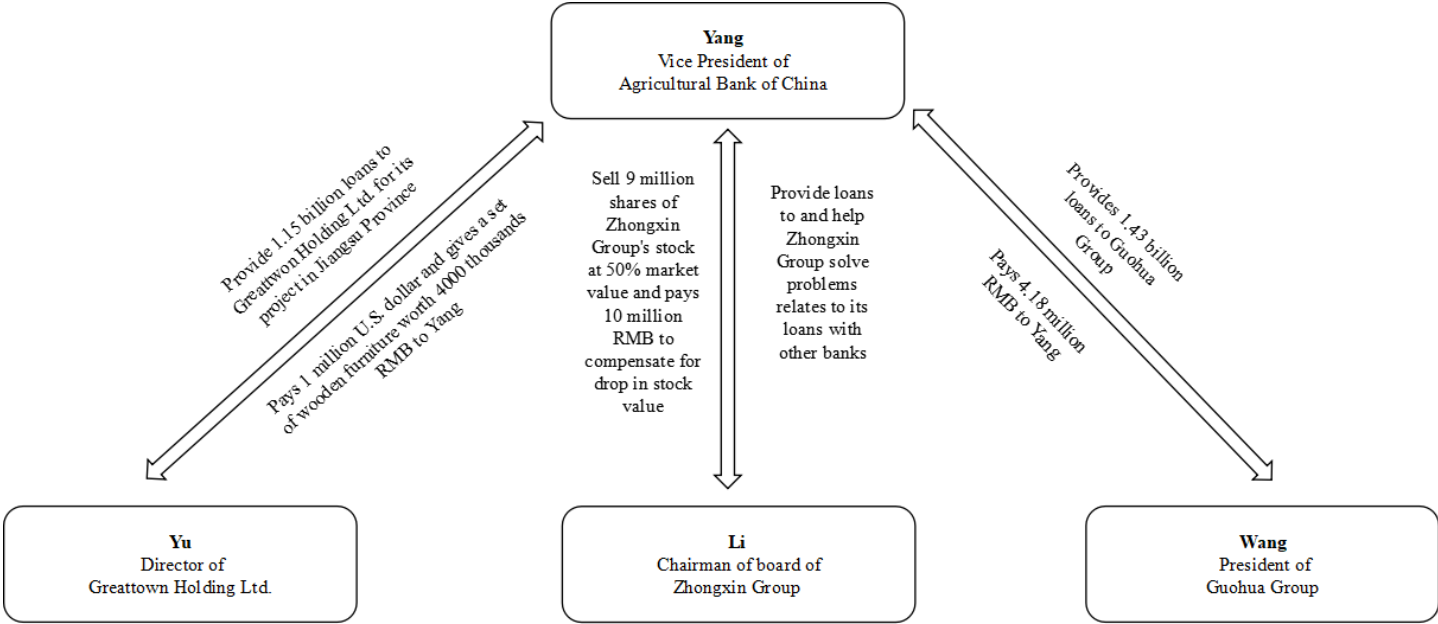
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4.9 Figures

Figure 4.1 Bribery of Former Vice President of Agricultural Bank of China



4.10 Tables

Table 4.1 Descriptive Statistics

This table presents the descriptive statistics for the sample. The bribery of managers is the proportion of bribe-taking managers of listed SOEs being arrested by regulators during our sample period 2013-2017. Other variables are defined in Appendix 1.

Variable	Mean	Median	Standard Deviation	Min	Max	Obs
Bribery of Managers	3.241%	0.000%	10.471%	0.000%	100.000%	960
Overall Marketization Index	8.724	8.930	2.026	0.380	11.800	960
Financial Marketization Index	10.746	10.540	1.173	5.900	12.660	960
Legal Protection Index	11.122	8.240	5.615	0.180	19.890	960
GDP per capita (in thousands)	34.780	47.20	24.180	8.900	86.660	960
GDP growth	0.104	0.089	0.026	0.059	0.163	960
State ownership	0.389	0.254	0.152	0.074	0.891	960
Return on Assets	0.049	0.038	0.943	-0.031	0.228	960
Assets (in 10 billion)	7.530	4.310	76.83	0.026	1473.000	960
Cash holding (in million)	20.19	5.68	1.471	14.376	26.911	960
Leverage	0.843	0.347	3.091	0.000	14.840	960
Age	19.626	19.000	4.439	6.000	36.000	960
Local government corruption	2.483	2.000	2.469	0.000	9.000	960
Board Independence	0.361	0.353	0.076	0.200	0.727	960
Affiliation	0.291	0.000	0.454	0.000	1.000	960
Other Blockholders	0.169	0.153	0.121	0.050	0.605	960

Table 4.2 Correlation Matrix

This table presents the correlation matrix for the variables used in this study. Bribery is the proportion of managers accused of taking-bribes, state is state ownership, mkt is overall marketization index, fmkt is financial marketization index, legal is legal protection index. roa is return on assets, size is firm size measured by its total assets, cash is cash holdings of a firm, lv is leverage, age is the age of a firm, bi is board independence, aff is affiliation of an SOE, gdpp is GDP per capita of a province, gdpg is the GDP growth of a province, local is the level of local corruption and other is the shares owned by other bloc kholders.

	bribery	state	mkt	fmkt	legal	roa	size	cash	lv	age	bi	aff	gdpp	gdpg	local	other
bribery	1															
state	-0.0202	1														
mkt	-0.0286	-0.0209	1													
fmkt	-0.0621	-0.0162	0.796***	1												
legal	-0.0126	-0.0298	0.909***	0.694***	1											
roa	-0.00813	0.127***	0.0697*	0.0637	0.0803*	1										
size	0.645***	-0.0242	0.0409	-0.000534	0.0575	0.00195	1									
cash	0.111**	0.107**	0.0395	0.0149	0.0670	0.193***	0.326***	1								
lv	-0.0116	-0.0260	-0.0672	-0.0521	-0.0697*	-0.0989**	0.00286	-0.0835*	1							
age	-0.0248	-0.158***	0.126***	0.147***	0.103**	-0.0274	-0.0395	-0.103**	0.0213	1						
bi	0.0489	-0.0279	-0.0438	-0.0345	-0.0499	0.00259	0.137***	0.134***	-0.0324	-0.0429	1					
aff	0.0426	0.0671	0.0501	-0.0238	0.0886*	-0.0360	0.130***	0.0981**	0.00328	-0.0794*	-0.0602	1				
gdpp	0.0234	-0.0218	0.770***	0.530***	0.865***	0.0611	0.0937**	0.0989**	-0.0608	0.0701*	-0.0373	0.148***	1			
gdpg	-0.00243	0.0248	-0.739***	-0.632***	-0.761***	-0.0856*	-0.0524	-0.0641	0.0573	-0.126***	0.0488	-0.0505	-0.701***	1		
local	-0.0316	0.0175	-0.177***	-0.138***	-0.255***	-0.0306	-0.0266	0.0358	0.0136	0.00420	-0.0250	-0.0223	-0.387***	0.245***	1	
other	-0.132***	0.302***	0.0308	-0.000230	0.0394	0.111**	0.185***	0.246***	-0.000575	-0.186***	0.0483	0.0720*	0.0649	-0.0173	0.0436	1

Table 4.3 Large Shareholder and Managerial Corruption

This table reports the OLS regression analyses between the proportion of state ownership and bribery of SOE managers. The dependent variable is the proportion of managers accused of taking bribes. In column 3 and 4, we control for industry fixed effect and cluster standard errors at province level. All variables are defined in Appendix 1. Numbers in parentheses are standard errors. *, ** and *** denote significance at 10%, 5% and 1%, respectively.

Dependent Variable	Bribery of Managers (proportion)			
	(1)	(2)	(3)	(4)
State Ownership	-1.878*	-2.013*	-1.849**	-1.954**
	(1.111)	(1.131)	(0.939)	(0.978)
Firm Size	-0.001**	-0.001**	-0.001*	-0.001*
	(0.000)	(0.000)	(0.000)	(0.000)
Leverage	0.007	0.000	0.003	-0.001
	(0.099)	(0.100)	(0.020)	(0.002)
Age	-0.112	-0.099	-0.062	-0.052
	(0.078)	(0.078)	(0.090)	(0.089)
ROA	-3.092	-2.779	-3.543	-3.334
	(3.340)	(3.348)	(2.430)	(2.346)
Cash Holding	1.238***	1.290***	1.389***	1.419***
	(0.241)	(0.245)	(0.311)	(0.328)
Board Independence	0.519	0.164	0.193	-0.086
	(0.446)	(0.447)	(0.503)	(0.497)
Affiliation	1.225	1.303*	0.948	0.979
	(0.747)	(0.759)	(0.977)	(0.940)
Local GDP per Capita		-0.052		0.046
		(0.242)		(0.278)
Local GDP growth		4.915		5.548
		(6.166)		(6.946)
Local Corruption		0.036		0.023
		(0.149)		(0.142)
Industry Effect	No	No	Yes	Yes
Cluster (Province)	No	No	Yes	Yes
Adjusted R-square	0.029	0.030	0.049	0.050
Observations	960	960	960	960

Table 4.4 Quality of Institutions and Corruption

This table reports the OLS regression analyses between the quality of institutions of the province where an SOE's headquarter is located and bribery of SOE managers. The dependent variable is the proportion of managers accused of taking bribes. In column 4, 5 and 6, we control for industry fixed effect and cluster standard errors at province level. All variables are defined in Appendix 1. Numbers in parentheses are standard errors. *, ** and *** denote significance at 10%, 5% and 1%, respectively.

Dependent Variable	Bribery of Managers (proportion)					
	(1)	(2)	(3)	(4)	(5)	(6)
Overall Marketization Index	-0.316*			-0.373**		
	(0.174)			(0.162)		
Legal Protection Index		-0.093			-0.122*	
		(0.069)			(0.062)	
Financial Sector Marketization Index			-0.405			-0.44
			(0.320)			(0.294)
Firm Size	0.000	0.000*	0.001*	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Leverage	-0.005	-0.003	-0.001	-0.003	-0.001	-0.000
	(0.025)	(0.025)	(0.023)	(0.026)	(0.025)	(0.010)
Age	-0.033	-0.040	-0.031	-0.030	-0.806	-0.031
	(0.087)	(0.088)	(0.084)	(0.079)	(0.082)	(0.080)
ROA	-3.641	-3.670	-3.744	-3.090	-3.125	-3.744
	(2.424)	(2.434)	(2.465)	(2.384)	(2.407)	(3.339)
Cash Holding	1.423***	1.425***	1.403***	1.285***	1.296***	1.403***
	(0.307)	(0.313)	(0.304)	(0.260)	(0.268)	(0.256)
Board Independence	-0.055	-0.106	0.037	0.210	0.124	0.037
	(0.492)	(0.500)	(0.496)	(0.499)	(0.500)	(0.450)
Affiliation	1.042	1.060	0.918	1.301	1.335	1.183
	(0.946)	(0.938)	(0.981)	(0.916)	(0.902)	(0.949)
Industry Effect	No	No	No	Yes	Yes	Yes
Cluster (Province)	No	No	No	Yes	Yes	Yes
Adjusted R-square	0.042	0.041	0.039	0.051	0.050	0.049
Observations	960	960	960	960	960	960

Table 4.5 Quality of Institutions and Corruption with Province Characteristics Controlled

This table reports the OLS regression analyses between quality of institutions of the province where an SOE's headquarter is located and bribery of SOE managers. The dependent variable is the proportion of managers accused of taking bribes. In column 4, 5 and 6, we control for industry fixed effect and cluster standard errors at province level. All variables are defined in Appendix 1. Numbers in parentheses are standard errors. *, ** and *** denote significance at 10%, 5% and 1%, respectively.

Dependent Variable	Bribery of Managers (proportion)					
	(1)	(2)	(3)	(4)	(5)	(6)
Overall Marketization Index	-0.606** (0.299)			-0.603** (0.299)		
Legal Protection Index		-0.258* (0.138)			-0.232* (0.138)	
Financial Sector Marketization Index			-0.319 (0.387)			-0.383 (0.389)
Firm Size	0.000 (0.000)	0.000 (0.000)	0.000 (0.001)	0.000 (0.000)	0.000 (0.000)	0.000 (0.001)
Leverage	-0.002 (0.010)	-0.002 (0.009)	-0.002 (0.010)	-0.003 (0.010)	-0.003 (0.009)	-0.002 (0.010)
Age	-0.074 (0.078)	-0.081 (0.077)	-0.077 (0.078)	-0.030 (0.079)	-0.037 (0.079)	-0.079 (0.080)
ROA	-3.038 (3.324)	-3.033 (3.325)	-3.163 (3.329)	-3.611 (3.341)	-3.580 (3.344)	-3.706 (3.347)
Cash Holding	1.246*** (0.244)	1.268*** (0.244)	1.264*** (0.244)	1.382*** (0.259)	1.399*** (0.259)	1.399*** (0.260)
Board Independence	0.370 (0.446)	0.093 (0.467)	0.294 (0.447)	0.116 (0.448)	-0.169 (0.449)	-0.020 (0.453)
Affiliation	1.162 (0.760)	1.188 (0.760)	1.217 (0.763)	0.842 (0.768)	0.886 (0.763)	0.871 (0.772)
Local GDP per Capita	0.284 (0.291)	0.418 (0.346)	-0.006 (0.246)	0.376 (0.294)	0.463 (0.346)	0.399 (0.251)
Local GDP growth	-1.083 (0.681)	-0.953 (0.689)	0.394 (0.734)	-0.451 (0.682)	0.192 (0.691)	0.251 (0.684)
Local Corruption	0.110 (0.153)	0.088 (0.151)	0.045 (0.149)	0.095 (0.153)	0.069 (0.151)	0.033 (0.149)
Industry Effect	No	No	No	Yes	Yes	Yes
Cluster (Province)	No	No	No	Yes	Yes	Yes
Adjusted R-square	0.043	0.042	0.039	0.053	0.051	0.049
Observations	960	960	960	960	960	960

Table 4.6 Quality of Institutions and Monitoring Effect of Large Shareholders

This table reports the OLS regression analyses between institution and monitoring effect of state ownership. The dependent variable is the proportion of managers accused of taking bribes. In column 3 and 4, we control for industry fixed effect and cluster standard errors at province level. All variables are defined in Appendix 1. Numbers in parentheses are standard errors. *, ** and *** denote significance at 10%, 5% and 1%, respectively.

Dependent Variable	Bribery of Managers (proportion)			
	(1)	(2)	(3)	(4)
State Ownership	-1.603** (0.755)	-1.602** (0.756)	-1.551** (0.560)	-1.557** (0.571)
Overall Marketization Index	-0.544*** (0.189)	-0.762** (0.311)	-0.481** (0.177)	-0.756*** (0.234)
Interaction	0.164* (0.085)	0.164* (0.086)	0.158** (0.063)	0.159** (0.064)
Firm Size	0.001* (0.000)	0.001** (0.000)	0.001* (0.000)	0.001* (0.000)
Leverage	-0.010 (0.010)	-0.009 (0.010)	-0.011 (0.025)	-0.009 (0.026)
Age	-0.078 (0.078)	-0.077 (0.079)	-0.037 (0.091)	-0.032 (0.088)
ROA	-3.253 (3.348)	-3.212 (3.353)	-3.805 (2.252)	-3.792 (2.199)
Cash Holding	1.297*** (0.241)	1.260*** (0.244)	1.426*** (0.307)	1.386*** (0.321)
Board Independence	0.164 (0.445)	0.316 (0.450)	-0.011 (0.494)	0.152 (0.491)
Affiliation	1.333* (0.746)	1.195 (0.759)	1.079 (0.929)	0.878 (0.927)
Local GDP per Capita		0.281 (0.291)		0.377 (0.286)
Local GDP growth		-0.632 (0.681)		0.047 (0.709)
Local Corruption		0.110 (0.153)		0.097 (0.097)
Industry Effect	No	No	Yes	Yes
Cluster (Province)	No	No	Yes	Yes
Adjusted R-square	0.037	0.035	0.055	0.057
Observations	960	960	960	960

Table 4.7 Probit Regression

This table reports the results of probit regression analyses for the effect of state ownership and quality of institutions on bribery of SOE managers. It also reports results of probit regression analyses for the effect of quality of institutions on monitoring effect of state ownership. The dependent variable is a dummy variable which equals 1 if an SOE has managers being accused of taking bribes during our sample period and equals 0 otherwise. Industry fixed effect is included in the analyses and standard errors are clustered by province. All variables are defined in Appendix 1. Numbers in parentheses are standard errors. *, ** and *** denote significance at 10%, 5% and 1%, respectively.

Dependent Variable	Bribery of Managers (dummy)		
	(1)	(2)	(3)
State Ownership	-0.536*		-1.740***
	(0.276)		(0.584)
Overall Marketization Index		-0.055**	-0.071**
		(0.027)	(0.028)
Interaction			0.110***
			(0.040)
Firm Size	-0.000	-0.000	-0.000
	(0.001)	(0.001)	(0.001)
Leverage	-0.011	-0.012	-0.015
	(0.009)	(0.012)	(0.014)
Age	-0.008	-0.004	-0.003
	(0.016)	(0.015)	(0.015)
ROA	-0.563	-0.526	-0.533
	(0.869)	(0.811)	(0.717)
Cash Holding	-0.011	-0.008	-0.012
	(-0.025)	(0.026)	(-0.025)
Board Independence	0.300	0.245	0.251
	(0.756)	(0.749)	(0.728)
Affiliation	0.221	0.213	0.223
	(0.141)	(0.142)	(0.137)
Local GDP per Capita	-0.005	0.107	0.111**
	(0.005)	(0.056)	(0.053)
Local GDP growth	0.467	-0.535	-0.598
	(1.097)	(1.291)	(1.219)
Local Corruption	0.008	0.017	0.019
	(0.028)	(0.022)	(0.020)
Industry Effect	Yes	Yes	Yes
Cluster (Province)	Yes	Yes	Yes
Pseudo R-squared	0.075	0.077	0.089
Observations	960	960	960

Table 4.8 Bivariate Probit Regression

This table reports the estimate for the bivariate probit model. The dependent variable in panel A is a dummy variable which equals to 1 if the SOE has managers taking bribes and 0 otherwise. The estimation of propensity to have corrupt managers is indicated by $P(C=1)$, and the estimation of corruption detection likelihood is indicated by $P(D=1|C=1)$, which is the dependent variable of panel B. Coefficient estimates and standard errors clustered by province are reported in column 1, 2 and 3. All variables are defined in Appendix 1. Numbers in parentheses are standard errors. *, ** and *** denote significance at 10%, 5% and 1%, respectively.

Dependent Variable	Bribery of Managers (dummy)		
Panel A			
P(C=1)	(1)	(2)	(3)
State Ownership	-0.677** (0.289)		-0.583** (0.231)
Overall Marketization Index		-0.368** (0.155)	-0.228 (0.149)
Interaction			0.322*** (0.122)
Firm Size	0.003 (0.004)	0.003 (0.002)	0.000 (0.002)
Leverage	0.077 (0.087)	0.150 (0.378)	-0.432** (0.202)
Age	-0.002 (0.015)	0.002 (0.027)	0.022 (0.037)
ROA	-2.424* (1.346)	3.374 (3.756)	0.592 (1.682)
Cash Holding	0.062* (0.033)	-0.109** (0.050)	0.003 (0.004)
Board Independence	-0.623 (0.874)	-0.131 (0.503)	0.986 (2.233)
Affiliation	-0.070 (0.151)	1.024*** (0.377)	0.341 (0.276)
Local GDP per Capita	-0.008 (0.046)	0.055 (0.068)	0.039 (0.073)
Local GDP growth	-0.506 (1.001)	-2.010 (1.532)	-6.94** (2.75)
Local Corruption	-0.043 (0.054)	-0.124 (0.155)	-0.005 (0.013)
Industry Effect	Yes	Yes	Yes
Cluster (Province)	Yes	Yes	Yes

Dependent Variable	Bribery of Managers (dummy)		
Panel B			
P(D=1 C=1)	(1)	(2)	(3)
State Ownership	1.86 ^{***} (0.394)	-0.764 (0.532)	1.701 (1.890)
Overall Marketization Index	0.131 (0.266)	0.288 [*] (0.153)	0.293 (0.172)
Firm Size	0.000 (0.001)	0.000 (0.011)	0.001 (0.001)
Leverage	-0.782 ^{***} (0.160)	-0.155 (0.314)	0.374 (0.449)
Age	0.000 (0.016)	0.002 (0.021)	0.037 (0.029)
ROA	1.249 (3.191)	-6.252 [*] (3.503)	-4.084 (3.452)
Cash Holding	-0.021 (0.047)	0.227 ^{***} (0.050)	0.193 (0.147)
Affiliation	-0.221 ^{***} (0.034)	-0.795 ^{**} (0.336)	-0.030 (0.081)
Local Corruption	0.232 (0.182)	-0.133 (0.157)	-0.101 (0.155)
No. SOEs	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Industry Effect	Yes	Yes	Yes
Cluster (Province)	Yes	Yes	Yes
Observations	960	960	960

Table 4.9 Monitoring Effect of Other Blockholders (OLS Regression)

This table reports the OLS regression analyses between the proportion of shares owned by blockholders other than government organizations and bribery of SOE managers. The dependent variable is the proportion of managers accused of taking bribes. In column 4, 5 and 6, we control for industry fixed effect and cluster standard errors by province. All variables are defined in Appendix 1. Numbers in parentheses are standard errors. *, ** and *** denote significance at 10%, 5% and 1%, respectively.

Dependent Variable	Bribery of Managers (proportion)					
	(1)	(2)	(3)	(4)	(5)	(6)
Other Blockholder	-0.078*** (0.023)	-0.081*** (0.023)	-0.092*** (0.024)	-0.076** (0.017)	-0.076*** (0.016)	-0.086*** (0.018)
State Ownership			-3.593* (1.762)			-3.313* (1.184)
Overall Marketization Index		-0.405** (0.168)	-0.420** (0.168)		--0.595** (0.241)	-0.580** (0.238)
Firm Size	-0.001** (0.000)	-0.001** (0.001)	0.001** (0.001)	-0.001** (0.000)	-0.001** (0.000)	-0.001** (0.000)
Leverage	-0.000 (0.099)	-0.013 (0.010)	-0.019 (0.099)	-0.011 (0.084)	-0.015 (0.023)	-0.019 (0.023)
Age	-0.039 (0.078)	-0.011 (0.079)	-0.028 (0.079)	0.018 (0.084)	0.026 (0.084)	0.011 (0.088)
ROA	-4.329 (3.312)	-3.931 (3.308)	-3.282 (3.317)	-4.390 (2.688)	-4.273 (2.603)	-3.670 (2.523)
Cash Holding	1.027*** (0.246)	1.086*** (0.246)	1.087*** (0.246)	1.228*** (0.322)	1.205** (0.321)	1.202*** (0.326)
Board Independence	0.496 (0.443)	0.003 (0.442)	-0.307 (0.382)	-0.364 (0.488)	-0.262 (0.488)	-0.487 (0.493)
Affiliation	1.117 (0.743)	1.213 (0.743)	1.230* (0.741)	0.906 (0.891)	0.798 (0.903)	0.841 (0.907)
Local GDP per Capita				-0.009 (0.289)	0.310 (0.305)	0.282 (0.295)
Local GDP growth				5.000 (7.293)	7.891 (7.457)	4.708 (7.320)
Local Corruption				-0.010 (0.148)	0.064 (0.104)	0.062 (0.101)
Industry Effect	No	No	No	Yes	Yes	Yes
Cluster (Province)	No	No	No	Yes	Yes	Yes
Adjusted R-square	0.040	0.045	0.048	0.059	0.063	0.067
Observation	960	960	960	960	960	960

Table 4.10 Monitoring Effect of Other Blockholders (Probit Regression)

This table reports the probit regression analyses between the proportion of shares owned by blockholders other than government organizations and bribery of SOE managers. The dependent variable is a dummy variable which equals 1 if an SOE has managers being accused of taking bribes during our sample period and equals 0 otherwise. In column 4, 5 and 6, we control for industry and province fixed effect and cluster standard errors by province. All variables are defined in Appendix 1. Numbers in parentheses are standard errors. *, ** and *** denote significance at 10%, 5% and 1%, respectively.

Dependent Variable	Bribery of Managers (dummy)					
	(1)	(2)	(3)	(4)	(5)	(6)
Other Blockholder	-0.016*** (0.005)	-0.016*** (0.005)	-0.016*** (0.005)	-0.017*** (0.004)	-0.017*** (0.004)	-0.017*** (0.005)
State Ownership			-0.581* (0.317)			-0.568* (0.291)
Overall Marketization		-0.055** (0.025)	-0.054** (0.025)		-0.054** (0.028)	-0.053** (0.027)
Index						
Firm Size	-0.000 (0.002)	-0.000 (0.002)	-0.001 (0.002)	-0.000 (0.001)	-0.000 (0.001)	-0.001 (0.002)
Leverage	-0.005 (0.011)	-0.007 (-0.014)	-0.008 (0.015)	-0.005 (0.008)	-0.006 (0.010)	-0.007 (0.010)
Age	-0.000 (0.015)	0.001 (0.015)	-0.001 (0.015)	0.002 (0.015)	0.004 (0.016)	0.002 (0.002)
ROA	-0.766 (0.793)	-0.684 (0.781)	-0.634 (0.798)	-0.717 (0.841)	-0.645 (0.824)	-0.601 (0.839)
Cash Holding	-0.003 (0.031)	-0.003 (0.032)	-0.004 (0.032)	-0.006 (0.025)	-0.006 (0.026)	-0.008 (0.025)
Board Independence	0.032 (0.712)	-0.007 (0.708)	-0.046 (0.706)	0.096 (0.775)	0.043 (0.768)	0.032 (0.770)
Affiliation	0.274** (0.127)	0.265** (0.129)	0.268** (0.130)	0.244* (0.141)	0.238* (0.144)	0.243* (0.148)
Local GDP per Capita	-0.011 (0.046)	0.096 (0.067)	0.087 (0.067)	-0.003 (0.050)	0.101* (0.059)	0.093* (0.056)
Local GDP growth	0.739 (1.147)	-0.332 (1.234)	-0.367 (1.224)	0.640 (1.210)	-0.371 (1.302)	-0.390 (1.252)
Local Corruption	0.009 (0.027)	0.018 (0.028)	0.017 (0.028)	0.006 (0.028)	0.015 (0.022)	0.014 (0.021)
Industry Effect	No	No	No	Yes	Yes	Yes
Cluster (Province)	No	No	No	Yes	Yes	Yes
Pseudo R-squared	0.067	0.075	0.081	0.086	0.093	0.099
Observation	960	960	960	960	960	960

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Table 4.11 Poisson Regression

This table reports the Poisson regression analyses between the proportion of state ownership and bribery of SOE managers. The dependent variable is the number of bribe-taking managers an SOE has. We control for industry fixed effect and cluster standard errors by province. All variables are defined in Appendix 1. Numbers in parentheses are standard errors. *, ** and *** denote significance at 10%, 5% and 1%, respectively.

Dependent Variable	Bribery of Managers (number)		
	(1)	(2)	(3)
State Ownership	-1.211*** (0.526)	-1.109*** (0.527)	-7.256*** (2.544)
Overall Marketization Index		-0.251*** (0.068)	-0.284*** (0.067)
Interaction			0.707*** (0.268)
Firm Size	-0.001 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Leverage	-0.038 (0.071)	-0.058 (0.076)	-0.063 (0.077)
Age	-0.038 (0.020)	-0.029 (0.021)	-0.025 (0.020)
ROA	-1.897 (1.504)	-1.596 (1.490)	-1.697 (1.486)
Cash Holding	0.291*** (0.060)	0.279*** (0.061)	0.279 (0.061)
Board Independence	-0.968 (1.116)	-0.939 (1.127)	-1.248 (1.136)
Affiliation	0.311 (0.191)	0.299 (0.193)	0.338* (0.192)
Local GDP per Capita	-0.117 (0.066)	0.027 (0.078)	0.025 (0.078)
Local GDP growth	0.166 (1.672)	-2.219 (1.820)	-1.894 (1.814)
Local Corruption	-0.056 (0.039)	-0.024 (0.039)	-0.023 (0.039)
Industry Effect	Yes	Yes	Yes
Pseudo R-square	0.046	0.060	0.068
Observation	960	960	960

4.1 Appendix

Appendix 1 Definition of Variables

This table presents definition of variables used in our analyses and source of data needed to construct these variables.

Variable	Definition	Sources of Data
Bribery of SOE managers	This is a firm level variable. This variable is the number of bribe-taking SOE managers being arrested by CCDI during our sample period 2013-2017 divided by the total number of managers of that SOE.	CCDI's official website, supplemented by Baidu and Google Search; CSMAR data base.
Number of corrupted SOE Managers	This is a firm level variable. This variable is the number of bribe-taking SOE managers being arrested by CCDI during our sample period 2013-2017.	CCDI's official website, supplemented by Baidu and Google Search
Overall Marketization index	This is a province level variable. This variable is an index and it measures how market oriented the economy is in each province of China.	Fan, Wang and Zhang (2011)
Financial Sector Marketization index	This is a province level variable. This variable is an index and it measures how market oriented the financial market is in each province of China.	Fan, Wang and Zhang (2011)
Legal Protection Index	This is a province level variable. This variable is an index and it measures how well entrepreneurs and firms are protected by legal rules and courts in each province of China.	Fan, Wang and Zhang (2011)
GDP per capita (in thousands RMB)	This is a province level variable. It is the average GDP per capita of each province in China over period 2010-2012.	China Statistical Yearbook
GDP growth	This is a province level variable. It is the geometric average GDP growth of each	China Statistical Yearbook

	province in China over period 2010-2012.	
State ownership	This is a firm level variable. It is the average proportion of shares held by any government organizations of a listed SOE over period 2010-2012.	CSMAR data base
Return on Assets	This is a firm level variable. ROA is calculated as the net income of a listed SOE divided by its total assets. This variable is calculated as the average ROA over period 2010-2012.	CSMAR data base
Assets(in 10 billion CNY)	This is a firm level variable. This variable is the average total assets of a listed SOE during period 2010-2012.	CSMAR data base
Cash holding	This is a firm level variable. This variable is the average of the natural log of the total amount of cash that a listed SOE holds during period 2010-2012.	CSMAR data base
Leverage	This is a firm level variable. Leverage ratio is calculated as the equity of a listed SOE divided by the sum of its total debts. This variable is calculated as the average leverage ratio of a listed SOE during period 2010-2012.	CSMAR data base
Age	This is a firm level variable. Age is calculated as 2017 minus the establish year of a listed SOE.	CSMAR data base
Board Independence	This is a firm level variable. Board independence is calculated as the proportion of independent board members to total board members.	CSMAR data base
Other Blockholder	This is a firm level variable. Other blockholder is calculated as the proportion of shares held by any shareholders who owns more than 5% of a firms' shares exclude government organizations.	CSMAR data base
Local	This is a province level variable. Local	CCDI's official

government corruption	government corruption is calculated as the number of local government officials, excluding SOE managers, getting prosecuted by CCDI in each province during period 2013-2017.	website
Affiliation	This is a firm level variable. This variable takes the value of 1 if the largest shareholder of a listed SOE is a central government level organization such as the State Council of China. In addition, we also check with the list of central government owned SOE provided by State-Owned Assets Supervision and Administration Commission of the State Council (SASAC)	CSMAR data base and official website of SASAC

Chapter 5 Investor Protection and Dispersion in Capital Structure

Abstract

Using the sample of listed firms of 64 countries over 2006 to 2014, we examine the relation between legal protection of investor and dispersion of firms' capital structure. Consistent with previous literature, we document that firms tend to use more equity funding or debt funding when investors' rights are better protected by law. Furthermore, we find that both creditor protection and shareholder protection are positively correlated with larger differences in capital structure between firms. Our findings are consistent with the argument that investor protection institutions are fundamental determinants of firms' capital structure.

5.1 Introduction

The law and finance theory argues that legal institutions which aim at protecting investors from being expropriated by others (e.g. corporate insiders) is an important determinant of financial market development (La Porta, et al., 1998). Due to investors' higher confidence in securing their investment return, firms in countries with better investor protection law are valued higher and therefore have more access to external financing (La Porta et al., 1997, 2002; Claessens et al., 2000; Shleifer and Wolfenzon, 2002; Klapper and Love, 2004). Subsequent studies find that not only firms' access to external financing but also their choice of capital structure is affected by investor protection institutions (Cheng and Shiu, 2007; Yifeng, Min and Tao, 2009; Alves and Ferreira, 2011).

Existing studies on the relation between institutions and capital structure mainly focus on the cross-country differences in the average or aggregate level of firm leverage. One potential issue is that firms do not have to raise as much funds as possible even if they could afford the costs. Instead, it is more reasonable for firms to raise certain amount of funds so that they could adjust their capital structure to optimal level. Therefore, we might expect to see larger dispersion of capital structure among firms located in countries with larger and more active financial markets as firms often differ with each other in their needs for external financing and optimal structure. However, little is known about the dispersion of firms' capital structure within a country and how it is affected by investor protection institutions. In this

study, we intend to shed light on this issue in this study.

We hypothesize that sound and effective shareholder protection institutions allow firms to have more access to equity financing and therefore allow them to have more freedom in choosing their capital structure. Thus, firms' capital structure tend to become more similar to each other in countries with poor investor protection. In addition, we combine both supply side view and demand side view of debt financing by proposing an inverted U shaped relation between the quality of creditor protection institutions and the dispersion of capital structure among firms. This is because overly strong (weak) creditor protection institutions makes firms unwilling to (not able to) raise enough funds from debt markets and therefore leads to a situation where firms have similar capital structures. Only at medium-level creditor protection will firms find it neither too expensive nor too difficult to access to debt financing.

To perform the analyses, we use a sample of listed firms from 64 countries over the period 2006-2014 to study the influence of investor protection on firms' choice of capital structure. We use equity-to-asset ratio and debt-to-asset ratio to measure a firm's capital structure. We then calculate the standard deviation of firms' equity-to-asset ratio and debt-to-asset ratio of a country in a given year. The higher the standard deviation, the larger the dispersion of firms' choice of capital structure. We find that the dispersion of firms' capital structure, either measured using

equity-to-asset ratio or debt-to-asset ratio, is large among listed firms in countries with better shareholder protection. For example, the dispersion of equity-to-asset ratio of countries with the highest disclosure index (e.g. France and U.K.) is expected to be larger than that of the country (Switzerland) with the lowest disclosure index by 0.12 if other characteristics of these countries are the same. We also find empirical evidence supporting our hypothesis regarding the non-linear relation between creditor protection institutions and the dispersion of capital structure among firms. Specifically, we find a positive relation between the standard deviation of debt-to-asset ratio and strength of legal rights index when it is below 8 and a positive relation between them when the index is above 8. Similarly, we also find an inverted U shaped relation between credit information index and the standard deviation of debt-to-asset ratio with a turning point of 2. Because the ranges of these two indices are 0 to 10 and 0 to 6, we believe our results are mathematically and economically meaningful.

This study makes two contributions. Our study contributes to literature on firm capital structure. Capital structure is one of the most widely studied topics in the literature of finance. It is found to have impact on various aspects of firms and many factors are identified to affect firms' choice of capital structure. However, existing literature focuses largely on firm-level determinants of capital structure (Titman and Wessels, 1988; Chen, 2004). Our study, instead of focusing on widely studied firm-level determinants of capital structure, looks at the role played by investor

protection institutions in affecting firms' choice of capital structure.

Our study also relates to law and finance literature. The law and finance theory argues that by mitigating investors' concerns of being expropriated by corporate insiders (i.e. controlling shareholders and managers), sound legal protection of investors attracts more investors to participate in financial markets and thus exert fundamental influence on financial development (La Porta, et al., 2008). Cheng and Shiu (2007) document that firms located in countries with better creditor protection tend to rely more on debt financing and therefore, on average, have higher leverage. Firms in countries with sound shareholder protection, on the other hand, are more prone to equity financing. Their study report that cross-sectional variation in the aggregate capital structure can be partly explained by differences in legal institutions. In this study, we take a further step by examining the role of institutions in affecting the dispersion of firms' choice of capital structure.

The remaining sections are organized in the following way. Section 2 reviews related literature. Section 3 describes and summarizes data used in this paper. Section 4 contains a discussion about empirical results and Section 5 concludes.

5.2 Literature

5.2.1 Determinants of Capital Structure

What are the most effective ways for firms to use their capitals and how to determine the capital structure of a firm are some of the mostly asked and studied questions in the field of finance. Titman and Wessels (1988) argue that it is the

relative costs of debt financing and equity financing that fundamentally determine firms' capital structure. Specifically, when costs of debt is relatively lower, firms tend to rely more on debt financing and thus have higher leverage. On the other hand, if costs of equity is lower, firms will choose to use more equity financing to cover their costs and meet their investments need in order to lower their financing costs.

Over the past decades, researchers have proposed and identified many factors which affect firms costs of debt financing, equity financing or both. Existing literature on determinants of capital structure suggests that eight firm attributes can potentially affect the capital structure of a firm. The first one is the collateral value of assets. Scott (1977) argues that secured bonds help firm reduce potential liabilities they need to pay in the future and therefore increase firm value. Thus, he predicts a positive relationship between the ability of firm to collateralize their assets and leverage. Jensen and Meckling (1976) and Myers (1977) hold the same opinion by arguing that lenders of unsecured debts tend to require more favorable terms due to their concern of being expropriated by borrowers. Grossman and Hart (1982), however, predict an opposite relation between collateral value of assets and leverage by arguing that firms with more intangible assets should issue more debts to minimize agency costs.

The second one is firms' growth rate. Galai and Masulis (1976) argues that shareholders tend to make sub-optimal investment decisions in order to expropriate wealth from creditors. Firms with higher growth rate have more choices when

deciding which investments to make, therefore this agency problem is more prominent for growing firms. Smith and Warner (1979) suggest that firms could issue convertible bond to mitigate the issue.

Other firm attributes that are argued or found to affect firm capital structure include non-tax debt shield (DeAngelo and Masulis, 1980), firms' uniqueness and the industry they operate in (Titman, 1984), size (Ang, Chua and McConnell, 1982), earnings volatility (Titman and Wessels, 1988) and profitability (Myers, 1984).

The aforementioned studies on determinants of firm capital structure focus largely on discussing the optimal or best capital structure of firms with given attributes. In other words, these studies analyse the issue from the perspective of demand side. However, how much debts a firm can borrow from or how much equities it could sell to investors is not fully at its will. In reality, many firms often find themselves financially constrained and therefore are prevented from reaching to their optimal capital structures. For example, Kumar et al. (1999) find that firms located in countries with larger financial markets tend to be larger, indicating that financial constraints might keep firms small. What factors that determine the supply side of external financing and how they affect firms' choice of their capital structures remain largely unexplored in previous literature on firm capital structure. The law and finance theory proposed by La Porta et al. (1998) asserts that how well investors' rights are protected by law, which is largely determined by a country's legal origin, determines the amount of external financing resources available to

firms. Therefore, legal institutions might exert fundamental influences on the choice of capital structures of various firms.

5.2.2 The Role of Institutions

Douglass North (1981), in his influential book *Structure and Change in Economic History*, argues that traditional economic theories have overlooked a very important determinants of economic performance, namely institutions. He asserts that transactions in real life is not frictionless and in some cases can be quite expensive. The costs of transaction stem from the uncertainty and unpredictability of transaction parties' behavior (North, 1987). If two parties have abundant information about each other and the transaction is expected to repeat in the future, the concern of their violating predetermined terms of contracts or even cheating will be relatively low. This is because compared with the potential gains of cheating others (e.g. more profits), the potential loss (e.g. the loss of future income and good reputation) could be much higher. Therefore, people might not be motivated to do so. In this case, transactions can be conducted effectively and efficiently.

However, in reality, many people do not possess enough information regarding other parties of transaction. In addition, many transactions are not expected to take place in the future. As a result, the probability that people cheating or being cheated by others could be high as someone might find it is more profitable to cheat others instead of acting according to contracts previously agreed upon by all parties. For example, many souvenirs are sold to tourists at unreasonably high prices and the

quality of these souvenirs often fail to meet their expectations. The reason is because tourists often lack the information regarding souvenirs sellers (i.e. lack of enough information) and these sellers view the purchasing of souvenirs as one-off consumption (i.e. non-repeat transaction). Thus, people have to spend considerable resources (such as time, money and labor) in collecting information about other parties of the transaction in order to ensure, or at least decrease the possibility that they are cheated by others. This might considerably reduce profits people earn from economic activities. Moreover, if the transaction is expected to last for a time period, more resources might be needed in order to ensure all parties are behaving according to terms predetermined in the original contracts.

One useful tool that allows people to reduce uncertainty when transacting with others, especially with unfamiliar ones, is legal institutions. This is because well-designed and appropriately enforced legal rules constrain people's behavior and increase their costs of cheating (North, 1991, 1994). Thus, it works at reducing transaction costs and therefore promotes transactions and stimulates economic growth. This is the main argument of neo-institutional economics.

5.2.3 Institutions and Financial Markets

Neo-institutional economic theory not only explains cross-country differences in economic growth but also sheds light on the differences in financial market development among various countries. Aghion and Bolton (1992) argue that transaction costs in financial markets tend to be higher in other markets due to the

incompleteness of financial contracts that investors sign with firms in which they make investments. Thus, if institutions have first order impacts on economic performance, it should also fundamentally affect financial development. La Porta et al. (1997) find a positive relation between a country's institutions which protect investors from being expropriated by corporate insiders and the aggregate level of external financing firm have access to. Specifically, they document that in countries with better creditor protection, firms have more debts and the countries' aggregate level of debt is also higher. Similarly, firms have higher market value and use more equity financing when institutions that protect minority shareholders against expropriation is better.

In their influential paper *Law and Finance*, La Porta et al. (1998) formally proposed a theory, which is widely known as the law and finance theory, that aims at explaining cross-country differences in financial markets development. The law and finance theory argues that securities represent rights of owners to get future cash flows from sellers of the securities. For example, owners of corporate bonds are promised by the firm that issues these bonds to receive interests every certain time interval (such as annually and semi-annually). In addition, principals will also be repaid during or at the end of the life of the bond. In terms of equities, stockholders who own part or all shares of a firm, have claim on the profits of the firm and they often get cash flows through dividends or stock buybacks. Therefore, one popular way of valuing a security is to add up all discounted future cash flows that owners of

the security expect to receive. However, La Porta et al. (1998) point out that investors cannot take for granted that these predetermined cash flows will be paid on time and in full amount. Bond issuers might default and only pay part or even no interests to creditors, not to mention the principals. Listed firms have no obligations to pay dividends to their shareholders, even if there are abundant cash. Moreover, managers might not get punished legally for not paying dividends to shareholders even if they promised to pay in the past. In other words, shareholders might not get any cash flows during the period they hold shares of listed firms.

The transaction costs in financial markets stem from the uncertainty of investors in securing their investment return. For example, the agency theory argues that when managers are not owners of a firm or only partially own a firm, they might become motivated in taking actions that maximize their own benefits at the costs of other stakeholders, especially of creditors and other shareholders (Jensen and Meckling, 1976; Jensen, 1986). In order to mitigate the problem and secure their investment return, investors have to spend a great amount of resources on doing researches on firms they want to make investments in and on preventing management team from expropriating them. In many cases, the costs of doing so can be so high that investors, especially small and individual investors, find themselves not being able to make profits after bearing these costs (Shleifer and Vishny, 1986). As a result, investors will not become motivated to finance firms and financial markets stagnate or even shrink in the face of high transactions costs.

The law and finance theory argues that one reason why there is a huge difference in financial markets development among various countries is that investors' rights are not protected to the same extent. La Porta et al. (1998) further report that countries with common law origin (such as U.S. and U.K.) provide better legal protections to investors against expropriation by corporate insiders than countries with civil law (e.g. France and Germany) origin do. It is the differences in how well legal rights of investors are protected between these two types of countries that makes legal origin an important determinant of the amount of external financial resources firms have access to and ownership concentration of listed firms (La Porta et al., 1997, 1998; La Porta et al., 2008).

However, the law and finance theory is challenged by Acemoglu et al. (2001) who argue that it is the geographical and disease environment instead of legal origin that fundamentally affect institutions of a country which ultimately determine its financial market development. Specifically, they assert that when local environment is not suitable for colonizers, they are more likely to establish extractive institutions which facilitate their extracting and transferring local resources back to their own countries. This kind of institutions are often characterized by lacking well-established protection of citizens' legal rights such as property rights. However, when local environment is suitable for colonizers to settle down, they are more likely to establish institutions which mimic that of their own countries where legal rights of citizens are better protected. This is referred to as the endowment theory.

Beck et al. (2003) tested both law and finance theory and endowment theory and report that both legal origin and the geographical and disease environment matter for financial development. However, the latter has stronger effects on the development of financial markets than the former has.

Although researchers differ in their opinions regarding the relative importance of legal origin and local environment to financial development, they all agree on the argument that how well legal rights of investors are protected is a fundamental determinant of financial developments.

5.2.4 Institutions and Capital Structure

Following the seminal works of La Porta et al. (1997, 1998), the past two decades has witnessed a significant increase in studies on the effects of institutions on many aspects of firms, including their choice of capital structures. These studies can be divided into two categories. One stream of literature mainly focuses on the protection of shareholder rights and the other one focuses more on creditor rights protection. For equity markets, La Porta et al. (2002) find a positive relation between shareholder rights protection and market value of firms' equities. In these countries, firms can raise more capitals by selling their equities at higher prices. Himmelberg, Hubbard and Love (2004) find that improvement in shareholder protection decreases risk premium and thus makes equity financing cheaper for and more popular among firms. Deesomasak, Paudyal and Pescetto (2004) document that in Asia Pacific region, institutional environment is one of the most important determinants of firm

capital structure. Firms in countries with weak shareholder protection find themselves difficult to sell equities to potential investors and therefore have more concentrated ownership structure.

However, for debt markets theories and findings are mixed. The supply view argues that better creditor protection enhance creditors' confidence in securing their interests and principals. Therefore, creditors are more willing to financing firms, which leads to higher supply of debt financing resources in financial markets. Furthermore, there are two theories explaining what is important for creditor protection. The power theory argues that the power of creditors is an important determinant of creditor protection. This is because the largest concern of creditors is that they might not be able to get their money back when borrowers are in financial distress. When it is easier for creditors to force repayment, secure collateral or even obtain control of borrowers' assets, they are more willing to extend credit (Aghion and Patrick, 1992). The information theory asserts that credit markets are more developed when information about borrowers such as their historical credits and existing debts with other lenders become more available. Better information sharing institutions mitigate lenders' concerns of being cheated and makes them more willing to provide capitals (Stiglitz and Weiss, 1981). These two views are not mutually exclusive and Djankov et al. (2007) find that both creditor power and credit information sharing institutions contribute to larger debt markets. Cheng and

Shiu (2007) report that in countries with sound and effective creditor rights protection institutions, firms tend to have higher leverage.

The power theory and the information theory analyse the issue from the perspective of the supply side. That is, they focus on the relation between the amount of capitals creditors are willing to provide and firms' access to debt financing. However, leverage not only depends on how much capitals are available to firms in debt markets but also depends on firms' willingness and ability to afford debts. In other words, both supply and demand of debts affect firms' access to debt financing. The demand side view of debt financing argues that powerful creditors might deter firms, especially those with weak solvency, from accessing to debt financing because they are concerned that their assets or even control rights will be threatened when they find they have problems in repaying debts on time. Rajan and Zingales (1995) argue that management teams in countries with more powerful creditors make more efforts in preventing firms from getting into financial distress to avoid being penalized by creditors. Cho et al. (2014) document that firms tend to prefer equity financing over debt financing and thus have lower leverage when creditor protection is too strong.

The majority of existing studies on the relation between investor protection institutions and capital structure focuses on the effects of investor protection institutions on the aggregate or average level of equity financing or debt financing of firms. However, one function of financial markets is to help firms find enough

investors who are willing to finance them so that they have the freedom to choose any capital structure that meets their best interests. Gathering as much external financing as possible might not be the priority of many firms. In addition, firms differ with each other in many aspects, including their needs for external financing and optimal capital structure. For example, Rajan and Zingales (1998) find that well-developed financial markets mainly benefits firms with high external financing dependence and these firms growth disproportionately faster than firms with lower external financing dependence in countries with large financial markets. Therefore, simply looking at the relation between the quality of investor protection institutions and the aggregate or average level of external financing used by firms might not fully answer the question whether better institutions give firms more access to external financing and therefore allow them to choose their optimal capital structure. In other words, when examining the effects of investor protection institutions on firms' choice of capital structure, we should not only focusing on the aggregate level of capital structure but also on its dispersion among firms in order to answer the question whether sound and effective legal institutions provide firms with more freedom in choosing their capital structures.

Literature on the distribution of firm size might provide hints on the relation between legal protection of investors and capital structure dispersion. Cabral and Mata (2003) report that the distribution of firm size of a given cohort is highly skewed to the right at beginning. That is, young firms tend to have similar size. As

time elapses, the highly right skewed distribution gradually evolves towards a more symmetric one. In other words, the dispersion of firm size increases as time passes. They argue that the evolution of firm size distribution has two implications. First of all, it indicates that some of the small firms exit the market as a result of fierce market competition and they name it selection effect. However, they find that selection only accounts for a small fraction of the entire evolution of firm size distribution. The majority of changes in firm size distribution is caused by changes in the size of survivors. This is because, as argued by Cabral and Mata (2003), young firms are often financially constrained and therefore unable to grow to their optimal sizes. However, as time passes, those survivors become less financially constrained and therefore have more freedom in growing to their optimal sizes. The work of Cabral and Mata (2003) shed lights on the relation between legal institutions and dispersion in firms' capital structure.

5.3 Hypothesis Development

Currently, the majority of literature on the impacts of investor protection on capital structure focuses on how institutions affect the aggregate level of leverage. However, firms differ with each other in terms of their needs for leverage and their abilities to raise funds from capital markets. Wurgler (2000) argues that better shareholder protection not only enlarges financial markets which increases firms' access to equity financing but also improves the aggregate level of financial markets' capital allocation efficiency. He finds that investors tend to increase their

investment in growing industries while decrease their investments in declining industries in countries where shareholders' rights are better protected. This finding indicates that better shareholder protection might not benefit all firms, or at least, it does not benefit all firms to the same extent.

The demand side view of capital structure argues that the optimal capital structure of a firm depends on a number of firm attributes such as size, industry and the nature of their assets (Galai and Masulis, 1976; DeAngelo and Masulis, 1980; Titman, 1984; Ang, Chua and McConnell, 1982; Titman and Wessels, 1988; Myers, 1984). In other words, firms differ with each other in their needs for debt financing and equity financing and their optimal capital structures are very likely not to be the same. These studies suggest that firms should choose capital structures that meet their needs instead of raising as much capitals as possible from financial markets, even if they can afford the costs. Thus, if firms are allowed to raise any amount of funds from financial markets and in any forms (e.g. through debts or equities), it is expected that the dispersion of capital structure among various firms could be large as firms tend to have different optimal capital structures.

However, the supply side view argues that how much funds firms are able to raise from financial markets not only depends on their needs for external financing but also on the willingness of investors to finance firms. In small and inactive financial markets, where investors are reluctant to make investments, firms might find it very difficult or expensive to borrow from or sell equities to others. Both law

and finance theory and endowment theory emphasize the importance of legal institutions to financial development. Although these two well-recognized theories differ in their opinion on the fundamental causes of cross country differences in legal institutions, they both hold the view that sound and effective legal institutions that protect investors' from being expropriated by others, especially corporate insiders, enhance investors' confidence in securing their investment return. As a result, they become more willing to finance firms, which ultimately leads to larger and more active financial markets and firms having increased access to external financing (La Porta, et al., 1998; Acemoglu et al., 2001).

Cabral and Mata (2003) find that firm size distribution is highly right skewed for a given cohort of firms. That is, the proportion of large firms is significantly lower than expected and the size of small firms are quite close to each other. One reason, they argue, is that most firms are financially constrained and have difficulties in raising enough funds for expanding and making investments. Similarly, we argue that under-developed financial markets increase the proportion of firms that are financially constrained and therefore results in firms being under-financed. As a result, even firms with distinctively different attributes might be forced to have similar capital structure because they are unable to raise enough external funds or cannot afford the costs to reach their optimal capital structure. Thus, the dispersion of capital structure of firms is predicted to be smaller in countries where shareholder protection institutions is not well-developed.

H1: The dispersion in capital structure among firms is predicted to be positively correlated with the quality of shareholder protection institutions.

As discussed in the previous section, there are two different views toward the effects of creditor protection institutions on debt financing. The supply side view argues that strong creditor protection allows creditors to secure interests and principals and thus encourages them to provide funds to firms. As a result, credit markets tend to be larger and more active in countries with better designed and well-enforced creditor protection institutions. However, the demand side view argues that strong creditor rights protection creates huge pressures on firms. Specifically, in countries where creditors rights are overly protected, the control rights of management team and of firms owners might be easily threatened by creditors when these firms are in financial distress and not able to repay interests and debts on time. This potential concern of managers and firm owners could deter firms from using debt financing and thus leads to lower level of leverage.

There are both empirical evidence that support or against each argument. We intend to combine these two views by proposing a non-linear relation between creditor protection institutions and dispersion of capital structure among firms. Specifically, we argue that when creditor protection is too weak (too strong), firms will find it very difficult (will become reluctant) to use debt financing. As a result, firms tend to have similar capital structure and rely more on equity or on other ways to finance investments. However, when creditor protection is at medium level,

neither too weak nor too strong, both creditors and firms will find debt markets attractive. Therefore, firms are more able and more willing to use debt financing. It then leads to larger dispersion in capital structure as firms have more freedom in choosing their capital structure. In other words, we propose an inverted U shaped relation between creditor protection institutions and dispersion in capital structure. Based on the above discussion, we propose our second hypothesis as follows:

H2: The dispersion of firm capital structure is predicted to be small when creditor protection institutions are too weak or too strong. It is predicted to be large when creditor protection institutions are at medium level.

5.4 Data and Methodology

5.4.1 Data

Our sample includes listed firms in 64 countries and regions over the period 2006 to 2014. Financial data and securities data are collected from Compustat - Capital IQ Global and North America database. *Doing Business Report* by World Bank construct indices that measure the extent to which investors, both shareholders and creditors, are protected since 2003. Indices are updated annually, and we use these indices as our measurement of investor protection. In addition, the report also ranks the ease of establishing and operating business in each countries or regions among all countries or regions included in the report. We use this as a control variable to adjust for the general business environment of each country or region in our sample. The economic performance of each country or region, namely GDP

growth and GDP per capita, are collected from the World Bank database, except for that of Taiwan. GDP growth and the GDP per capita of Taiwan are collected from the official website of National Statistics of Taiwan. Variables that measure a country's or region's public governance quality are collected from the World Bank's World Governance database. Finally, we obtain the number of domestically listed firms from the World Bank's World Financial Development database.

Our sample period starts at 2006 because this is the first year in which the *Doing Business Report* starts to use four different indices to measure the extent to which shareholders are protected by legal rules. In its 2003 and 2004 reports, the World Bank do not provide any indices that measure the extent to which shareholders are protected. In the *2005 Doing Business Report*, the only index that measures how well shareholders are protected by legal rules is the disclosure index that measures how much information regarding the related party transactions of firms needs to be disclosed. Since 2006, another three indices that measure the strength of shareholder protection in a country or region are added. In addition, 2006 is also the first year that the *Doing Business Report* ranks the ease of establishing and operating business for each country or region. Therefore, we decided to use 2006 as the start of our sample periods. Our sample period ends on 2014 because since 2015, the *Doing Business Report* changed its way of measuring shareholder and creditor protection. In terms of creditor protection, the maximum value of the strength of the legal rights index increased from 10 to 12, and that of the depth of

credit information index increased from 6 to 8. In terms of shareholder protection, it no longer reports the disclosure index, director liability index and the ease of shareholder suits index. Instead, two new indices, namely the conflict of interest regulation index and the shareholder governance index are used to measure the extent to which shareholders are protected. In order to maintain consistency and make investor protection comparable across our sample period, we decided to end our sample period in 2014.

Our starting sample comprises 80 countries or regions. However, in order to calculate standard deviation of firms' market cap-assets ratio or total debts-assets ratio and make them meaningful, we require that sample countries or regions have more than 10 valid firm observations each year over the period 2006 to 2014. This requirement drops 16 countries or regions from the Capital IQ database. The countries or regions being excluded by these requirements are Bahrain, Bermuda, Cayman Islands, Gabon, Gahan, Gibraltar, Kuwait, Liberia, Liechtenstein, Malta, Marshall Islands, Monaco, Namibia, Papua New Guinea, Virgin Islands and Zambia. Our final 556 country-year observations for dispersion of capital structure.

5.4.2 Dependent Variables and Independent Variables

The dependent variables in our study are the standard deviation of capital structure of firms. We use equity-to-asset ratio and debt-to-asset ratio to measure a firm's capital structure. After getting these ratios, we winsorize the data at 95%. The reason is because we find there are too many outliers that might distort our

regression analysis. We then calculate the standard deviation of firms' capital structure using the winsorized ratios and this is how we measure the dispersion of capital structure of firms in one country and in a given year. This is our main dependent variable. The higher the standard deviation, the larger the dispersion of capital structure among firms.

Our main independent variables include eight indices that measure the extent to which investors' rights are protected by legal rules (four for shareholder protection and two for creditor protection). Indices that measure the extent to which shareholders are protected by legal rules are the disclosure index, the director liability index, the ease of shareholder suits index and the strength of shareholder protection index. In terms of creditor protection, we look at both the power of creditors and credit information sharing institutions as argued by power theory and information theory. The strength of legal rights index measures the power of lenders and the credit information index, public registry coverage (% of adult) and private registry coverage (% of adult) are used to measure the development of credit information sharing institutions. A more detailed description of each independent variable is provided in Appendix 1.

We also add several control variables in our ordinary least squares (OLS) regressions. Firstly, the economic development of a country might affect the development of financial markets. Many studies report a positive correlation between financial market development and economic growth (Goldsmith, 1969;

McKinnon, 1973; Shaw, 1973). Researchers also identify several channels through which financial markets promote economic performance such as investment efficiency (Tobin and Brainard, 1963), saving mobilization (Wicksell, 1935) and risk reduction (Bencivenga and Smith, 1991). However, there are also arguments which assert that economic growth also affects the development of financial markets (Ang, 2008). To control for the effects of economic development on financial markets, we follow La Porta et al. (1997, 1998) and use gross domestic product (GDP) per capita and GDP growth rate as control variables.

Public governance also plays an important role in investor protection. The majority of empirical studies on the relation between investor protection laws and the financial market mainly focus on the content of such protection (La Porta et al., 1998). How well legal rules that aim at protecting investors from being expropriated are enforced is of the same importance as the contents of investor protection laws. We control for the enforcement of legal rules by adding a country's control of corruption and regulatory quality as control variables. Lastly, we also use a country's rank of ease of doing business and number of listed firms as control variables. Year fixed effect is controlled to account for the difference in conditions of global financial markets across different years. Descriptive statistics are presented in Table 5.1.

<Insert Table 5.1 Here>

Table 5.2 presents the correlation matrix. From Table 5.2, we can see that our

main variables of interest, namely standard deviation of equity-to-asset ratio or debt-to-asset ratio are positively correlated with many indices that measure how well investors' rights are legally protected, such as strength of legal rights index, public registry coverage, disclosure index and strength of shareholder protection index. Consistent with existing literature, we also find that the aggregate level of equity financing and debt financing is positively correlated with the effectiveness of investor protection institutions. One interesting finding is that, we find countries with higher GDP growth rate tend to have larger dispersion of capital structures among firms as illustrated by the positive and statistically significant correlation between the standard deviation of leverage and GDP growth rate. One possible explanation might be that in countries with fast growing economies, market competition are fiercer. Thus, firms have to come up with unique strategies including the use of their funds and the design of capital structures in order to remain competitive. Lastly, as expected, we also find that the number of listed firms is positively correlated with the dispersion of capital structure among firms.

<Insert Table 2 Here>

We use the OLS model to estimate the relationship between the extent to which investors are protected by legal rules and the dispersion of capital structure among firms. The baseline model is presented below:

$$\text{Dispersion}_{j,t} = \alpha_0 + \beta_1 \times \text{InvestorProtection}_{j,t} + \beta_2 \times \text{Controls}_{j,t}$$

where $\text{dispersion}_{j,t}$ is the dispersion of capital structure among firms of country j in

year t . Investor Protection $_{j,t}$ is the investor protection indices that we collected from the *Doing Business Report* by the World Bank. Control variables include economic performance, public governance quality, general business environment and the number of listed firms.

5.5 Empirical results

5.5.1 Investor Protection and Aggregate Level of Leverage

Following existing literature, We first examine the relation between investor protection and the aggregate level of firms' capital structure. In Table 5.3 and Table 5.4, we use the average equity-to-asset ratio and debt-to-asset ratio to measure the aggregate level of firms' capital structure, respectively. The findings are mixed, however. In Table 5.3, we find a positive relation between shareholder protection and the average equity-to-asset ratio. For example, column 1 of Table 5.3 shows that, holding other variables unchanged, an 1 unit increase in disclosure index is expected to lead to a 0.011 unit increase in the average equity-to-asset ratio. Given that the average equity-to-asset ratio is about 0.7 in our sample, an 1 unit increase in disclosure index is expected to results in a 1.6% increase in the ratio (0.011/0.7) on average. However, we fail to find a statistically significant relation between director liability index and the average equity-to-asset ratio. This result still holds even we include all indices that measure how well investors are protected in one regression model. This, to some extent, supports La Porta's et al. (2006) findings that not all forms of investor protection have first order or significant impacts on firms'

financing decisions and financial market development.

In addition, we also find that the average equity-to-asset ratio is positively correlated with GDP growth, the general business environment and the number of listed firms. In terms of GDP growth, one possible explanation might be that in fast growing economies, firms tend to have more growth opportunities and therefore their equities are valued higher. The higher valuation of their equities leads to higher equity-to-asset ratio. Similarly, firms located in countries with more business-friendly government characterized by less intervention and more effective and efficient governance should find it easier to sell their equities to investors compared with their counterparts located in countries with less efficient government and business-friendly environment.

In Table 5.4 where variables of interest are switched to creditor protection and the dependent variable is changed to debt-to-asset ratio, we find empirical evidence supporting both the supply side view and the demand side view of debt financing. Specifically, we find a positive relation between legal rights protection of creditors and firms' leverage. This is consistent with the supply side view of debt financing which asserts that better creditor rights protection encourages investors to finance firms and therefore allow firms to have more access to debt financing. However, we also find that the average level of firms' leverage is negatively correlated with creditor information index and public registry coverage. These findings support the demand side view of debt financing which argues that strong creditor protection

deter firms from using debt financing because they are concerned of losing their control over firms in financial distress. Our empirical results in Table 5.4 seem to suggest that legal institutions which strengthen creditors' claims on borrowers' assets and institutions which facilitate credit information sharing have opposite effects on the average leverage of firms. In addition, our results also suggest public enforcement is more effective than private enforcement in terms of credit information sharing as we fail to find a statistically significant relation between private registry coverage and average leverage of firms. This finding is contradict to that of La Porta et al. (2006) which suggests that private enforcement is more effective than public enforcement.

<Insert Table 5.3 Here>

<Insert Table 5.4 Here>

5.5.2 Investor Protection and Dispersion of Capital Structure

In Table 5.5 and Table 5.6, We examine how dispersion of capital structure among firms is affected by legal protection of shareholders. The variables of interest in these two tables are legal protection of shareholders and the dependent variable is the dispersion of capital structure among firms, which is measured by the standard deviation of equity-to-asset ratio and standard deviation of debt-to-asset ratio, respectively. In Table 5.5, expect for director liability index, we find a positive relation between shareholder protection and the dispersion of capital structure among firms. This result supports our first hypothesis that better shareholder

protection leads to higher dispersion of capital structure because large financial markets grants firms with more freedom in choosing capital structures. For example, column 3 of Table 5.5 indicates that, holding other variables unchanged, an 1 unit increase in ease of shareholder suits index is associated with a 0.019 unit increase in the standard deviation of equity-to-asset ratio. In other words, the dispersion of capital structure of the country with the highest ease of shareholder suits index is expected to be 0.19 higher than that of the country with the lowest ease of shareholder suits index if all other aspects of these countries are the same. We believe that the coefficients of these indices are not only statistically significant but also economically significant. Similar to our results in Table 5.3, we do not find a statistically significant relation between director liability index and the dispersion of capital structure among firms. This result provides further supports to the argument that certain forms of investor protection institutions might not be as effective as others.

In terms of control variables, we find that countries with higher GDP growth rate, better control of corruption and larger number of listed firms have larger dispersion of capital structure among firms. One possible reason could be that market competition is fiercer and fairer in countries with higher economic growth and better control of corruption. Therefore firms have to use different strategies, including the ways in which they finance their investments and daily operations, in order to secure a place. We also find that the dispersion of capital structure among

firms tend to be negatively correlated with regulatory quality. This might be because firms find themselves having more difficulties to obtain external financing when financial markets are more strictly regulated. Thus, their capital structure might become more similar to each other.

The results reported in Table 5.6 also support our first hypothesis. Specifically, we find a positive relation between legal protection of shareholders and the dispersion of capital structure among firms when using debt-to-asset ratio to measure firms' capital structure. However, one difference between the results in Table 5.5 and Table 5.6 is that the coefficient of shareholder protection indices become smaller and ease of shareholder suits index become statistically insignificant. For the rest of the variables (such as GDP growth and control of corruption), their statistical and economic significance are quite similar to what we have in Table 5.5.

We hypothesize that one possible reason why coefficients of shareholder protection indices decrease when the standard deviation of debt-to-asset ratio instead of the standard deviation of equity-to-asset ratio is used to measure the dispersion of capital structure among firms is that equity financing and debt financing are not perfect substitutes. There are more than just two ways (i.e. equity and debt financing) for firms to finance their investments. For example, accounts payable and retained earnings are also popular alternative sources of finance. Therefore, changes in shareholder protection institutions might not have as strong impacts on firms' debt financing decisions as it has on firms' equity financing decisions. Another possible

reason is that, on average, a firm's debt-to-asset ratio is much smaller than its equity-to-asset ratio and therefore the standard deviation of former is expected to be smaller than the standard deviation of the latter. Table 5.1 shows that the average debt-to-asset ratio of firms included in our sample is 0.226, about one third as large as the average equity-to-asset ratio, which is 0.695. Moreover, the average standard deviation of debt-to-asset ratio is only 0.123 while that of equity-to-asset ratio is 0.784. Therefore, it is not that surprising the coefficient of shareholder protection indices drops when the standard deviation of debt-to-asset ratio is used as the dependent variable.

<Insert Table 5.5 Here>

<Insert Table 5.6 Here>

Table 5.7 to Table 5.10 present our OLS regression results for our second hypothesis which propose a non-linear relation between creditor protection and dispersion of capital structure among firms. As discussed in the previous sections, there are theories and empirical results support both arguments that sound and effective creditor protection could either encourage or deter firms from accessing to debt financing. We intend to combine these theories by proposing that when creditors' rights are too weakly protected or too strongly protected, firms will become difficult or unwilling to use debt financing. Thus, the dispersion of capital structure among firms is predicted to be relatively small when creditor protection is too weak or too strong. On the other hand, with medium-level creditor protection,

firms will find it relatively easy and affordable to borrow money from creditors and thus they will have more freedom in choosing capital structures that meet their true needs. As a result, capital structure is predicted to be more dispersed in countries with medium-level creditor rights protection.

In order to test this hypothesis, we need the squared term of creditor rights protection indices. However, we still run OLS regressions without squared terms in Table 5.7 and Table 5.9. In Table 5.7 and Table 5.8, the dependent variable is the standard deviation of equity-to-asset ratio and the variables of interest are indices that measure how well creditors are protected. It can be seen from Table 5.7 that there is a negative relation between the development of credit information sharing institutions and the dispersion of capital structures among listed firms. For example, in column two of Table 5.7, the coefficient of credit information index is -0.025, meaning that better credit information sharing is associated with lower dispersion in capital structure among firms. This result seems to support the demand side view of debt financing which argues that strong creditor protection deters firms from accessing to debt financing because of their concerns of losing control over firms during financial distress.

In Table 5.8, we add the squared term of creditor protection indices and we find evidence supporting our second hypothesis. Specifically, we find that the coefficient of creditor protection indices are positive but that of their squared term is negative. In addition, the strength of legal rights index becomes statistically significant after

its squared terms are included in our OLS regression model. The positive signs of creditor protection indices and the negative signs of their squared terms indicate a non-linear relation between creditor protection and the dispersion of capital structure among firms. Our results in Table 5.8 suggest that the dispersion of capital structure increases as creditor protection institutions improve. It maximizes at a certain value then starts to decrease as creditor protection institutions further improve. For example, regression results present in column 1 of Table 5.8 suggest that the dispersion of capital structure peaks when the value of strength of legal rights index equals to 7.75. Given that the range of the index is 0 to 10, we believe the regression results make sense both in math and in reality. However, we also realize that regression results in column 3 and column 4 of Table 5.8, where public and private registry coverage are variables of interest, do not support our second hypothesis. This might be because unlike other indices which consist of several components that measure various aspects of investor protection, these two variables only measure the percentage of adults and firms listed in a credit bureau's database. Therefore, they might not be as comprehensive as strength of legal rights index and credit information index in measuring how well legal rights of creditors are protected. Overall, we believe that regression results presented in Table 5.8 support our second hypothesis that the relation between creditor protection institutions and the dispersion of capital structure among firms is non-linear and inverted U shaped.

<Insert Table 5.7 Here>

<Insert Table 5.8 Here>

In Table 5.9 and Table 5.10, we use the standard deviation of debt-to-asset ratio as our dependent variable and the results are consistent with what we have in the previous two tables. Specifically, in Table 5.9, we find that the dispersion of capital structure is negatively correlated with creditor rights protection and the results still hold even if we include all four indices into one single regression model (see results in column 4 of Table 5.9). Similarly, we fail to find a statistically significant linear relation between the strength of legal rights index and the dispersion of capital structure among firms. In Table 5.10, we add squared terms of creditor rights protection into our OLS regression models. The results are consistent with our previous ones. For example, column 1 of Table 5.10 indicates a positive relation between the strength of legal right index and the dispersion of capital structure when the index is below 8 and a negative relation between them when the index is over 8. Regression results in the second column of Table 5.10 also indicates an inverted U shaped relation between credit information index and the dispersion of capital structure among firms (the turning point is about 2). Given the range of these two indices are 0 to 10 and 0 to 6, we believe these results are both mathematically and economically meaningful.

<Insert Table 5.9 Here>

<Insert Table 5.10 Here>

5.6 Conclusion

The Law and finance theory argues that legal protection of both creditors and shareholders promotes financial market development and thus allows firms to have more access to external financing (La Porta et al., 1998). However, firms differ from each other in their needs to raise funds from financial markets and thus they may not benefit from an improvement in investor protection and from financial market development to the same extent. Studies have documented that financial development benefits firms with higher dependence on external financing more (Ranjan and Zingales, 1998). Wurgler (2000) further reports that in countries with better investor protection and more developed financial markets, firms in declining industries might even find it is more difficult to raise funds from financial markets as a result of investors' divestment.

Didier et al. (2014) find that firms' access to external financing through equity markets and debt markets is limited with only a few large firms being able to issue equities and bonds and sell them to investors. Thus, we hypothesize that under-developed financial markets as a result of weak investor protection, limits firms' access to external financing. Therefore, they have less freedom in choosing capital structure and thus the dispersion of capital structure among firms is predicted to be smaller. In other words, they are forced to choose similar capital structure because of financial constraints. However, the supply and demand side view of debt financing also suggest an inverted U shaped relation between creditor rights

protection and dispersion of capital structure among firms. That is, we propose a positive relation between the strength of creditor rights protection and dispersion of capital structure among firms when creditor rights are weakly protected. In contrast, we hypothesize a negative relation between creditor rights protection and dispersion of capital structure among firms when creditor rights are overly strongly protected.

Based on a sample of listed firms in 64 countries over the period 2006 to 2014, we find empirical evidence support both hypotheses regarding the effect of shareholder protection and creditor protection on the dispersion of capital structure among firms. Specifically, we find that the dispersion of capital structure among firms is positively correlated with shareholder rights protection. This finding supports our hypothesis that firms in countries with better shareholder protection have more freedom in choosing their capital structure because of large equity markets. In terms of creditor protection, we find a non-linear relation between creditor rights protection and dispersion in capital structure. Specifically, when creditor rights protection is too weak or too strong, the dispersion of capital structure among firms is small, and when creditor rights protection is at medium level the dispersion of capital structure tend to be large. We believe this finding supports both the supply and demand side view of debt financing.

Our finding is consistent with law and finance theory which argues that legal protection of investors exert fundamental influence on financial market by affecting investors' incentive in financing firms (La Porta et al., 1998). Furthermore, we also

present empirical evidence that legal protection of investors affect firms' choice of capital structure. Our study contributes to literature by extending studies on capital structure by exploring macro-level factors instead of firm attributes that affect capital structure of firms.

One of the limitations of this study is that we only look at the dispersion of capital structure among listed firms. Listed firms only represent a small portion of all firms. Furthermore, compared with the most of unlisted firms, these firms are much less financially constrained. We are not sure whether our results still hold for unlisted firms. Secondly, the variation in investor protection mainly comes from the differences in investor protection between different countries and the within country variation in investor protection is quite small. This might lead to a situation where dispersion in capital structure is caused by some unobserved time invariant factors instead of the extent to which investors are protected by legal rules. In the future, we might narrow down to a smaller number of countries to allow larger within country variation in investor protection.

5.7 Reference

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5.7 Tables

Table 5.1 Descriptive Statistics

This Table reports the number of firm-year observations and key statistics for variables used in this paper. The sample includes listed firms in 64 countries over period 2006 to 2014.

Variables	Mean	Medium	Maximum	Minimum	STD	Observations
STD (Equity-to-Asset Ratio)	0.784	0.754	2.076	0.271	0.268	562
STD (Debt-to-Asset Ratio)	0.123	0.119	0.338	0.016	0.051	556
Mean (Equity-to-Asset Ratio)	0.695	0.699	1.000	0.154	0.216	562
Mean (Debt-to-Asset Ratio)	0.226	0.245	0.539	0.000	0.207	556
Disclosure Index	6.377	7.000	10.000	0.000	2.532	562
Director Liability Index	4.881	5.000	9.000	0.000	2.243	562
Ease of Shareholder Suits Index	6.187	7.000	10.000	0.000	2.043	562
Strength of Shareholder Protection Index	5.824	5.700	10.000	2.300	1.592	562
Strength of Legal Rights Index	6.102	6.000	10.000	1.000	2.307	556
Credit Information Index	4.411	5.000	6.000	0.000	1.575	556
Public Registry Coverage (% of Adult)	9.419	0.000	100.000	0.000	19.578	556
Private Registry Coverage (% of Adult)	44.58	38.600	100.000	0.000	38.922	556
GDP per capita (in thousands)	24.00	15.432	106.749	0.326	22.772	562
GDP Growth	3.216	3.345	14.231	-17.669	4.188	562
Control of Corruption	0.583	0.394	2.465	-1.434	1.079	562
Regulatory Quality	0.686	0.932	1.984	-2.236	0.898	562

Ease of Doing Business Rank	55.550	41.000	181.000	1.000	44.717	562
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Table 5.2 Correlation Matrix

This table reports the correlation matrix of the variables used in this study. Std (ea) is the standard deviation of equity -to-asset ratio, std (da) is the standard deviation of debt-to-asset ratio, m (ea) is the mean of equity-to-asset ratio, m (da) is the mean of debt-to-asset ratio, slr is strength of legal rights index, ci is credit information index, pub is public coverage, pri is private coverage, dis is disclosure index, dl is director liability index, ess is ease of shareholder suit index, ssp is strength of shareholder protection index, gdp_g is GDP growth, gdp_p is GDP per capita, cc is control of corruption, rq is regulatory quality, nol is number of listed firms and rank is ease of doing business ranking. ***, ** and * indicates the significance level at 1%, 5% and 10% level.

	std(ea)	std(da)	m(ea)	m(da)	slr	ci	pub	pri	dis	dl	ess	ssp	gdp _g	gdp _p	cc	rq	nol	rank
std(ea)	1																	
std(da)	0.95***	1																
m(ea)	0.79***	0.76***	1															
m(da)	0.77***	0.79***	0.96***	1														
slr	0.14**	0.15***	0.16***	0.17***	1													
ci	-0.07	-0.05	-0.09*	-0.08	0.11**	1												
pub	0.15***	0.21***	0.19***	0.18***	-0.17***	0.16***	1											
pri	0.053	0.06	0.03	0.04	0.31***	0.53***	-0.17***	1										
dis	0.19***	0.17***	0.17***	0.18***	0.18***	0.16***	0.14***	0.17***	1									
dl	0.01	0.07	0.03	0.05	0.35***	0.21***	-0.05	0.31***	0.19***	1								
ess	0.01	0.03	0.07	0.11**	0.52***	0.26***	-0.14***	0.35***	0.16***	0.24***	1							
ssp	0.07	0.09*	0.08*	0.10*	0.26***	0.23***	0.10*	0.22***	0.43***	0.44***	0.40***	1						
gdp _g	0.27***	0.26***	0.21***	0.23***	-0.07	-0.20***	-0.02	-0.23***	0.14**	-0.06	-0.07	0.027	1					
gdp _p	0.12**	0.16***	0.04	0.07	0.32***	0.27***	-0.14**	0.52***	-0.01	0.22***	0.15***	0.08	-0.31***	1				
cc	0.18***	0.23***	0.03	0.04	0.41***	0.38***	-0.07	0.51***	0.12**	0.32***	0.21***	0.18***	-0.26***	0.83***	1			
rq	0.10*	0.15***	-0.01	0.01	0.43***	0.49***	-0.05	0.51***	0.075	0.32***	0.34***	0.21***	-0.29***	0.73***	0.91***	1		

nol	0.16 ^{***}	0.13 ^{**}	0.11 ^{**}	0.14 ^{**}	0.23 ^{***}	0.26 ^{***}	-0.03	0.28 ^{***}	0.25 ^{***}	0.15 ^{***}	0.19 ^{***}	0.17 ^{***}	-0.02	0.23 ^{***}	0.19 ^{***}	0.17 ^{***}	1	
rank	-0.10 [*]	-0.14 ^{**}	-0.01	-0.01	-0.51 ^{***}	-0.53 ^{***}	0.01	-0.51 ^{***}	-0.27 ^{***}	-0.39 ^{***}	-0.42 ^{***}	-0.34 ^{***}	0.22 ^{***}	-0.63 ^{***}	-0.81 ^{***}	-0.86 ^{***}	-0.21 ^{***}	1

Table 5.3 Shareholder Protection and Average Equity-to-Asset Ratio

This table presents the regression results of the relation between shareholder protection and the average equity-to-asset ratio of firms. The dependent variable is the average equity-to-asset ratio of all listed firms in one country in a year. We also control for the economic development, public governance quality, business environment and number of firms. Standard errors are clustered at country level. ***, ** and * indicates the significance level at 1%, 5% and 10% level.

	Dependent Variable: Average Equity-to-Asset Ratio				
	(1)	(2)	(3)	(4)	(5)
Disclosure Index	0.011*** (0.001)				0.010*** (0.002)
Director Liability Index		0.004 (0.276)			0.002 (0.579)
Ease of Shareholder Suits Index			0.015*** (0.000)		0.014*** (0.000)
Strength of Shareholder Protection Index				0.007** (0.022)	
GDP per capita	0.002** (0.011)	-0.001* (0.054)	0.001* (0.058)	0.001* (0.001)	0.002*** (0.009)
GDP Growth	0.010*** (0.000)	0.011*** (0.000)	0.011*** (0.00)	0.011*** (0.003)	0.010*** (0.000)
Control of Corruption	0.003 (0.861)	0.015 (0.480)	0.035* (0.092)	0.017 (0.393)	0.021 (0.315)
Regulatory Quality	0.013 (0.603)	-0.009 (0.709)	-0.030 (0.212)	-0.008 (0.743)	-0.006 (0.816)
Ease of Doing Business	0.001** (0.022)	0.000 (0.019)	0.001** (0.047)	0.001* (0.077)	0.001*** (0.002)
Number of Firms	0.017** (0.040)	0.023*** (0.006)	0.019* (0.023)	0.021** (0.010)	0.012 (0.0.138)
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes
Observations	562	562	562	562	562
Adjusted R ²	0.099	0.084	0.105	0.091	0.119

Table 5.4 Creditor Protection and Average Debt-to-Asset Ratio

This table presents the regression results of the relation between creditor protection and the average debt-to-asset ratio of firms. The dependent variable is the average debt-to-asset ratio of all listed firms in one country in a year. We control for the economic development, public governance quality, business environment and number of firms. Standard errors are clustered at country level. ***, ** and * indicates the significance level at 1%, 5% and 10% level.

	Dependent Variable: Average Debt-to-Asset Ratio				
	(1)	(2)	(3)	(4)	(5)
Strength of Legal Rights Index	0.013*** (0.000)				0.011*** (0.004)
Credit Information Index		-0.014*** (0.032)			-0.004 (0.550)
Public Registry Coverage			-0.158*** (0.011)		-0.124*** (0.004)
Private Registry Coverage				0.008 (0.713)	0.002 (0.993)
GDP per capita	0.001** (0.033)	0.001* (0.055)	0.001 (0.139)	0.001* (0.059)	0.001 (0.137)
GDP Growth	0.011*** (0.000)	0.011*** (0.000)	0.011*** (0.000)	0.012*** (0.000)	0.010*** (0.000)
Control of Corruption	0.009 (0.673)	0.002 (0.927)	0.012 (0.561)	0.009 (0.666)	0.009 (0.672)
Regulatory Quality	-0.010 (0.669)	0.001 (0.098)	-0.015 (0.529)	0.013 (0.579)	-0.012 (0.635)
Ease of Doing Business	0.006* (0.009)	0.002 (0.995)	0.010 (0.780)	0.002 (0.639)	0.003 (0.399)
Number of Firms	0.017*** (0.033)	0.025*** (0.003)	0.021*** (0.009)	0.022*** (0.010)	0.020** (0.020)
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes
Observations	556	556	556	556	556
Adjusted R ²	0.106	0.089	0.108	0.082	0.120

Table 5.5 Dispersion of Capital Structure and Shareholder Protection

This table presents the regression results of the relation between capital structure dispersion and shareholder protection. The dependent variable is the ratio of standard deviation of equity-to-assets ratio of all listed firms in one country in a year. We control for the economic development, public governance quality, business environment and number of firms. Standard errors are clustered at country level. ***, ** and * indicates the significance level at 1%, 5% and 10% level.

	Dependent Variable: STD (Equity-to-Assets ratio)				
	(1)	(2)	(3)	(4)	(5)
Disclosure Index	0.012** (0.019)				0.012** (0.015)
Director Liability Index		-0.008 (0.128)			0.009* (0.089)
Ease of Shareholder Suits Index			0.019* (0.076)		0.002 (0.718)
Strength of Shareholder Protection Index				0.003* (0.059)	
GDP per capita	-0.002 (0.829)	-0.001 (0.374)	-0.001 (0.439)	-0.001 (0.469)	-0.003 (0.745)
GDP Growth	0.020*** (0.000)	0.021*** (0.000)	0.021*** (0.000)	0.021*** (0.000)	0.020*** (0.000)
Control of Corruption	0.136*** (0.000)	0.154*** (0.000)	0.153*** (0.000)	0.151*** (0.000)	0.142*** (0.000)
Regulatory Quality	0.056 (0.129)	-0.086** (0.015)	-0.084** (0.020)	-0.080** (0.023)	-0.062* (0.100)
Ease of Doing Business	0.001* (0.069)	0.000 (0.569)	0.001 (0.309)	0.001 (0.275)	0.001 (0.137)
Number of Firms	0.028** (0.000)	0.041*** (0.002)	0.035*** (0.004)	0.034*** (0.004)	0.029** (0.018)
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes
Observations	562	562	562	562	562
Adjusted R ²	0.176	0.167	0.173	0.172	0.177

Table 5.6 Dispersion of Capital Structure and Shareholder Protection

This table presents the regression results of the relation between capital structure dispersion and shareholder protection. The dependent variable is the ratio of standard deviation of debt-to-assets ratio of all listed firms in one country in a year. We control for the economic development, public governance quality, business environment and number of firms. Standard errors are clustered at country level. ***, ** and * indicates the significance level at 1%, 5% and 10% level.

	Dependent Variable: STD (Debt-to-Assets ratio)				
	(1)	(2)	(3)	(4)	(5)
Disclosure Index	0.007** (0.040)				0.007* (0.052)
Director Liability Index		-0.001 (0.861)			-0.001 (0.714)
Ease of Shareholder Suits Index			0.004 (0.375)		0.004 (0.409)
Strength of Shareholder Protection Index				0.003* (0.320)	
GDP per capita	-0.002 (0.806)	-0.001 (0.460)	-0.001 (0.478)	-0.001 (0.536)	-0.002 (0.787)
GDP Growth	0.016*** (0.000)	0.017*** (0.000)	0.017*** (0.000)	0.016*** (0.000)	0.016*** (0.000)
Control of Corruption	0.109*** (0.000)	0.119*** (0.000)	0.124*** (0.000)	0.119*** (0.000)	0.115*** (0.000)
Regulatory Quality	-0.029 (0.364)	-0.046 (0.130)	-0.051* (0.062)	-0.045* (0.098)	-0.035 (0.222)
Ease of Doing Business	0.001** (0.038)	0.000 (0.160)	0.001 (0.107)	0.001* (0.095)	0.001** (0.035)
Number of Firms	0.016 (0.126)	0.020* (0.052)	0.019** (0.041)	0.019*** (0.038)	0.029** (0.018)
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes
Observations	556	556	556	556	556
Adjusted R ²	0.198	0.192	0.182	0.172	0.177

Table 5.7 Dispersion of Capital Structure and Creditor Protection

This table presents the regression results of the relation between capital structure dispersion and creditor protection. The dependent variable is the ratio of standard deviation of equity-to-assets ratio of all listed firms in one country in a year. We control for the economic development, public governance quality, business environment and number of firms. Standard errors are clustered at country level. ***, ** and * indicates the significance level at 1%, 5% and 10% level.

	Dependent Variable: STD (Equity-to-Assets ratio)				
	(1)	(2)	(3)	(4)	(5)
Strength of Legal Rights Index	0.009 (0.113)				0.004 (0.486)
Credit Information Index		-0.025*** (0.007)			-0.018* (0.099)
Public Registry Coverage			-0.199*** (0.001)		-0.160** (0.013)
Private Registry Coverage				-0.012 (0.724)	-0.003 (0.933)
GDP per capita	-0.001 (0.444)	-0.001 (0.323)	-0.001 (0.196)	-0.001 (0.442)	-0.001 (0.180)
GDP Growth	0.021*** (0.000)	0.021** (0.020)	0.020*** (0.000)	0.021*** (0.000)	0.020*** (0.000)
Control of Corruption	0.150*** (0.000)	0.137*** (0.000)	0.154*** (0.000)	0.150*** (0.000)	0.144*** (0.000)
Regulatory Quality	-0.081** (0.021)	-0.062* (0.082)	-0.086** (0.013)	-0.085** (0.016)	-0.074** (0.038)
Ease of Doing Business	0.001 (0.163)	0.000 (0.844)	0.000 (0.496)	0.002 (0.537)	0.000 (0.869)
Number of Firms	0.033*** (0.007)	0.042*** (0.001)	0.035*** (0.003)	0.038*** (0.002)	0.041** (0.001)
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes
Observations	562	562	562	562	562
Adjusted R ²	0.171	0.179	0.185	0.169	0.188

Table 5.8 Dispersion of Capital Structure and Creditor Protection

This table presents the regression results of the relation between capital structure dispersion and creditor protection. The dependent variable is the ratio of standard deviation of equity-to-assets ratio of all listed firms in one country in a year. We control for the economic development, public governance quality, business environment and number of firms. Standard errors are clustered at country level. ***, ** and * indicates the significance level at 1%, 5% and 10% level.

	Dependent Variable: STD (Equity-to-Assets ratio)			
	(1)	(2)	(3)	(4)
Strength of Legal Rights Index	0.062** (0.015)			
Strength of Legal Rights Index ²	-0.004** (0.031)			
Credit Information Index		0.058** (0.035)		
Credit Information Index ²		-0.012*** (0.001)		
Public Registry Coverage			-0.283* (0.078)	
Public Registry Coverage ²			0.136 (0.573)	
Private Registry Coverage				0.367 (0.113)
Private Registry Coverage ²				0.358 (0.242)
GDP per capita	-0.001 (0.406)	-0.001 (0.333)	-0.001 (0.191)	-0.001 (0.176)
GDP Growth	0.021*** (0.000)	0.019*** (0.000)	0.020*** (0.000)	0.021*** (0.000)
Control of Corruption	0.145*** (0.000)	0.142*** (0.000)	0.154*** (0.000)	0.144*** (0.000)
Regulatory Quality	-0.067* (0.057)	0.088** (0.015)	-0.084** (0.016)	-0.062 (0.082)
Ease of Doing Business	0.001* (0.073)	-0.000 (0.736)	0.000 (0.462)	0.003 (0.558)
Number of Firms	0.33*** (0.006)	0.050*** (0.000)	0.035*** (0.003)	0.032** (0.011)
Year Fixed Effect	Yes	Yes	Yes	Yes
Observations	562	562	562	562
Adjusted R ²	0.177	0.193	0.184	0.182

Table 5.9 Dispersion of Capital Structure and Creditor Protection

This table presents the regression results of the relation between capital structure dispersion and creditor protection. The dependent variable is the ratio of standard deviation of debt-to-assets ratio of all listed firms in one country in a year. We control for the economic development, public governance quality, business environment and number of firms. Standard errors are clustered at country level. ***, ** and * indicates the significance level at 1%, 5% and 10% level.

	Dependent Variable: STD (Debt-to-Assets ratio)				
	(1)	(2)	(3)	(4)	(5)
Strength of Legal Rights Index	0.006 (0.119)				0.001 (0.734)
Credit Information Index		-0.018*** (0.008)			-0.012* (0.087)
Public Registry Coverage			-0.218*** (0.000)		-0.199*** (0.000)
Private Registry Coverage				-0.013 (0.622)	-0.019 (0.518)
GDP per capita	-0.001 (0.485)	-0.001 (0.361)	-0.001 (0.143)	-0.001 (0.498)	-0.001 (0.169)
GDP Growth	0.016*** (0.000)	0.016*** (0.000)	0.016*** (0.000)	0.016*** (0.000)	0.015*** (0.000)
Control of Corruption	0.119*** (0.000)	0.109*** (0.000)	0.123*** (0.000)	0.119*** (0.000)	0.117*** (0.000)
Regulatory Quality	-0.046* (0.090)	-0.031 (0.249)	-0.051* (0.052)	-0.049* (0.068)	-0.045* (0.095)
Ease of Doing Business	0.001* (0.068)	0.000 (0.511)	0.000 (0.305)	0.000 (0.317)	0.000 (0.630)
Number of Firms	0.018** (0.048)	0.025*** (0.006)	0.020** (0.027)	0.022** (0.019)	0.024** (0.012)
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes
Observations	556	556	556	556	556
Adjusted R ²	0.184	0.192	0.217	0.183	0.217

Table 5.10 Dispersion of Capital Structure and Creditor Protection

This table presents the regression results of the relation between capital structure dispersion and creditor protection. The dependent variable is the ratio of standard deviation of equity-to-assets ratio of all listed firms in one country in a year. We control for the economic development, public governance quality, business environment and number of firms. Standard errors are clustered at country level. ***, ** and * indicates the significance level at 1%, 5% and 10% level.

	Dependent Variable: STD (Debt-to-Assets ratio)			
	(1)	(2)	(3)	(4)
Strength of Legal Rights Index	0.032 (0.102)			
Strength of Legal Rights Index ²	-0.002** (0.182)			
Credit Information Index		0.033 (0.113)		
Credit Information Index ²		-0.008*** (0.010)		
Public Registry Coverage			-0.302** (0.013)	
Public Registry Coverage ²			0.136 (0.454)	
Private Registry Coverage				0.295 (0.102)
Private Registry Coverage ²				-0.284 (0.379)
GDP per capita	-0.001 (0.461)	-0.000 (0.371)	-0.001 (0.138)	-0.000 (0.198)
GDP Growth	0.017*** (0.000)	0.015*** (0.000)	0.016*** (0.000)	0.016*** (0.000)
Control of Corruption	0.116*** (0.000)	0.112*** (0.000)	0.122*** (0.000)	0.114*** (0.000)
Regulatory Quality	-0.039 (0.150)	-0.048* (0.086)	0.049* (0.061)	-0.031 (0.254)
Ease of Doing Business	0.001** (0.040)	-0.000 (0.828)	0.000 (0.273)	0.000 (0.332)
Number of Firms	0.018** (0.047)	0.030*** (0.001)	0.020** (0.029)	0.017* (0.067)
Year Fixed Effect	Yes	Yes	Yes	Yes
Observations	556	556	556	556
Adjusted R ²	0.186	0.201	0.216	0.196

5.8 Appendix 1 Details of Investor Protection Indices

Index	Explanation	Scale	Source	More Details
Disclosure Index	It measures the internal, immediate and periodic disclosure requirements for related-party transactions	0-10	World Bank	http://www.doing business.org/Met hodology/protect ing-minority- inv estors
Director Liability Index	It measures minority shareholders' ability to sue and hold interested directors liable for prejudicial related-party transactions	0-10	World Bank	http://www.doing business.org/Met hodology/protect ing-minority- inv estors
Ease of Shareholder Suits Index	It measures shareholders' access to internal corporate documents, obtainability of evidence during trials and allocation of legal expenses	0-10	World Bank	http://www.doing business.org/Met hodology/protect ing-minority- inv estors
Strength of Shareholder Protection Index	The average of disclosure index, director liability index and ease of shareholder suits index	0-10	World Bank	http://www.doing business.org/Met hodology/protect ing-minority- inv estors
Strength of Legal Rights Index	It measures the protection of rights of borrowers and lenders through collateral laws	0-10	World Bank	http://www.doing business.org/Met hodology/Gettin g-Credit
Credit Information Index	It measures the scope and accessibility of credit information distributed by credit bureaus and credit registries	0-6	World Bank	http://www.doing business.org/Met hodology/Gettin g-Credit
Public Registry	It is the number of individuals and firms	0-1	World Bank	http://www.doing business.org/Met

Coverage (% of Adult)	listed in the largest public registry as percentage of adult population			hodology/Gettin g-Credit
Private Registry Coverage (% of Adult)	It is the number of individuals and firms listed in the largest private registry as percentage of adult population	0-1	World Bank	<a href="http://www.doingbusiness.org/Met
hodology/Gettin
g-Credit">http://www.doing business.org/Met hodology/Gettin g-Credit

Chapter 6 Conclusion

Institutions exert first-order influence on financial market at both macro-level and micro-level. Sound and effective institutions, especially property right institutions and contracting right institutions, reduce transaction costs therefore promote financial development and boost firm value (Acemoglu and Johnson, 2005). In this thesis, I conduct three studies to further explore the effect of institutions on financial market. This thesis fills gaps in the literature by exploring how checks on government power relates to financial development and firm value and by looking at the role of large shareholder in preventing firm managers from acting corruptly and how this role is affected by local institutions. In addition, I also explore how institutions affect the allocation of capitals in financial market.

In Chapter 3, I identify a new form of institutions that checks government power thereby allows financial market to flourish and boost market value of firms. New institutional economics have long been emphasizing the importance of checks on government power (North, 1991). As the ultimate coercive power, government can abuse its political power therefore expropriate its citizens if its power is left unconstrained. Acemoglu and Johnson (2005) compare the relative importance of contracting rights institutions and property rights institutions to financial development. They report that property rights institutions, which protect citizens from government expropriation, have much stronger effect on financial development than contracting rights institutions which enhance enforcement of contracts, do.

They argue that this is because it is difficult for citizens to find alternative ways other than checks on government power to reduce government expropriation. This argument is challenged by the rise of several Asian countries under one-party or dominant-party dictatorship (e.g. China, Singapore and South Korea). Due to the lack of democracy and political competition, government power is often viewed as weakly constrained and risk of being expropriated by government is high. Therefore, these countries are predicted to have under-developed financial market and low economic growth rate. However, Singapore and South Korea are two of the most developed countries not only in Asia but also around the world. China achieved dramatic economic development during the past decades and its stock market is the second largest in the world, only smaller than U.S. stock market. Allen et al. (2005) argues that alternative governance mechanisms based on reputation and relationship support economic and financial development in China. I propose that government power can still be checked in countries under one-party or dominant-party dictatorship through government power self-check system. The promulgation of revised internal discipline of Communist Party of China (CPC), which aims at preventing government officials in China from abusing their political power, provides me with an ideal setting to test the hypothesis. Consistent with my expectation, the revised internal discipline invokes a positive reaction in stock market in China. Moreover, firms that are more vulnerable to government expropriation experienced a higher increase in value surrounding the event date.

These results support my argument that government power self-check system is a form of institutions, which allow government power to be constrained, that lead to financial development and that boost firm value.

Chapter 3 contributes to literature on law and finance theory by identifying a new form of institutions that are important to financial development and firm value. La Porta et al. (1998) argue that sound and effective legal protection of investors from being expropriated encourages them to finance firms therefore promotes financial development and boosts firm value. Literature on law and finance theory mainly focuses on corporate insider expropriation. This study complements existing literature by presenting firm-level evidence that risk of being expropriated by government reduce firm value and it can be reduced by constraining government power. In addition, this study also relates to the literature on legal enforcement. Studies on relation between investor protection and financial development use indices that based on the existence of certain legal rules to measure how well investors are protected against expropriation. These indices cannot measure how well legal rules are enforced. The revised internal discipline of CPC does not change legal rules in China. By imposing restrictions on government officials, it enhances judicial independence in China. Thus, legal enforcement is improved. The positive reaction of stock market in China supports the argument that legal enforcement also matter for quality of institutions.

Chapter 4 focuses on the role of large shareholder and market-supporting

institutions in preventing firm managers from engaging in corruption. Agency theory argues that firms managers are self-interested utility maximizers. If not properly monitored, they will behave in ways that maximize their interest at the expense of shareholders' (Jensen and Meckling, 1976). La Porta et al. (1998) point out that institutions that protect shareholders against expropriation by corporate insiders serve as a mechanism to mitigate agency problem. In countries with weak institutions, large shareholders serve as a way to monitor managers to ensure that they behave in the way that meets interest of firms and shareholders. The more shares large shareholders have, the more motivated they are in monitoring firm managers (La Porta et al., 1999; Shleifer and Vishny, 1986). In chapter 4, I take advantage of the recent national wide anti-corruption campaign in China to examine the aforementioned arguments. I find that state owned enterprises (SOEs) with more shares owned by government organizations, who are the largest shareholders, have fewer bribe-taking managers. I also find that SOEs located in provinces with sound and effective market-supporting institutions also tend to have fewer bribe-taking managers. The monitoring effect of large shareholders are stronger in firms located in province with weak market-supporting institutions. In addition, I also compare monitoring effect of the largest shareholder with that of other blockholders. These findings are consistent with La Porta's et al. (1999) and Shleifer and Vishny's (1986) arguments.

The fourth chapter contributes to literature on corporate governance by

presenting evidence that both large shareholder and market-supporting institutions reduce agency costs. Existing literature report that large shareholder put monitoring pressure on managers therefore lowers costs (Yafeh and Yosha, 2003), reduces earnings management (Chung, Firth and Kim, 2002), and affects proposal of corporate policies (Agrawal and Mandelker, 1990). This study adds to new evidence on the monitoring effect of large shareholders by reducing the probability of managers engaging in corruption. I further document that the monitoring effect of large shareholders are more powerful in places with weak institutions, supporting Shleifer and Vishny's (1986) argument that large shareholder serves as a complement to institutions in mitigating agency costs. Chapter 4 also contributes to literature on determinants of corruption by exploring what characteristics of bribe-takers affect level of corruption. Corruption is a widely studied topic. However, most firm-level studies on corruption focuses on characteristics of firms who are bribe-payers(Svensson, 2003;Nguyen and Van Dijk, 2012; Bai et al., 2015). This study, on the other hand, focus on characteristics of bribe-takers. The finding that SOEs with more state ownership are less likely to have bribe-taking managers is consistent with the resource constrained theory which argues that the level of corruption depends on how much resources are spent on monitoring (Kedia and Rajgopal, 2011).

In chapter 5, I extend literature on capital structure by exploring the relation between investor protection and the dispersion in firms' capital structure. What

affect firms' choice of capital structure is one of the mostly researched topics in finance field and researchers have identified many firm attributes such as size, industry and the collateral value of their assets have effects on firms' choice of capital structure (Titman and Wessels, 1988; Chen, 2004). Little attention has been paid to factors other than firm attributes. Effective legal protection of investors against expropriation of corporate insiders provide investors with incentive to finance firms (La Porta et al., 1998). As a result, financial market is larger and more active. Firms in countries with better legal protection of investors have more access to external finance and their equities are valued higher by investors (La Porta et al., 1997). Therefore, they have more freedom in choosing their capital structures as they are less likely to be financially constrained. I propose that capital structure are more dispersed in countries with better legal protection of investors because it reduce expropriation risk therefore allow firms to have more access to external financing. Based on a sample of listed firms in 64 countries over period 2006 to 2014, I find empirical evidence that supports my hypothesis. Specifically, I find a positive relation between shareholder rights protection and dispersion in capital structure, measured using the standard deviation of either equity-to-asset ratio or debt-to-asset ratio. However, in terms of creditor rights protection, I identify a non-linear relation between it and dispersion in capital structure. I document that dispersion in capital structure peaks in countries with medium-level creditor rights protection and it is predicted to be low in countries with either too poor or too strong

creditor rights protection. I believe this finding is consistent with both supply side and demand side view of debt financing.

Chapter 5 contributes to literature by exploring factors other than firm attributes that affect capital structure (Titman and Wessels, 1988). Existing literature on capital structure mainly focuses on firm-level determinants and pays little attention to other determinants. This is more close to a demand side view where firms choice capital structures mainly based on their needs. However, most firms cannot finance their daily operation and investments only using their own money without the support of external financing. How much debt or equities firms could sell not only depends on their needs for external financing but also on how much external financing resources are available. La Porta et al. (1997, 1998) argue that expropriation by corporate insiders such as managers and controlling shareholders, reduce expected return of outside investors thus discourages them from financing firms. Legal rules that protect investors from being expropriated by corporate insiders mitigate outside investors' concern thereby contribute to financial development and boost market value of firms. Chapter 5 contributes to literature on capital structure and law and finance theory by documenting that legal protection of investors is an important macro-level determinants of firms' capital structure.