CORPORATE GOVERNANCE AND CORPORATE FINANCE: EVIDENCE FROM CHINESE LISTED COMPANIES

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Declaration

I hereby declare that the materials contained in this thesis have not been previously submitted for a degree in this or any other university. I further declare that this thesis is solely based on my own research.

Ratnam Vijayakumaran

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Dedication

This work is dedicated to my PARENTS and TEACHERS and DAUGHTER, SANKAVI, a precious treasure.

Abstract

This thesis explores the linkages between corporate governance and corporate finance, making use of a large panel of Chinese listed firms over the period 2003-2010. We investigate three main themes.

First, we examine the impact of managerial ownership and other corporate governance variables on firms' exporting decisions, which are characterized by considerable risk and information asymmetries. We document that both export propensity and intensity increase with managerial ownership up to a point of around 23%-27%, and decrease thereafter. We also find a negative association between state ownership and export intensity. Furthermore, we observe that the larger the board size, the lower the firm's export propensity and intensity, and that firms with a higher proportion of independent directors in the board are generally less likely to export. These findings are driven by privately controlled firms during the post-2006 split share structure reform period.

Second, we examine the relationship between managerial ownership and corporate investment decisions. We find that investment decisions are systematically related to managerial ownership in two ways. Firstly, managerial ownership exerts a positive direct effect on corporate investment decisions, by aligning management's incentives with the interests of shareholders. Secondly, we document that, by acting as a form of collateral to lenders, managerial ownership helps to reduce the degree of financial constraints faced by firms.

Third, we examine the impact of ownership and corporate governance on agency costs. We measure the latter in two ways: using the sales to assets ratio, and the general administration and selling expenses scaled by assets. We find that, especially in the post-2006 split share structure reform period, increased managerial ownership and debt financing work as effective corporate governance mechanisms, by mitigating agency problems. We also find evidence that while legal person shareholding helps to mitigate agency costs for privately controlled firms in the post-reform period, large boards of directors are associated with higher agency costs in government controlled firms.

From a policy perspective, our findings suggest that the Chinese government's recent policies aimed at reforming ownership structure and encouraging managerial ownership in listed firms have helped to reduce agency and asymmetric information problems, thereby enabling firms to enhance investment efficiency and international activities. Our study recommends that greater attention should therefore be paid to compensation contracts of the management team and to board characteristics, and that state ownership should be further reduced. This would help further enhance resource allocation efficiency and sustain high levels of economic growth.

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Abbreviations

AR	:	Autoregressive
CEO	:	Chief Executive Officer
CIA	:	Central Intelligent Agency
CSMAR	:	China Stock Market Accounting Database
CSRC	:	China Security Regulatory Commission
GMM	:	Generalized Method of Moments
i.i.d	:	Independently and identically distributed
MA	:	Moving average
OLS	:	Ordinary Least Square
R&D	:	Research and Development
RMB	:	Renminbi
SEO	:	Seasoned Equity Offering(s)
SOE(s)	:	State owned enterprises (s)
S&P 500	:	The Standard & Poor's 500 companies
WTO	:	World Trade Organization

Chapter 1

Introduction

1.1. Research background

The agency perspective of corporations was first introduced by Berle and Means (1932), who observe a separation between ownership and control in large US corporations. The separation of ownership and control in large corporations with diffuse ownership makes it difficult for shareholders to monitor management's decisions. This gives managers the freedom to pursue their own objectives at shareholders' expense (Berle and Means, 1932). Building on Berle and Means's argument, Jensen and Meckling (1976) systematically apply the principal agent perspective to model the potential agency costs resulting from agency problems in corporations. The agency problem arises from the agency relationship whereby one party (the principal) appoints another party (manager) to act on his/her behalf in the corporation. By providing a new paradigm of the firm as a "nexus of contracts" mainly between the principal and his/her agents, agency theory advances our understanding of the firm beyond that offered by the "legal entity" concept in law, or the "factor of production" concept in economics (Alchian and Demsetz, 1972; Jensen and Meckling, 1976). The agency cost theory adds therefore a new dimension to the theory of firm.

Jensen and Meckling (1976, p. 308) define the agency costs as the sum of (1) the monitoring expenditures by the principal, (2) the bonding expenditure by the agent, and (3) the residual loss. Given the considerable losses to the economy as a whole that follow from agency costs (Alchian and Demsetz, 1972; Jensen and Meckling, 1976), agency theory is considered as a dominating theoretical and empirically valid perspective in the governance of corporations (Shleifer and Vishny, 1997; Eisenhardt, 1989).

More recent years have witnessed an explosion of research on corporate governance issues in emerging markets such as China and Asian and East European countries. These studies (e.g., Faccio et al., 2001; Allen, 2005; Morck et al., 2005; Young et al. 2008) suggest that, in addition to the traditional principal agent problems

which can also be observed in the developed markets, in emerging markets where ownership is concentrated and legal protection for minority shareholders is rather weak, majority shareholders tend to expropriate minority shareholders through various means like tunnelling, insider trading, dividend policy and leverage. This principal–principal perspective of agency problem affects decisions made by managers and consequently corporate performance (Faccio at al., 2001; Morck et al., 2005)

There is no single and generally accepted definition of corporate governance and existing definitions vary widely. A claimholders/financiers-focused definition is given by Shleifer and Vishny (1997). They put it as "the ways in which suppliers of finance to corporations assure themselves of getting a return on their investment" (Shleifer and Vishny 1997, p.737). A similar focus can be seen in Denis and McConnell (2003, p.2) who define corporate governance as "the set of mechanisms-both institutional and market-based that induce the self-interested controllers of a company (those that make decisions regarding how the company will be operated) to make decisions that maximize the value of the company to its owners (the suppliers of capital)". A somewhat broader definition is provided by the Cadbury Committee (1992) which defines it as "the system by which companies are directed and controlled". Similarly, Zingales (1998, p.499) broadly defines a governance system as "the complex set of constraints that shape the ex-post bargaining over the quasi-rents generated by the firm".

It is very clear from the above variety of definitions that corporate governance plays a central role in the direction and control of the corporations in order to ensure the interest of shareholders and other stakeholders are met through efficient and effective use of resources. A central theme of corporate governance research revolves around the establishment of mechanisms aimed at attenuating the conflict of interest between shareholders and managers, as well as between majority shareholders and minority shareholders, thereby mitigating agency costs. This is the predominant issue underlying corporate governance theories. To solve the agency problems various governance mechanisms have been devised such as providing equity ownership and compensation to managers, monitoring by the board of directors/large shareholders, the use of debt financing, the discipline by capital markets and the managerial labour market, the market for corporate control and so on.

As part of the wider economic reform initiated in the late 1970s, in the 1980s, the Chinese government adopted various measures aimed at reforming state owned enterprises (SOEs). These mainly include managerial autonomy, a management responsibility system, and corporatization and partial privatization of former SOEs (Aivazian et al., 2005; Su, 2005). The latter two measures of SOE reforms mainly hinge on the Western-style modern corporate system, which is essentially characterized by the separation of ownership and control. This suggests that modern Chinese firms are inevitably subject to the issues of incentive incompatibility and information asymmetry, which often arise between managers and owners. Lin et al. (1998) suggest that as a consequence of this, China's SOEs may face agency problems, such as moral hazard and managerial slacks and discretion. Therefore, giving appropriate incentives to the management becomes critical in firms in order to mitigate heightened agency problem and to motivate managers to pursue profit maximization objectives (Chow, 1997; Xu et al., 2005).

Furthermore, the Chinese government traditionally wanted to retain some control in the companies, in part through partial retained ownership. This led to further conflicts between politicians/controlling shareholders and firms (Shleifer and Vishny, 1994; Young et a., 2008). Yet, government ownership and control weaken the effectiveness of other government mechanisms aimed at providing incentives for managers (Kato and Long, 2006a,b, c and 2011; Tian and Estrin, 2007). Despite these problems, the Chinese government has taken several steps to improve the corporate governance of firms in recent years.

In this study, we propose to investigate the effects of managerial ownership and other internal governance mechanisms on various aspects of Chinese listed firms' behaviour. Among other things, this enables us to shed light on the linkages between corporate governance and corporate finance. Specifically, making use of a large panel of Chinese listed firms over the period 2003-2010, we investigate three main themes. Our first empirical chapter (Chapter 3) examines the impact of managerial ownership and other corporate governance variables on firms' exporting decisions, which are characterized by considerable risk and information asymmetries. The investigation in our second empirical chapter (Chapter 4) focuses on how managerial ownership affects corporate investment decisions directly by mitigating agency conflicts between

managers and owners, and indirectly by affecting the financing constraints faced by firms. The third empirical chapter (Chapter 5) is devoted to analyse the impact of managerial ownership and corporate governance on the agency costs faced by firms, which we measure in two ways: using the sales to assets ratio, and the general administration and selling expenses scaled by assets.

1.2. Motivation of the study

The Chinese corporate governance system has evolved significantly over the last three decades, and especially in the last decade. However, very limited systemic academic research has been conducted to assess its effectiveness in recent years. This provides a great opportunity for us to fill this gap and contribute to the understanding of the effectiveness of the Chinese corporate governance system. We next discuss the motivations behind each of the empirical chapters carried out in this thesis.

Participation in export markets is often viewed as helpful for economic growth, especially in emerging economies, as evidenced by a large number of cross-country studies at the aggregate level, which report a positive relationship between international trade and economic growth (Frankel and Romer, 1999). Since its accession to the WTO in 2001, China's export performance has been phenomenal: in 2010, it has become the largest exporter in the world (CIA, 2010), while the technological sophistication of its exports has also increased substantially. At the same time, as we discuss in Chapters 2 and 3, the Chinese governance system has significantly improved. In the light of these developments, it is increasingly interesting to see how internationalization and internal governance mechanisms, which are two constantly evolving phenomena, interact with each other in the Chinese context. This is the main objective of our first empirical study (Chapter 3) in this thesis. Further, the same chapter is motivated by the fact that there is no study that has examined the impact of corporate governance on internationalisation after the 2005 split share reform in China.

Efficient corporate investment decisions are of key importance not only for the firms themselves but for the economy as a whole. At the microeconomic level, investment/capital expenditures affect a firm's production decisions, strategic plans, and

performance (Bromiley, 1986; Nicholson, 1992; McConnell and Muscarella, 1985). At the macroeconomic level, firms' investment/capital expenditures have a significant effect on economic growth, and business cycles (Dornbusch, and Fischer, 1987; Bernanke and Gertler, 1989; Carlstrom and Fuerst, 1997). Consequently, a vast body of research has attempted to identify the determinants of corporate investment. The classic work trace back to Meyer and Kuh (1957). Following the seminal work of Fazzari et al. (1988), a large body of literature has established cash flow as an important determinant of investment. Yet, although a number of theoretical papers suggest that managerial incentives have implications for investment, only a limited number of studies from developed countries have provided evidence on the impact of managerial ownership on investment, either directly or indirectly through its effects on financing constraints. In addition, these two effects are usually investigated separately. In the context of China, although several studies have recently examined the direct and indirect impact of state ownership on investment, to the best of our knowledge, no single study has focused on the potential impact of managerial ownership on fixed investment decisions. We believe this represents a significant gap in the literature, in the light of the fact that managerial ownership has emerged as an important governance mechanism in recent years. The main motivation of our second empirical chapter (Chapter 4) is therefore to fill this gap by examining both the direct and indirect impact of managerial ownership on fixed investment decisions. Another motivation for the same empirical study is the controversy over the over- or under-investment behavior of Chinese listed firms which we address in details in this Chapter.

China's modern corporations suffer from sever agency problem stemming from conflicts of interest between mangers and shareholders, as well as between controlling shareholders and minority shareholders (Lin et al. 1998; Kato and Long, 2006a,b,c). Agency costs arising from the agency conflicts in the corporations not only generate losses for the owners of the firms, but also significant losses for the economy (Alchian and Demsetz, 1972; Jensen and Meckling, 1976). Following Ang et al.'s (2000) empirical contribution to the analysis of agency costs, a handful of studies have developed empirical evidence on the relationship between ownership and governance structure and agency costs in developed countries (e.g., Singh and Davidson, 2003; Fleming et al., 2005; Florakis, 2008; McKnight and Weir, 2009). Focusing on Chinese

listed firms prior to 2000, Tian and Estrin (2007) and Firth et al. (2008) examine the effects of ownership and other internal governance mechanisms including debt financing, and conclude that these governance mechanisms are not effective in mitigating agency costs. Yet, considering recent developments in the governance of listed firms as well as banks a (as we discuss in the Chapter 2), it is interesting to analyze the extent to which ownership and governance mechanisms affect agency costs in the most recent period, and particularly after the 2005 split share structure reform . It is also interesting to how they affect agency costs differently in private-controlled firms and state-controlled firms. These considerations motivate our third empirical study (Chapter 5).

1.3. Contributions

This thesis contributes to the existing literature in a number of ways. By examining the impact of managerial ownership and other corporate governance variables on firms' exporting decisions, the first empirical study in this thesis (Chapter 3) primarily contributes to the trade literature by including governance components as new elements of firm heterogeneity, with the aim of better explaining the determinants of both export propensity and intensity. Recent developments in international trade literature have advanced our understanding by incorporating sunk-costs, heterogeneity in productivity, and financial factors to explain variations in firms' export market participation decisions. Yet, they have ignored the potential impact of governance factors. Although a limited number of studies has examined the relationship between corporate governance factors and export behavior, these studies are generally based on small samples and often make use of a static modelling framework. Further, they do not examine all the corporate governance components in a unified framework. By integrating the corporate governance and trade literatures, this study documents for the first-time a non-linear relationship between managerial ownership and exporting decisions in the context of China.

Our second empirical study (Chapter 4) examines the relationship between managerial ownership and corporate investment decisions. Firstly, this study advances existing literature by providing evidence on both the direct and indirect effects of

managerial ownership on corporate investment decisions, whereby the latter operates through a reduction in financing constraints. Prior literature on countries other than China has focused on one or the other effect, but never on both effects simultaneously. Secondly, in the context of China, there is no single study that examines the impact of managerial ownership on corporate investment or on the sensitivity of investment to cash flow. Using a recent data set, this study identifies managerial ownership as a mechanism through which Chinese listed firms can alleviate agency and asymmetric information problems, and concludes therefore that managerial ownership is an important determinant of investment decisions even in a transition and emerging economy such as China.

Our third empirical study (Chapter 5) contributes to the existing literature by providing the first evidence from China on the direct relationship between managerial ownership and agency costs. Although previous studies have looked at the effects of other ownership variables on the agency costs faced by Chinese firms (Firth et al., 2008; Tian and Estrin, 2007), to the best of our knowledge, there is no evidence on the direct effect of managerial ownership on agency costs in China. This study also addresses endogeneity problem through the use of a system GMM estimator in the empirical analysis.

Taken as a whole, our research contributes to the literature along three additional dimensions. First, it contributes to the growing literature on the effects of managerial incentives, and in particular managerial ownership, in the context of transition economies (Kato and Long, 2011)

Second, it distinguishes itself from previous studies by differentiating the effects of managerial ownership on firms' exporting and investment decisions, as well as agency costs, between the pre- and post- reform period, and thus contributes to the research on the effects of the split share structure reform in China. Recent empirical studies examine the direct effects of the reform itself on firms' behavior (Lin 2009; Chen et al., 2012), ignoring how corporate governance mechanism can differently affect firm behavior in the post reform period. The empirical studies in this thesis show that the increased managerial ownership which followed the reform is associated with

reduced agency costs, reduced financial constraints, more efficient investment decisions and increased exporting activities.

Finally, our research differentiates for the first time, the impact of managerial ownership on firm behavior (including investment and exporting decisions as well as agency costs and financing constraints faced by firms) between privately- and state-controlled firms. All three empirical studies in this thesis unanimously provide evidence that privately-controlled firms are associated with fewer agency costs, fewer financial constraints, more efficient investment decisions, and increased international expansion activities in terms of export sales. These results are consistent with the argument that private ownership is superior to state ownership (Alchian, 1965; Shleifer, 1998; Green, 2004; Chen et al., 2010). Our research therefore also contributes to the literature that favors privatisation (see Megginson and Netter, 2001, for a survey).

Overall, our research examines the effects of managerial ownership and other governance mechanisms on various aspects of corporate behaviour. It also provides an opportunity for the comparison of the effectiveness of different governance mechanisms between the pre-reform and post reform periods, as well as between state- and privately-controlled firms. By integrating and leveraging the corporate governance, corporate finance, and trade literatures, this research contributes to further our knowledge about the effectiveness of managerial ownership and other internal corporate governance mechanisms of Chinese listed firms. The outcomes of this research will help policy designers and government agencies, economists, as well as local and foreign investors to improve the corporate governance of Chinese listed firms.

1.4. Structure of the thesis

This thesis mainly consists of three empirical studies on the impact of the corporate governance on various aspects of Chinese listed firms' behavior. It is structured in six chapters. The rest of the thesis is organized as follows. Chapter 2 provides a general overview of the institutional reforms in China. It first provides a historical background of corporations and financial markets in China. It then describes the ownership structure of the corporations and other internal governance mechanisms. The same chapter also

describe the development of the private sector and the evolution of the banking system in China. Chapter 3 presents the first empirical study, which examine the impact of managerial ownership and other corporate governance variables on firms' exporting decisions. The same chapter also provides brief descriptions of the present state of international expansion, and the managerial incentive system in China. Chapter 4 represents the second empirical study, which examines the relationship between managerial ownership and corporate investment decisions. Chapter 5 presents the third empirical study that examine the impact of managerial ownership and corporate governance on agency costs, which are measured using the sales to assets ratio, and the general administration and selling expenses scaled by assets. Finally, Chapter 6 presents the concluding remarks of this thesis, identifies some potential research limitations, and suggests potential avenues for future research.

Chapter 2

Institutional reforms and corporate governance system in China

2.1. Introduction

It is generally accepted that China's economic success is the result of its economic reform initiated in 1978, which is gradually transforming the central-command economic system into a market-based economy. In the initial stage of the transition, the government paid little attention to providing institutional infrastructures that were necessary for the capital market to function properly.[1] Although the transition necessitated the establishment of an almost entirely new set of institutions, China's political system inhibited the development of legal institutions and the evolution of local governmental authorities. Nevertheless, its desire to integrate globally has resulted in the gradual development of legal institutions, the decentralization of political institutions, the liberalization of the financial system, and the rapid growth of the private sector and development of financial markets. In this section, we briefly describe the important institutional developments that are underpinning the growth of the corporate sector in China.

As part of the wider economic reform, in the 1980s, the Chinese government adopted various measures aimed at reforming SOEs. Unlike most former centrally planned economies, China has adopted a gradual and piecemeal approach instead of the overnight privatization of SOEs. These measures included increasing managers' decision making autonomy, introducing financial incentives, and bringing in performance contracts between the government and SOEs, which were mainly aimed at giving more latitude to SOE management in managing their firms and at aligning the goals of SOE management with those of the government (Naughton, 1995; Shirley and Xu, 2001; Su 2005). These reforms measures were successful to a certain extent by

[1] Hereby, we denote with institutions those formal constraints such as rules, laws, and regulations, as well as informal constrains such as norms of behavior, conventions, self-imposed codes of conduct, and enforcement mechanisms, which structure human interaction to reduce uncertainty and provide incentives (North, 1990, 1994). Without institutions, markets neither develop nor function properly.

reducing the role of governmental intervention in the management of SOEs and by improving their productivity (Groves et al., 1994; Li, 1997). Nonetheless, the rights and responsibilities of SOE stakeholders and management were still ill-defined. Furthermore, as the reform efforts implemented thus far had not resulted in sufficient improvements in SOE performance, the government could not finance all SOEs itself (Aivazian et al., 2005; Jiang et al., 2009). Therefore, it sought to corporatize and partially privatize former SOEs while retaining its status as the controlling shareholder (Walter and Howie, 2003).

2.2. Corporate governance system in China

In this section, we discuss the evolution of corporate governance of Chinese listed corporations, with particular emphasis on corporate ownership structure.

2.2.1. Evolution of corporations and financial markets

The history of modern corporations in China is very short compared to other developing countries. Starting from 1984, stock companies have appeared in China, but formal trading did not start until the early 1990s. Beijing Tianquao Co, Ltd which was established in 1984 became the first joint stock corporation in China. In the same year, Shangai Feil Acoustics Co., Ltd was the first Chinese corporation that publicly offered shares to the market (CSRC, 2006).

The establishment of the two stock markets in Shanghai in 1990 and in Shenzhen in 1991 with the objective of promoting the reform of SOEs was one of the most significant economic reforms in China. The government has thereby been successful in encouraging enterprises, especially SOEs to raise funds by issuing stocks and corporate bonds (Chi and Young, 2007). Moreover, the government has been seeking to improve the operating performance, and the corporate governance of SOEs through continuous economic and share-ownership reforms. Consequently, Chinese capital markets have seen a rapid development in terms of the number of listed companies, trading volume, and total market capitalization. Yet, the number of privately-owned listed companies was negligible until 1998, but boomed thereafter.

At the end of 2010, a total of 2063 companies were listed on the two Chinese stock exchanges. The total market capitalization of these companies was 26.54 trillion of RMB. The combined market capitalization of these two stock exchanges in 2010 accounted for about 66.694 % of China's GDP (CSRC, 2010). Now China is the world's third largest stock market after the US and Japan in terms of combined market capitalization. Furthermore, China's securities market is open to foreign investors. While International investors were for the first time allowed to invest in China's B share market in 1992, after ten years, foreign institutions have been allowed to invest directly into China's A share market via the Qualified Foreign Institutional Investor (QFII) scheme.[2] As can been seen in Table 2.1, with the opening of Chinese economy for foreign investors, there has been a steady growth in number of QFIIs and approved investment quotas in USD billion. We can also observe that the total assets held by the QFIIs have steadily increased from 2004 to 2010 except in 2008. Furthermore, among QFIIs commercial banks accounted for about 29% in 2007 and 20 % in 2010[3].

Table 2.1 Qualified foreign institutional investors (QFII) in China 2004-2010

Year	QFII licensed foreign institutions	Approved investment quotas in USD billion	Total QFII assets	Securities held by QFII	Percentage of securities to total assets
2004	27	3.7	24	16.2	66.6
2005	34	5.6	39	34.7	90
2006	44	7.3	196	137	70
2007	52	9.995	258.8	175.5	61.4
2008	76	13.405	178.78	104.78	58.6%
2009	94	16.67	289.9	237	81.8%
2010	106	19.72	297.1	265.8	89.5%

Source: CSRC annual reports 2004-2010

Furthermore, since 2001, eligible foreign companies can offer and list shares in China's markets. A further significant development was that since 2002 foreign companies are also allowed to take over Chinese listed companies. International investors' participation has helped to promote Chinese capital markets. At the same time, it has brought into the capital market long-term funds, which are helpful for the

[2] This was a program that permitted, on a selective basis, certain licensed global institutional investors to participate in China's mainland stock exchanges by buying and selling yuan-denominated "A" shares. Foreign access to these shares is limited by specified quotas that determine the amount of money that the licensed foreign investors are permitted to invest in China's capital markets.

[3] Other main QFIIs include investment management firms, brokers (securities companies) and investment banks, insurance companies..

growth of Chinese corporations, as well as advanced investment philosophies and good expertise (CSRC, 2006).

2.2.2. The company Law and the Chinese Securities Regulations Commission

The institutional framework for corporate governance in China mainly draws from both the 1994 Company Law of the People's Republic of China and the Chinese Securities Regulations Commission (CSRC). The 1994 Company Law improved property rights by establishing the firm as a legal entity that owns assets. Furthermore, the company law facilitated the restructuring of traditional large and medium sized SOEs as legal entities, and the establishment of a modern corporate system by standardizing the organization and the behavior of the companies. It defines the functions and responsibilities of shareholders, board of directors, and board of supervisors. In 2006, a fundamental review of Chinese company law was enacted, creating two types of limited companies: the limited liability companies (LLC private companies) and the joint stock company (JSC public companies). This brought the legal context much in line with the company law of other countries. The Enterprise Bankruptcy Law was introduced only in November 1988 for an initial trial period. In April 1991, the Civil Procedural Law, which established the bankruptcy procedure for companies, was enacted. Yet, due to that fact that most of the firms were owned by the government or government agents which have social and political objectives such as maintaining employment, the number of bankruptcies was very low compared to international standards (Cao (1998). A new corporate bankruptcy law was enacted in 2007, which applied to SOEs, foreign investment enterprises, and domestic companies. Tomasic and Zhang (2012) suggest that China's bankruptcy judges are extremely cautious in the implementation of the new law's reorganization provisions due to the political considerations.

The establishment of the two stock exchanges was an important milestone toward the development and implementation of the rule of law and in securing property rights for private enterprises. Yet, in the early 1990s, local leaders retained a significant influence over the listing process and the enforcement of secondary market regulation, but in the late 1990s, the China Security Regulatory Commission (CSRC) was able to consolidate its influence. The stock market regained the confidence of public investors and has enjoyed rapid expansion since then. From time to time, the CSRC, along with

other authorities, has issued supplemental regulations, administrative rules, guidelines and codes (e.g. the Provisional Regulations on Public Offering and Trading, and the Measures on the Administration of Futures Exchanges). The main objective of the CSRC is to protect investors. In 2001, the China Security Regulatory Commission (CSRC) formulated some basic norms of corporate governance, aiming at protecting minority shareholders from controlling shareholders' expropriation. The guideline also discourages the combination of the positions of chairperson of the board of directors and general manager (CEO duality). In 2002, a Code of corporate governance for listed companies was formulated for the first time by the CSRC. This prescribed basic principles for the protection of investors' rights, as well as basic rules and standards for directors, supervisors, and senior management. The code was intended to be the major measuring standard for the evaluation of listed companies' corporate governance structure.

2.2.3. Ownership structure

Until 2005, Chinese corporations could issue non-tradable and tradable shares. Thus, the equity structure of most listed companies was segmented, being characterized by the co-existing of exchange-tradable shares held mainly by public investors, and largely stated-owned non- tradable shares, which could only be transferred through negotiation among designated parties. This structure stemmed mainly from a lack of consensus among policy-makers on the corporate shareholding structure in the early years, a lack of clarity over the role and functions of the securities market, and a lack of awareness of how to manage state assets through capital markets. Chinese corporations typically issue non-tradable shares to SOEs, and other state owned legal persons and tradable shares to public investors.

Chinese listed firms have traditionally issued four types of tradable shares; each with its own unique characteristics. China's mainland companies issue A-share and B-share in Shanghai and Shenzhen. A-shares are denominated in local currency (RMB) mainly for the domestic investors. B-shares which are traded in U.S. dollars are mainly for overseas investors. Mainland companies issue H-share in Hong Kong, and N-shares (American Depository Receipts - ADRs) in the US. Before the 2005 reform, only one

third of total shares issued by the companies were tradable. The rest were non-tradable, which significantly affected the liquidity of the China's stock markets.

2.2.4. The 2005 split share structure reform

In 2005, the CSRC launched trial reforms of non-tradable shares (referred to hereafter as the reform), with the objective of releasing the market from the historical hangover that afflicted it, and better protecting the investors. Following the positive results of the trial, a full-scale reform campaign was soon carried out among listed companies. Specifically, the non-tradable shares were floated through the open markets. The reform aimed to gradually eliminate the difference between the two types of shares and to balance the interest between the two categories of shareholders in a market-oriented way. In order to make government-owned shares legally tradable, state shareholders were required to compensate tradable shareholders through a share conversion process. This was achieved through fair negotiations between holders of non-tradable shares and tradable shares. The compensation was decided at shareholders' meetings, without any government intervention. The reform effectively diluted the government-owned share portion, attenuating government-related agency costs.

As of December 31, 2007,1,298 listed companies, which represented 98% of the total listed companies subject to the reforms, had either initiated or completed the process of non-tradable share reform. Additionally, all new IPOs taking place since mid-2006 no longer have non-tradable shares.

The non-tradable share reform successfully resolved problems such as the dual-pricing of shares of the same listed company. It restored the pricing functions of the capital market, greatly improved market efficiency and paved the way for further improvements in the corporate governance and development of the capital market.

Another important outcome related to the 2005 reform is that listed companies have been allowed to incentivize their managers with shares and stock options. In January 2006, the CSRC issued "The Administrative Rules of Equity Compensation of Listed Companies", which allow the companies that have successfully completed their split-share-reforms to adopt equity based compensation plans for their managers. According to these measures, equity incentives include restricted stocks and stock

option plans. Yet, independent directors were excluded from any stock incentive scheme, as they were tasked with providing independent opinions on the fairness and impact of proposed stock incentive schemes. This also provided a strong incentive for the top managers of listed companies to complete the reform at the earliest possible in order to participate in the new incentive scheme. It is expected that in addition to increasing the income standards of the management, granting them stocks or equity options helps align their interest with those of the shareholders and with the long-term development of the enterprise. Yet, state ownership and control in former SOEs hinders the use of modern governance mechanisms such as managerial ownership (Conyon and He, 2011; Kato and Long, 2011). However, after three decades of reform, managerial ownership has emerged as one of important governance mechanisms in Chinese listed companies at least in non-state firms (Conyon and He, 2011; Walder, 2011).

Table 2.2 reports the evolution of the ownership structure, board structure of Chinese listed firms over the period 2003–2010.We observe a persistent decrease in state ownership and legal person ownership throughout the sample period. In particular, state ownership which accounted on average for one third of total shares decreased from 35.9% in 2003 to 8.3% in 2010. We can observe similar trend for legal person ownership which decreased from 21.9% in 2003 to 0.086% in 2010. In contrast, shares owned by top management increased from 0.4% in 2003 to 0.8% in 2010.

Table 2.2 Evolution of the ownership structure, board structure

Year	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
State ownership	0.359	0.344	0.333	0.284	0.248	0.210	0.114	0.083
Legal person ownership	0.219	0.224	0.215	0.186	0.156	0.129	0.094	0.086
Managerial ownership	0.004	0.011	0.013	0.019	0.030	0.036	0.048	0.080
Foreign ownership	0.044	0.041	0.042	0.042	0.043	0.038	0.029	0.035
Board size	9.814	9.658	9.580	9.405	9.343	9.203	9.089	9.027
Proportion of independent directors	0.327	0.342	0.347	0.351	0.356	0.357	0.359	0.360

Note: See appendix A3.1 for definition of variables

2.2.5. Board of directors

In accordance with company law, Chinese firms operate under a two-tier board structure, with a board of directors (management board) and a board of supervisors

(with employees and others like the German model). The board of directors is responsible for the strategic operations of the firm.

One of the important legal rights of shareholders is the right to elect the board of directors, which have certain rights and duties in regard to the incumbent management. In the United States, the boards of directors, which rely heavily on directors from outside a firm, have enormous power in appropriating and dismissing top executives and in determining their compensation. In Japan, creditor financial institutions, which are often large shareholders as well, often dispatch directors to monitor managerial decision makings. China's commercial law also identifies the board of directors as the top level decision-making body of a company. Directors are appointed at general shareholders' meetings. In practice, however, the authority and prestige of China's boards were comparatively low relative to those in other countries. This is because the majority of listed firms were controlled by the state and thus almost 90% of the board members of these firms were government officials who lacked the necessary knowledge or experience (Su, 2005).

In 2002, the CSRC issued Guidelines for introducing independent directors in the boards of listed companies. In particular, each listed company was required to have at least two independent directors, and by June 2003 at least one-third of the board had to be made up by independent directors (including at least one professional in accounting). Independent directors could be nominated by the board of directors, the board of supervisors, or any shareholder holding 5 percent of the shares. According to the Guidelines, the independent directors were expected to play a better monitoring role than non-executive directors, being more "independent". They were not allowed to "hold posts in the company other than the position of director" and were asked to "maintain no relations with the listed company and its major shareholders that might prevent them from making objective judgment independently." Independent directors were required to provide independent opinions on substantial decisions, such as the nomination, appointment or removal of directors, the appointment or removal of senior managers, the compensation of directors and senior managers, substantial connected transactions (with a value higher than RMB3 million or 5% of latest audited net asset value), and other issues deemed substantial.

As can be seen in Table 2.2, we observe a slight decrease in the number of board of directors listed firms over the period 2003–2010 with the number of board of directors declined from 9.814 in 2003 to 9.027 in 2010. By contrast, we observe a steady increase in the proportion of independent directors of companies which increased from 0.327% in 2003 to 0.36% in 2010. Yet, in practice, many independent directors in China are, however, appointed by controlling shareholders and their independence from the management is not certain (Clarke, 2003; Su, 2005).

2.2.6. Board of supervisors

The main functions of the supervisors are to oversee finances, ensure diligent actions of the directors and senior management, and report any impropriety, abuse of discretionary power, or action that affects the firm. The Company Law does not specify the proportion of representatives of shareholders or employees on the board of supervisors, except that at least a third should be worker representatives. Moreover, whilst the supervisory board in the German model sits between the shareholders and the management board and can appoint board of directors, in the Chinese model, the supervisory board does not have the power to hire and fire directors. Consequently, the supervisory power of Chinese supervisory boards is relatively soft and seeks to act through influence. Commentators point out that Chinese supervisory boards are often ineffective, and have little influence on firms' activities, since their members have low education and professional experience and their meetings are not well attended (Dahya et al., 2003; Tong, 2003; Tricker, 2009).

2.3. Comparisons of the Chinese corporate governance system with that of developed countries

There is divergence of corporate governance systems around the world. In the developed world, one of the most prominent distinctions has been made between the Anglo-American market based corporate governance model (also known as principal-agent model or shareholder model) which characterizes the US and UK, and the network based models (stakeholder), which operates in Germany and Japan (Ahmadjian and Robbins, 2005). The main features of the former are diffuse ownership, a separation

of ownership and control, and external market-based financing and discipline, while the latter features concentrated ownership, insider control, and coordinated networks of firms and financial institutions. More specifically, the government is not very involved in the corporate governance system in the US. By contrast, banks and workers play a crucial role in Germany's governance system. They provide a substantial amount of loans to corporations, own their shares, and intervene in their corporate governance through the appointment of directors or the general monitoring of their performance.

Additionally, in China, state ownership uniquely provides another corporate governance model with its traditional ideology of employees being masters of the enterprises. In particular, many listed companies in China are still heavily influenced by the government, which controls them directly through share ownership, or indirectly by allocating capital to them at favorable rates through state-owned banks. Thus, to some extent, the Chinese government supplements the market-based economy.

2.4. Growth of the Chinese private sector

One of the most significant changes in China's economy brought about by the market-oriented reforms is the emergence of a significant private sector. Consequently, the country has gradually shifted away from the complete reliance on state-owned and collective enterprises, towards a mixed economy. Private enterprises now play a major role in promoting exports, growth, innovation, and employment in China. The development of the private sector was considered as an important element of the unique Chinese ‘‘dual-track" approach to economic reform. In addition to officially recognizing private enterprises in 1988, in the 1990s, government policies began to encourage the transformation of SOEs and collectives firms into private enterprises (Hasan et al., 2009). The Government has also granted approval for banks to lend to private businesses, thus promoting the growth of numerous small- and medium-sized firms. Further, the Chinese private sector was formally accepted as an integral part of the economy in 1999 by an amendment to the constitution. As in the Western countries, the private sector is considered as the major engine of China's rapid growth (Allen et al., 2005). In 2004, the National Congress approved a constitutional amendment to protect private property rights, granting "private property" an equal legal status to

"public property". As documented in Firth et al. (2009), based on data from the National Bureau of Statistics, the private sector accounted for roughly 50% of GNP in 2005, and was expected to rise to at least 75% by 2010.

As for the listed companies, during the last decade there have been significant changes in ownership structure. In particular, in our data sample, we observe that the proportion of privately controlled listed firms has increased from 26.76% in 2005 to around 40% in 2010, whilst the proportion of state-controlled firms has declined from 70.32% to 56.73% over the same time period.[4] As discussed in Conyon and He (2012), this trend can be explained by the growing numbers of firms coming to the exchange as privately controlled firms, and by the 2005 split share reform, which converted previously non tradable state and legal person shares to tradable shares. This clearly shows that with the deepening of China's market reforms, privately controlled firms are becoming more and more common.

2.5. China's banking system and bond market

Unlike in developed countries, in China alternative governance mechanisms, such as reputation and personal relationship (also known as Quanxi[5] in China) plays crucial role in the financing of firms, especially in the development of entrepreneurial firms. As Allen et al. (2005) discuss, out of three sectors in China, namely, State Sector (SOEs), Listed Sector and Unlisted private Sector, the former two sectors use the formal financing channels, such as bank financing and equity and bond markets for financing investment, while a large number of private firms with arguably poor applicable legal and financial sectors use the Quanxi system to finance the investment activities which contribute to the most of the growth of China's economy. Yet, recent studies suggest that following the liberalization of China's financial system and the improvement in the corporate governance of the banking sector, Chinese banks play an important role in monitoring corporate activities and improving the efficiency of corporations. In this study, since our focus is on the listed firms it is important to have an insight about the

[4] Using a similar measure of corporate control as ours, i.e. the identity of the ultimate owner (which is provided in the dataset), Walder (2011) report that the private control of listed corporations in China increased from 6.5% in 1999 to 35% in 2007.

[5] Guanxi (literally means relationship or connection) "(in China) the system of social networks and influential relationships which facilitate business and other dealings" (online oxford dictionary).

Chinese banking system, and recent reforms so as to clearly understand their implications for the firms' corporate governance and financing of investment.

Before 1978, China's financial system was a mono-bank system with only one bank–the People's Bank of China (PBOC), which played both the role of central bank and commercial bank. Beginning in the late 1970s, there was a structural but gradual change in the banking sector. In 1978, in line with economic reforms, the PBOC was split into four state-owned banks (known as the Big Four), with a multi-layered system that separates central banking functions and commercial lending. These were: the PBOC which has become China's central bank; the Bank of China (BOC) which specialized in transactions related to foreign trade and investment; the People's Construction Bank of China (PCBC) which specialized in transactions related to fixed investment; and the Agriculture Bank of China (ABC) which specialized in all banking business in rural area. Additionally, in 1984, the Industrial and Commercial Bank of China (ICBC) was established to take over all commercial transactions (deposit-taking and lending business) of the PBOC. ICB quickly became China's largest bank accounting for half of all bank lending and it is still the leading bank in China (Cull and Xu, 2003).

Since 1984, the Chinese banking system has been undergoing a series of further reforms, with the objective of making the Big Four as real enterprises. Since 1985, these banks have been permitted to engage in business outside of their designated economic sector.

Furthermore, in 1994, three wholly state-owned policy banks were established to take over the policy lending functions from the four state owned banks[6]. From that point onwards, the Big Four were known as commercial banks and were expected to operate in accordance with market principles. The state-owned commercial banks have also been subject to reform in terms of managerial and mechanistic aspects. For example, the importance of risk management has been reinforced and their managers are held responsible for their lending decisions. Other subsequent developments made during the 1990s, include the transformation of urban credit cooperatives into commercial banks,

[6] These are the State Development Bank, the Agricultural Development Bank of China, and the Export and Import Bank of China.

permitting non-state commercial banks, and introducing standard accounting and prudential norms. Furthermore, because of the large volume of policy loans and weak internal controls, by the late 1990s, the accumulated large non-performing loans (NPLs) of the Big Four state owned commercial banks and their insolvency had become important issue for the government. In 1998, the government therefore injected RMB 27 billion of capital into the four state-owned banks and transferred the NPLs to four newly established asset management companies.

To enhance the efficiency of the banking sector by increasing competition among banks, in 1986, the Chinese government began to establish new banks, known as joint-equity banks and city banks.[7] By the end of 2004, five of the 11 domestic joint-equity banks were publicly listed on China's stock exchanges. However, because the largest shareholders in most of joint-equity banks are usually SOEs, they are indirectly controlled by the government.[8]

Until 2004, the Big Four were SOEs solely owned by the Chinese government. Yet, in 2005, the government started to privatize these banks through the recruitment of strategic investors (by providing minority foreign ownership stakes) and by listing them on the stock exchange. The China Banking Regulatory Commission (CBRC) and the Central Huijin Investment Company were set up in 2002 in order to provide closer scrutiny and better monitoring of banking activities, and to facilitate restructuring, reform, and initial public offerings of state-owned banks, respectively

Another important aspect of the Chinese banking system is the entry of foreign banks which predominantly takes place through setting up branches directly. Prior to 1993, foreign banks were only allowed to establish branches in certain cities to conduct foreign-currency business with foreign firms and citizens. From 1993 onwards, however, the government started lifting restrictions on foreign bank lending and allowed foreign banks in China to conduct both foreign- and local-currency business with foreign firms and citizens, and to conduct foreign-currency business with domestic firms. There were 190 foreign bank branches in China in 2001 (Lin, 2011).

[7] The first joint-equity bank was the Bank of Communication.
[8] The China Minsheng Bank was the only joint-equity private bank wholly owned by private shareholders in China.

Following its accession to the World Trade Organization (WTO) in December 2001, China has further opened up its banking sector to foreign banks in full scale in the following five-year period. Foreign banks in 13 cities were allowed to conduct local-currency business with domestic firms from 2003 onwards. Large foreign banks were allowed to acquire significant stake and become strategic partners of major state-owned banks.[9] By 2006, there were over 300 foreign bank branches in China.

Despite many policy and regulatory changes have been initiated from early part of the 1980, empirical researches carried out in the first half of the 2000s such as by Bandt and Li (2003) and Cull and Xu (2003) show that the Chinese banking system discriminates against private firms and private enterprises are generally significantly less likely to obtain loans and receive smaller loans and are subject to higher loan standards. Bandt and Li (2003) further argue that the Chinese government's majority ownership of banks inevitably lead to less efficient resource allocation and specially capital allocation is biased in favor of SOEs. Since bank managers benefit only marginally from higher bank profitability, they prefer to lend to state-related firms because they enjoy the perks of their relationships with local government officials, who, for example, can use their political power to help arrange a job for a bank manager's relative, or facilitate their entry into the Chinese Communist Party.

Yet, more recent research argues that participation of foreign capital and management in state banks, listing of state banks and many other city commercial banks on stock exchanges from mid-2000, has exerted external market pressure on banks to follow commercial judgment and prudence in their lending practices (Jia, 2009 and Lin, 2011).[10] Qin (2007) argues that China's accession to WTO has made its foreign trade and investment regime much more liberalized and less opaque than a decade ago, specially by institutionalizing the process of China's domestic reform externally through the force of WTO obligations. Consistent with these developments, Firth et al. (2009)

[9] For example, the Hongkong and Shanghai Banking Corporation (HSBC) acquired a 19.9% stake of the Bank of Communication. The Bank of America and the Royal Bank of Scotland have become strategic partners of the China Construction Bank and the Bank of China, respectively

[10] We can observe similar development in other areas, for example, Chen et al. (2010) who investigate the relation between client importance and audit quality, suggest that auditors in China are more likely to compromise audit quality for economically important clients when the institutions for investor protection are weak. However, with the institutional improvements in China, auditors become more concerned about litigation risks and regulatory sanctions instead of their economic incentives.

provide evidence that Chinese banks provide loans to financially healthier and better-governed firms. Ayyagari et al. (2008) suggest that unlike financing from alternative channels, financing from China's formal financial system (e.g., bank financing) is associated with faster firm growth. Generally, recent studies based on China's financial system conclude that Chinese banks exercise commercial judgment and prudence in their lending and are becoming more efficient in allocating credit to private firms. Thus, Chinese banks' traditional lending bias in favor of state-owned enterprises is less likely to prevail.

In China, the corporate bonds market lags behind the development of the equity market. Although bonds were first issued in 1986, the corporate bond market has only begun to expand after 2000, when new rules governing issuance were implemented. Local firms, besides the giant SOEs, are also encouraged to issue corporate bonds and market forces increasingly determine the spread on bonds. Yet, China's bond market is still very small compared to its huge banking scoter.

2.6. Conclusion

The above analysis shows that China's efforts to improve the corporate sector through its own unique gradual and piecemeal approach has been successful in terms of introducing a formal governance structure for the sector, liberalizing its financial sector, improving governance of state owned banks, and most importantly, developing the private sector as the back bone of the economy. Furthermore, there have been significant improvements in the political and legal environment. The Chinese political system is becoming increasingly structured with regularized decision-making subject to the rule of law (Hasan et al., 2009). The legal environment has also improved, with the laws being enacted nationally and locally to protect property rights. Despite the widespread adoption of western corporate governance practices, their effectiveness has yet to be fully evaluated. In pursuit of this objective, in the subsequent three empirical chapters, we assess impact of corporate governance mechanisms on various firm behaviors.

Chapter 3

Managerial Ownership, Corporate Governance, and Firms' Exporting Decisions: Evidence from Chinese listed companies

3.1. Introduction

For many decades, the internationalization of firms' operations has been a widely researched phenomenon in both developed and developing countries. Internationalization encompasses a wide variety of activities including exporting, foreign direct investment, global outsourcing, and licensing. Recently, there has been a rapid growth in the internationalization of firms in transition economies such as China, India, Russia, and East European countries. Exporting has been the dominant mode of foreign market participation, and a number of firm-level studies provide evidence that participation in export markets improves firms' economic performance, financial health, and long-run survival prospects (Greenaway et al., 2007; Park et al., 2010).

Encouraging the internationalization of domestic firms has been a prominent policy choice in many countries, especially developing and transition economies (Buck et al., 2000). This has been done particularly via exports, following the example of the export-led growth achievement of the Asian tigers such as Singapore, South Korea, and Taiwan (World Bank, 1993)[11]. Participation in export markets is often viewed as helpful for economic growth, especially in emerging economies, as evidenced by a large number of cross-country studies at the aggregate level, which report a positive relationship between international trade and economic growth (Edwards, 1993; Frankel and Romer, 1999). The desire to promote international sales is not limited to transition and emerging economies. Bernard and Jensen (2004) note that all fifty U.S states have offices to assist firms' overseas sales, and document a considerable rise in the resources committed to export promotion in the US.

[11] Only very recently have firms endeavored in outward foreign direct investments (OFDI) via acquisitions or greenfield investment, as these forms of internationalization require a considerably greater resource commitment and risk taking than exporting (Morck et al., 2008). For instance, although China is the world's largest exporter, its OFDI is still tiny and a limited number of firms are involved in it (Morck et al., 2008).

Considering that expansion to international markets offers many advantages to firms, one can ask why not all firms engage in international trade. One possible reason is that venturing into international markets for the first time involves large initial fixed and sunk start-up costs, and a considerable risk and uncertainty (Roberts and Tybout, 1997; Bernard and Jensen, 2004; Caggese and Cuñat, 2013). Recent developments in international trade theory have used a combination of these fixed and once-and-for-all start-up costs and heterogeneity in productivity to explain variations in firms' export market participation decisions (Bernard et al., 2003; Melitz, 2003; Bernard and Jensen, 2004)[12]. In a similar vein, following the pioneering empirical work of Greenaway et al. (2007), a number of recent papers study how financial factors influence exporting decisions (Berman and Héricout, 2010; Minetti and Zhu, 2011; Caggese and Cuñat, 2013).

Yet, the trade literature has neglected the effects of managerial incentives and other corporate governance mechanisms, which have been shown to significantly affect other aspects of firm behavior in the corporate finance literature. A large body of theoretical and empirical studies investigate the effects of managerial incentives and governance mechanisms on firm performance and various types of corporate decisions including investment in physical assets and research and development (R&D). For example, Jensen and Meckling's (1976) interest alignment hypothesis suggests that managerial ownership aligns the incentives of managers with the interests of shareholders and provides top management with incentives to undertake risky investments and make decisions in the best interest of shareholders[13]. A counter-argument is proposed by Amihud and Lev (1981) and May (1995) who show that when managers' shareholding is sufficiently large, they become entrenched, and tend to adopt investment and financing policy choices which reduce firms' idiosyncratic risk at the expense of shareholders' interests. In addition to managerial incentives, other corporate governance related variables such as state or foreign ownership, or board structure have

[12] See Greenaway and Kneller (2007) for a detailed review.

[13] Several papers have shown that corporate risk-taking is generally positively related to performance, thereby enhancing shareholder value (see for instance, John et al., 2008). Looking specifically at the decision to enter export markets, which can be seen as a risky investment (Verhoeven, 1988), there is a huge literature which has shown that exporting is positively linked to corporate performance in general and productivity in particular (Park et al., 2010).

been shown to significantly affect firm performance (see Brown et al., 2011, for a survey).

In this paper, we connect the international trade literature on the determinants of firms' exporting activities, with the corporate finance literature which has shown the importance of managerial ownership and other corporate governance mechanisms on firm behavior. The primary governance attribute we consider is managerial ownership. Additionally, we examine the effects of other forms of corporate ownership such as state, legal person, and foreign shareholding, as well as the characteristics of the board of directors on firms' internationalization decisions. We build on existing literature (Filatotchev et al., 2001 and 2007; Lu et al., 2009; Fu et al., 2010), which has typically analyzed the effects of a single or few specific corporate governance mechanisms on firm exporting behavior, by considering the simultaneous effect of several mechanisms. This approach mitigates omitted variable bias and enables us to control for possible interactions between mechanisms. Our analysis focuses on both export propensity and intensity, which in our view, gives readers a thorough overview of the extent to which managerial ownership and other corporate governance variables affect firms' overall export strategy

Our study is based on a large panel of Chinese listed firms over the period 2004-2010, which we differentiate into state- and privately-controlled. We believe that China represents an interesting case study for the analysis of the links between corporate exporting decisions and corporate governance mechanisms for the following two reasons. First, its accession to the WTO in late 2001 opened up tremendous business opportunities for Chinese firms worldwide. A large number of Chinese firms have consequently internationalized their operations, and the country has now become the first exporter in the world. Second, China's corporate governance has been evolving and improving rapidly so as to cope with its fast economic growth and the desire to integrate with the global economy. For instance, after June 2003, companies were required to appoint one third of independent directors to their boards. In addition, following the 2005-2006 split share structure reform, agency problems were significantly reduced, and restrictions on managerial stock ownership were removed (Li et al., 2011). To the best of our knowledge, ours is the first study looking at the links between corporate governance and firm exporting decisions in China, focusing on the differences between

the pre- and post-reform period. Additionally, we are also the first to investigate differences in these links between state-controlled and privately-controlled firms,

Using a dynamic modelling framework to control for the persistence in exporting (due to sunk costs), and controlling for firm heterogeneity and endogeneity, we document a strong non-monotonic relationship between managerial shareholding and export propensity and intensity. This implies that as managerial ownership increases, managers are provided with the incentive to align their interest with that of shareholders, which reduces agency costs and contributes towards shareholder value maximization. Yet, after a threshold level is reached, managers become risk adverse and entrenchment effects become prominent, affecting firms' behavior in a manner that is not conducive for international expansion. In addition, we find a negative association between state ownership and export intensity. Finally, we observe that the larger the board size, the lower the firm's export propensity and intensity, and that firms with a higher proportion of independent directors in the board are generally less likely to export. These findings are mainly driven by privately-controlled firms during the post-2006 period and suggest that in the Chinese context, in order to promote the international presence of Chinese firms, company shares should be included in the compensation package of managers, state ownership should be further reduced, and firms should be encouraged to have smaller boards and to pay particular attention to the quality of the independent directors in their boards.

The remainder of the paper proceeds as follows. Section 3.2 provides a description of the institutional environment in China. In Section 3.3, we present some theoretical background on the links between managerial ownership and other corporate governance variables, on the one hand, and internationalization decisions, on the other; review the related existing empirical evidence; and develop our hypotheses. Section 3.4 discusses our baseline specification and estimation methodology. Section 3.5 describes the data and provides descriptive statistics. We discuss our empirical results in Section 3.6. Section 3.7 concludes.

3. 2. Institutional environment in China

3.2.1. Internationalization

Since its accession to the WTO in 2001, China's export performance has been phenomenal. In 2007, the Chinese government has set up the China Investment Corporation (CIC), with the aim of actively encouraging Chinese firms to expand operations abroad (Brainard and Fenby, 2007). China's economic expansion overseas is occurring at different levels of engagement using various modes of internationalization. Exporting is by far the most significant aspect of internationalization in terms of economic value (Child and Rodrigues, 2005). In particular, China's total exports increased tremendously during the last three decades: from US$8 billion (around 1 percent of world exports) in 1978-89 to US$1,442 billion (13.4 percent) in 2005-06 (Athukorala, 2009). In 2006, China became the world's second largest exporter after Germany, and in 2010, the largest exporter (CIA, 2010). In 2007, its exports to GDP ratio was at 37.5 per cent, more than three times higher than the average level of around 10 per cent characterizing the other major economies such as the US, Japan, India, and Brazil (Athukorala, 2009). The technological sophistication of Chinese exports has also increased substantially and these exports now show significant overlap with the products of OECD countries (Schott, 2008). China is therefore clearly an ideal laboratory to explore the internationalization behavior of firms.

3.2.2. Managerial incentives

Despite these achievements, the corporate governance systems of Chinese listed firms and the institutions that support them have long been criticised for their ineffectiveness (Clarke, 2003; Allen et al., 2005). In particular, despite the numerous ownership reforms that took place during the last decades, the Chinese government not only dominates over economic affairs, but also retains a substantial portion of ownership in a large number of listed corporations.

Given that most of the assets in China are owned by the state, historically, the government adopted various incentive systems to make the management of these assets more efficient. In addition to the partial privatization and corporatization of former SOEs, these mainly include managerial autonomy and a management responsibility

system (Su, 2005). During the 1980s, the Chinese government introduced managerial autonomy by decentralizing managerial decision rights of state-owned enterprises (SOEs) from the central government down to the firm level. In addition, as discussed in Bai and Xu (2005), as part of the economic reform process in the 1980s, the Chinese central government delegated some of its decision rights (including exporting) to SOE managers, in order to motivate them to become more efficient. This exercise was motivated by the central government's willingness to promote markets and to gradually phase out its central planning function (Fan et al., 2007). Groves et al. (1994) provide evidence that managerial autonomy improved corporate productivity[14].

Subsequently, other forms of managerial incentives such as CEO pay-performance sensitivities and CEO turnover-performance sensitivities were introduced. Yet, large government ownership and control have been found to weaken the positive effects of these managerial incentives (Kato and Long, 2006 a, b, c; Conyon and He, 2011)[15].

More recently, following the 2005-2006 split share structure reform, which removed restrictions on managerial stock ownership, the literature has considered managerial ownership as another type of managerial incentive. A number of studies document that, with the deepening of market-oriented reforms, the introduction of foreign investment in China, and the global pay benchmark, managers' ownership shares in publicly listed corporations have considerably increased in recent years[16]. For example, average managerial ownership rose from less than 1% before 2000 (Tian and Estrin, 2008) to around 8% in 2010[17]. Furthermore, Conyon and He (2011, 2012) report that the worth of CEO share ownership is much higher than their executive pay (greater

[14] By contrast, Lin et al. (1988) argue that, although a series of reforms initiated by the government have increased managerial autonomy and intensified competition, due to policy burdens and soft budget constraints, instead of enhancing economic efficiency, they have worsened agency problems in SOEs.

[15] Research focused on Chinese listed firms reaches similar conclusions using managerial tournament theory (Chen et al., 2011; Kato and Long, 2011). Specifically, these studies provide evidence suggesting that the winner's price (executive pay) and the pay gap between the highest executive positions (i.e. the first- and second- tier executives) improve firm performance due to enhanced managerial efforts, but that the performance effects of managerial incentives derived from these corporate tournaments is weakened by state ownership and control (Chen et al., 2011; Kato and Long, 2011).

[16] Although these changes were gradual and evolutionary compared with those experienced in other transition countries, Walder (2011, p. 23) refers to this as a Chinese version of "managerial revolution". It should be noted, however, that the rise in managerial ownership has been slower in China compared to market economies (Walder, 2011; Chen et al., 2011; Conyon and He, 2012)

[17] The latter figure is based on the data used in our empirical analysis.

than 400 times in 2010). Since the state imposes a ceiling on how much SOE managers can be paid, some managers may choose to shirk instead of being productive, while other productive managers may enjoy on-the job consumption or perquisites (Fan et al., 2011). By contrast, equity ownership directly links managers' efforts to their wealth, giving them strong incentives to work hard[18].

In addition, considering that Chinese firms are characterized by severe agency problems due to the separation of ownership and control (Qian, 1996; Xu et al., 2005)[19], equity ownership provides an important mechanism to align the top management's interests with those of shareholders and to focus managers' efforts on value increasing decisions (Jensen and Meckling, 1976).

Lin et al. (2009) show a large and significant effect of insiders' equity ownership on the efficiency of Chinese corporations. Along similar lines, Chow (1997) observes that whatever the type of managerial incentive system adopted by the government, there is a positive association between the profit of the enterprise and the economic benefits to the management. Therefore, he rightly stresses that "providing incentives for the management of publicly owned assets is a key to China's success" (Chow, 1997, p. 321).

In the light of these developments, it is increasingly interesting to see how internationalization and managerial ownership, which are two constantly evolving phenomena, interact with each other in the Chinese context. This is the main objective of our study.

[18] This effect is likely to be more significant for Chinese managers than for their counterparts in the Western countries, since their personal wealth is much lower (Walder, 2011).

[19] Even though ownership concentration is high in China, there often exists a separation between ownership and control. This can be explained by the dominance of pyramidal ownership structures among Chinese listed companies. In these circumstances, agency problems often take the form of tunneling, whereby the listed companies transfer resources through related party transactions to benefit the controlling shareholders at the cost of smaller investors (Jiang et al., 2010). Agency costs may also arise because managers at SOEs are mainly appointed by the government, and tend to have political and social objectives rather than focus on profit maximization (Bai and Xu, 2005).

3.3. Literature review and hypotheses

In this section, we review the literature on the agency theory of managerial decision-making and its impact on firms' export market participation decisions, and develop testable hypotheses.

As we discussed in the introduction, the international trade literature has made significant progress in explaining firms' export market participation decisions. Sunk costs such as gathering information on foreign markets, developing marketing channels, adapting products and packaging to foreign taste, and learning to deal with new bureaucratic procedures play an important role in determining these decisions (Greenaway and Kneller, 2007). As such, only large and productive firms can achieve a net present value of profits from exports sufficiently large to offset the entry sunk costs. Other studies have also shown how financial factors affect firm export market participation decisions (see, for instance, Greenaway et al., 2007).

Yet, the literature on firm heterogeneity and exporting has neglected the importance of managerial ownership and other corporate governance characteristics, which have been found to be pervasive in other aspects of firm behavior, such as financing and investment in fixed capital (Jensen and Meckling, 1976; Fama, 1980; and Fama and Jensen, 1983; Shleifer and Vishny, 1997). Entering foreign markets incurs large ex-ante fixed sunk costs, which can be seen as a form of investment in intangible assets, as modelled in Melitz (2003). This investment involves risk and uncertainty (Dixit, 1989; Roberts and Tybout, 1997), including a potential bankruptcy risk (Caggese and Cuñat, 2013)[20]. It also reflects complexity and information asymmetry between owners and managers (Morck and Yeung, 1991), and between firms and lenders such as banks (Caggese and Cuñat, 2013). Given the association between the decision to enter export markets and an investment decision, it can be argued that managerial incentives,

[20] Bankruptcy risks are associated with possible non-payment, late payment, or fraud by foreign buyers. These risks may stem from the difficulty in verifying buyers' creditworthiness and reputation when buyers reside in distant countries. They could also derive from buyers' poor financial conditions, insolvency, or bankruptcy, and/or from their unwillingness to keep their contractual payment obligations. Firms who start exporting also face several challenges in terms of language, legal threats, conforming to foreign regulations, and cultural differences. In addition, there are risks in terms of legal security, reliability of trade partners, and exchange rates (Verhoeven, 1988). Transportation risks, which involve the risks of transferring goods from one country to another, also need to be taken into account. They may include theft and/or damage of goods during transportation. Finally, there may be risks caused by natural catastrophes, coup d'état, terrorism, civil war, revolution, insurrection, and so on in the buyer's country.

and, more in general, corporate governance mechanisms, which have been found to have significant effects on corporate investment, may have important bearings on this decision as well. This suggests that differences in corporate governance may explain observed differences in firms' export behavior: it is possible that only firms with robust governance structures are able to engage in international activities. Alternatively, suboptimal governance structures may prevent top managers from participating in export markets. Thus, by exploring how governance issues in general and managerial ownership in particular affect exporting decisions, a new dimension —corporate governance— is added to the firm heterogeneity theory of international trade.

Only a limited number of studies have analyzed the relationship between corporate governance and firms' internationalization decisions. A study by Buck et al. (2000) based on listed firms of former Soviet Union countries including Russia, Ukraine and Belarus find that managerial ownership has a non-monotonic relationship (inverted U shape) with exporting, reflecting the incentive and entrenchment effects of managerial shares in the context of the propensity to export. That is managerial entrenchment effects may at first oppose and finally overwhelm incentive effects at higher levels of managerial ownership in relation to exporting decisions. They also show that outside individual and institutional shareholding are insignificantly associated with exporting propensity, since outside individuals and institutions in the countries analyzed do not have sufficient shares to influence the decisions of the firms or provide a discipline on managerial decisions.

Using a survey data over the period 1995-1997, Filatotchev et al. (2001) investigate the impact of governance structures of privatized firms on export intensity for 152 privatized firms in the transition economies of Russia, Ukraine and Belarus. They show that while managerial ownership and increasing managerial board power is negatively associated with exporting activities, despite majority managerial control, the presence of foreign investor and outside board representation is positively associated with export-oriented product development and export intensity. This shows that because of the rapid transformation of ownership from state to insiders (particularly managers) in these countries, entrenched managers may hamper the international expansion at the expense of minority shareholders (Filatotchev et al., 2001). That is, entrenched large

shareholders (managers) reap private benefits by avoiding risky projects at the expense of minority shareholders.

Filatotchev et al. (2007) employ Bayesian structural equation modeling to examine the relationship among corporate governance, managers' independence from owners in terms of strategic decision making, exporting, and corporate performance. They use data collected through survey from 157 large companies in Poland and Hungary. They find that managers' independence is positively associated with firms' financial performance and exporting. The extent of managers' independence is negatively associated with ownership concentration, but positively associated with the percentage of foreign directors on the firm's board. They interpret these results as indicating that concentrated owners tend to constrain managerial autonomy at the cost of the firm's internationalization and performance. However, participation of foreign shareholders in the board enhances the firm's export orientation and performance by encouraging managers' decision-making autonomy. This study emphasizes the importance of manager's independence in the export market participation decisions in transition economies.

Hobdari et al. (2009) use 8489 firm year observations of non-listed firms in two transition economies: Estonia and Slovenia to investigate how different types of owners influence the extent of firms' internationalization decisions. They measure the degree of internationalization by the share of firm exports in total sales. They find that while firms under the control of insider owners are generally more internationalized, consistent with the interest alignment hypothesis, State control hampers international activities.

George et al. (2010) argue and find that the ownership structures of SMEs influences their proclivity to take risks and thus expand the scale and scope of their internationalization efforts. Using data from 889 Swedish SMEs, they show that internal owners (CEOs and other senior executives) tend to be risk averse and as the managerial ownership increases, both the scale and scope of internationalization decline.

Furthermore, Calabro et al. (2009) and Calabro and Mussolino (2013) show that board characteristics have an important impact on the internationalization decisions of family businesses in Norway.

To the best of our knowledge, only a handful of studies have focused on links between internationalization and corporate governance in the Chinese context. Among these, Lu et al. (2009) use data on listed companies over the period 2002 to 2005 and find that CEO share ownership and the ratio of outside directors in the board are positively associated with firms' exporting decisions, whilst ownership concentration is negatively associated with it. Fu et al. (2010) use data on Chinese non-listed manufacturing firms over the period 1999 to 2003 and show that wholly foreign owned firms and joint-ventures with foreign control have higher export propensity and intensity than domestic firms or joint-ventures with domestic control. Yi (2014) and Yi and Wang (2012) use data on approximately 30,000 firms operating in the Zhejiang province over the period 2001-2003 and find that especially for small and medium-sized enterprises, foreign ownership is positively associated with firms' export decisions, while state ownership appears to make exporting less likely. We build on these studies by making use of a larger and more representative dataset for a much more recent post-split share structure reform time period, by analyzing the effects of a broader range of corporate governance variables on firms' export propensity and intensity, and by differentiating firms into state-controlled and privately-controlled. We next turn to how specific internal governance mechanisms can be used to provide managers with the incentives necessary to make investment decisions, including the decision to enter export markets.

3.3.1. Managerial ownership

In a situation where managerial actions and/or the details of the investment opportunities are not perfectly observable by shareholders, there will be an incomplete contracting against managerial policy choices. One way to solve this problem is to give managers incentives in the form of equity stakes in the firm (Jensen and Meckling, 1976). This helps to resolve managers' moral hazard problems by aligning their incentives with the interests of the shareholders. We refer to this as the interest alignment effect. Consistent with this prediction, Agrawal and Mandelker (1987) argue that managers' holdings of common stock and options in the firm reduce incentive problems by motivating managers to make variance-increasing investment decisions. Along similar lines, Denis et al. (1997) find that managerial equity ownership is positively associated with value increasing corporate decisions. More recently, Coles et

al., (2006) provide evidence that managerial holdings of shares and stock options provide managers with incentives to implement riskier policy choices, including more investment in R&D. Although these studies are based on US data, their findings are likely to apply to the Chinese case as well. This is confirmed by Lin et al. (2009), who show that the level of firm efficiency in China is positively associated with insiders' ownership. Similarly, using data from 970 Chinese listed firms over the period of 2007-2008, Liu et al. (2012) argue that managerial ownership is positively related to the performance of state-owned enterprises (SOEs).

A counter-argument is provided by Amihud and Lev (1981) and May (1995) who show that when managers' shareholding is sufficiently large, they will become entrenched and engage in risk-reduction activities, adopting investment and financing policy choices which reduce firms' idiosyncratic risk at the expense of shareholders' interests. Similarly, John et al. (2008) argue that managers with large insider ownership stakes in firms may opt for conservative investment policies, even to the extent of passing up risky projects with high positive net present value at the detriment of shareholders. Furthermore, according to La Porta et al. (1999), when managerial ownership reaches a threshold, further increasing it is likely to make managers entrenched, which may lead them to abuse power and exploit small shareholders instead of undertaking value-enhancing investment projects. We refer to this as the entrenchment effect.

In a seminal work based on US data, Morck et al. (1988) provide the first empirical evidence for a non-monotonic relationship between managerial shareholding and performance. Using a piecewise linear model, they find that until inside ownership reaches 5%, increasing ownership results in higher firm value (i.e. Tobin's Q increases); between 5% and 25%, increasing ownership negatively affects firm value; and finally firm value rises with inside ownership thereafter (but the effects are small). The rationale suggested by Morck et al. (1988) for this non-monotonic relationship is as follows. Managers have a natural tendency to indulge their preferences to the detriment of other shareholders. Consistent with Jensen and Meckling's (1976) alignment hypothesis, at lower levels of managerial ownership, further increases in managers' ownership align their interest with that of other shareholders, and thus, they work hard to maximize firm value, benefitting all shareholders (shared benefits). Yet, increasing

managers' stock ownership not only gives them a residual claim on profit, but also increases their voting power, insulating them from other disciplinary forces, and making them more entrenched. This provides managers with incentives to use corporate assets for their own (private) benefits. Similarly, McConnell and Servaes (1990) examine the relationship between insider ownership and performance measured by Tobin's Q using a quadratic model for insider ownership, and find an inverted U-shaped relation for insider ownership. Most recently, Kim and Lu (2011) report evidence suggesting a hump-shaped relation between managerial ownership and R&D expenditure of US firms. Along similar lines, some recent studies show that in the Chinese context, managerial ownership is positively associated with corporate performance. Yet, very high levels of ownership show negative performance effects (Li et al., 2007b, and Hu and Zhou, 2008).

Moving the above literature forward, we investigate the extent to which managerial ownership affects Chinese listed firms' export market participation decisions. We expect the alignment and entrenchment effects to apply to these decisions in the same way as they have been found to apply to firm performance, in general, and other risky corporate activities such as R&D expenditure, in particular. We therefore hypothesize that:

> *H1: There is a non-monotonic (inverted U-shaped) relationship between managerial ownership and firms' export propensity and intensity. Specifically, at low levels of managerial ownership, increases of the latter will rise export propensity and intensity, thanks to the alignment between managers' and shareholders' interests. Yet, at high levels of managerial ownership, further increases of the latter will lower export propensity and intensity, due to the managerial entrenchment effect.*

3.3.2. Other ownership types

We next examine the extent to which other ownership types, in addition to managerial ownership, affect export propensity and intensity. In particular, we focus in turn on the effects of state, legal person, and foreign ownership.

3.3.2.1. State ownership

Research from both developed countries and developing countries (including China) often shows that state ownership contributes to operational inefficiency and poor performance in firms (Megginson et al., 1994; Shleifer, 1998; Dewenter and Malatesta, 2001; Kato & Long, 2006a, b, c). This can be due to the following reasons: (i) poor motivation of the top management team, (ii) excess labor and wages, (iii) appointment of people with political influence to senior positions by government without considering their expertise, (iv) pursuit of multi-goals, namely social and political goals, and (v) higher transaction costs, (vi) divergence between cash flow rights and control rights for the controlling shareholder: while government agents/bureaucrats have control over SOEs, the cash flow rights of SOEs belong to the state or the Treasury.

In the Chinese context, substantial state ownership is observed in transformed SOEs, which are generally inefficient and reluctant to undertake risky value-enhancing investments such as venturing into international markets. The reluctance of SOEs to export can be explained as follows. First, SOE managers in Chinese listed corporations face complex agency problems, soft budget constraints, corruption, and have weaker incentives than their counterparts at privately-controlled firms (Sun and Tong, 2003; Wei et al., 2005; Yi and Wang, 2012) [21]. This explains why innovation activities, which are typically risky and value-enhancing, are significantly lower in SOEs than in non-SOEs (Guariglia and Liu, 2014), and why SOEs' participation in export markets is limited.

Second, Chinese SOEs are generally expected to pursue several political and social objectives (Bai and Xu, 2005), which often do not go hand in hand with profit maximization, and hence, make these companies less competitive in export markets. Third, state-owned firms typically have lower productivity than firms owned by other agents, which provides an additional barrier to export entry (Yi and Wang, 2012). Finally, considering that the state holds shares in strategically important resources and energy industries, such as petroleum, nuclear fuel, raw chemical material, mining and supply of electric and heat power, gas and water, which are less export-oriented

[21] This happens because managers at SOEs are generally not rewarded on the basis of performance.

industries in China (Lee, 2009), it is reasonable to expect that firms with considerable state-owned shares are less likely to export[22]. We therefore hypothesize that:

H2: There is a negative relationship between state ownership and firms' export propensity and intensity.

3.3.2.2. Legal person ownership

Legal person shareholders in China are represented by domestic institutions such as mutual funds, government agents, or insurance companies. Several studies suggest that these shareholders have the opportunity, necessary capacity, and incentives (due to their large stake in a firm) to monitor managers' activities in order to enhance firm performance (Cornett, et al, 2007), and are likely to support risky policy choices including internationalization (George and Prabhu, 2000). Institutional investors can also influence a firm's strategic behavior through persuasion and private or public activism (Tihanyi et al., 2003). In general, institutional shareholders also tend to have a longer tenure, which leads them to adopt longer investment horizons. This can mitigate the incentives for myopic investment decisions and thus lead to greater investment efficiency.

In the case of Chinese firms, some studies show that legal person shareholding is positively associated with firm performance since institutional shareholders have diverse professional backgrounds and are usually the largest shareholder of the firm (Sun and Tong, 2003). Among these, using a sample of 1211 listed firms over the period of 2001-2005, Yuan et al. (2008) document a positive impact of mutual funds' ownership on corporate performance. In contrast, other researchers point out that mutual funds and insurance companies are often owned wholly or partially by different levels of government, which may lead to agency problems, which in turn may imply that fewer risky and value-enhancing investment choices are made[23]. Among these, Wei et al. (2005) reports a negative relationship between legal person shareholding and firm

[22] It should be noted, however, that, as discussed in Morck et al. (2008), a few large SOEs with lucrative state-enforced monopolies in natural resources or infrastructure sectors are actively involved in overseas mergers and acquisitions and outward foreign direct investment, specially seeking to acquire strategic resources. Yet, these types of companies are very few and the majority of SOEs are inefficiently run, highly unprofitable, and mainly engaged in domestic markets (Sun and Tong, 2003, Wei et al., 2005).

[23] Specifically, legal persons may expropriate assets or cash flows from the listed firms, harming the interest of minority shareholders.

value measured using Tobin's Q. Given the contrasting findings in the literature, we make no ex-ante prediction on the effects of legal persons' shareholding on firms' internationalization decisions.

3.3.2.3. Foreign ownership

The literature has traditionally argued that in emerging economies, the participation of foreign capital in domestic firms increases the probability of internationalizing their operations. Five main mechanisms can explain this conjecture. First, firms with foreign investors are more likely to adopt international standards of governance and business practices, which facilitate entry into international markets (Jackson and Strange, 2008). Second, these firms generally possess intangible firm-specific assets, such as advanced technology, marketing skills, brand name, and market networks, which provide them with a competitive advantage in the international market. Third, because they typically have well-diversified portfolios and superior monitoring abilities, foreign institutional investors are more likely to encourage firms in emerging markets to invest in risky ventures such as internationalization (Filatotchev, 2007). Fourth, foreign shareholders are more likely to pressure firms to employ better qualified CEOs/managers with international experience, who may favor exporting activities. Finally, multinational enterprises often take emerging economies like China, as the export platform to serve their home market or other markets (Fu et al., 2010).

In the Chinese context, Fu et al. (2010) use data on Chinese non-listed manufacturing firms over the period 1999 to 2003, to show that wholly foreign owned firms and joint-ventures with foreign control have a higher propensity to export and a higher export intensity than domestic firms or joint-ventures with domestic control. In line with their findings, we hypothesize that:

> *H3: There is a positive relationship between foreign ownership and firms' export propensity and intensity.*

3.3.3. Board of directors characteristics and exporting decisions

Traditional theoretical arguments (Fama, 1980; Fama and Jensen, 1983; Jensen, 1993), recent advances in the development of formal economic theories of boards of directors (Raheja, 2005; Harris and Raviv, 2008), and numerous empirical studies assert that

boards of directors should help to resolve governance issues inherent in the management of a firm. Boards of directors are in fact entrusted with the power to hire, fire, evaluate, and compensate top management teams and monitor their non-shareholder wealth maximizing behavior. Thus, it is expected that board of directors mitigate agency costs associated with the separation of ownership and control, enhancing the performance of the firms and, consequently, shareholders' wealth. In this spirit, in most countries, corporate laws require that firms should be governed by a board of directors. The question of how size and composition of the board are effective in curbing managerial opportunistic behavior and, thus, improving corporate performance dominates empirical studies in a substantial part of the corporate governance literature. However, this empirical research provides mixed results.

3.3.3.1. Board size

Research indicates that the size of the board is an important governance mechanism as it affects its ability to be an effective monitor and guide. Monks and Minow (2004) suggest that since larger boards are able to commit more time and effort to overseeing management, board monitoring can improve the quality of managerial decision-making and lead to better firm performance. Adams and Mehran (2003) provide evidence suggesting that larger boards increase monitoring effectiveness and provide for greater board expertise. Recently, Coles et al. (2008) argue that complex firms (as proxied by size and business diversification) can benefit by having larger number of directors on their boards, since large and complex firms need directors' advise, counsel and expertise. They provide empirical support for their argument in that, in the case of complex firms, Tobin's Q increases with board size. Yet, it is negatively related with board size in small firms.

By contrast, Lipton and Lorsch (1992) and Jensen (1993) theoretically argue that larger boards are less effective in group decision-making and strategy formulation, and contribute to the entrenchment of CEOs. The reason for this is that large boards hardly reach consensus on their decisions, and agency problems such as directors' free-riding may increase within large boards. Prior studies also suggest that larger boards may lead to a low level of individual motivation and thus adversely affect their members' commitment and effective participation in decision making (Dalton et al., 1999).

Yermack (1996) and Eisenberg et al. (1998) support this argument by providing empirical evidence that firm performance is enhanced by smaller boards.

We believe this last set of arguments is likely to apply to the Chinese case. In line with this conjecture, Li et al. (2007a) and Conyon and He (2012) show evidence that in the Chinese context, larger boards are inconsequential or less effective in specific actions such as the determination of CEO compensation. Huyghebaert and Wang (2012) argue that large boards risk being dominated by powerful shareholders. They provide empirical evidence that although board size does not influence related party transactions, it is associated with larger labor redundancies in Chinese listed SOEs. They conclude that large boards might favor the expropriation of minority investors. The increased agency problems associated with large boards (e.g. managers' entrenchment, directors' free riding, tunneling) are therefore likely to have a negative impact on Chinese firms' export propensity and intensity. We therefore hypothesize that:

H4: There is a negative relationship between the size of the board of directors and firms' export propensity and intensity.

3.3.3.2. Board independence

Because of their independence and concern to maintain their reputation in the external labor market , non-executive directors will effectively monitor the actions of the executive directors and managers so as to ensure that they are pursuing policies congruent with interests of shareholders and complement expert knowledge of top management (Fama, 1980; Fama and Jensen, 1983; Cadbury, 1992). Researchers suggest that because of their education and broad knowledge, experience, reputation and networks with other institutions, outside directors may play an information and service role, as well as a resource role, and also assist in making important strategic decisions (Pfeffer, 1972; Pearce and Zahra, 1992; Zahra, 2003).

However, since a conductive institutional environment for the effective functioning of outside directors has not yet been well established in China, some researchers cast doubt on the qualities and independence of outside directors. They also argue that outside directors are appointed merely to meet the requirements of the

regulations and for the prestige of their value and, consequently, do not play their role as effectively as their counterparts in developed countries (Tenev and Chunlin,2002; Clarke, 2003; Lau et al., 2007). They also point out that in China, independent directors are either lacking necessary financial and practical business knowledge or too busy to care about problems of listed companies and, consequently, find it difficult to provide a significant contribution to, and exert any substantial influence on the important decisions other than ornamenting the board. We therefore pose the following hypothesis:

> *H5: There is no association/a negative association between the proportion of independent directors in the board and firms' export propensity and intensity.*

3.4 Our contribution

Our main aim in this paper is to study the effect of managerial ownership on export propensity and intensity of Chinese listed companies, allowing for the relationship to be non-linear, controlling for a wide range of other corporate governance variables, using a more representative data sample and a more recent time period than previous studies, and differentiating firms into state- and privately-controlled. Our paper contributes to the trade literature by including governance components as new elements of firm heterogeneity, with the aim of better explaining the determinants of both export propensity and intensity. It also contributes to the growing literature on managerial incentives, and in particular managerial ownership, in the context of transition economies (Kato and Long, 2011). Furthermore, our study provides empirical evidence on the outcome of the recent split share structure reform, through which non-tradable shares were floated in the open markets, and following which restrictions on managerial stock ownership were removed.

3.4. Baseline specifications and estimation methodology

3.4.1. Baseline specification

Our baseline model links internationalization decisions with corporate governance factors and firm characteristics, as follows:

$$EXPDUM_{it} \text{ or } EXPINT_{it} = \beta_0 + \beta_1 (EXPDUM_{i(t-1)} \text{ or } EXPINT_{i(t-1)}) + \beta_2 DOS_{i(t-1)} + \beta_3 DOS^2_{i(t-1)} + \beta_4 SOS_{i(t-1)} +$$
$$+ \beta_5 LPS_{i(t-1)} + \beta_6 FOWNS_{i(t-1)} + \beta_7 INDIR_{i(t-1)} + \beta_8 BODSIZE_{(t-1))} + \beta_9 FIRSIZE_{i(t-1)} + \beta_{10} FAGE_{it} +$$
$$+ \beta_{11} PROD_{i(t-1)} + \beta_{12} CIR_{i(t-1)} + \beta_{13} LEV_{i(t-1)} + \beta_{14} MBR_{i(t-1)} + \beta_{15} LIQTY_{i(t-1)} + v_i + v_t + v_j + v_r + \varepsilon_{it} \quad (\mathbf{3.1})$$

where *i* indexes firms, *t* years. Table A3.1 in the Appendix provides definitions and expected signs for all variables used in this paper. When examining the probability of exporting, the dependent variable is export propensity (EXPDUM), i.e a binary variable taking the value of one if the firm exports, and zero otherwise. When we consider export intensity, on the other hand, the dependent variable (EXPINT) is a censored variable, which is zero if the firm does not export, and takes the actual value of the ratio of exports to total sales, otherwise.

Since previous studies provide strong evidence that exporting activity is characterized by high persistency due to the sunk start-up cost a firm needs to pay to enter export markets (Roberts and Tybout, 1997; Bernard and Jensen, 1999, 2004), we include the lagged dependent variable among our explanatory variables. Its coefficient can be interpreted as a measure for the path dependency of exporting activities.

The other independent variables in Equation (3.1) include proxies aimed at testing the effects of corporate governance mechanisms and other control variables proved by previous studies to be influential determinants of firms' exporting decisions.

Focusing on corporate governance mechanisms, we include managerial shareholding (DOS) and its square[24]. We also include legal person shareholding (LPS), foreign shareholding (FOWNS)[25], and state shareholding (SOS)[26]. Furthermore, we include board size (BOARDSIZE) and the proportion of independent directors in the

[24] All shareholding variables are calculated as the percentage of shares owned by various agents. For instance, following the finance literature (Anderson et al., 2000; Yuan et al., 2008), we define managerial shareholding (DOS) as the percentage of shares owned by managers, directors, and supervisors (including members of the supervisory board). It is noteworthy that most of the studies based on U.S. data also investigate the effects of high powered incentives such as holding of common stocks and options on investment decisions. Given that in China stock options are still an underdeveloped incentive mechanism for managers, we consider stock holdings and not stock options as the main incentive mechanisms for managers.

[25] Following Yuan et al. (2008), foreign ownership includes non-tradable foreign-founder shares, tradable B-shares, and tradable H-shares.

[26] We also estimated alternative specifications, which included the squares of state, legal person, and foreign ownership, but these terms were never statistically significant. The results are not reported for brevity, but available upon request.

board (INDIR). We include these corporate governance variables first one by one, then in groups, and finally all together.

In line with previous studies, Equation (3.1) also includes several additional variables to control for a set of firm-specific characteristics that are likely to be correlated with firms' internationalization decisions. These include firm size (FIRSIZE), labor productivity (PROD), the capital intensity ratio (CIR), firm age (FAGE), the leverage ratio (LEV), the liquidity ratio (LIQTY), and the market-to-book ratio (MBR).

Firm size is measured by the natural logarithm of total real sales at the firm level. A positive relationship between firm size and foreign activities such as exporting is often considered as a stylized fact, as several studies found that both the probability of exporting and export intensity rise with firm size (see, for instance, Greenaway et al., 2007; and Wagner, 2010). A larger size reflects firms' ability to attract and deploy resources (such as finance, expertise, and so on) needed to international operations; economies of scale in production; and also a higher capacity for taking risks (e.g. investment in R&D and development of new products) due to internal diversification. Consequently, large firms produce at lower average cost and may display higher productivity than smaller firms, and are, as such, more likely to export. Firm age is expected to have a positive association with export propensity and intensity, given that older firms are likely to suffer less from asymmetric information problems, which may make it easier for them to obtain the financing necessary to venture abroad. Labor productivity is measured as the ratio of real sales to the number of employees. A higher productivity reflects firms' success in generating the profits necessary to recover the sunk costs that need to be faced when entering export markets. Consequently, we expect more productive firms to be more likely to export (Bernard and Jensen 2004). Capital intensity is calculated as the ratio of real fixed assets to the number of employees. More capital intensive firms are expected to be more likely to engage in export activity. Leverage, which is defined as the total debt to total assets ratio, is used to capture the effect of capital structure. As in Greenaway et al. (2007), we expect a negative relationship between leverage and export market participation decisions, as high leverage is generally associated with unhealthy balance sheets. Liquidity is given by the ratio of current assets minus current liabilities to total assets. Firms with higher liquidity have been proved in previous literature to have a higher probability to export and a

higher export intensity (Greenaway et al., 2007). Growth opportunities are proxied by the market-to-book ratio. If managers' decisions to invest in export activities reflect a real growth opportunity, we would expect a positive relationship between the market-to-book ratio and international expansion decisions.

The error term in Equation (3.1) is made up of five components. v_i is a firm-specific effect; v_t, a time-specific effect, which we control for by including time dummies capturing business cycle effects[27]; v_j, an industry-specific effect, which we take into account by including industry dummies; and v_r, a region-specific effect, which we control for by including a full-set of regional dummies. Finally, ε_{it} is an idiosyncratic component.

3.4.2. Estimation methodology

3.4.2.1. Random effect probit and tobit models

To examine the extent to which corporate governance factors determine export propensity and intensity, we use two estimation methods. The first is a random-effects probit model used to estimate the probability of exporting. The second is a random-effects tobit model used for export intensity (measured as the ratio of foreign sales to total sales). Since the export ratio is a censored variable, characterized by a large number of zeroes, the tobit model is appropriate. We use random-effects probit and tobit models to control for unobserved heterogeneity: unobserved attributes, such as managers' skills, and attitudes towards risk are in fact likely to affect both the probability of exporting and the amounts exported.

3.4.2.2. Endogeneity

Our estimates may be affected by reverse causality. The relationship between governance mechanisms and exporting may in fact be dynamic, in the sense that on the

[27] Li et al (2012) show that China's export declined during the recent global financial crises period (2007-2009). Our dataset includes the Global Financial Crisis years. The effects of the Crisis are taken into account in our analysis through the inclusion of time dummies, which account for all business cycle effects. For instance, the fact that exports were reduced during the Crisis would be picked by the time dummies. Furthermore, since governance variables are mostly persistent overtime and can well be described as cross sectional or between-firms' phenomena (Zhou, 2001), we do not expect the effects of corporate governance variables on exports to change over the crisis years. We believe therefore that the different results obtained for the pre- and post-2006 period are more likely to be due to the split-share structure reform than to the financial crisis.

one hand, robust governance systems may facilitate exporting decisions. Yet, on the other hand, a firm's increased participation in international markets may require additional equity ownership to be awarded to managers to compensate their efforts in dealing with the additional complexities, information asymmetries, and agency problems arising from entering into international markets (Rose and Shepard, 1997). Similarly, stronger governance structures may become necessary to ensure firm survival in the more competitive global environment. Furthermore, the Chinese stock market has been buoyant from its establishment since a limited number of companies were allowed to list in the stock markets and the supply of shares was much less than the demand from the large number of potential investors. Therefore, one may argue that the gains from managerial share ownership often depend to a large extent upon the overall movement of the stock market and hence that managerial share ownership does not necessarily provide the right incentives which align managers' and shareholders' interest That is, managerial share ownership is endogenously determined and may not provide the right incentive to managers to undertake risky investments such as paying the sunk costs necessary to start exporting activities. However, in fact in China managerial ownership is a new phenomenon. Since the managerial incentive system was rather weak in the early stage of the development of corporations, the Chinese government encouraged the listed firms to provide incentive to managers by issuing equity shares in their firms from 2006 (CSRC, 2006 and Martin and He, 2011). Furthermore, we address the potential endogeneity issue by using the system GMM estimator. Our results indicate that even after controlling for endogeneity, managerial ownership in Chinese listed firms provides managers with the necessary incentives to make risky and efficient investment decisions.

It is therefore crucial to control for "dynamic endogeneity" in our study.

We address the potential endogeneity issue in two main ways. First, we include one-period lag of all corporate governance and other explanatory variables, with the exception of firm age and dummy variables, in all our specifications. A similar approach is also used in many previous studies (see, among others, Roberts and Tybout, 1997; and Coles et al., 2006).

Second, following Bernard and Jensen, (2004) and Greenaway et al. (2007), we use the Generalized Method of Moments (GMM) estimator in addition to the random-effects probit and tobit estimators. However, unlike these authors, we use the system GMM estimator (Arellano and Bover, 1995; Blundell and Bond, 1998) instead of the first-difference estimator (Arellano and Bond, 1991). The system GMM estimator estimates the relevant equation both in levels and in first-differences. First-differencing is used to control for unobserved heterogeneity. We use all right-hand side variables (except age and the dummies) lagged twice or more as instruments in the first-differenced equation, and first-differences of these same variables lagged once as instruments in the level equation. The system GMM estimator addresses the potential weak instrument problem. It should be noted, however, that being a linear probability model, the system GMM estimator is problematic in our particular case, as it fails to properly capture the curvature of the regression function in the proximity of 0 and 1.

3.5. Data and descriptive statistics

3.5.1. Sample and dataset

The data used in this study are obtained from two Chinese databases namely, the China Stock Market Accounting Database (CSMAR) and Sino-fin for the period of 2004-2010[28]. The sample is composed of publicly listed firms traded on the Shanghai and Shenzhen stock exchanges. As listed companies are typically seen as the best performers in the Chinese economy, we believe that looking at their export behavior represents an interesting research question. Additionally, as our objective is to assess the extent to which corporate governance variables affect firms' export behavior, the analysis can only be performed on listed companies, as information on corporate governance characteristics is only available for these firms.

Financial and utility industries are excluded. To reduce the influence of potential outliers, we exclude observations in the one percent tails of each of the regression variables. Since we lag all our independent variables once, we end up with a panel of

[28] We separately purchased export data by listed firms from GCCET LTD. The data file includes export value as well export sales ratios for all exporting firms. We then merged these export data with our main CSMAR database, which contains governance and other firm characteristic.

6315 firm-year observations on 1420 companies over the period 2005-2010 for our empirical analysis. The panel has an unbalanced structure, with an average of 6 observations per firm.

3.5.2. Descriptive statistics

Table 3.1 presents descriptive statistics for the variables used in the analysis for our pooled sample. We observe that, on average, over one third of the listed firms (38.0%) are involved in exporting activities. The average export to total sales ratio is 8.7 %. However, the average exporting intensity amongst exporters is 22.8 % (as shown in Table 3.4).

The pooled mean (median) value of managerial ownership is 3.1% (0%). The state and legal persons hold 25.6% (25%) and 16.7% (5.2%) of the shares, respectively. Foreign shareholders, on average, hold 4 % (0%) of total issued shares. The average board size is 9.4 (9.0) with a proportion of independent outside directors of 35.2% (33.3%).

With respect to the control variables included in our baseline model, the average (median) firm size is about 1 billion RMB (0.43) and the average firm age measured by number of years from the establishment of firm is 11.52 (11)[29]. Productivity, measured as real sales per employee, is 0.55 million RMB (0.24). Capital intensity, proxied by the ratio of real fixed assets to the number of employees of the firm, is given by 0.19 (0.095) million RMB fixed assets per employee. The average debt to asset ratio and the market-to-book ratio are 50.5% (51.2%) and 1.52 (1.22), respectively. Finally, the average liquidity, measured as net working capital over total assets, is 11.1% (10.6%).

These summary statistics indicate that the sample employed in this study is comparable to others used in prior research on corporate governance and on corporate internationalization decisions. For example, the average export-sales ratio in our sample is similar to the averages (7%) reported by Lu et al. (2009) for the period 2002-2005. Similarly, the average foreign ownership is comparable to the average (4%) reported in Yuan et al. (2008) for the years 2001-2005. This also indicates that the level of foreign

[29] It should be noted that although firm size is measured as the logarithm of total real sales in the regression analysis, the figures reported in the descriptive statistics Tables are not in logarithms as actual values are easier to interpret.

ownership has not changed significantly during the last decade. In addition, corporate governance and other firm characteristics are similar to those reported in recent studies on corporate governance in China, such as Conyon and He (2012) among others.

Table 3.2 reports the Pearson correlation coefficients between variables. It is worth noting that both managerial and foreign shareholdings show a positive and statistically significant correlation with firms' exporting activities, as suggested by our hypotheses H1 and H3. The results also highlight that state shareholding exhibits a negative and significant correlation with export propensity. This is consistent with the prediction of hypothesis H2. Legal person shareholding exhibits a negative and significant correlation with both export propensity and intensity. In line with hypothesis H4, board size has a significant negative relationship with international market expansion. Finally, the proportion of outside directors does not have any significant association with export propensity and intensity, which is consistent with hypothesis H5.

Turning to control variables, as expected, firm size has a significant positive correlation with internationalization. It is interesting to note that productivity has a negative but statistically insignificant correlation with exporting decisions, while the capital intensity ratio shows a significant negative correlation. These findings are opposite to what has been observed in developed countries and other emerging markets (Wakeling, 1998). However, Lu et al. (2009) also show a negative relationship between exporting and the capital labor ratio for Chinese firms. Furthermore, the leverage ratio exhibits a significant negative correlation with international sales expansion, while liquidity is positively related to both export intensity and propensity. Table 3.2 also suggests that given that the observed correlation coefficients are relatively low, multicollinearity should not be a serious problem in our study[30].

[30] There is, however, one exception: we observe in fact a high correlation between managerial ownership and its square (0.86). For this reason, following Kennedy (2008), we calculate the variance inflation factor (VIF), which is a standard test for multicollinearity. We note that the VIF does not exceed the threshold of 10, which suggests that the observed high correlation coefficient between managerial shareholding and its square should not cause problems in our regressions.

3.6. Evaluation of the results

3.6.1. Univariate analysis

Table 3.3 shows the distribution of observations across various categories of managerial ownership. We observe that out of a total of 6315 observations, 4829 are characterized by managerial ownership lower than 0.1%. 533 observations have managerial ownership between 0.1% and 5%; 239, between 5% and 25%; and 714, above 25%. The Table also shows that both export propensity and intensity tend to increase with managerial ownership up to a 25% threshold, and decline thereafter. This is in line with our hypothesis H1, which posits an inverted U-shaped relationship between managerial ownership and export intensity and propensity.

In Table 3.4, we report univariate mean comparisons of governance and firm characteristics between non-exporters and exporters. The statistics in the table show that, in line with our hypotheses H1 and H3, the fractions of managerial and foreign ownership are significantly higher for exporters. In addition, consistent with our hypothesis H2, non-exporting firms have higher average state and legal person shareholding than exporting firms, the differences being significant. As predicted by our hypothesis H4, we observe that board size is higher for non-exporters. In line with hypothesis H5, we do not observe much difference in terms of proportion of outside directors between exporters and non-exporters.

Moving to firm characteristics, we observe that non-exporting firms display significantly higher capital intensity and lower market-to-book ratios than their exporting counterparts. In terms of productivity, there is no significant difference between exporters and non-exporters. These findings suggest that the self-selection hypothesis that the most efficient (productive) firms self-select into the export market (Bernard and Jensen, 1999; Aw et al., 2000) may not be true for Chinese exporters[31]. The results also show that exporters are slightly larger and younger than non-exporters. The larger liquidity ratio and lower leverage ratio in the exporting firms suggests that, in

[31] This can be explained considering that several exporters in China are engaged in processing trade: they import parts and input labor to assemble final products, which they then export (Dai et al., 2014). These exporters are therefore not necessarily more productive than non-exporters. In addition, according to the trade theory of comparative advantage, labor-intensive firms in China are more likely to become exporters (Lu et al., 2009). This explains why average capital intensity appears to be higher for non-exporters.

line with Greenaway et al. (2007) for UK firms, financially constrained firms are less likely to participate in export markets.

This univariate analysis highlights some differences between non-exporters and exporters. The observed differences in the governance factors provide some preliminary evidence supporting our hypotheses. A potential problem in the univariate analysis is that since observations within a firm are unlikely to be independent, the statistical significance is overstated (Anderson et. al., 2000). Another important problem is that the univariate tests do not control for several factors that may systematically affect the variables of interest. These factors include geographic location, industry membership, business cycle effects and so on (Dewenter and Malatesta, 2001). We address these issues in the multivariate analysis that follows in the next section.

3.6.2. Multivariate analysis

3.6.2.1. The decision to export, corporate governance, and firm characteristics

Table 3.5 presents random-effects probit estimation results of our baseline model (3.1), where the dependent variable is the export dummy, equal to 1 if the firm exports, and 0 otherwise. To facilitate economic interpretation, we report marginal effects for those explanatory variables which display statistically significant coefficients.

In column 1 of Table 3.5, we first estimate a naïve model in which the export propensity is regressed on managerial ownership, managerial ownership squared and a set of control variables including lagged export propensity, firm size, age, productivity, capital intensity, leverage, market-to-book ratio, liquidity and regional, industry, and year dummies. In subsequent columns, we then include other ownership and board structure variables one by one and in groups, to reach our baseline model in column 7. Firstly, the coefficients on managerial ownership and its square are consistently highly significant (at the 1% level) throughout all of the models. The former is positive, and the latter, negative. In line with hypothesis H1, these findings suggest there is strong evidence of a curvilinear relationship between managerial equity ownership and the probability of participating in export markets. Specifically, the probability of exporting first increases, then decreases as managerial ownership rises. At lower levels of managerial ownership, the positive effect of ownership strongly dominates any negative

effects, consistent with Jensen and Meckling's (1976) incentive alignment hypothesis. The average turning point in managerial ownership ranges between 23% and 27%[32]. Focusing on the marginal effects reported in column 1, for management shareholding lower than the turning point, a 10 percentage point increase in ownership increases the probability of exporting by 0.39 percentage point. However, for management shareholding above the turning point, a 10 percentage point increase in ownership decreases the probability of exporting by 0.73 percentage point. This finding is consistent with Kim and Lu (2011), who find a hump-shaped relationship between managerial ownership and US firms' Tobin's Q and R&D expenditures.

In columns 2, 3, and 4 of Table 3.5, state ownership, legal person ownership, and foreign ownership are introduced respectively in to the models as additional independent variables. The results show that none of these additional ownership variables influences firms' decisions to enter foreign markets. Even when all additional ownership variables are included together in column 5, none of them is significant at the conventional significant levels. Our hypotheses H2 and H3 are therefore not supported[33].

In column 6, board size and the proportion of independent directors are included together with the managerial ownership variables. Both these additional variables exhibit negative and significant coefficients, supporting therefore our hypotheses H4 and H5. Our results are consistent with Clarke (2003) and Lau et al. (2007), who show that outside directors in the Chinese market do not contribute to strategic decisions and are just appointed to meet regulatory and legal requirements.

Column 7 of Table 3.5 shows estimates for our baseline model (3.1), which includes all the independent and control variables. Even after introducing all other ownership and governance variables, the coefficient on the managerial ownership variable remains positive and precisely determined, and the coefficient on its squared

[32] The turning points are calculated setting the first derivative of Equation (1) with respect to DOS equal to 0, and solving for DOS.

[33] Although earlier research found a positive effect of foreign ownership on firms' exporting activities, the fact that in most of our specifications, foreign ownership has an insignificant coefficient can be explained considering that foreign ownership is very small in our sample of Chinese listed companies (see Table 3.1). This suggests that foreign ownership is not very common among listed Chinese companies, which could explain why it does not significantly affect firms' decisions to enter export markets.

value, negative and significant. Board size and the proportion of independent directors in the board retain their negative signs.

As for the effects of the control variables, the results show that in all specifications, the coefficient on lagged export status is positive and significant at the 1% level, suggesting that Chinese exporting decisions are highly persistent, probably due to the high sunk costs, which need to be paid upfront to enter export markets. Additionally, larger firms are more likely to be exporters. This is consistent with the prediction that large firms have more resources, may experience economies of scale, and have access to external finance which facilitate exporting decisions. The coefficient of firm age is negative and statistically significant at conventional levels. This is not consistent with our initial prediction, but can be explained considering that those state-owned enterprises with a long history of operations, which were then converted into listed companies might be less efficient, less dynamic, and hence, less likely to become exporters. This result also provides support for the born-global firm hypothesis, which suggests that it is young firms which are more likely to rapidly internationalize.

The coefficient associated with labor productivity is never statistically significant, which is inconsistent with the common wisdom that more productive firms are likely to enter foreign markets (Bernard and Jensen, 1995, 1999 and 2004). Similarly, the coefficient on the capital intensity ratio is negative, but not statistically significant[34]. The market-to-book ratio does not have a statistically significant association with exporting decisions, which is probably due to the fact that in the Chinese context, it is an imperfect measure of investment opportunities (Allen et al., 2005; Wang et al., 2009). This may be due to the fact that stock market-based measures of growth opportunities are not reliable in the Chinese financial markets (Wang et al., 2009). In line with Greenaway at al. (2007), liquidity always attracts a positive and significant coefficient, suggesting that having more internal finance at hand facilitates firms' entry in export markets and enables them to export more. Finally, contrary to Greenaway et al. (2007), leverage displays an insignificant coefficient in columns 1 to 5, and a positive and significant coefficient in columns 6 and 7. The insignificant coefficients can be explained considering that our panel is made up of listed companies, all of which are relatively large and financially healthy. Hence, leverage should not make a big

[34] See footnote 27 above for an explanation for these findings.

difference for these firms. The positive coefficients can be explained in the light of the fact that firms with high leverage have more resources at hand, which they can use to pay for the sunk costs that need to be faced in order to enter export markets. In addition, having obtained debt in previous years, these firms may be considered more creditworthy by banks, and may consequently obtain more loans in the present, which they can use to finance the sunk costs. Thus, they are more likely to become exporters. It should be noted, however, that in columns 6 and 7, the coefficients on leverage are only marginally significant.

So far, the results show that managerial ownership has an important influence on the export markets participation decisions of Chinese listed corporations. However, except for managerial ownership, we generally do not find significant effects for any other ownership variables. In addition, both board size and the proportion of independent directors in the board negatively affect firms' internationalization decisions.

3.6.2.2 Export intensity, corporate governance, and firm characteristics

We now turn to export intensity measured as export sales over total sales, another measure of international involvement of firms. We investigate how managerial ownership and other governance mechanisms affect the volume of exports after entering the export markets. To this end, we replicate the same model specifications 1 to 7 used in Table 3.5, using a random-effects tobit model. Table 3.6 reports the results. Consistent with our previous findings, managerial ownership and its square attract a positive and a negative coefficient, respectively, in all models. Focusing on column 1, the marginal effects suggest that export intensity increases with managerial ownership up to a threshold of 26.85%, and then declines. More specifically, if managerial shareholding is less than this threshold, a 10 percentage point increase in ownership increases export intensity by 0.08 percentage point, whilst if managerial ownership is greater than the threshold, a 10 percentage point increase in ownership decreases export intensity by 0.15 percentage point.

Focusing on columns 2 to 7, we observe that other ownership variables do not influence export intensity, with the exception of state ownership, which, in accordance with our hypothesis H2, exhibits a negative coefficient in columns 5 and 7, and legal

person shareholding, which also displays a negative coefficient in those same columns. Moving on to board characteristics, we observe that in line with our hypothesis H4, board size is negatively related to export intensity, whilst the percentage of independent directors has a statistically insignificant coefficient. Furthermore, we observe that, once again, past exporting experience has strong large effects on firms' export intensity.

The coefficients on the other control variables indicate that, as in the probit regressions, young, large firms, with a higher liquidity are more likely to exhibit higher export intensity. Finally, we can see that in most specifications, compared to firms in the Central region (which represent the excluded category), firms in the Coastal region are more likely to export more, whereas firms in the Western region are less likely to do so.

3.6.3. Robustness tests

In this sub-section we verify whether our results are robust to using alternative estimation methods and specifications.

3.6.3.1. Using alternative estimation methods

First, columns 1 and 8 of Table 3.7 report system GMM estimates of our export propensity and intensity regressions. We use the system GMM estimator to control for the possible endogeneity of the regressors. We use all right-hand side variables except age and the dummies, lagged twice or more as instruments in the first-differenced equation, and first-differences of these same variables lagged once as instruments in the level equation. It should be noted, however, that being a linear probability model, the system GMM estimator is problematic in our particular case as it fails to properly capture the curvature of the regression function in the proximity of 0 and 1. The results show that once again, managerial ownership and it square still display a positive and negative coefficient, respectively, and are both precisely determined. This confirms that managerial ownership and export propensity and intensity are linked by an inverted U-shaped relationship, with turning point of 27.47% in the former case and 24.24% in the latter.

Furthermore, following Aggarwal and Samwick (2006), in columns 2 and 9 of Table 3.7, we report estimates of our models for export propensity and intensity

respectively, obtained using a piecewise regression. To this end, we allow for one change in the slope coefficient of managerial ownership at 25% (first quartile), which is close to the turning point identified in the regressions reported in Tables 5 and 6. With reference to Equation (3.1), we replace the managerial ownership variable and its square with the following two variables: the first (DOS025) is equal to the actual managerial ownership if this number is less than 0.25, and to 0.25 otherwise. The second (DOS25) is equal to (managerial ownership – 0.25) if managerial ownership is greater than 0.25, and equal to 0 otherwise. The results show that the first variable exhibits a positive and significant coefficient, whilst the second displays a negative and precisely determined coefficient. These findings suggest that at levels of managerial ownership lower than 25%, the likelihood and intensity of exporting increase with managerial ownership, whilst a negative relationship between managerial ownership and exporting appears beyond the 25% threshold of managerial ownership. These new results confirm therefore our main findings and are in line with our hypothesis H1[35].

Our results in Tables 3.5 and 3.6 are also robust to using a pooled probit, pooled fractional probit (Papke and Wooldridge, 1996), and pooled tobit estimators with cluster- robust standard errors. In addition, our results are robust to using OLS and the "orthogonal deviations" variant of the GMM estimator, in which the fixed effects are eliminated by subtracting the forward means of each regression variable (Arellano and Bover, 1995) [36]. All these results, which are not reported for brevity, but available upon request, confirm the curvilinear dependence of exporting decisions on managerial ownership predicted by our hypothesis H1.

[35] As in Aggarwal and Samwick (2006), we have also estimated regressions using two break points (at 5% and 25 % respectively) and found a positive relationship between managerial ownership and exporting within the range of 0-25% and a negative relationship thereafter. This finding is consistent with the descriptive statistics presented in Table 4. We have also undertaken an additional robustness test replacing managerial ownership and its square with dummies for managerial ownership less than 5%; between 5% and 10%; between 10% and 20%; between 20% and 30%; and higher than 30%. We found that that increasing managerial ownership from 0% to 10% enhances both export propensity and intensity. Yet increasing managerial ownership more has no effect on both dimensions of exporting, up to a threshold of around 30%, after which further increases in managerial ownership are detrimental to export propensity and intensity. These results are not reported for brevity, but available upon request.

[36] The results for export intensity were also robust to estimating a system-GMM model augmented with the inverse Mills ratio on the subsample of exporters (see Minetti and Zhu, 2011, for a similar approach). These results are not reported for brevity, but available upon request.

3.6.3.2 Using dummy variable for managerial ownership and foreign ownership

In columns 3 and 10 of Table 3.7, we provide estimates of our export propensity and export intensity regressions, which include a dummy equal to one if managerial ownership is greater than 0, and 0 otherwise; and a dummy equal to 1 if foreign ownership is greater than zero, and 0 otherwise. These dummies replace the continuous managerial and foreign ownership variables, which both exhibit medians equal to 0. The results show that the coefficient on the managerial ownership dummy is positive and precisely determined, whilst the coefficient on the foreign ownership dummy is also positive, but not statistically significant. This suggests that managerial ownership plays a more significant role than foreign ownership on firms' internationalization decisions.

3.6.3.3 Estimating separate regressions for state- and privately-controlled firms

We next aim at verifying the extent to which our results hold for the subsamples of state- and privately-controlled firms. This exercise is motivated considering that top executives in the state sector are often appointed by party and government agencies and are typically party secretaries, government officials or veteran socialist managers (Walder, 2011). Additionally, appointments to top managerial posts in these companies are generally controlled by the state, and managerial autonomy is limited (Walder, 2011). As such, managers in state-controlled companies might have limited power in regards to the firms' internationalization decisions[37].

In contrast, top executives in the privately-controlled sector may have begun their careers in the state sector, but are no longer appointed by the state. The managers of these firms also have greater autonomy from state agencies than their counterparts in state-controlled companies. Furthermore, their executives enjoy much higher levels of compensation and are more likely to hold significant ownership stakes (Walder, 2011). These developments clearly demonstrate that managers are likely to play a major role in these companies, and since these managers are the ones who ultimately decide whether or not the firm will enter export markets, any types of managerial incentives are likely

[37] It should also be noted that managerial ownership in state-controlled firms is very low: According to our data, it is in fact equal to 0.22% for state-controlled firms, and to 8.1% for privately-controlled firms.

to affect firms' internationalization decisions[38].

In the light of these considerations, in columns 4/5 and 11/12 of Table 3.7, we provide separate estimates of Equation (3.1) for state-controlled and privately-controlled firms. The results show that managerial ownership only affects the exporting decisions of non-state firms. These results are consistent with a number of studies, which provide empirical evidence for the differential effects of other forms of managerial incentives such as the sensitivities of top management compensation and turnover to firm performance and promotion tournaments among state-controlled and privately-controlled Chinese listed firms (Kato and Long, 2006a, b, c, and 2011). Specifically, these studies suggest that managerial incentives derived from these incentive mechanisms are weakened by state ownership and control. We also observe that whilst board size has a negative and significant effect on the export propensity and intensity of both state- and privately controlled firms, the proportion of independent directors in the board is negatively related to the export decisions of privately-controlled firms only.

3.6.3.4 Estimating separate regressions for the pre- and post-2006 period

It is important to take into account differences in our results before and after the 2005-2006 split share structure reform, following which non-tradable shares were floated through the open markets, for the following reasons. First, agency costs were significantly reduced following the reform (Li et al., 2011). Second, from 2006 onwards, corporations were allowed to incentivize their top management with stocks. As a consequence of this, average managerial ownership rose from 1.1% in 2004 to 8.2% in 2010, managers' interests became aligned with stock return performance, and their conflicts of interest with outsider investors were reduced.

To take this into account, in columns 6/7 and 13/14 of Table 3.7, we provide separate estimates of Equation (3.1) for the pre- and post-2006 period. The results show that managerial ownership and its square are only significant in the post-reform period. This suggests that, by removing restrictions on managerial stock ownership, the reform played an indirect role in enhancing Chinese firms' internationalization activities.

[38] In line with this argument, Todo et al. (2012) show that privatized Chinese companies are more likely to engage in exports than SOEs.

Furthermore, with the exception of board size which has a negative and marginally significant effect on export propensity in the pre-reform period, all other corporate governance variables only affect firms' exporting decisions in the post-crisis period.

3.7. Conclusions

In this paper we use a dataset made up of 1240 Chinese listed companies over the period 2004-2010 to examine the effects of managerial ownership, other ownership types, and board characteristics on firms' exporting decisions, distinguishing firms into state- and privately-controlled. This is the first study conducted on the topic on a dataset including the post-split share structure reform period in China, the first to analyze differences between state-owned and other companies, and the first study to include all relevant corporate governance variables in a unified framework.

We find that increasing managerial ownership is linked with a higher probability to enter export markets, and higher export intensity. Yet, after a threshold level of ownership of 23%-27% is reached, managers' entrenchment tendencies become prominent, discouraging internationalization activities. We also observe that state ownership is negatively associated with export intensity; that the larger the board size, the lower the firm's export propensity and intensity; and that firms with a higher proportion of independent directors in the board are generally less likely to export. Finally, larger, younger firms with higher liquidity are more likely to export and are also more likely to display higher export intensity. Our findings, which are robust to using different estimation methods, and mainly driven by non-state firms in the post-reform period.

Our paper contributes to the international trade literature by taking into account corporate governance components as new elements of firm heterogeneity, with the aim of better explaining the determinants of both the export propensity and intensity. It also contributes to the corporate finance literature, which has looked at the effects of managerial ownership and corporate governance mechanisms on various aspects of corporate behavior, neglecting, however, firms' exporting decisions.

Our findings have policy implications. In order to promote the international

presence of Chinese firms, the government should encourage a rise in managerial ownership up to its optimal level, through a revision of the compensation contracts of management teams, aimed at including company shares. Furthermore, given the concave relationship between managerial ownership and risk taking activities such as international expansion, excessive managerial ownership should be avoided. In addition, in order to raise export propensity and intensity, companies should be encouraged to have smaller boards and to pay particular attention to the quality of the independent directors in their boards. Finally, state ownership should be further reduced.

Our study suffers from a number of limitations. Firstly, since a limited number of firms have been involved in Outbound Foreign Direct Investment (OFDI) during our sample period (Morck et al., 2008), we only use exports as a measure of firms' degree of internationalization. In the future, we aim at complementing our study by also employing other measures of internationalization, such as OFDI.

Secondly, we do not focus on the qualities of the CEOs/top management team, such as their international experience and education. Yet, these may have an important bearing on firms' efforts in venturing abroad. As these data are not available in standard databases, a questionnaire-based survey would have to be conducted in order to complement this study. This is on the agenda for future research.

Finally, in future research, we plan to undertake a comparative analysis of the effects of managerial ownership and other forms of corporate governance on a range of different corporate activities in China, other emerging economies, and developed countries.

Appendix

Table A3.1 in the Appendix provides variable names, definitions, and expected signs.

Appendix : Table A3.1 Variables' names, definitions, and expected signs

Variables	Name	Definition	Expected sign
Dependent Variables			
Export propensity	EXPDUM	Dummy variable equal to 1 if the firm exports, and 0 otherwise	
Export intensity	EXPINT	Ratio of exports to total sales	
Corporate governance variables			
Managerial share ownership	DOS	Percentage of shares owned by managers, directors and supervisors	+ (H1)
	DOS^2	Squared term of managerial share ownership	- (H1)
	DOS dummy	Dummy variable equal to 1 if DOS>0, and 0 otherwise	
	DOS025	Variable equal to DOS if DOS<0.25, and equal to 0.25 if DOS≥0.25	
	DOS25	Variable equal to DOS-0.25 if DOS>0.25, and 0 otherwise.	
State-owned shares	SOS	Percentage of shares owned by the central government, local governments, or any entity representing the central or local governments.	- (H2)
Legal person shares	LPS	Percentage of shares owned by non-individual legal entities or institutions	?
Foreign share ownership	FOWNS	Percentage of shares owned by foreign investors	+ (H3)
	FOWNS dummy	Dummy variable equal to 1 if FOWNS>0, and 0 otherwise	
Board size	BODSIZE	Total number of directors on the board of directors	- (H4)
Independent directors	INDIR	Proportion of independent directors on the board of directors.	-/no (H5)
Control Variables			
Firm size	FIRSIZE	Natural logarithm of the firm's total real sales	+
Firm age	FAGE	Logarithm of the number of years since the establishment of the firm	+
Labor productivity	PROD	Ratio of real sales to the number of employees	+
Capital intensity	CIR	Ratio of real fixed assets to the number of employees	+
Leverage ratio	LEV	Ratio of total debt to total assets	-
Market to book ratio	MBR	Ratio of the sum of the market value of equity and the book value of debt to the book value of total assets	-
Liquidity ratio	LIQTY	Ratio of the difference between current assets and current liabilities to total assets	+
Regional dummies		Dummies indicating whether the firm is located in the Coastal, Western, or Central region of China	
Year dummies		Year dummies for the years 2005 to 2010.	
Industry dummies		Dummies for the following four industrial groups based on the CSMAR B classification: Properties, Conglomerates, Industry, Commerce. Utilities and financial industries are excluded.	

Note: Real variables are derived from nominal ones using China's GDP deflator.

Table 3.1 Summary statistics of governance and firm characteristics for the pooled sample of companies

Variables	Obs	Mean	Std. Dev.	Median	Min	Max
Dependent Variables						
Export dummy (EXPDUM)	6315	0.380	0.485	0.000	0.000	1.000
Export intensity (EXPINT)	6315	0.087	0.177	0.000	0.000	0.869
Governance Characteristics						
Managerial shareholding (DOS)	6315	0.031	0.107	0.000	0.000	0.748
Legal person shareholding (LPS)	6315	0.167	0.207	0.052	0.000	0.869
State shareholding (SOS)	6315	0.256	0.238	0.250	0.000	0.812
Foreign shareholding (FOWNS)	6315	0.040	0.109	0.000	0.000	0.736
Board size (BODSIZE)	6315	9.392	1.947	9.000	3.000	19.000
Independent directors (INDIR)	6315	0.352	0.045	0.333	0.000	0.667
Firm Characteristics						
Firm size (billion RMB)(FIRSIZE)	6315	1.007	1.828	0.433	0.000	21.023
Firm age (FAGE)	6315	11.520	4.006	11.000	2.000	26.000
Productivity (million RMB) (PROD)	6315	0.551	2.005	0.243	0.000	134.479
Capital intensity (million RMB) (CIR)	6315	0.190	0.736	0.095	0.000	37.074
Leverage ratio (LEV)	6315	0.505	0.204	0.512	0.013	5.494
Market –to- book ratio (MBR)	6315	1.516	0.854	1.218	0.477	11.222
Liquidity ratio (LIQTY)	6315	0.111	0.247	0.106	-3.437	0.915

Notes: This table reports summary statistics of the main variables used in our study. All variables are defined in Table A3.1 in the Appendix.

Table 3.2 Correlation matrix

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	EXPDUM	1.00															
2	EXPINT	0.63*	1.00														
3	$DOS_{i(t-1)}$	0.10*	0.10*	1.00													
4	$DOS^2_{i(t-1)}$	0.07*	0.07*	0.86*	1.00												
5	$LPS_{i(t-1)}$	-0.08*	-0.08*	-0.28*	-0.23*	1.00											
6	$SOS_{i(t-1)}$	-0.05*	0.00	-0.01	-0.05*	-0.56*	1.00										
7	$FOWNS_{i(t-1)}$	0.08*	0.10*	-0.07*	-0.05*	-0.01	-0.05*	1.00									
8	$INDIR_{i(t-1)}$	0.00	-0.00	0.08*	0.07*	-0.11*	0.02	0.01	1.00								
9	$BODSIZE_{(t-1)}$	-0.03*	-0.04*	-0.09*	-0.09*	0.14*	-0.08*	0.07*	-0.24*	1.00							
10	$FIRSIZE_{i(t-1)}$	0.11*	0.03*	-0.12*	-0.10*	0.15*	-0.21*	0.14*	-0.02	0.21*	1.00						
11	AGE_{it}	-0.07*	-0.09*	-0.34*	-0.30*	-0.14*	-0.06*	0.06*	0.00	-0.03*	0.10*	1.00					
12	$PROD_{i(t-1)}$	-0.01	-0.01	-0.02	-0.01	0.03*	-0.03*	0.02	0.02	-0.02	0.14*	0.06*	1.00				
13	$CIR_{i(t-1)}$	-0.04*	-0.03*	-0.04*	-0.03*	0.04*	-0.02	0.02	0.01	0.01	0.04*	0.06*	0.52*	1.00			
14	$LEV_{i(t-1)}$	-0.04*	-0.07*	-0.17*	-0.14*	0.04*	-0.00	-0.01	-0.01	0.05*	0.21*	0.21*	0.06*	0.10*	1.00		
15	$MBR_{i(t-1)}$	0.05*	0.02	0.07*	0.05*	-0.24*	-0.09*	-0.08*	0.05*	-0.08*	-0.15*	0.11*	-0.02	-0.02	-0.16*	1.00	
16	$LIQTY_{i(t-1)}$	0.06*	0.07*	0.24*	0.21*	-0.09*	0.06*	-0.02	0.04*	-0.07*	-0.12*	-0.24*	0.05*	-0.13*	-0.64*	0.14*	1.00

Notes: This table reports Pearson correlation coefficients. * denotes significance at the 5% level. See Table A3.1 in the Appendix for definitions of all variables.

Table 3.3 Average export propensity and intensity for different degrees of managerial ownership

Managerial ownership	Observations	Export propensity	Export intensity
DOS < .001	4829	0.35	0.08
0.001 =< DOS < .05	533	0.42	0.12
0.05 =< DOS < .25	239	0.60	0.17
DOS > .25	714	0.47	0.10
	6315		

Source: Authors' calculations based on the dataset used in the revised paper. DOS represents managerial shareholding. See Table A3.1 in the Appendix for the precise definitions of this variable.

Table 3.4 Mean comparison of corporate governance and firm characteristics for non-exporters and exporters

	Non-exporters			Exporters			Mean differences (t-statistic)	
Variables	Count	Mean	S.E.	Count	Mean	S.E.		
Export Dummy	3915	0.000	0.000	2400	1.000	0.000		
Exports/Total sales	3915	0.000	0.000	2400	0.228	0.224	-0.228***	(-63.63)
Governance characteristics								
Managerial shareholding (DOS)	3915	0.022	0.094	2400	0.045	0.124	-0.023***	(-8.22)
Legal person shares (LPS)	3915	0.174	0.210	2400	0.155	0.202	0.019***	(3.62)
State shares (SOS)	3915	0.272	0.240	2400	0.231	0.234	0.040***	(6.54)
Foreign shares (FOWNS)	3915	0.033	0.098	2400	0.051	0.124	-0.018***	(-6.38)
Board size (BODSIZE)	3915	9.442	2.022	2400	9.310	1.814	0.132**	(2.62)
Independent directors (INDIR)	3915	0.352	0.046	2400	0.352	0.042	-0.000	(-0.30)
Firm characteristics								
Firm size (billion RMB) (FIRSIZE)	3915	0.942	1.733	2400	1.115	1.970	-0.173***	(-8.43)
Firm age (FAGE)	3915	2.397	0.376	2400	2.341	0.400	0.056***	(5.59)
Productivity (million RMB) (PROD)	3915	0.575	1.195	2400	0.513	2.872	6.189	(1.19)
Capital intensity (million RMB)(CIR)	3915	0.213	0.847	2400	0.153	0.506	5.989**	(3.14)
Leverage ratio (LEV)	3915	0.512	0.195	2400	0.494	0.218	0.018***	(3.47)
Market- to-book ratio (MBR)	3915	1.479	0.851	2400	1.576	0.855	-0.096***	(-4.37)
Liquidity ratio (LIQTY)	3915	0.100	0.253	2400	0.129	0.237	-0.029***	(-4.58)

Notes: ***, **, and* denote, respectively, significance levels of 1%, 5% and 10% for a two-tailed two sample t-test. t-statistics are in parentheses. See Table A3.1 in the Appendix for definitions of all variables.

Table 3.5 The decision to export, corporate governance, and firm characteristics

	Dynamic random-effects probit models						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Governance variables							
$DOS_{i(t-1)}$	2.139***	2.006***	2.129***	2.139***	1.968**	2.159***	2.011***
	(0.743)	(0.761)	(0.747)	(0.744)	(0.764)	(0.750)	(0.771)
	[0.391]	[0.348]	[0.399]	[0.396]	[0.327]	[0.399]	[0.332]
$DOS^2_{i(t-1)}$	-3.758***	-3.601***	-3.737***	-3.759***	-3.625***	-3.877***	-3.763***
	(1.376)	(1.389)	(1.386)	(1.376)	(1.390)	(1.391)	(1.406)
	[-0.727]	[-0.675]	-0.743]	[-0.733]	[-0.693]	-0.756]	[-0.718]
$SOS_{i(t-1)}$		-0.091			-0.163		-0.150
		(0.113)			(0.160)		(0.162)
$LPS_{i(t-1)}$			0.015		-0.108		-0.098
			(0.121)		(0.171)		(0.172)
$FOWNS_{i(t-1)}$				0.006	-0.014		0.049
				(0.222)	(0.223)		(0.225)
$INDIR_{i(t-1)}$						-1.026*	-1.050*
						(0.551)	(0.552)
						[-0.143]	[-0.154]
$BODSIZE_{(t-1)}$						-0.412***	-0.412***
						(0.123)	(0.123)
						[-0.060]	[-0.060]
Control variables							
$EXPDUM_{i(t-1)}$	2.741***	2.739***	2.741***	2.741***	2.738***	2.748***	2.744***
	(0.052)	(0.052)	(0.052)	(0.052)	(0.052)	(0.053)	(0.053)
	[1.822]	[1.821]	[1.822]	[1.821]	[1.818]	[1.817]	[1.812]
$FIRSIZE_{i(t-1)}$	0.069***	0.071***	0.069***	0.069***	0.069***	0.079***	0.079***
	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.022)
	[0.020]	[0.021]	[0.020]	[0.020]	[0.019]	[0.022]	[0.021]
AGE_{it}	-0.137*	-0.148**	-0.137*	-0.137*	-0.155**	-0.149**	-0.166**
	(0.072)	(0.073)	(0.072)	(0.072)	(0.074)	(0.072)	(0.075)
	[-0.022]	[-0.021]	[-0.022]	[-0.022]	[-0.030]	[-0.022]	[-0.031]
$PROD_{i(t-1)}$	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)
$CIR_{i(t-1)}$	-0.016	-0.015	-0.016	-0.016	-0.015	-0.023	-0.023
	(0.045)	(0.045)	(0.045)	(0.045)	(0.045)	(0.049)	(0.049)
$LEV_{i(t-1)}$	0.201	0.201	0.200	0.201	0.209	0.293*	0.301*
	(0.151)	(0.151)	(0.152)	(0.152)	(0.152)	(0.159)	(0.159)
						[0.028]	[0.033]
$MBR_{i(t-1)}$	-0.039	-0.042	-0.039	-0.039	-0.045	-0.020	-0.024
	(0.033)	(0.033)	(0.033)	(0.033)	(0.034)	(0.034)	(0.035)
$LIQTY_{i(t-1)}$	0.298**	0.299**	0.297**	0.298**	0.307**	0.323**	0.331**
	(0.142)	(0.142)	(0.142)	(0.142)	(0.142)	(0.143)	(0.144)
	[0.062]	[0.063]	[0.063]	[0.062]	[0.068]	[0.063]	[0.069]
COASTAL dummy	0.059	0.056	0.059	0.059	0.059	0.064	0.062
	(0.058)	(0.058)	(0.058)	(0.058)	(0.059)	(0.059)	(0.059)
WESTERN dummy	-0.059	-0.057	-0.059	-0.059	-0.054	-0.034	-0.029
	(0.077)	(0.077)	(0.077)	(0.077)	(0.077)	(0.077)	(0.077)
Industry dummies	yes	yes	yes	yes	yes	yes	yes
Year dummies	yes	yes	yes	yes	yes	yes	yes
Inflection points	26.89%	25.78%	26.85%	27.01%	23.59%	26.39%	23.12%
Observations	6315	6315	6315	6315	6315	6315	6315
Log-likelihood	-1758.55	-1758.23	-1758.55	-1758.55	-1758.03	-1731.40	-1730.92
Wald χ^2 (P value)	3126.55	3126.67	3126.62	3126.53	3126.36	3079.50	3079.00
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

Notes: The dependent variable (EXPDUM) is a binary variable which takes value of one if the firm exports, and 0 otherwise. Standard errors are in parentheses. Marginal effects are in square brackets for those coefficients that are statistically significant. The Wald statistic is aimed at testing the null hypothesis that the regression coefficients are jointly equal to zero. ***, **, and * denote significance at the 1%, 5%, and 10%, levels respectively. See Table A3.1 in the Appendix for definitions of all variables.

Table 3.6 Export intensity, corporate governance, and firm characteristics

	Dynamic random-effects tobit models						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Governance variables							
$DOS_{i(t-1)}$	0.233***	0.207***	0.237***	0.235***	0.194**	0.238***	0.197***
	(0.074)	(0.076)	(0.074)	(0.074)	(0.076)	(0.074)	(0.077)
	[0.080]	[0.071]	[0.082]	[0.081]	[0.067]	[0.082]	[0.068]
$DOS^2_{i(t-1)}$	-0.432***	-0.401***	-0.442***	-0.435***	-0.412***	-0.450***	-0.427***
	(0.139)	(0.140)	(0.140)	(0.139)	(0.141)	(0.140)	(0.142)
	[-0.149]	[-0.138]	[-0.152]	[-0.150]	[-0.142]	[-0.155]	[-0.147]
$SOS_{i(t-1)}$		-0.018			-0.043***		-0.045***
		(0.012)			(0.017)		(0.017)
					[-0.015]		[-0.034]
$LPS_{i(t-1)}$			-0.007		-0.039**		-0.039**
			(0.013)		(0.018)		(0.018)
					[-0.013]		[-0.012]
$FOWNS_{i(t-1)}$				0.012	0.003		0.008
				(0.022)	(0.022)		(0.022)
$INDIR_{i(t-1)}$						-0.085	-0.092
						(0.058)	(0.058)
$BODSIZE_{(t-1)}$						-0.035***	-0.036***
						(0.013)	(0.013)
						[-0.012]	[-0.012]
Control variables							
$EXPINT_{i(t-1)}$	1.083***	1.081***	1.083***	1.082***	1.080***	1.081***	1.078***
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
	[0.373]	[0.372]	[0.373]	[0.372]	[0.372]	[0.372]	[0.372]
$FIRSIZE_{i(t-1)}$	0.012***	0.012***	0.012***	0.012***	0.012***	0.013***	0.013***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]
AGE_{it}	-0.013*	-0.015**	-0.013*	-0.013*	-0.018**	-0.013*	-0.019**
	(0.007)	(0.007)	(0.007)	(0.007)	(0.008)	(0.007)	(0.008)
	[-0.004]	[-0.005]	[-0.004]	[-0.004]	[-0.006]	[-0.005]	[-0.006]
$PROD_{i(t-1)}$	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
$CIR_{i(t-1)}$	-0.011	-0.011	-0.011	-0.011*	-0.011	-0.011	-0.011
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
$LEV_{i(t-1)}$	0.016	0.016	0.017	0.017	0.019	0.017	0.020
	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
$MBR_{i(t-1)}$	0.001	0.000	0.001	0.001	-0.001	0.002	-0.000
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
$LIQTY_{i(t-1)}$	0.037**	0.037**	0.038**	0.037**	0.040***	0.038**	0.041***
	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)
	[0.013]	[0.013]	[0.013]	[0.013]	[0.014]	[0.013]	[0.014]
COASTAL dummy	0.010*	0.009	0.010*	0.010	0.010*	0.010*	0.010*
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
	[0.004]	[0.003]	[0.004]	[0.003]	[0.004]	[0.004]	[0.004]
WESTERN dummy	-0.015*	-0.015*	-0.015*	-0.015*	-0.013	-0.013	-0.011
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
	[-0.005]	[-0.005]	[-0.005]	[-0.005]			
Industry dummies	yes	yes	yes	yes	yes	yes	yes
Year dummies	yes	yes	yes	yes	yes	yes	yes
Inflection points	26.85%	25.72%	26.97%	27.0%	23.59%	26.45%	23.13%
Observations	6315	6315	6315	6315	6315	6315	6315
Proportion > 0	37.99%	37.99%	37.99%	37.99%	37.99%	37.99%	37.99%
Log-likelihood	-300.58	-263.96	-236.35	-205.97	-272.25	-336.27	262.74
Wald χ^2 (P value)	8535.29	8540.77	8535.16	8535.94	8548.34	8447.01	8460.69
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

Notes: The dependent variable (EXPINT) is a censored variable which is equal to zero if the firm does not export, and takes the value of the actual exports to total sales ratio, otherwise. Standard errors are in parentheses. Marginal effects are in square brackets for those coefficients that are statistically significant. The Wald statistic is aimed at testing the null hypothesis that the regression coefficients are jointly equal to zero. ***, **, and * denote significance levels of 1%, 5% and 10%, respectively. See Table A3.1 in the Appendix for definitions of all variables.

Table 3.7 Robustness tests

	Export propensity							Export intensity						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	System GMM	Piecewise	Dummies	Non-state	State	Post-reform	Pre-reform	System GMM	Piecewise	Dummies	Non-state	State	Post-reform	Pre-reform
Governance variables														
$DOS_{i(t-1)}$	1.483**			2.059**	-1.572	2.024**	-0.042	0.271**			0.247***	-0.322	0.183**	0.237
	(0.628)			(0.855)	(4.807)	(0.800)	(3.255)	(0.131)			(0.085)	(0.416)	(0.083)	(0.215)
				[0.403]		[0.320]					[0.092]		[0.068]	
$DOS^2_{i(t-1)}$	-2.699**			-3.935***	12.942	-3.711**	-1.848	-0.559*			-0.481***	1.421	-0.393***	-0.666
	(1.300)			(1.466)	(27.352)	(1.444)	(6.734)	(0.310)			(0.148)	(1.690)	(0.152)	(0.445)
				[-0.786]		[-0.688]					[-0.180]		[-0.145]	
$DOS025_{i(t-1)}$		1.274**							0.112**					
		(0.606)							(0.051)					
		[0.188]							[0.038]					
$DOS25_{i(t-1)}$		-1.240*							-0.167**					
		(0.648)							(0.066)					
		[-0.281]							[-0.057]					
$DOS\text{-}Dummy_{i(t-1)}$			0.151**							0.021**				
			(0.071)							(0.010)				
			[0.021]							[0.007]				
$SOS_{i(t-1)}$	0.074	-0.159	-0.118	-0.447	-0.036	-0.186	-0.170	0.015	-0.046***	-0.038**	-0.064	-0.031	-0.047**	-0.043
	(0.071)	(0.162)	(0.156)	(0.408)	(0.218)	(0.174)	(0.513)	(0.025)	(0.017)	(0.016)	(0.042)	(0.022)	(0.019)	(0.040)
									[-0.016]	[-0.013]			[-0.017]	
$LPS_{i(t-1)}$	0.021	-0.102	-0.063	-0.167	-0.145	-0.072	-0.354	0.020	-0.039**	-0.031*	-0.033	-0.032	-0.035*	-0.052
	(0.071)	(0.172)	(0.165)	(0.242)	(0.295)	(0.186)	(0.542)	(0.025)	(0.018)	(0.017)	(0.025)	(0.030)	(0.020)	(0.042)
									[-0.014]	[-0.011]			[-0.013]	
$FOWNS_{i(t-1)}$	0.187	0.045		-0.005	0.094	0.013	0.086	-0.008	0.007		0.014	0.023	-0.010	0.050
	(0.366)	(0.225)		(0.416)	(0.323)	(0.256)	(0.563)	(0.134)	(0.022)		(0.039)	(0.030)	(0.026)	(0.042)
$FOWNS\text{-}Dummy_{i(t-1)}$			0.113							0.012				
			(0.138)							(0.014)				
$INDIR_{i(t-1)}$	0.594	-1.044*	-1.045*	-2.240**	-0.307	-1.114*	-1.488	-0.054	-0.091	-0.094	-0.266***	0.012	-0.144**	0.014
	(0.606)	(0.552)	(0.552)	(0.925)	(0.723)	(0.643)	(1.212)	(0.182)	(0.058)	(0.058)	(0.097)	(0.073)	(0.070)	(0.103)
		[-0.152]	[-0.158]	[-0.435]		[-0.253]					[-0.099]		[-0.053]	
$BODSIZE_{(t-1)}$	0.109	-0.407***	-0.399***	-0.509**	-0.317**	-0.394***	-0.539*	-0.007	-0.035***	-0.034***	-0.039*	-0.032**	-0.043***	-0.011
	(0.112)	(0.123)	(0.123)	(0.220)	(0.156)	(0.143)	(0.278)	(0.032)	(0.013)	(0.013)	(0.023)	(0.016)	(0.016)	(0.023)
		[-0.059]	[-0.058]	[-0.064]	[-0.054]	[-0.076]	[-0.016]		[-0.012]	[-0.012]	[-0.015]	[-0.011]	[-0.016]	
Control variables														
$EXPDUM_{i(t-1)}$ / $EXPINT_{i(t-1)}$	0.716***	2.744***	2.745***	2.578***	2.880***	2.448***	3.762***	0.799***	1.079***	1.079***	1.007***	1.137***	1.023***	1.226***
	(0.051)	(0.053)	(0.053)	(0.085)	(0.070)	(0.059)	(0.136)	(0.050)	(0.012)	(0.012)	(0.018)	(0.017)	(0.014)	(0.025)
		[1.813]	[1.814]	[1.645]	[1.921]	[1.791]	[1.840]		[0.372]	[0.372]	[0.376]	[0.374]	[0.378]	[0.358]
$FIRSIZE_{i(t-1)}$	0.011	0.079***	0.080***	0.152***	0.057**	0.098***	0.004	-0.002	0.013***	0.013***	0.023***	0.009***	0.013***	0.009**
	(0.013)	(0.022)	(0.022)	(0.038)	(0.029)	(0.025)	(0.056)	(0.004)	(0.002)	(0.002)	(0.004)	(0.003)	(0.003)	(0.005)
		[0.021]	[0.022]	[0.037]	[0.016]	[0.023]			[0.004]	[0.004]	[0.008]	[0.003]	[0.005]	[0.003]

AGE_{it}	-0.011	-0.170**	-0.149**	-0.173	-0.124	-0.148*	-0.385**	-0.003	-0.019**	-0.015*	-0.020*	-0.019*	-0.020**	-0.019
	(0.028)	(0.075)	(0.075)	(0.108)	(0.110)	(0.084)	(0.183)	(0.008)	(0.008)	(0.008)	(0.011)	(0.011)	(0.009)	(0.015)
		[-0.032]	[-0.025]			[-0.035]	[-0.029]		[-0.007]	[-0.005]	[-0.007]	[-0.006]	[-0.007]	
$PROD_{i(t-1)}$	0.010	-0.002	-0.002	-0.134**	0.051**	-0.001	0.024	0.006	0.001	0.001	-0.017**	0.006***	0.001	0.005
	(0.012)	(0.014)	(0.014)	(0.063)	(0.025)	(0.014)	(0.083)	(0.007)	(0.001)	(0.001)	(0.007)	(0.002)	(0.001)	(0.006)
				[-0.028]							[-0.006]	[0.002]		
$CIR_{i(t-1)}$	-0.009	-0.023	-0.025	0.070	-0.408***	-0.022	-0.439	-0.020	-0.011	-0.011	0.007	-0.050***	-0.009	-0.051**
	(0.047)	(0.049)	(0.050)	(0.064)	(0.155)	(0.048)	(0.299)	(0.012)	(0.007)	(0.007)	(0.008)	(0.016)	(0.007)	(0.025)
					[-0.084]							[-0.016]		[-0.015]
$LEV_{i(t-1)}$	0.082	0.304*	0.302*	0.624**	-0.159	0.411**	-0.136	0.002	0.020	0.019	0.030	-0.007	0.025	0.002
	(0.089)	(0.159)	(0.159)	(0.250)	(0.230)	(0.177)	(0.419)	(0.026)	(0.017)	(0.017)	(0.027)	(0.023)	(0.019)	(0.035)
		[0.033]	[0.033]	[0.049]		[0.043]								
$MBR_{i(t-1)}$	-0.001	-0.024	-0.021	0.023	-0.069	-0.024	0.153	-0.003	-0.000	0.001	0.002	-0.001	-0.001	0.019
	(0.010)	(0.035)	(0.035)	(0.053)	(0.047)	(0.034)	(0.267)	(0.003)	(0.004)	(0.004)	(0.005)	(0.005)	(0.004)	(0.022)
$LIQTY_{i(t-1)}$	0.039	0.337**	0.315**	0.471**	0.155	0.475***	-0.329	0.007	0.041***	0.038**	0.049**	0.020	0.048***	0.024
	(0.069)	(0.144)	(0.143)	(0.233)	(0.196)	(0.161)	(0.382)	(0.017)	(0.015)	(0.015)	(0.025)	(0.020)	(0.017)	(0.031)
		[0.070]	[0.064]	[0.080]		[0.084]			[0.014]	[0.013]	[0.018]		[0.018]	
COASTAL dummy	0.003	0.063	0.059	0.104	0.027	0.058	0.088	0.005	0.010*	0.010	0.011	0.008	0.009	0.016
	(0.015)	(0.059)	(0.059)	(0.105)	(0.074)	(0.067)	(0.143)	(0.005)	(0.006)	(0.006)	(0.011)	(0.008)	(0.007)	(0.012)
									[0.004]					
WESTERN dummy	-0.011	-0.030	-0.030	-0.103	-0.009	-0.054	0.004	-0.002	-0.012	-0.012	-0.019	-0.010	-0.014	-0.003
	(0.019)	(0.077)	(0.077)	(0.145)	(0.094)	(0.088)	(0.175)	(0.005)	(0.008)	(0.008)	(0.015)	(0.010)	(0.010)	(0.015)
Industry dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Year dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Inflection point	27.47%	N/A	N/A	25.64%	N/A	23.26%	N/A	24.24%	N/A	N/A	25.56%	N/A	23.45%	N/A
Observations	6315	6315	6315	2281	3941	4275	2040	6315	6315	6315	2281	3941	4275	2040
Proportion > 0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	37.99%	37.99%	42.04%	35.70%	42.74%	28.04%
Log-likelihood	N/A	-1732.07	-1732.87	-650.08	-1025.60	-1392.87	-280.44	N/A	-226.08	-1732.87	26.60	461.2	1153.05	1654.23
Wald χ^2 (P value)	N/A	3081.27	3082.52	1108.77	1879.83	2013.49	806.80	N/A	8452.33	3082.52	3891.71	4577.62	5888.92	2576.07
	N/A	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	N/A	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Sagan test (p values)	59.30(0.173)							40.95(0.429)						
AR1 (p values)	-9.55(0.000)							-5.73(0.000)						
AR2 (p values)	0.71(0.477)							0.77(0.442)						

Notes: In columns 1 to 7, the dependent variable (EXPDUM) is a binary variable which takes value of one if the firm exports, and 0 otherwise. In columns 8 to 14, the dependent variable (EXPINT) is a censored variable which is equal to zero if the firm does not export, and takes the value of the actual exports to total sales ratio, otherwise. Estimates in columns 1 and 8 are obtained using a system GMM estimator; those in columns 2 and 9, using a piecewise specification; those in columns 3 to 7, using a random-effects probit estimator; and those in columns 10 to 14, using a random-effects tobit estimator. In the random-effects probit and tobit models, the Wald statistic is aimed at testing the null hypothesis that the regression coefficients are jointly equal to zero. For the system GMM regressions reported in columns 1 and 8, *AR1 (AR2)* is a test for first- (second-) order serial correlation of the differenced residuals, asymptotically distributed as $N(0,1)$ under the null of no serial correlation. The Hansen *J* test of over-identifying restrictions is distributed as *Chi*-square under the null of instrument validity. We treat all right-hand side variables except firm age as potentially endogenous variables: levels of these variables dated *t*-2 and further are used as instruments in the first-differenced equations and first-differences of these same variables lagged once are used as additional instruments in the level equations. In columns 4/5 and 11/12, a firm is defined as state-owned if the state is identified as its ultimate owner. In columns 2-7 and 9-14, marginal effects are in square brackets for those coefficients that are statistically significant. Standard errors are in parentheses. ***, **, and * denote significance levels of 1%, 5% and 10%, respectively. See Table A3.1 in the Appendix for definitions of all variables.

Chapter 4

Managerial ownership, investment, and liquidity constraints: Empirical evidence from Chinese listed companies

4.1. Introduction

The link between finance and investment represents a fundamental aspect of corporate finance and has long been a topic of intense interest and debate among academics and researchers. In this linkage, agency and asymmetric information problems and the mechanisms to mitigate them play a vital role.[39] In a world of perfect capital markets, a firm's investment decisions are completely independent of its financial conditions (i.e. internal and external funds are perfect substitutes), but solely dependent on investment opportunities (Modigliani and Miller, 1958). However, in reality, the prevalence of a variety of market frictions affects corporate investment decisions. It is argued that agency conflicts between managers and shareholders have a direct effect on investment decisions (Ross, 1973; Jensen and Meckling, 1976, Holmstrom and Costa, 1986; Aggarwal and Samwick, 2006).

Additionally, firms' investment decisions are influenced by financial constraints due to capital market imperfections, which make external finance more expensive than internal finance (Jensen and Meckling 1976; Stiglitz and Weiss 1981; Myers and Majluf 1984). Recent events such as the credit crunch reinforce the fact that financial constraints arising from these market imperfections can be a severe deterrent to a firm's ability to undertake value-enhancing investment projects (Campello et al., 2010). Like Fazzari et al. (1988) and the vast literature that followed their study, in this paper, we consider the firm's investment sensitivity to cash flow as an indicator of the financial constraints the firm faces. A high sensitivity is therefore seen as an indicator of under-

[39] Efficient resource allocation has implications not only for the firm but for the economy as a whole. At the microeconomic level, investment/capital expenditures affect a firm's production decisions, strategic plans, and performance (Bromiley, 1986; Nicholson, 1992; McConnell and Muscarella, 1985). At the macroeconomic level, firms' investment/capital expenditures have a significant effect on economic growth, and propagation of business cycles (Dornbusch, and Fischer, 1987; Bernanke and Gertler, 1989; Carlstrom and Fuerst, 1997).

investment[40].

Our study is related to the literature that studies the effect of managerial incentives on investment as well as to the literature that focus on the relationship between firms' managerial ownership and financial constraints on investment.[41] Specially, these two strands of literature suggest that insider ownership not only affects investment decisions directly but also indirectly by influencing the degree of financial constraints faced by the firms. Two theoretical perspectives namely the agency and asymmetric information theories are primarily used to explain the role of managerial ownership on investment decisions.

Despite a large body of theoretical literature, even in the context of developed countries, relatively few studies have empirically examined the effects of managerial ownership on investment decisions, obtaining mixed findings. For example, Aggarwal and Samwick (2006) and Kang et al. (2006) have focused on the direct relationship between managerial ownership and investment, while Oliver and Rudebusch (1992), Hadlock (1998), and Goergen and Renneboog (2001) have focused on the indirect effects of managerial ownership on investment, through the financial constraints channel: to this end, they look at the link between managerial ownership and investment-cash flow sensitivities.

In this study, we use a large panel of Chinese listed companies to examine both the direct and indirect effects of managerial ownership on corporate investment decisions. In China, given the importance of efficient firm-level capital allocation decisions necessary to foster on-going economic growth, the recent literature has paid great attention to corporate investment decision making and, in particular, to the relationship between firms' investment and financial constraints. In the early period of corporatization and partial privatization of former Chinese SOE's, the government and its agents were predominant shareholders of most corporations, and managers' ownership stakes in firms were very low. Therefore, the main focus of previous studies has been on investigating whether state ownership and control have any effect on the

[40] While most recent empirical studies interpret excess investment-cash flow sensitivities as an indicator of financial constraints, some argue that these sensitivities reflect free cash flow problems, which lead to over-investment for empire building (e.g., Jensen, 1986; 1993).

[41] See, for example, Jensen and Meckling (1976); Leland and Pyle, (1977); Gertler and Hubbard (1988); Hubbard (1988); Bernanke and Gertler (1989); Oliner and Rudebusch (1992); Hadlock (1998); Aggarwal and Samwick (2006).

financial constraints and investment of firms. For instance, focusing on a large number of non-listed firms, Poncet et al. (2010) and Guariglia, et al. (2011) find that investment by State Owned Enterprises (SOEs) is independent of internally generated funds, while the investment–cash flow sensitivity is positive and statistically significant for private firms. By contrast, research focusing on Chinese-listed firms has shown an opposite picture. Specifically, Lin and Bo (2012), Firth et al. (2012), and Tsai et al., (2014) provide evidence consistent with the notion that state-ownership does not necessarily reduce firms' financial constraints via soft budget constraints or easy access to finance. Firth et al. (2012) and Tsai et al., (2014) also demonstrate that state controlled firms face a higher degree of financing constraints than privately controlled firms. Firth et al. (2012) further show that the latter firms use more external finance than the former. Taken as a whole, a key implication of this evidence is that the financial constraint faced by state- and privately-controlled firms move in the opposite directions, with financial constraint becoming less important for the latter.

At the same time, another stand of recent literature which examine managerial incentives in Chinese firms suggests that the managerial incentive system has improved in privately controlled firms, whilst state ownership and control typically weaken its effectiveness (Kato and Long (2006 a,b,c). More specially, Conyon and He (2011) show an increase in the use of equity based incentives for managers in those listed companies that exhibit a lower level of government control.

Combining these two sets of papers, we believe that the fact that investment by state-controlled listed firms faces more financing constraints than privately controlled firms may be therefore a symptom of a more serious agency problem, or in other words, of the absence of good corporate governance practices (i.e. poor incentive for managers) in these firms compared to their private counterparts. For example, recent empirical studies show that firms with concentrated state ownership exhibit high levels of information asymmetries (Gul et al., 2010). Furthermore, Chen et al. (2011) find evidence that government intervention in SOEs through either majority state ownership or the appointment of connected managers distorts investment behavior, making it deviate from value-maximizing levels. By contrast, recent research provide evidence consistent with the notion that managerial ownership not only help to alleviate agency problem and improve corporate efficiency, investment in R&D, and performance of

firms (Lin et al., 2009; Lin et al., 2011; Liu et al., 2012), but also acts as a kind of organizational collateral which helps firms to obtain bank financing (Firth et al., 2009). There could therefore be a link between the increased managerial ownership they witnessed and the reduced financial constraints faced by the privately controlled firms. More specially, growing management ownership stakes in Chinese listed firms could be a mechanism which reduces financial constraints and enhances investment efficiency. Thus, different degrees of managerial ownership might explain the differences in the magnitude of the financial constraints faced by Chinese private and state-controlled listed firms that prior literature has identified (Firth et al., 2012; Tsai et al., 2014). Yet to the best of our knowledge, nobody has focused on the effects (direct or indirect) of managerial ownership on the investment of Chinese companies. This paper fills this gap in the literature.

Our study therefore proposes to test the hypothesis that managerial ownership of Chinese listed companies not only reduces the managerial incentive problems in firms by aligning the incentives of managers with those of outside shareholders, but also helps to reduce information problems in an environment characterized by a high level of information asymmetries (Morck et al., 2000; Wang et al., 2009; Gul et al., 2010).

Using a large panel of Chinese-listed firms over the period 2003-2010, we find that investment decisions are systematically related to managerial ownership in two ways. Firstly, managerial ownership exerts a positive direct effect on corporate investment decisions, by aligning managers' incentives with the interests of shareholders. Secondly, we document that, by acting as a form of collateral to lenders, managerial ownership helps to reduce the degree of financial constraints faced by firms (which we measure by the sensitivity of investment to cash flow). These results are consistent with theoretical predictions according to which by lowering agency and information costs, insider ownership stakes in the firm reduce the cost of external finance, relax liquidity constraints, and promote optimal investment decisions. From a policy perspective, our findings suggest that the Chinese government's recent policies aimed at reforming ownership structure and encouraging managerial ownership in listed firms have helped to reduce agency and asymmetric information problems in capital markets, thereby enabling firms to enhance investment efficiency. Our study

recommends therefore that greater attention should be paid to compensation contracts of management teams.

The remainder of the paper is organized as follows. Section 4.2 reviews previous literature on the link between market imperfections, financial constraints, investment decisions, and managerial ownership of corporations. Section 4.3 presents our hypotheses. The model specifications and estimation methodology are described in Section 4.3. In Section 4.4, we describe our data and provide basic descriptive statistics. Section 4.5 discusses the empirical results of our investigation. Finally, in Section 4.6 we offer concluding remarks and discuss policy implications for this chapter.

4.2. Review of the literature

4.2.1. Capital market imperfections and investment decisions

In this section we provide a brief review of standard literature on financial constraints and investment decisions. The theoretical works of Jensen and Meckling (1976) and Myers and Majluf (1984) provide the central analytical framework for the underinvestment problems stemming from liquidity constraints. Jensen and Meckling (1976) argue that contracting and managerial incentive problems raise the cost of obtaining external finance. The separation of ownership and control and asymmetric information between managers and outside investors provide incentives to the firm's managers to pursue their own interests at the expense of the firm's shareholders and bondholders, resulting in expropriation of investors' funds and misallocation of corporate resources. Therefore, considering that their interests may be endangered, outside shareholders attempt to control managers' behavior by using various governance mechanisms such as board of directors, audit committees, budget restrictions, and compensation systems designed to align the interest of managers with those of shareholders (Jensen and Meckling, 1976; Shleifer and Vishny, 1997). These actions result in increased costs for monitoring management, but also from the loss of profit opportunities due to reduced management flexibility (e.g. budget restrictions may prevent managers from responding to new demand for the products.). Therefore, outside investors require a higher return to compensate them for these monitoring costs and the potential moral hazard associated with managers' control over the allocation of

resources to investment. This leads to a cost premium on the use of outside equity finance.

Furthermore, in an environment with weak legal investor protection, there is high potential for expropriation by insiders of outside investors (both shareholders and creditors). Investors are therefore less willing to invest in these firms because they face the risk that the returns on their investment and capital will never materialize (La Porta et al., 2000). Consequently, such firms become financially more constrained, due to the high premium on external finance imposed on them, or even the lack of access to external finance (Lin et al., 2011).

Due to the conflict of interest between debtholders and equity holders, debtholders also face a moral hazard problem, in the sense that management may act on behalf of shareholders to erode the value of existing debt by undertaking excessively risky projects. In the face of this risk, creditors usually demand covenants that restrict management behavior in various ways (Jensen and Meckling, 1976; Smith and Warner, 1979).

Whilst Jensen and Meckling (1976) emphasize management/agency cost without consideration of informational asymmetries, Myers and Majluf (1984) argue that asymmetric information between managers and outside investors raises the cost of equity financing. That is, if managers are better informed than investors about a firm's prospects (i.e. the value of the firm's assets), then, due to adverse selection, the firm's risky securities (equities) will sometimes be underpriced, thereby raising the cost of external finance. Stiglitz and Weiss (1981) further extend the rationale for underinvestment by showing how information asymmetries can cause credit rationing in the loan markets. Due to the fact that risk is unobservable, bondholders do not know, ex-ante, the quality/riskiness of the investments that managers and shareholders will choose. Thus they infer adverse selection and demand a higher risk premium, leading to the firm being faced with credit rationing. This credit rationing may force the firm to forego investment projects with positive net present value-NPV).

In sum, theories suggest that in the presence of asymmetric information and agency problems, managers who find it more difficult to attract external finance due to either a high risk premium or credit rationing, need to finance investment with internal

funds. Thus, for firms facing agency and/or information problems, holding constant investment opportunities, internally generated resources will be an important determinant of investment (Hubbard, 1998).

In their seminal paper, Fazzari et al. (1988) (hereafter FHP) provide empirical tests for the impact of capital market imperfections on investment by linking the firm's internal resources to its investment. Focusing on a panel of 421 US manufacturing firms, they estimate investment equations as a function of Tobin's q and cash flow (a proxy for the firm's internal financial resources). FHP (1988) also use the level of dividend payout ratio to group their sample into financially constrained firms and unconstrained firms. The argument is that firms that nearly exhaust all their low-cost internal funds (i.e. the firms in the "low dividend payout" group) are expected to exhibit higher investment-cash flow sensitivities compared with firms that pay high dividends. In other words, low dividend payout firms are expected to be more financially constrained than their high-dividend payout counterparts. In line with their expectations, FHP (1988) find a positive relationship between investment and cash flow, which is higher for firms in the low-income payout category. FHP (1988) conclude that the investment–cash-flow sensitivity should be interpreted as evidence for the existence of information-driven capital market imperfections. The rationale behind this interpretation is that capital market imperfections make internal finance cheaper than external finance and consequently, one would expect cash flow to play a stronger role on the investment of firms which are more likely to face financial constraints. Following FHP's (1988) paper, a vast number of empirical studies provide evidence for the existence of financial constraints in different country settings.

However, FHP's (1988) work was challenged. Specially, Kaplan and Zingales (1997) re-examine the subset of low-dividend firms used by FHP (1988) and criticize the usefulness of the sensitivities of investment to cash flow as measures of financing constraints. In particular, these authors reclassify the firms into several categories, ranging from least to most financially constrained, based on managers' statements on liquidity and other criteria, and show that it is the least constrained firms which exhibit the highest sensitivity of investment to cash flow. They therefore argue that firms having higher investment–cash flow sensitivities cannot be considered as being more financially constrained. However, Allayannis and Mozumdar (2004) show that outliers

may be driving Kaplan and Zingales' (1997) results. In particular, they show that when negative cash flow observations are excluded, more constrained firms exhibit higher investment-cash flow sensitivity than less constrained firms.

As a further development in this literature, subsequent studies including Hoshi et al. (1991), Hadlock and Jemes (2002), Love (2003) and McLean et al. (2012) among others, explore factors that reduce or intensify the investment sensitivity to cash flow. Using a panel of Japanese manufacturing firms, Hoshi et al. (1991) show that firms affiliated with business groups (keiretsu) in Japan have lower sensitivities of investment to liquidity measures than independent firms. They conclude that these firms face less financial constraints because of their close relationship with the main banks inside the keiretsu, which contribute to reducing moral hazard and adverse selection problems arising from asymmetric information between borrowers and lenders. Similarly, focusing on a panel of US firms, Hadlock and Jemes (2002) also provide empirical evidence supporting the notion that close relationship with banks help alleviate asymmetric information problem faced by firms.

Moving their focus beyond firm level factors, other authors investigate how country-level factors may affect the financial constraints faced by firms. For instance, Love (2003) reports that the level of financial development in countries reduces financing constraints, and thereby promotes efficient allocation of investment and fosters growth. McLean et al. (2012) show that strengthening investor protection weakens investment-cash flow sensitivities across countries, suggesting that financial constraints are less binding in countries with stronger investor protection.

4.2.2. Financial constraints and investment decisions in China

In this section, we focus on the current state of the research on financing constraints faced by Chinese firms. A limited number of studies have focused on the issue. Among these, Chow and Fung (1998, 2000) use a panel of 5825 manufacturing firms operating in Shanghai over the period 1989-1992 to examine the relationship between investment and cash flow. Based on the estimates of a sales accelerator model of investment, the authors conclude that the investment of these firms is constrained by the availability of internal funds (i.e. cash flow), and that the sensitivity of investment to cash flow is higher for private firms, which do not have access to funding from state-owned banks

or foreign sources. The authors further find that small firms have lower sensitivities of investment to cash flow than large firms. They attribute this observed difference to the fact that small firms are dominated by high growth enterprises, which actively use working capital to smooth their fixed investment.

Héricourt and Poncet (2009) use survey data on 1,300 domestic firms in 18 Chinese cities over the period 2000 to 2002 to examine the relationship between the debt-to-asset ratio and interest coverage on the one hand, and investment, on the other, in a dynamic framework. They find that while state-owned firms do not face financial constraints, domestic private firms' capital expenditure decisions are significantly affected by financial variables. This suggests that due to the lending bias against them, private firms are significantly credit constrained. Héricourt and Poncet (2009) also show that foreign direct inflows (FDI) in China help to moderately reduce the finance constraints faced by private domestic firms.

Using a panel of more than 20,000 Chinese firms that are grouped according to different types of ownership over the period 1998–2005, Poncet et al. (2010) find that investments by both SOEs and foreign invested firms are independent on cash flow, while the investment–cash flow sensitivity is positive and significant for private firms. Based on their findings that unlike SOEs and foreign-invested firms, private firms in China face severe financial constraints on investment, Poncet et al. (2010) argue that a 'political-pecking order' in credit allocation affects investment efficiency in China.

Ding et al. (2013) also find that private firms in China are the most financially constrained. They reach this conclusion based on a panel of 116,000 unlisted Chinese firms of different ownership types over the period 2000-2007. The authors also argue that good working capital management helps the private firms alleviate the financing constrains that they face. Specifically, private firms with high working capital display high investment in working capital to cash flow sensitivities, but relatively low sensitivities of fixed investment to cash flow.

Using a large sample of 79,841 unlisted Chinese firms over the period 2000-2007, Guariglia et al. (2011) study the extent to which firms' assets growth is affected by financial constraints. To this end, they focus on the sensitivities of assets growth to cash flow, which they interpret as an indicator of the importance of financing

constraints. In line with previous studies (Héricourt and Poncet, 2009; Poncet et al., 2010), they also find that state-owned enterprises as well as collectives firms are not affected by financial constraints, because they have access to loans from state-owned banks. Yet, private firms exhibit higher sensitivities of investment to cash flow, meaning that they are financially constrained. The authors further find that although they display high sensitivities of asset growth to cash flow compared to other types of firms, these private firms typically exhibit the highest asset growth rates. They explain this apparently contradictory finding by noting that even though private firms have only limited access to external finance, they are able to achieve phenomenal high growth using internal funds generated from retained profits, which contribute to relax the financing constraints that they face.

While early research on financial constraints has mainly focused on non-listed firms, more recent research that has looked at Chinese listed firms has found an opposite picture. Using a panel of 1325 Chinese-listed firms over the period 1999–2008, Lin and Bo (2012) find that state-ownership does not necessarily help in reducing firms' financial constraints on investment. They therefore conclude that China's corporatization movement has been successful in eliminating the soft budget constraints once enjoyed by former state-owned enterprises.

Focusing on data from 650 Chinese-listed manufacturing firms during the period 1999–2008, Firth et al. (2012) find that government-controlled firms have greater investment–cash flow sensitivities than privately-controlled listed companies, especially when cash flow is negative. However, this finding holds only among firms that have few profitable investment opportunities. Furthermore, in their univariate analysis, they demonstrate that privately-controlled firms use more external finance than state-controlled firms, and that for both firms, debt is a more common source of financing than equity.

In a similar vein, using a panel of 1271 listed firms over the period of 1996–2007, Chan et al. (2012) provide evidence on the effects of China's financial development on the sensitivities of firms' investment to their cash holdings. The authors show that large state-owned enterprises (SOEs) face financial constraints as a result of the recent reforms in the banking system. This suggests that the financial reforms have gradually eliminated the preferential treatments given to large SOEs, subjecting these

firms' investment decisions to stricter market-based discipline. Yet, they do not find evidence that the financial reform has been successful in relaxing financing constraint experienced by small firms.

Finally, by analyzing data for 422 Chinese listed family firms over the period 2000 to 2007, Xu et al. (2013) investigate the effects of family firms' political connectedness on the financial constraints faced by these firms. They demonstrate that consistent with previous literature, Chinese listed family firms face difficulties in financing their investment. Using measures of financial constraints such as firm size and firm age[42], they find that larger and older family firms have lower investment-cash flow. By contrast, they find that governance factors such as the proportion of independent directors in the board and the percentage of shares held by the immediate largest shareholder do not affect investment-cash flow sensitivities. The idea is that if firms face free cash flow problems (i.e. overinvestment in wasteful projects), then the above governance mechanisms should help to constraint managers' tendency to overinvest, and thus reduce investment-cash flow sensitivities. They therefore conclude that Chinese family firms/privately controlled firms face an underinvestment problem due to information asymmetries in capital markets, rather than overinvestment resulting from excessive free cash flow. Finally, the authors show that the political connectedness of family firms helps to mitigate the financial constraints, and contributes therefore to reducing the underinvestment problem.

4.2.3. Managerial ownership, investment, and financial constraints

In this section, we first focus on the literature that investigates the direct effects of managerial ownership on corporate investment decisions. We next analyze the literature that focuses on the indirect effects of managerial ownership on investment, by looking at its effects on the degree of financing constraints the firm faces, which we proxy by the sensitivity of investment to cash flow.

4.2.3.1. Direct effect of managerial ownership on investment

Using the agency theory framework, we first look at how managerial ownership directly affects corporate investment decisions. In a market without agency conflicts, it is

[42] Large and older firms are likely to face fewer information asymmetries, and thus lower financial constraints.

generally expected that managers make investment decisions that maximize the wealth of shareholders. In practice, however, self-interested managers' actions may lead to sub-optimal investment decisions. The separation of ownership and control in modern corporations and the resultant conflict of interests between managers and shareholders give managers incentives to shirk or to divert corporate resources to their own benefits at the expenses of investors (Jensen and Meckling 1976). While the former may lead to underinvestment problem, the latter takes the form of excessive consumption of perquisites and empire building (i.e., overinvestment).

Focusing further on the shirking argument, Hicks (1935) suggests that the best of all monopoly profits is a quiet life, and poorly governed managers are more likely to prefer to avoid the difficult decisions and costly efforts associated with starting new line of business. Consistent with this argument, Bertrand and Mullainathan (2003) find that with the introduction of antitakeover laws in the US, which reduced the fear of hostile takeovers[43], workers' wages has risen whereas overall productivity and profitability has declined. Therefore, they conclude that active empire building may not be the norm and that managers may instead prefer to enjoy a quiet life. Based on these insights, Aggarwal and Samwick (2006) formally develop a model in which underinvestment is a result of shirking or managerial laziness. The authors show if managers incur private costs from the new investment (i.e. costly efforts in the form of overseeing responsibilities for that investment), then they will be willing to forego some positive net present value projects, resulting in an underinvestment problem.[44] Aggarwal and Samwick (2006) predict therefore that investment should increase in managerial incentives (such as share ownership and stock options).

In contrast, building on Jensen and Meckling's (1976) argument for managers' consumption of excessive perks, Jensen (1986, 1993) develops the free cash flow hypothesis, according to which managers in large corporations have the discretionary power and the incentive to invest excess free-cash flow in negative net present value

[43] This means that an important disciplining device typically used to constraint managers' opportunistic behavior has become less effective. The new law enabled in fact managers to enjoy a quiet life by increasing wages of employees and maintaining peace with their workers at the expenses of shareholders (Bertrand and Mullainathan, 2003).

[44] Other investment models suggest that managers' carrier concerns and reputational concerns can lead to under-investment (Holmstrom and Costa, 1986; Narayanan, 1985; Stein, 1989). See Stein, (2003) for a comprehensive survey of this literature.

projects that increase their personal utility at the expense of shareholders. Stulz (1990), Harris and Raviv (1990), Hart (1995), Hart and Moore (1995) and Zwiebel (1996) all develop formal theoretical models of free cash flow problem, in which entrenched managers attempt to expropriate corporate assets for their own benefits.[45]

Jensen and Meckling (1976) argue that agency costs (including those discussed above) arising from agency conflicts can be mitigated by aligning more closely the incentives of the management with those of the shareholders. Therefore, they suggest managerial ownership as an important governance mechanism to reduce agency problems. When the equity stakes of managers increase, they internalize, at least partially, the costs and benefits of the decisions they make. For example, if they work hard and undertake new investments which require costly efforts, they can also share the benefit like other shareholders. Similarly, if they favor bad or negative NPV projects, they will also suffer a fall in their own wealth. While a range of alternative governance mechanisms such as monitoring by boards and large shareholders, debt, dividends, and hostile takeovers have been devised to mitigate agency problem, Shleifer and Vishny (1997) suggest that these alternative mechanisms are not effective in constraining managerial behavior. By contrast, Denis et al. (1997) argue that management ownership should be the primary mechanism to align the incentives of managers with that of owners and, hence, influence managerial behavior. It is therefore argued that managerial ownership encourages managers to make optimal investment decisions that maximize shareholders wealth.

Bizjak et al. (1993) consider some of the implications of the above discussed under-investment theoretical framework for the design of optimal management compensation schemes. The authors suggest that for firms that are characterized by high/persistent informational asymmetries (about growth potential) between managers and shareholders, linking management compensation contracts to the long-term returns of the company's stocks provides incentive to insiders to make optimal investment decisions. Durnev and Kim (2005) report that in countries where legal investor protection are weak, incentive alignment effect of insider ownership is even stronger

[45] However, as discussed in Stein et al. (2003, p.119) these models do not imply that empire-building tendencies necessarily lead to an empirical prediction of overinvestment on average; they instead show that level of debt is endogenously determined, which attempts to balance ex-post over- and under-investment distortions.

and helps to improve the firm's governance. In general, underinvestment models predict a positive relationship between managerial ownership and investment. By contrast, Jensen (1986; 1993) suggests that managerial ownership is an important mechanism that can mitigate free cash flow problem and thus, predicts a negative relationship between increasing managerial ownership and investment.[46] Yet, in both cases managerial ownership enhances the investment inefficiency.

Jensen and Meckling (1976) suggest that investment is one of the most important channels through which ownership structure impacts on firm value. Yet, only a few studies have examined directly the effect of managerial ownership on investment. Among these, Cho (1998) uses cross-sectional data from a sample of 326 firms in Fortune 500 to examine the relation between inside ownership, investment, and firm performance with a view to identify the channel by which inside shareholdings affects firm performance. His estimates show that managerial ownership does not affect investment decisions. Similarly, focusing on 802 UK industrial companies, Davies et al. (2005) do not find any significant association between managerial ownership and investment.

By contrast, focusing on a large sample of US firms over the period of 1993 and 2001, Aggarwal and Samwick (2006) provide evidence that managerial incentives (measured by stock and stock options) positively affect investment. In a similar vein, by using a sample of 9,379 firm year observations for 2261 US firms, Kang et al. (2006) show that long-term corporate investment is positively associated with the weight placed on CEOs' equity based compensation relative to total compensation. The authors conclude that managerial stock-based incentives are a significant determinant of corporate investment. Since managerial ownership is a recent phenomenon in the Chinese context, to the best of our knowledge, there is no systemic research that has directly examined the impact of managerial ownership on corporate investment in China. One of our objectives in this paper is to fill this gap in the literature. See Appendix A4.1 for summary of the literature.

[46] The empirical studies which test the free cash flow hypothesis mainly focus on mergers and acquisition activities of the firms, which are beyond the focus of this paper.

4.2.3.1. Indirect effect of managerial ownership on investment

We next consider how managerial ownership indirectly impacts investment decisions, by influencing the degree of financing constraints firms face. As we discussed earlier, in the presence of frictions such as agency and asymmetric information problems, or costly enforcement of contracts, there is a wedge between the cost of funds raised externally and the opportunity cost of internal funds, reflecting the costs of adverse selection and moral hazard. Suppliers of finance (such as banks) lack in fact information about the quality of a firm's investment projects and the behavior of its management. This makes them require a premium on the financing they provide. In the worst case, they may refuse to provide any financing to those firms with significant agency and information problems (Oliner and Rudebusch, 1992; Bernanke and Gertler, 1995).

In this situation, two theoretical considerations suggest that managerial ownership can help to alleviate information asymmetries between managers and outside investors. These are the bonding and signaling arguments for managerial ownership. First, the bonding argument of Jensen and Meckling (1976) suggest that when manager's ownership stakes in a firm increases, managers internalize large part of the costs of their decisions. Hence, increasing managerial ownership in the firm would suggest that managers commit to reduce waste, as well as the expropriation of firm resources (i.e. agency costs). Managerial shareholdings in the company therefore serves as a credible guarantee to obtain financing for their investment at lower cost from the suppliers of finance.

Second, Leland and Pyle, (1977) consider the asymmetric information between managers and outside investors. They suggest that when insiders have information about the value of a firm's future investment opportunities which the outside investors do not have, the insiders' willingness to invest in their firms cam signal the quality of the firm's future investment projects. This enable outside investors to differentiate between profitable and unprofitable firms. As such, Leland and Pyle (1977) show that entrepreneurs/insiders' net worth/equity stakes affects firm value by reducing financing constraints (by reducing costs of external capital). While Leland and Pyle, (1977) relate this signaling effects of insider ownership ultimately to firm value, other authors exploit this idea and relate entrepreneurs/insiders' net worth/equity stakes to financial

constraints (Gertler (1988) and Gertler and Hubbard (1988). [47]

Using a sample of 500 S&P firms, Anderson et al. (2006) empirically test how creditors view insider's ownership stakes in the firms that seek bank financing for their investment. They find that creditors pay particular attention to managerial shareholdings in their lending decisions. Since creditors perceive that management's shareholdings influence their effort and opportunistic behavior by reducing agency conflicts, thus reducing credit risk, they require a lower rate of return (interest) from firms with higher managerial ownership.

Oliner and Rudebusch (1992) provide the first direct empirical test on the impact of managerial ownership on investment-cash flow sensitivities for US firms. The authors estimate an accelerator model combined with Q, where they include an interaction term between cash flow and insiders' ownership. They find no evidence to support the notion that managerial ownership can reduce financial constraints. Similarly, using an unbalanced panel of 697 firm-year observations for 132 firms listed on the Amsterdam Stock Exchange over the period 1993-1998, Degryse and de Jong (2006) find an insignificant effect of managerial shareholding on investment-cash flow sensitivities. By contrast, utilizing an Euler equation model for a panel of 240 companies listed on the London Stock Exchange over the period 1987 to 1993, Goergen and Renneboog's (2001) provide some evidence that insider ownership helps reduce the sensitivity of investment to cash flow.

As we have discussed above, most models of financial structure and investment suggest that information problems and financing constraints lead to underinvestment (e.g., Jensen and Meckling, 1976; Myers and Majluf, 1984; Stiglitz and Weiss, 1981; Fazzari et al., 1988; Hoshi et al., 1991; Whited, 1992;). Furthermore, most empirical studies interpret excess investment cash flow sensitivity as an evidence of financial constraints firm faces.

By contrast, Jensen (1986, 1993) suggests that manager' preferences for empire-building will lead managers to spend essentially all available funds on investment

[47] These theoretical works are based on the fundamental insight from the seminal work of Akerlof (1970) and Spence (1973), and on the subsequent contributions of Rothschild and Stiglitz (1975) and Riley (1975), who show that equilibrium in markets with asymmetric information and signalling may have quite different properties from equilibrium either with no information transfer, or with direct and costless information transfer.

projects. Thus, according to their free cash flow hypothesis, positive and significant sensitivities of investment to cash flow can be seen as a symptom of overinvestment rather than of underinvestment. Their theory predicts again a negative relationship between managerial ownership and investment-cash flow sensitivities. Using a large sample of the UK listed firms, Pawlina and Rennebook (2007) provide empirical support for this argument. See Appendix A4.2 for summary of the literature.

To the best of our knowledge, no study has examined the impact of managerial ownership on the financial constraints faced by Chinese firms. In this paper, we therefore propose to fill this gap in the literature.

4.3. Hypotheses

4.3.1. Effects of managerial ownership on investment.

4.3.1.1. Direct effects

The analysis of the impact of managerial ownership on investment is particularly relevant as China is characterized by insufficient but increasing managerial incentives (Chang and Wong, 2004; Xu et al., 2005; Kato Lang, 2006a,b,c; 2011), as well as by inefficient investment. A large literature argues in fact that China suffers from overinvestment problems (see Ding et al., 2014a, for a survey). This literature also point out that this problem affects primarily SOEs, and is caused by the soft budget constraints from which these firms benefit. Yet, more recent literature argues that recent reforms of corporate ownership and of the banking system have contributed to reducing the prevalence of soft budget constraints, and hence overinvestment. In particular, the abolition of the preferential treatment for SOEs, the enhancement of prudent lending, and the close monitoring of borrowers which have followed from these reforms (Firth et al., 2009; Jia, 2009; Chan et al., 2012; Lin and Bo, 2012; Tsai et al, 2014) have contributed to making investment in China more efficient. In line with this argument, Ding et al. (2014a) show that overinvestment in China has declined in recent years.

Following a different perspective, other authors argue that investment inefficiency in China stems from under-investment. Qian (1996), Lin et al., (1998), and

Kato and Long, (2006c) point out that the lack of managerial autonomy and weak managerial incentives in SOEs lead to shirking (managerial moral hazard), which in turn leads to an underinvestment problem (Bertrand and Mullainathan, 2003; Aggarwal and Samwick, 2006). Underinvestment may also stem from financing constraints, which are particularly relevant in the Chinese context (Ding et al., 2014b). Guariglia and Yang (2014) argue that both overinvestment and underinvestment coexist in the Chinese setting.

Previous empirical studies based on Chinese listed firms provide evidence suggesting that while government control and interference on management's decisions negatively affects corporate performance, managerial ownership and decision autonomy improve firms' performance (Chang and Wong, 2004; Fan et al., 2007; Lin et al., 2009; Liu et al., 2012). In a similar vein, Lin et al. (2011) use World Bank survey of 1088 private manufacturing firms over the period 2000–2002 to investigate firms' R&D investment. They find that those firms whose CEOs having significant shareholding in their firms, and firms who give performance-based compensations to their CEOs are more likely to not only to undertake R&D investment, but also to allocate more resources to R&D activities. They conclude that well-designed CEO incentive schemes are important to improve investment efficiency especially in corporate R&D. If the R&D investment of a firm is increasing in managerial incentives, clearly, this indicates that the firm is facing underinvestment problem due to insufficient incentives for managers (Aggarwal and Samwick, 2006). We believe that these arguments can be extended to corporate fixed investment. Yet, to the best of our knowledge no study has examined the direct impact of managerial ownership on investment in China. We hypothesize therefore that:

> *H1: There is a positive relationship between managerial ownership and investment.*

4.3.1.2. Indirect effects

Early research suggests that because of the dominant state ownership of banks, Chinese banks are mainly involved in policy lending, do not use commercial criteria to decide which companies to lend to, and are biased against lending to the private sector (Cull and Xu, 2003, Allen et al., 2005). Yet, recent studies such as Cull and Xu (2005), Firth

et al. (2009) and Tsai et al. (2014) provide evidence consistent with the view that as a result of a series of financial reforms and of the improvement in the governance of the Chinese financial sector (such as participation of foreign ownership in the state owned banks and foreign participation in the management of Chinese banks), banks now use more and more commercial judgment and prudence in their lending decisions. Tsai et al. (2014) further show that the banking system reform helped not only to alleviate politically-oriented investment distortions (i.e. overinvestment) in SOEs, but also to alleviate under-investment problems in non-state-controlled listed firms because of increased availability of bank loans to private sector.

Firth et al. (2009) further suggest that due to the high levels of information asymmetries in China, Chinese banks now pay more attention to the quality of corporate governance of their potential borrowers. They find evidence that top managers' equity ownership is positively associated with access to and size of bank loans. This is consistent with the prediction that incentive contracts and equity ownership not only help to alleviate moral hazard problems and reduce agency costs, but also serves as credible collateral to lenders and signal the quality of the firm in the capital markets (Jensen and Meckling, 1976; Leland and Pyle, 1977).

Combining these observations suggests that growing managerial shareholdings in Chinese firms may help to alleviate the financing constraints they face. Assuming that financing constraints can be proxied by investment-cash flow sensitivities (Fazzari et al., 1988), we pose the following hypothesis:

> *H2: There is a negative relationship between managerial ownership and investment-cash flow sensitivities.*

4.3.2. Taking the 2005-2006 split share structure reform into account

We next analyse the effects of the 2005-2006 split share structure reform following which non-tradable shares were floated through the open markets. That is, we test the extent to which the impact of managerial ownership on investment and investment and investment–cash flow sensitivities differs between the pre-reform and post-reform period. Taking the reform into account is important as from 2006 onwards, restrictions on managerial stock ownership were removed. Consequently, as evidenced by our data,

average managerial ownership rose from 1.1% in 2004 to 8.2% in 2010. We therefore hypothesize that:

> *H3: The effects of managerial ownership on investment and investment-cash flow sensitivities are stronger in the post- reform period.*

4.3.3. Differentiating firms into state- and privately-controlled

We next investigate the extent to which the impact of managerial ownership on investment and on the investment-cash flow sensitivities differs across state- and privately-controlled firms. This exercise is motivated considering that top executives in the state sector are often appointed by party and government agencies and are typically party secretaries, government officials or veteran socialist managers (Walder, 2011). Additionally, appointments to top managerial posts in these companies are generally controlled by the state, and managerial autonomy is limited (Walder, 2011). In contrast, top executives in the privately-controlled sector may have begun their careers in the state sector, but are no longer appointed by the state. The managers of these firms also have greater autonomy from state agencies than their counterparts in state-controlled companies. Furthermore, their executives enjoy much higher levels of compensation and are more likely to hold significant ownership stakes (Walder, 2011). [48]

Recent research on managerial incentives in Chinese listed firms reports evidence that managerial incentives such as the sensitivities of top management compensation and turnover to firm performance and promotion tournaments work as effective governance mechanisms to provide incentives to managers, whilst the effectiveness of these incentive devices are weakened by state ownership and control (Conyon and He, 2011 and 2012; Kato and Long, 2006a,b,c and 2011). Additionally, Chen et al. (2011) show that sensitivity of investment to investment opportunities is reduced by state ownership and the presence politically connected CEOs. This suggests that managers' equity ownership stakes in privately controlled firms are likely to provide them with the necessary incentives to make investment decisions which reflect growth opportunities. If these facts are correctly perceived by the modern banks in China, we would also expect managerial equity ownership stakes in privately controlled

[48] It should also be noted that managerial ownership in state-controlled firms is very low: According to our data, it is in fact equal to 0.2% for state-controlled firms, while it amounts to 6.0% for privately-controlled firms.

firms to alleviate the financial constraints faced by these firms. We therefore pose following hypotheses.

> *H4: The effects of managerial ownership on investment and investment-cash flow sensitivities are larger and more prevalent in privately-controlled firms compared to their state-controlled counterparts.*

4.3.4. Our contribution

This paper contributes to the existing literature in several ways. First, advancing existing literature, we provide evidence on both the direct and indirect (through a reduction in financing constraints) effects of managerial ownership on corporate investment decisions. Prior literature has focused on one or the other effect, but never on both effects simultaneously. For example, Cho (1998), Aggarwal and Samwick (2006), and Kang et al. (2006) focus on the direct effect, while Oliner and Rudebusch (1992), Hadlock (1998), and Goergen and Renneboog (2001) look at the indirect effect only.

Second, the previous studies that have examined the impact of managerial ownership on investment exclusively use data from Western countries such as the US and the UK[49]. We contribute to the literature on the links between managerial ownership and investment behavior focusing on a different economic scenario, in particular China. Previous studies based on Chinese data focus on the impact of government ownership and control on the investment-cash flow sensitivity and investment decisions (Chen et al., 2011; Firth et al., 2012; Lin and Bo, 2012). Yet, no study has focused on the potential impact of increasing managerial ownership on financing constrains faced by firms. By filling this gap, our study makes an important contribution to the literature. Particularly, using a recent data set, our study identifies managerial ownership as a mechanism through which Chinese listed firms can alleviate agency and asymmetric information problems, and concludes therefore that managerial ownership is an important determinant of investment decisions even in a transition and emerging economy such as China.

[49] As discussed in Kang et al. (2006), although a large number of theoretical papers examine the impact of agency conflicts and equity based compensation on managers' investment behavior, only a limited number of papers examine this issue empirically.

Third, we contribute to the research on the split share structure reform in China. Most recently, Lin (2009) and Chen et al., (2012) have examined the effects of the large non-tradable shareholders' incentive alignment resulting from the reform. Lin (2009) finds that the reduced agency conflicts stemming from the reform have diminished tunneling in the form related party transactions. Chen et al., (2012) report that the reform resulted in lower cash holdings and higher market valuations of cash holding as a consequence of the reduced free cash flow problem of controlling shareholders and the reduced financial constants faced by the firm. We show that the increased managerial ownership which followed the reform is associated with reduced financial constraints and more efficient investment decisions.

Finally, we differentiate for the first time, the impact of managerial ownership on financial constraints and investment decisions between privately- and state-controlled firms. By doing so, we are able to provide additional evidence on the impact of government ownership both on the managerial incentive (corporate governance) and on the interaction between managerial ownership and investment decisions.

4.4 Baseline specifications and estimation methodology

In this section, we outline our empirical specification and estimation methodology, namely the system GMM estimator.

4.4.1. Baseline specifications

In the literature, three types of investment models have been used to test the effects of financial constraints on investment, namely (1) reduced form investment models, such as for example, the Q-model of investment (FHP, 1988), or the accelerator model (Oliner and Rudebusch, 1992); (2) the Euler equation model (Whited 1992; Bond and Meghir 1994); (3) the error correction model (Bond et al., 2003; Guariglia, 2008).

A major criticism of the Q-model is the measurement error which typically characterizes Q. If investment opportunities are measured with error, cash flow may in fact not represents liquidity effects, but may act as a proxy either for an accelerator effect or for the quality of investment opportunities not captured by Q (Whited, 1992;

Erickson and Whited, 2000). This problem is more pronounced in emerging markets, which are characterized by market inefficiency. In these markets, it is argued that Q cannot meaningfully reflect firms' investment opportunities. By contrast, Whited (1992) argues that the Euler equation methodology avoids problems associated with estimating reduced-form investment equations by controlling for expectations about future profitability. According to Bond and Meghir (1994), the Euler equation approach is based on the dynamic optimization ''Euler condition'' for imperfectly competitive firms that accumulate productive capital stock with a quadratic adjustment cost technology. Bond et al., (2003, p.153) note that ''under the maintained structure, the model captures the influence of current expectations of future profitability on current investment decisions; and it can therefore be argued that current or lagged financial variables should not enter this specification merely as proxies for expected future profitability.'' Furthermore, as discussed in Lin et al. (2011), the Euler equation not only allows to exploit the cross-sectional heterogeneity among different firms to test for the role of financial factors, but it also helps to point out the specific impact of financial factors on the intertemporal allocation of investment.[50] We use the Euler equation as our main estimating equation in this paper, as it enables us to isolate the precise role of financial constraints in the investment process, and to provide a sharp test of the effects of managerial ownership on liquidity constraints and investment decisions.

This structural approach has been used in previous literature to study the effects of ownership on the sensitivity of investment to cash flow (Goergen and Renneboog, 2001; Lin et al., 2011; and Lin and Bo, 2012). We will follow an approach similar to theirs, focusing on managerial ownership. In particular, we consider an augmented version of Bond and Meghir's (1994) standard investment Euler equation, which includes managerial ownership, as well as the interaction between managerial ownership and cash flow. We therefore estimate the following baseline model to test our hypotheses.

$$\begin{aligned}(I_{it}/K_{it-1}) = \beta_0 + \beta_1(I_{it-1}/K_{it-2}) + \beta_2(I_{it-1}/K_{it-2})^2 + \beta_3(CF_{it-1}/K_{it-1}) + \beta_4 DOS_{it-1} + \\ \beta_5(CF_{it-1}/K_{it-1} * DOS_{it-1}) + \beta_6 SALGRTH_{it-1} + \beta_7(D_{it-1}/K_{it-1})^2 + \\ \beta_8(\Delta WC_{it-1}/K_{it-1}) + \beta_9 FIRSIZE_{it-1} + \beta_{10} SEID_{it-1} + v_i + v_t + v_j + v_{tj} + \varepsilon_{it} \qquad (4.1)\end{aligned}$$

[50] The Euler equation considers the intertemporal allocation of investment because it is a relationship between ratios of investment to capital stock (investment rates) in adjacent periods, derived from a dynamic value optimization problem in the presence of symmetric, quadratic adjustment costs (Bond et al., 2003).

where *i* indexes individual firms and *t* represents the current year. Investment, *I*, is defined as the change in net-fixed assets plus depreciation. *K* represents capital stock measured by total assets at the beginning of the period[51]. *(I/K)* denotes the rate of investment. Cash flow *(CF)*, which is the sum of net profit and depreciation, is used as a proxy for internal funds. *DOS* denotes the percentage of shares owned by directors and officers.[52] *SALGRTH* represents the real annual sales growth rate; *Q* is Tobin's q; *(D/K)* denotes the leverage ratio; *(*Δ*WC/K)* represents changes in working capital as a proportion of the capital stock; *SEID* represents an equity financing dummy variable; and *FIRSIZE* represents firm size. We lag all the independent variables by one period to account for the fact that current investment decision-making is based on past information. Furthermore, to account for possible heteroscadasticity arising from differences in firm size, investment, cash flow, leverage, and changes in working capital are scaled by the firm's level of capital stock at the beginning of the period.

In Euler investment model, it is assumed that capital adjustment costs are a quadratic function of the investment ratio (Bond and Meghir, 1994). Therefore, the investment rate lagged one period and its square are included as additional independent variables in our equation. The structural model implies that the coefficient on lagged investment ratio should be positive. Yet, if adjustment costs are very high, it would negatively affect investment, suggesting a negative coefficient on lagged investment ratio.

The estimated coefficient on *CF/K* is interpreted as the investment–cash-flow sensitivity, which is widely used in the literature as a measure of financial constraints. Since the Euler-equation model is derived under the null hypothesis that firm investment spending is not affected by financial constraints (i.e. under the null of no financial constraints), there should be a negative or no relationship between investment

[51] A similar approach is also used in Lin and Bo (2012) and McLean et al. (2012), among others.

[52] We also estimated alternative specifications, which included the squares of Managerial ownership as in Chapter 3, but these quadratic terms were never statistically significant. This may be due to the fact that unlike ordinary capital expenditure, entering foreign markets involves a high level of risk and uncertainty (Verhoeven, 1988). Thus with a higher level of equity ownership vested in the firm, managers' propensity to risk-aversion may prevents them from promoting and engaging in international activities, even when it is efficient and profitable for the firm. This may cause managerial ownership to non-linearly affect export market participation decisions, but not ordinary capital investments.

and cash flow. If the coefficient on *CF/K* is positive and statistically significant, this would then indicate the existence of financial constraints on investment.

For the purpose of testing our hypotheses, we first focus on the coefficient of managerial ownership to see its direct impact on investment decisions. As discussed above, if as predicted by Hypothesis 1, managerial ownership mitigates agency conflicts and provides managers with the necessary incentives to undertake investment, we would expect a positive association between managerial ownership and investment. Hence:

If H1 is true; $\beta_4 \geq 0$.

Next, we focus on the interaction between cash flow and managerial ownership to assess the indirect impact of managerial ownership on investment through the financial constraints channel. If, as predicted by our Hypothesis 2, firms become less financially constrained due to the reduced agency and asymmetry information problems stemming from increased managerial ownership, we would expect the coefficient on this interaction term to be negative and significant, whilst the coefficient associated with cash flow would remain positive. Hence:

If H2 is true; $\beta_3 \geq 0$; $\beta_6 < 0$.

To account for the accelerator effects from sales, our Euler equation includes the real annual sales growth rate *(SALGRTH)*. We use Tobin's q *(Q)* to represent the firm's future investment opportunities. We compute *Q* as the sum of the market value of equity, and the book value of long-term and short-term debt, divided by total assets. We control for the effect of debt by including the leverage ratio *(D/K)* measured by the ratio of total debt to total assets. Following Fazzari and Petersen (1993), we also include changes in working capital scaled by total assets *(*Δ*WC/K)* to control for the substitution effect between working capital investment and fixed investment. As discussed in Fazzari and Petersen (1993), if firms use working capital to smooth fixed investment, we would expect a negative association between *(*Δ*WC/K)* and fixed investment. We also use firm size, which is measured by the natural logarithm of the firm's total assets, as a control variable. Having more resources and collateral, large firms are likely to face fewer information asymmetries and are therefore likely to invest more (Guariglia,

2008). Yet, smaller firms are more likely to be in the expansion stage and typically have high growth potential (Hovakimian, 2009).

In addition, to account for the effect of external equity financing, we use an equity financing dummy variable, *SEID,* which takes the value of one if the firm has raised additional equity capital by making seasonal equity offerings (SEOs) during the sample period, and zero otherwise. If equity is utilised as an alternative source of external financing for investment, then we should observe a positive association between *SEID* and investment.

The error term in Equation (4.1) is made up of five components. v_i is a firm-specific effect; $v_{t,}$ a time-specific effect, which we control for by including time dummies capturing, among other things, the variation in the user cost of capital and tax rates, as well as business cycle effects[53]; $v_{j,}$ an industry-specific effect, which we take into account by including industry dummies. v_{tj} represents industry-year shocks to investment, which we account for by including time dummies at the industry level. Finally, ε_{it} is an idiosyncratic component.

4.4.2. Estimation methodology

The primary estimation method we use is the two-step system GMM for dynamic panel models with lagged dependent variables. A similar approach has been used in a number of recent studies investigating the effects of ownership and governance on various aspects of firm behavior including investment decisions and firm performance (e.g. Lin and Bo, 2012; Wintoki et al., 2012, among others). Estimating our baseline model using an OLS technique would produce biased estimates of the coefficients, as the unobservable time-invariant determinants of investment/performance (μ_i) are likely to

[53] For example, Bo et al. (2014) show that recent global financial crisis (2007-2009) has negatively affected the investment of Chinese firms especially through the demand channel (i.e., contraction of demand). Our dataset includes the Global Financial Crisis years. The effects of the Crisis are taken into account in our analysis through the inclusion of time dummies, which account for all business cycle effects. For instance, the fact that exports and/or investment were reduced during the Crisis would be picked by the time dummies. Furthermore, since corporate governance, in particular ownership structure variables are mostly persistent overtime and can well be described as cross sectional or between-firms' phenomena (Zhou, 2001), we do not expect the effects of managerial ownership on investment to change over the crisis years. We believe therefore that the different results obtained for the pre- and post-2006 period are more likely to be due to the split-share structure reform than to the financial crisis.

be correlated with other regressors in the model (Wooldridge, 2002). It is possible to take into account the μ_i component of the error term by using a panel data fixed effect model or by estimating the equation in first-differences. Yet, because our structural investment Euler equation is dynamic, the lagged dependent variable will be correlated with the firm-specific effect, creating bias in the simple fixed effects estimates (Nickell, 1981).

Furthermore, the OLS and fixed model assume that all the explanatory variables are strictly exogenous, which may not be the case when studying the relationship between ownership and investment decisions and performance. The level of investment or performance may in fact affect the firm's ownership structure, and the random events affecting the level of investment or firm performance are also likely to influence ownership and firm characteristics.[54]

3.2.1 The System GMM

To overcome these problems and to estimate our dynamic models consistently on a short unbalanced panel, we use the system GMM estimator developed by Holtz-Eakin, et al. (1988), Arellano and Bond (1991), Arellano and Bover (1995), and Blundell and Bond (1998). This method estimates the relevant equation in a system, i.e. the equation is estimated both in first-differences and in levels. The use of first-differencing eliminates firm-specific, time-invariant effects. Additionally, the system GMM estimator uses lagged values of the regressors as internal instruments to control for the possible endogeneity of regressors.

It is documented that the system GMM estimator performs well with highly persistent or slowly moving phenomena such as ownership structure and performance (Bond, 2002). In this way, the use of the system GMM alleviates the concerns raised by Zhou (2001), who argue that since ownership structure variables are mostly persistent overtime and can well be described as cross sectional or between-firms' phenomena, the fixed effects model is problematic, as it essentially eliminates all between-variations in firms' characteristics. Moreover, the use of a first-differencing approach in the GMM estimator also leads to more efficient estimates since it mitigates the possibility of

[54] See Hadlock (1998) for a detailed discussion on the endogeneity concern in the case of ownership and investment decisions.

collinearity among the explanatory variables. In the system GMM, we use the two-step robust option to get a robust (to panel-specific autocorrelation and heteroskedasticity) and finite-sample corrected covariance matrix.

3.2.2 Validity of instruments

We use several tests to assess whether our instruments are legitimate and our model is correctly specified. The first is the Sargan/ Hansen test (also known as *J test*) for overidentifying restrictions. This test is asymptotically distributed as a chi-square with degrees of freedom equal to the number of instruments less the number of parameters estimated under the null of instrument validity.

Next, we note that if the error term (ε_{it}) in the original (untransformed) specification (equation 4.1) is *i.i.d*, lagged levels of the explanatory variables dated *t*-2 are potentially valid internal instruments. However, if the random error (ε_{it}) follows an *MA(q)* process, rather than being serially uncorrelated, the differenced disturbances follow an *MA(q+1)* process. In this case, the first valid instruments start from 2+*q* (Bond, 2002; Bond et al., 2003). For example, if ε_{it} is *MA(1)*, then valid instruments include lag 3 and deeper values. Consequently, to have a valid set of instruments independent of the residuals, it is crucial to ensure that there is no higher order serial correlation. The *AR(n)* test check for the presence of n^{th}-order auto-correlation in the differenced residuals. It is asymptotically distributed as a standard normal under the null of no n^{th}-order serial correlation of the differenced residuals

To sum up, the system GMM estimator potentially deals with most of the estimation problems in our study of the dynamic relationship between ownership and investment i.e. (1) the dynamic fixed effects bias arising from OLS and within-firm group estimates in panels with relatively few time periods (Nickell, 1981); (2) the potential endogeneity arising from simultaneity and measurement error; and (3) the high level of persistency in governance and performance variables. We estimate our equations using the two-step System GMM (with Windmeijer corrected standard errors) using the xtabond2 package for STATA.

4.5. Data and descriptive statistics

The data used for the analysis are obtained from two Chinese databases namely, the China Stock Market Accounting Database (*CSMAR*) and Sino-fin for the period 2003-2010. Our data set is composed of publicly listed non-financial firms traded either on the Shanghai or the Shenzhen stock exchanges. Firms in the financial sector are excluded in our empirical analysis of investment decisions since they have rather different investment behaviors. To reduce the impact of possible outliers, we exclude observations in the one percent tails of each of the regression variables. Firms with only three years or less of time-series data are dropped, as sufficient observations over time are required for the system GMM estimation. Finally, since we lag all our independent variables once and use variables lagged twice or more as instruments, we end up with a panel of 5347 firm-year observations on 1420 companies over the period 2006-2010 for our actual empirical analysis. The panel has an unbalanced structure.

Table 4.1 provides summary statistics for the variables used in this study for the full sample firms as well as for state- and privately-controlled firms. The average (median) ratio of investment to total assets (*I/K*) of the full sample firms is 6% (3.3%). The average ratio of cash flow to total assets (*CF/K*) is 5.7% (5.5%). The average (median) percentage of managerial ownership (*DOS*) is 2.1% (0) with a minimum of zero and a maximum of 63%. The average (median) real sales growth rate (*SALGRTH*) is 13.5% (10%) while the average Tobin's Q (*Q*) is 1.83 (1.143). These two variables indicate that there are strong growth opportunities in China during the sample period. The average (median) leverage measured by total debt to total assets ratio (*D/K*) is 52% (52%), suggesting that more than 50% of Chinese listed firms' assets is financed with loans. The seasonal equity financing dummy (*SEID* = 1) is 0.526, implying that the majority of the firms in our sample have used equity financing during the sample period. The average (median) firm size measured by the real value of total assets (*FIRSIZE*) is about 2 billion RMB (0.966).

As we discussed earlier, non-sate controlled firms have greater a percentage of managerial ownership (*DOS*) than state-controlled firms. The mean value of managerial ownership is in fact 6% for the former, and 0.2%, for the latter. Furthermore, compared to firms controlled by the state, privately-controlled firms are smaller (*FIRSIZE*), but exhibit higher real sale growth rate (*SALGRTH*) and Tobin's Q (*Q*), suggesting that they

have higher growth opportunities. This is consistent with Hovakimian, (2009) who show that smaller firms are more likely to be in the expansion stage and typically have high growth potential. Finally, compared with privately-controlled firms, state-controlled firms use more leverage (*D/K*) and seasonal equity financing (*SEID*).

These summary statistics indicate that the sample employed in this study is comparable to others used in prior research on investment decisions. For instance, the average ratios of investment to total assets and of cash flow to total assets in our sample are very similar to those reported by Tsai et al. (2014), who use similar data from the period 2001-2010.

4.6. Empirical results

4.6.1. Results from the investment Euler equation estimation

In this section, we discuss the main results from the estimation of our structural investment Euler equation. The System GMM estimation results of a standard investment Euler equation with only control variables are shown in the first column of Table 4.2. The estimation results from the models augmented with managerial ownership variables are presented in columns (2) and (3).

The estimated coefficients associated with the cash flow to total assets ratio *(CF/K)* are positive and statistically significant at conventional levels in all the specifications in Table 4.2. In column 1, the coefficient on *CF/K* is 0.423. Considering that the mean value of investment is 0.060, and the standard deviation of *CF/K* is 0.057 (as shown in Table 4.1), a one-standard-deviation increase in *CF/K* yields on average a 40.19% increase in the investment of the firm. This figure is comparable with the average value of 33%[55] reported in McLean et al. (2012) in their cross-country study[56]. If we follow the interpretations of investment-cash flow sensitivities in Fazzari, et al. (1988, 2000), this finding implies that our sample of Chinese listed firms experience a certain degree of financial constraints on investment. This result is consistent with those

[55] The estimated coefficient on cash flow (0.423) times its standard deviation (0.057) divided by the mean value of investment (0.060).
[56] See Table II of McLean (2012, p.323) for the list of countries included in the Worldscope which include several developed and developing countries excluding China.

reported in previous studies on financing constraints of Chinese listed companies (Firth et al., 2012; Lin and Bo, 2012).

4.6.2. The direct and indirect effects of managerial ownership on investment

Our main interest is centred on coefficient estimates for managerial ownership and its interaction with cash flow in columns (2) and (3) of Table 4.2. Note that in these regressions, the coefficients on *CF/K* are still positive and significant at the 1% level, which means that for firms without managerial ownership, investment is highly dependent on internally generated cash flows.

Focusing on the regression in column 2, we observe that the estimated coefficient on managerial ownership is positive and statistically significant at the 1% level, suggesting that by better aligning the incentive of managers with outside shareholders' interest, a higher ownership by insiders in the firms increases the firms' investment. This result is in line with our hypothesis *H1* and also consistent with the theoretical predictions of Jensen and Meckling, (1976) and Aggarwal and Samwick (2006), among others, and with the empirical findings of Aggarwal and Samwick (2006) and Kang et al. (2006) for US firms. The magnitude of the coefficient indicates that the effects are economically meaningful: a one standard deviation increase in managerial ownership yields on average a 64%[57] increase in investment. This large increase in investment is also consistent with the prediction of Chow (1997, p. 321) that "providing incentives for the management of publicly owned assets is a key to China's success" and with the empirical finding in Lin et al. (2009) who report a largest increase in efficiency of firms with insiders' ownership.

Coming to the indirect effects of managerial ownership, consistent with our prediction, we find that the estimated coefficient on cash flow interacted with managerial ownership (*DOS)* is negative and statistically significant at the 1% level, suggesting that managerial ownership helps reduce information asymmetries and thus, the financial constraints faced by firms. This result thus supports our hypothesis H2. It is also consistent with the recent empirical evidence presented in Anderson et al. (2006)

[57] The estimated coefficient on managerial ownership (0.473) times its standard deviation (0.081) divided by the mean value of investment (0.060).

for US firms and Firth et al. (2009) for Chinese firms, who show that managerial ownership acts as a form of collateral to bank financing[58].

It should be noted, however, that the negative coefficient on the cash flow interacted with *DOS* could also be attributed to the alleviation of free cash flow problems (Jensen, 1986). Yet, if the firm faced free cash flow problems (which typically lead to overinvestment), and if the alignment of managers' incentives through equity ownership reduced these problems, then in addition to the negative coefficient on the interaction between cash flow and managerial ownership, we would also expect to observe a negative relationship between managerial ownership and investment. The positive and highly statistically significant coefficient estimate on managerial ownership that we find here is inconsistent with the free-cash flow theory of investment. Therefore, our findings of a positive association between managerial ownership and investment, coupled with the negative relationship between managerial ownership and the investment-cash flow sensitivity are consistent with the ideas that managerial ownership reduces both managers' tendency to shirk (Bertrand and Mullainathan, 2003; Aggarwal and Samwick, 2006) and the degree of financing constraints faced by firms (Myers and Majluf, 1984; Stiglitz and Weiss,1981; Fazarri et al., 1988; Hoshi et al., 1991; Whited, 1992), which both typically lead to underinvestment.

4.6.3. The effects of ownership reform on the interaction among managerial ownership, financial constraints and investment

We further test whether the impact of managerial ownership on investment and the investment–cash flow sensitivity differs between pre- and post-reform periods. As we discussed earlier, in order to fully understand the impact of managerial ownership on firms' investment behaviour, it is important to take into account differences in our results before and after the 2005 split share structure reform. To take this into account, we estimate equation (4.1) by incorporating interaction terms of both DOS_{it-1} and $CF_{it-1}/K_{it-1} * DOS_{it-1}$ with dummies for the pre- and post-2006 period.[59] This formulation allows the parameters of DOS_{it-1} and $CF_{it-1}/K_{it-1} * DOS_{it-1}$ to differ across observations in the two sub-sample periods. If managerial ownership has mainly emerged as an

[58] By contrast this result is inconsistent with Hadlock (1998) who argue that managerial ownership increases investment sensitivity to cash flow (financial constraints) since aligning managers' incentives with the interest of owners causes them to avoid costly external financing.

[59] *Reform* is a dummy variable that takes 1 if the sample year is greater than 2006, and 0 otherwise.

important governance mechanism only following the reform, then one would expect *DOS* and *CF/K*DOS* to have significant effects on investment only in the post reform period.

The results are reported in column 3 of Table 4.2. We observe that the estimated coefficient on managerial ownership is positive and statistically significant only in the post-reform period. Similarly, the estimated coefficient on the interaction between managerial ownership and investment-cash flow sensitivities is negative and statistically significant only in the post-reform period. The Table reports the *p*-value associated with an *F*-test aimed at assessing whether the impact of *DOS* and *CF/K*DOS* on investment is the same for the pre- and post-2006 periods. Although, according to our *F*-test, the difference in magnitude of the coefficient estimates of *DOS* and *CF/K*DOS* between the pre- and post-2006 firm-years is not statistically significant, the former coefficients are never precisely determined.

These findings support our hypothesis *H3*, according to which managerial ownership in the Chinese listed firms has worked as an effective governance mechanism only in the post reform period, and suggest that, by removing restrictions on managerial stock ownership, the reform played a significant role in achieving a more efficient allocation of resources for investment by corporations.

Focusing on the control variables, the estimated coefficients on sales growth *(SALGRTH)* are significantly positive in all the regressions in Table 4.2. This implies that the accelerator effects from sales also bear an important role on the corporate investment decisions. This finding is consistent with Lin and Bo (2012). Except in column (1), the estimated coefficients on the total debt ratio *(D/K)* are positive and statistically significant. This suggests that gaining more debt financing enables firms to invest more. This can also be explained in the light of the fact that firms with high leverage have more resources at hand, which they can use to make new investments. In addition, these firms may be considered more creditworthy by banks having obtained debt in previous years, and may consequently obtain more loans in the present.[60] Lin

[60] This result is inconsistent with free cash flow hypothesis which predict that investment will decrease with leverage, because high levels of current debt service payments force managers to disgorge cash out of the firm, thereby reducing managers' discretionary expenses.

and Bo (2012), also find a positive relation between investment and leverage in their Euler investment equation estimation though it is insignificant.

Consistent with Fazzari and Petersen (1993), the coefficient on working capital investment ($\Delta WC/K$) is negative and significant at the 10% level in all specifications, suggesting that firms use the working capital to smooth fixed investment. The estimated coefficients for the equity financing dummy (*SEID*) variable bear a positive sign and are statistically significant in all the models except the one in column 3, suggesting that equity financing is also important to fund investment projects. Finally, the coefficient of firm size *(FIRMSIZE)* is negative and insignificant in all the regressions. Again, these findings are in line with those reported by Lin and Bo (2012).

As for the validity of the instruments, the *AR(2)* and Sargan tests generally indicate that our models are correctly specified and that the instruments are generally valid.

4.6.4. Differentiating firms into state- and privately-controlled

As we argued earlier, state-controlled and privately controlled-firms may exhibit different investment behavior. In the light of this consideration, in Table 4.3, we provide separate GMM estimates of the Euler equation (Equation 4.1) for state- and privately-controlled firms.

Once again, the estimated coefficients on the cash flow to total assets ratio *(CF/K)* are positive and statistically significant at conventional levels in all the specifications in Table 4.3. This result suggests that all the listed firms are, on average, finically constrained regardless of their ownership. This finding is consistent with Firth et al. (2012), Lin and Bo (2012), but inconsistent with Chow and Fung (1998), Héricourt and Poncet (2009), Poncet et al. (2010), Guariglia et al. (2011), Ding et al. (2013). The latter group of studies argues that the existence of soft-budget constraints and easy access to bank financing from state-controlled banks, make state-owned firms less financially constrained or not financially constrained at all. Yet, contrary to us, they focus on unlisted companies.

Interestingly, in Table 4.3, we also observe that in sharp contrast to the soft budget constraint arguments, the coefficients on cash flow for state-controlled firms are

much larger than those for privately-controlled firms, suggesting that the former firms face more financing constraints than the latter. This finding is consistent with Firth et al (2012), and Tsai et al. (2014) who argue that financial liberalization and the banking system reform have gradually eliminated preferential treatments given to SOEs, and that these firms' investment decisions now face a stricter scrutiny by suppliers of finance (e.g. banks).

As shown in column 1 of Table 4.3, consistent with our prediction while the coefficient of *DOS* is positive, the coefficient on its interaction with cash flow is negative and both of these coefficients are precisely determined for privately-controlled firms. By contrast, the coefficients of both of these variables are poorly determined for state-controlled firms (column 3). Similarly, the estimated coefficients of *DOS* and its interaction with cash flow are only precisely determined with their expected signs in the post-reform period for privately controlled firms (column 2). By contrast, again, the coefficients of both of these variables are poorly determined both in pre- and post – reform period for state- controlled firms (column 4.) These results provide support for our hypothesis (*H4*) and imply that managerial ownership is only effective in reducing agency and information problem and hence financial constraints at non-state firms. These findings can be explained considering the higher level of managerial ownership characterizing private firms relative to their state-controlled counterparts.

The coefficients of the control variables reported in Table 4.3 were generally similar to those reported in Table 4.2, and the tests for instrument validity did not indicate significant problems. In sum, our results from the Euler-equation estimation suggest that managerial ownership is an important factor that affects investment, both directly and indirectly by alleviating the effects of the capital market imperfections faced by non-state-controlled firms, especially in the post reform period.

4.4.7. Further tests

In this section, we verify whether our results are robust to using an alternative investment model, namely the Q model, which has been widely used in the literature as an alternative to the Euler equation (Fazzari et al., 1988; Fazzari and Petersen, 1993; Carpenter and Guariglia, 2008; McLean et al., 2012). The structural Euler equation models controls for the influence of expected future profitability on current investment

decisions, albeit under a restrictive assumption about the form of adjustment costs. Unlike the more structural Euler equation, the reduced form investment equation can be regarded as an empirical approximation to some more general adjustment process. Although the Q model does not appear to completely explain investment spending, a huge literature has used it to assess the effects of financing constraints on investment (see Bond and Van Reenen, 2007 for a survey). We therefore verify whether our results are robust to estimating a reduced form investment equation where we augment the traditional Q model with our variables of interest, namely managerial ownership and its iteration with cash flow. Our investment model takes the following form:

$$(I_{it}/K_{it-1}) = \beta_0 + \beta_1 (I_{it-1}/K_{it-2}) + \beta_2 (CF_{it-1}/K_{it-1}) + \beta_3 DOS_{it-1} + \beta_4 (CF_{it-1}/K_{it-1} * DOS_{it-1}) + \beta_5 Q_{it-1} + v_i + v_t + v_j + v_{tj} + \varepsilon_{it} \quad \textbf{(4.2)}$$

All notations are the same as in Equation (4.1). Table 4.4 presents the System GMM estimates of Equation (4.2). The results are generally consistent with those obtained using the Euler equation in Table 4.2. Specifically, we observe that the estimated coefficient on cash flow remains positive and precisely determined in all regressions. Furthermore, in both columns 2 and 3, we observe that the coefficient on managerial ownership remains positive and significant, and that the interaction between cash flow and managerial ownership attracts a negative and significant coefficient. As shown in column 3, we observe, once again, that our findings are driven by the post-reform period. These results support our hypotheses *H1, H2* and *H3*. The coefficients on Tobin's Q are generally poorly determined. This suggests that in the Chinese context, *Tobin's Q* does not reflect firms' real growth potential. (Wang et al., 2009; Xu et al, 2013)

We also provide separate GMM estimates of the Q model (Equation 4.2) for state- and privately -controlled firms in Table 4.5. Again, the estimated coefficients on the cash flow to total assets ratio *(CF/K)* are positive and statistically significant at conventional levels in all the specifications. Further, consistent with our the findings in Table 4.3, the coefficients of cash flow for state-controlled firms are much larger than those for privately controlled firms, suggesting that the former group of firms face more financing constraints than the latter group of firms.

Coming to managerial ownership, consistent with our prediction, the coefficients on *DOS* and its interaction with cash flow are respectively negative and positive, and in both cases precisely determined, for the privately-controlled firms in the post reform period. *DOS* is also positively associated with investment in the pre-reform period, but it is only marginally significant. By contrast, the coefficients associated with managerial ownership are poorly determined for state- controlled, regardless of the period analyzed. These results provide additional support for our hypothesis *H4.*

It is interesting to note that the estimated coefficients on Tobin's Q are positive and significant at the 10 % level for privately controlled firms. In contrast, they are negative and significant at the 1 % level for state-controlled firms. This finding is consistent with Chen et al. (2011) who show that state ownership in Chinese listed firms negatively affects the sensitivity of investment to investment opportunities, negatively affecting investment efficiency. As with the Euler equation, the *AR(2)* and Sargan tests generally indicate that our models are correctly specified and that the instruments are generally valid.

4.7. Conclusions

In the this study, we have used a panel of Chinese listed firms over the period 2003-2010 to analyze the extent to which managerial ownership, which is considered as an important governance mechanism, affects investment both directly, and indirectly by mitigating the effects of financing constraints. This study thus fits into the vast literature that shows that managerial incentives can have a real impact on both corporate financial structure and investment. Although limited evidence is available from developed countries, no study has examined the impact of managerial ownership on the investment and financial constraints in the context of China. This study fills this gap.

Using the system GMM estimator to estimate Euler investment equations, which control for unobserved heterogeneity and endogeneity, we find that investment decisions are systematically related to managerial ownership in two ways. Firstly, by aligning management's incentives with the interests of shareholders, managerial ownership exerts a positive direct effect on corporate investment decisions. Secondly, we document that, by acting as a form of credible guarantee to lenders and signaling the quality of information in the capital markets, managerial ownership helps to reduce the

degree of financial constraints faced by firms (which we measure by the sensitivity of investment to cash flow). These results are consistent with theoretical predictions according to which by lowering agency and information costs, insider ownership stakes in the firm reduce the cost of external finance, relax liquidity constraints, and, hence, promote optimal investment decisions. These results are inconsistent with free cash flow hypothesis (Jensen, 1996 & 1993) which predicts a negative relationship between managerial ownership and investment (i.e., aligning managers' incentives with the interests of shareholders should reduce overinvestment) and a negative effect of managerial ownership on the sensitivity of investment to cash flow. Although our analysis is mainly based on Euler investment equation, our results are robust to estimating a reduced form investment equation.

Managerial ownership exerts a positive direct and indirect effect on corporate investment as it provides managers with residual rights and incentives to mitigate the agency costs arising from the separation of ownership and control which characterizes Chinese listed firms (Lin et al., 1998; Kato and Long, 2006a,b,c). Furthermore, in an environment with severe information asymmetries such as the Chinese one (Morck et al., 2000; Wang et al., 2009; Gul et al., 2010), increasing managerial ownership further help to pass the information that managers are committed to reduce agency costs and make value enhancing investment decisions (the quality of the firm) on to the capital market, which helps to reduce costs of adverse selection resulting from the asymmetric information between the firm and outside investors/lenders.

When distinguishing the effects of managerial ownership on investment between state- and privately controlled firms as well as pre- and post-reform period, we find that managerial ownership works as an effective governance device influencing investment and financial constraints only in the post-reform period for privately controlled-firms. Moreover, we provide additional evidence that state ownership lowers the sensitivity of investment to investment opportunities (Chen et al., 2011).

In line with the vast majority of studies on Western countries, we confirm that Chinese listed firms face financial constraints, and that privately-controlled firms tend, as a consequence, to underinvest. This finding is consistent with recent literature on China (Xu et al., 2013; Tsai et al., 2014).

Our study has policy implications. First, the Chinese government's recent policies to reform firms' ownership structure and encourage managerial ownership in listed firms have been successful and have helped to reduce agency problems and improve the informational environment in the capital markets. Yet, they have induced more efficient investment decisions only in the non-state firms. This would suggest that managerial ownership should be further encouraged in the state-controlled firm. This can be addressed through optimal incentive contract systems. Second, the considerable government ownership which is still characterizing the majority of Chinese listed firms should be further reduced so as to further enhance efficient resource allocation.

Appendix

Appendix: Table A4.1 Relationship between managerial ownership and investment

Authors	**Under/Overinvestment models**	**Relationship between managerial ownership and investment**
Jensen and Meckling (1976)	Under-investment	**Positive**: The alignment of the interest of managers with the interest of shareholders increases investment
Aggrawal and Samwick (2006)	Under-investment	**Positive**: The alignment of the interest of managers with the interest of shareholders increases investment
Jensen (1986 and 1993)	Free Cash flow/over-investment	**Negative**: The alignment of the interest of managers with the interest of shareholders decreases (over) investment

Appendix: Table A4.2 Relationship between managerial ownership and the sensitivity of investment to cash flow.

Authors	**Under/Overinvestment models**	**Relationship between managerial ownership and the sensitivity of investment to cash flow.**
Jensen and Meckling (1976), Anderson et al. (2006)	Under-investment	**Negative**:Managerial ownership serves as credible guarantee to obtain financing for investment at lower costs from suppliers of finance.
Leland and Pyle (1977),	Under-investment	**Negative**:Managerial ownership

Gertler (1988), Gertler and Hubbard (1988), Firth et al., (2009)		signals the quality of the firm's future investment projects and thus reduces financing constraints (by reducing the costs of external capital)
Hadlock (1998)	Under-investment	**Positive**: The alignment of interests between managers and shareholders intensifies asymmetric information problems and thus, increases the investment-cash flow sensitivities (i.e. the financial constraints faced by firms).[61]
Jensen (1986, 1993) and Hadlock (1998)	Free Cash flow/over-investment	**Negative**: The alignment of the interest of managers with the interest of shareholders decreases (over) investment and thus reduces the sensitivity of investment to cash flow.

[61] The idea behind his argument is that when managers' ownership stakes in the firm increase, the managers should also bear more of the mispricing of external funds (i.e., the wedge between the cost of funds raised externally and the opportunity cost of internal funds) arising from the information asymmetry and consequently, will be unwilling to seek external funds, leading to underinvestment problem. This suggests that a firm's reliance on internal funds should increase with the increase in managerial ownership in the firm when making investment decisions (leading to an increased sensitivity of investment to cash flow) (Hadlock, 1998)

Table 4.1 Summary statistics

Variables	Obs	Mean	Std. Dev.	Median	Min	Max
Panel A : full sample						
(I_{it}/K_{it-1})	5347	0.060	0.091	0.033	-0.186	0.578
(CF_{it-1}/K_{it-1})	5347	0.057	0.057	0.055	-0.251	0.227
DOS_{it-1}	5347	0.021	0.081	0.000	0.000	0.630
$SALGRTH_{it-1}$	5345	0.135	0.316	0.100	-0.631	2.339
Q_{it-1}	5345	1.830	1.099	1.449	0.816	8.491
(D_{it-1}/K_{it-1})	5346	0.520	0.183	0.529	0.062	1.475
$(\Delta WC_{it-1}/K_{it-1})$	5347	0.006	0.105	0.004	-0.514	1.242
$SEID_{it-1}$	4782	0.527	0.499	1.000	0.000	1.000
$FIRSIZE_{it-1}$ *(billion RMB)*	5347	1.971	3.056	0.966	0.083	25.953
Panel B : state-controlled firms						
(I_{it}/K_{it-1})	3280	0.063	0.091	0.034	-0.184	0.562
(CF_{it-1}/K_{it-1})	3280	0.055	0.056	0.053	-0.237	0.227
DOS_{it-1}	3280	0.002	0.012	0.000	0.000	0.323
$SALGRTH_{it-1}$	3280	0.133	0.303	0.102	-0.609	2.339
Q_{it-1}	3280	1.731	1.001	1.381	0.816	8.491
(D_{it-1}/K_{it-1})	3280	0.529	0.178	0.544	0.062	1.281
$(\Delta WC_{it-1}/K_{it-1})$	3280	0.002	0.099	0.003	-0.379	1.242
$SEID_{it-1}$	2916	0.535	0.499	1.000	0.000	1.000
$FIRSIZE_{it-1}$ *(billion RMB)*	3280	2.252	3.373	1.083	0.093	25.953
Panel B : non-state-controlled firms						
(I_{it}/K_{it-1})	1706	0.057	0.090	0.030	-0.186	0.578
(CF_{it-1}/K_{it-1})	1706	0.062	0.058	0.061	-0.240	0.224
DOS_{it-1}	1706	0.060	0.132	0.000	0.000	0.630
$SALGRTH_{it-1}$	1706	0.149	0.334	0.103	-0.631	2.288
Q_{it-1}	1706	2.094	1.258	1.689	0.844	8.411
(D_{it-1}/K_{it-1})	1706	0.495	0.187	0.501	0.070	1.381
$(\Delta WC_{it-1}/K_{it-1})$	1706	0.014	0.116	0.007	-0.514	0.711
$SEID_{it-1}$	1548	0.505	0.500	1.000	0.000	1.000
$FIRSIZE_{it-1}$ *(billion RMB)*	1706	1.188	1.684	0.659	0.083	18.988

Note: Definition of variables: *(I/K)* where *I*= change in total assets plus depreciation; *K*= capital stock (total assets) at the beginning of the period; *CF/K*= ratio of cash flow to total assets*; DOS* = percentage of shares owned by directors and officers; *SALGRTH* = real annual sales growth rate; *Q* = Tobin's *q*; *(D/K)* = ratio of total debt to total net fixed assets; *(ΔWC/K)* = change in working capital as a proportion of capital stock; *FIRSIZE* = natural logarithm of the firm's total real sales; *SEID* = dummy variable that takes 4.1 if the firm has raised additional equity capital by making seasonal equity offerings (SEOs) during the sample period, and 0 otherwise.

Table 4.2 Managerial ownership and investment-cash flow sensitivities: Euler equation model

Variables	1	2	3
(I_{it}/K_{it-1})	0.885***	0.496*	0.826***
	(0.255)	(0.253)	(0.254)
$(I_{it-1}/K_{it-2})^2$	-1.994***	-1.207**	-1.918***
	(0.563)	(0.580)	(0.588)
(CF_{it-1}/K_{it-1})	0.423**	0.692***	0.735***
	(0.199)	(0.213)	(0.261)
DOS_{it-1}		0.473***	
		(0.123)	
$(CF_{it-1}/K_{it-1} * DOS_{it-1})$		-4.245***	
		(1.334)	
$[DOS_{it-1} *(1-REFORM)]$			1.096
			(2.207)
$(DOS_{it-1} * REFORM)$			0.409**
			(0.189)
$[CF_{it-1}/K_{it-1} * DOS_{it-1} *(1-REFORM)]$			-5.684
			(23.587)
$(CF_{it-1}/K_{it-1} * DOS_{it-1} * REFORM)$			-4.253**
			(1.856)
$REFORM$			0.009
			(0.027)
$SALGRTH_{it-1}$	0.021**	0.035**	0.029*
	(0.010)	(0.016)	(0.017)
$(D_{it-1}/K_{it-1})^2$	-0.043	0.155**	0.162**
	(0.043)	(0.066)	(0.081)
$(\Delta WC_{it-1}/K_{it-1})$	-0.085***	-0.119***	-0.104***
	(0.030)	(0.027)	(0.035)
$SEID_{it-1}$	0.014**	0.012*	0.005
	(0.007)	(0.007)	(0.033)
$FIRSIZE_{it-1}$	-0.009	-0.007	-0.010
	(0.007)	(0.010)	(0.015)
Year dummies	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes
Year and industry interaction dummies	Yes	Yes	Yes
Observations	5347	4933	4810
Sagan test of over-identification (p values)	45.96 (0.351)	66.25(0.162)	45.31(0.260)
AR(1) test (*p* values)	-7.24(0.000)	-6.72 (0.000)	-6.64 (0.000)
AR(2) test (*p* values)	1.54(0.124)	0.89(0.374)	1.16(0.247)
H0: Impact of DOS_{it-1} same before and after the reform (p-value)			0.768
H0: Impact of $CF_{it-1}/K_{it-1} * DOS_{it-1}$ same before and after the reform (p-value)			0.954

Note: The system GMM estimator is used in estimation. *AR1(AR2)* is a test for first- (second-) order serial correlation of the differenced residuals, asymptotically distributed as $N(0,1)$ under the null of no serial correlation. The Hansen *J* test of over-identifying restrictions is distributed as *Chi*-square under the null of instrument validity. We treat all right-hand side variables as potentially endogenous: levels of these variables dated *t*-2 and further are used as instruments in the first-differenced equations and first-differences of these same variables lagged once are used as additional instruments in the level equations. The numbers in the rows testing whether the impact of DOS_{it-1} and $CF_{it-1}/K_{it-1} * DOS_{it-1}$ on $I_{it}/K_{i(t-1)}$ is the same before and after the reform are the p-values associated with *F*-tests for general restrictions. Time dummies, industry dummies and time dummies interacted with industry dummies are always included in the specifications and the instrument set. Standard errors are in parentheses. ***, **, and * denote significance levels of 1%, 5% and 10%, respectively. See note to the Table 4.1 for definitions of the variables.

Table 4.3 Managerial ownership and the investment-cash flow sensitivities of state- and non-state-controlled firms: Euler equation model

Variables	Non state-controlled firms		State-controlled firms	
$(I/K)_{it-1}$	0.356*	0.253*	0.542**	0.898***
	(0.213)	(0.148)	(0.259)	(0.235)
$(I/K)^2_{it-1}$	-0.776	-0.541*	-1.370**	-2.110***
	(0.551)	(0.301)	(0.588)	(0.545)
$(CF/K)_{it-1}$	0.587**	0.564*	0.802***	0.681**
	(0.287)	(0.301)	(0.220)	(0.288)
DOS_{it-1}	0.485***		0.953	
	(0.131)		(0.877)	
$[DOS_{it-1}*(1-REFORM)]$		-0.149		-0.981
		(1.535)		(3.932)
$(DOS_{it-1}* REFORM)$		0.457***		1.447
		(0.159)		(1.580)
$(CF/K* DOS)_{it-1}$	-3.552**		-9.266	
	(1.632)		(7.383)	
$[CF_{it-1}/K_{it-1}* DOS_{it-1}*(1-REFORM)]$		4.740		-2.046
		(15.672)		(30.721)
$(CF_{it-1}/K_{it-1}* DOS_{it-1}* REFORM)$		-3.109**		-15.103
		(1.542)		(11.753)
REFORM		0.044		-0.012
		(0.049)		(0.031)
$SALGRTH_{it-1}$	0.025*	0.019	0.024	0.022
	(0.014)	(0.048)	(0.015)	(0.033)
$(D_{it-1}/K_{it-1})^2$	0.136	0.153	0.072	0.152**
	(0.115)	(0.116)	(0.050)	(0.077)
$(\Delta WC_{it-1}/K_{it-1})$	-0.119***	-0.110**	-0.126***	-0.085*
	(0.040)	(0.044)	(0.033)	(0.046)
$SEID_{it-1}$	0.012	0.010	0.010	-0.016
	(0.011)	(0.011)	(0.009)	(0.043)
$FIRSIZE_{it-1}$	-0.001	0.003	0.000	-0.010
	(0.014)	(0.015)	(0.011)	(0.017)
Year dummies	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes
Year and Industry interaction dummies	Yes	Yes	Yes	Yes
Observations	1647	1647	3190	3134
Sagan test of over-identification (*p* values)	39.54	36.48	36.05	44.03
	(0.169)	(0.268)	(0.560)	(0.386)
AR(1) test (*p* values)	-3.88	-3.50	-6.36	-6.86
	(0.000)	(0.000)	(0.000)	(0.000)
AR(2) test (*p* values)	-0.56	-0.82	1.08	1.40
	(0.573)	(0.412)	(0.279)	(0.163)
H0: Impact of DOS_{it-1} before and after the reform (*p*-value)		0.7031		0.6377
H0: Impact of $CF_{it-1}/K_{it-1}* DOS_{it-1}$ same before and after the reform (*p*-value)		0.6254		0.6460

Note: The system GMM estimator is used in estimation. *AR1 (AR2)* is a test for first- (second-) order serial correlation of the differenced residuals, asymptotically distributed as $N(0,1)$ under the null of no serial correlation. The Hansen *J* test of over-identifying restrictions is distributed as *Chi*-square under the null of instrument validity. We treat all right-hand side variables as potentially endogenous: levels of these variables dated *t*-2 and further are used as instruments in the first-differenced equations and first-differences of these same variables lagged once are used as additional instruments in the level equations. The numbers in the rows testing whether the impact of DOS_{it-1} and $CF_{it-1}/K_{it-1}* DOS_{it-1}$ on $I_{it}/K_{i(t-1)}$ is the same before and after the reform are the p-values associated with *F*-tests for general restrictions. Time dummies, industry dummies and time dummies interacted with industry dummies are always included in the specifications and the instrument set. Standard errors are in parentheses. ***, **, and * denote significance levels of 1%, 5% and 10%, respectively. See note to the Table 4.1 for definitions of the variables.

Table 4.4 Managerial ownership and investment-cash flow sensitivities: Q model

Variables	1	2	3
(I_{it-1}/K_{it-2})	0.711***	0.016	0.015
	(0.204)	(0.019)	(0.019)
(CF_{it-1}/K_{it-1})	0.360**	0.402***	0.428***
	(0.142)	(0.127)	(0.114)
DOS_{it-1}		1.075***	
		(0.387)	
$(CF_{it-1}/K_{it-1} * DOS_{it-1})$		-9.253**	
		(4.081)	
$[DOS_{it-1} *(1-REFORM)]$			0.554*
			(0.286)
$(DOS_{it-1} * REFORM)$			0.813**
			(0.361)
$[CF_{it-1}/K_{it-1} * DOS_{it-1} *(1-REFORM)]$			-1.974
			(4.185)
$(CF_{it-1}/K_{it-1} * DOS_{it-1} * REFORM)$			-7.045**
			(3.551)
REFORM		-0.008	-0.004
		(0.012)	(0.011)
Q_{it-1}	-0.001	-0.006	-0.007*
	(0.012)	(0.004)	(0.004)
Year dummies	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes
Year and Industry interaction dummies	Yes	Yes	Yes
Observations	7780	7234	7234
Sagan test of over-identification (p values)	6.66 (0.966)	26.33 (0.155)	23.76 (0.590)
AR(1) test (*p* values)	-4.88 (0.000)	-13.08 (0.000)	-14.70 (0.000)
AR(n) test (*p* values)	1.07 (0.286)	-0.50 (0.615)	-0.64 (0.519)
H0: Impact of DOS_{it-1} before and after the reform (*p*-value)			0.585
H0: Impact of $CF_{it-1}/K_{it-1} * DOS_{it-1}$ same before and after the reform (*p*-value)			0.398

Note: The system GMM estimator is used in estimation. *AR1 (AR2)* is a test for first- (second-) order serial correlation of the differenced residuals, asymptotically distributed as $N(0,1)$ under the null of no serial correlation. The Hansen *J* test of over-identifying restrictions is distributed as *Chi*-square under the null of instrument validity. We treat all right-hand side variables as potentially endogenous: levels of these variables dated *t*-2 and further are used as instruments in the first-differenced equations and first-differences of these same variables lagged once are used as additional instruments in the level equations. The numbers in the rows testing whether the impact of DOS_{it-1} and $CF_{it-1}/K_{it-1} * DOS_{it-1}$ on $I_{it}/K_{i(t-1)}$ is the same before and after the reform are the p-values associated with *F*-tests for general restrictions. Time dummies, industry dummies and time dummies interacted with industry dummies are always included in the specifications and the instrument set. Standard errors are in parentheses. ***, **, and * denote significance levels of 1%, 5% and 10%, respectively. See note to the Table 4.1 for definitions of the variables.

Table 4.5 Managerial ownership and the investment-cash flow sensitivities of state and non-state controlled firms: Q model

Variables	Non-state-controlled firms		State-controlled firms	
	1	**2**	**3**	**4**
(I_{it-1}/K_{it-2})	0.035	0.026	-0.013	-0.005
	(0.037)	(0.037)	(0.026)	(0.026)
(CF_{it-1}/K_{it-1})	0.315*	0.352**	0.676***	0.652***
	(0.181)	(0.151)	(0.204)	(0.175)
DOS_{it-1}	1.157***		1.067	
	(0.284)		(1.818)	
$(CF_{it-1}/K_{it-1}* DOS_{it-1})$	-10.068***		-7.995	
	(3.014)		(12.019)	
$[DOS_{it-1}*(1-REFORM)]$		0.621		1.922
		(0.485)		(3.121)
$(DOS_{it-1}* REFORM)$		0.968***		0.742
		(0.348)		(1.131)
$[CF_{it-1}/K_{it-1}* DOS_{it-1}*(1-REFORM)]$		-3.224		-17.406
		(5.842)		(31.335)
$(CF_{it-1}/K_{it-1}* DOS_{it-1}* REFORM)$		-8.429**		-0.831
		(3.507)		(7.662)
REFORM		-0.027		-0.008
		(0.021)		(0.014)
Q_{it-1}	0.011*	0.012*	-0.014***	-0.013***
	(0.006)	(0.007)	(0.005)	(0.004)
Year dummies	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes
Year and Industry interaction dummies	Yes	Yes	Yes	Yes
Observations	2322	2322	4791	4791
Sagan test of over-identification	20.98 (0.398)	19.21	28.45	26.49
(*p*- values)		(0.787)	(0.441)	(0.437)
AR(1) test (*p* values)	-5.40	-6.44	-11.61	-11.85
	(0.000)	(0.000)	(0.000)	(0.000)
AR(2) test (*p* values)	-0.38	-0.65	-0.87	-0.75
	(0.707)	(0.518)	(0.382)	(0.452)
H0: Impact of DOS_{it-1} before and after the reform (*p*-value)		0.552		0.712
H0: Impact of $CF_{it-1}/K_{it-1}* DOS_{it-1}$ same before and after the reform (*p*-value)		0.458		0.650

Note: The system GMM estimator is used in estimation. *AR1 (AR2)* is a test for first- (second-) order serial correlation of the differenced residuals, asymptotically distributed as $N(0,1)$ under the null of no serial correlation. The Hansen *J* test of over-identifying restrictions is distributed as *Chi*-square under the null of instrument validity. We treat all right-hand side variables as potentially endogenous: levels of these variables dated *t*-2 and further are used as instruments in the first-differenced equations and first-differences of these same variables lagged once are used as additional instruments in the level equations. The numbers in the rows testing whether the impact of DOS_{it-1} and $CF_{it-1}/K_{it-1}* DOS_{it-1}$ on $I_{it}/K_{i(t-1)}$ is the same before and after the reform are the p-values associated with *F*-tests for general restrictions. Time dummies, industry dummies and time dummies interacted with industry dummies are always included in the specifications and the instrument set. Standard errors are in parentheses. ***, **, and * denote significance levels of 1%, 5% and 10%, respectively. See note to the Table 4.1 for definitions of the variables.

Chapter 5

Agency costs, ownership, and internal governance mechanisms: Evidence from Chinese listed companies

5.1 Introduction

Agency costs represent one of the central aspects of the linkages between corporate governance and corporate finance (Jensen and Meckling, 1976 and Williamson, 1988). For a 100% owner-managed firm, agency costs of equity are zero (Jensen and Meckling, 1976). Yet, when ownership and management (or control) of a firm are separated, as happens in modern corporations, the divergence of interest between owners and managers results in considerable agency costs for the owners (Berle and Means, 1932 and Jensen and Meckling, 1976). The agency problem and the resultant agency costs cause significant losses to the economy as a whole (Alchian and Demsetz, 1972; Jensen and Meckling, 1976).

In their influential empirical contribution to the analysis of agency costs, Ang et al. (2000) suggest empirical proxies to measure agency costs, namely the asset utilization ratio and the operating expenses ratio. They then provide direct tests of the theoretical predictions made by Jensen and Meckling (1976), according to which agency costs are higher for firms whose managers have less than a 100 percent ownership stake, and should decrease as the equity shareholdings of the owner-manager increase. In line with these predictions, they find an inverse relationship between inside ownership and agency costs.[62]

In the context of China, Firth et al. (2008) suggest that the ownership and governance reforms which Chinese SOEs have undergone before 2000[63], have not been effective in reducing the agency costs experienced by these firms. They attribute this

[62] Singh and Davidson (2003) extend the work of Ang et al. (2000) to a sample of large listed US-corporations, and others researchers, to other economic settings such as the UK and Australia (e.g., Singh and Davidson, 2003; Fleming et al., 2005; Florakis, 2008; McKnight and Weir, 2009). We discuss those papers in detail in the literature review section.

[63] Examples of these reforms are the partial privatization of companies via initial public offering in the stock exchange, and the introduction of the company law in 1994.

finding to the fact that the Chinese government often retains a considerable ownership stake in privatised SOEs. Similarly, Tian and Estrin (2007) provide evidence suggesting that the Chinese government's ownership of both banks and firms, and the resultant soft budget constraints make debt an ineffective governance mechanism in reducing agency costs for Chinese listed firms.

In this paper, we build on this literature to examine the linkages between managerial ownership and other internal corporate governance mechanisms, on the one hand; and agency costs, on the other, focusing on the Chinese economy in more recent years. We believe that China provides an excellent laboratory to study these linkages because its corporate governance has been evolving and improving rapidly so as to cope with its fast economic growth and the desire to integrate with the global economy. For instance, from June 2003 onwards, companies were required to appoint one third of independent directors to their boards. In addition, a crucial share ownership reform was successfully implemented in 2005-2006, following which (from January 2006) Chinese corporations have been allowed to incentivize their top-management with equity shares and share options. The main objective of these reforms was to improve the governance of listed firms, helping to solve the long standing agency conflicts characterizing these firms, and thereby enhancing corporate efficiency and performance.

In recent years, there has been an increasing interest in assessing the effectiveness of ownership in China (see for example, Kato and Long, 2006b,c and 2011, Conyon and He (2012). In their survey article, Denis and McConell (2003) suggest that the context of privatization provides an interesting setting in which to investigate the effects of ownership structure on agency conflicts. Recent evidence suggests that managerial ownership has emerged as an important governance mechanism among Chinese listed firms (Lin et al. 2009; Walder, 2011; Liu et al., 2012).

Additionally, following a series of reforms of the banking system[64], the governance of the Chinese financial sector has significantly improved and banks now use more and more commercial judgment and prudence in their lending decisions (Cull and Xu, 2005; Ayyagari et al., 2008; Firth et al. 2009). In light of these developments,

[64] For instance, these reforms involved the introduction of foreign ownership and management in Chinese banks and particularly, state owned commercial banks; as well as the listing of these banks in stock exchanges. See section 2.5 of Chapter 2 for detailed discussion of China's banking sector reform.

recent studies using data on Chinese listed firms suggest that bank financing no longer facilitates unwise investment and the overconsumption of perquisites in SOEs. By contrast, it improves investment efficiency in both state controlled and privately controlled firms. The recent reforms have therefore paved the way for debt to now act as a governance mechanism that constrains managers' misconduct (Chan et al, 2012; Lin and Bo, 2012; Tsai et al. 2014), thus reducing agency costs in Chinese listed firms.

It is therefore interesting to investigate the extent to which recent ownership and governance reforms in China have affected agency costs for listed firms. If governance mechanisms are effective in reducing agency costs, then this would imply that the ownership and governance reforms have been successful in providing the management with the necessary incentives to make optimal decisions and enhance corporate performance. To the best of our knowledge, ours is the first direct study which uses data of Chinese listed firms after these reforms and particularly after the 2005 split share structure reform, to look at the impact of ownership and other corporate governance mechanisms on the agency costs of Chinese listed firms.

Our study is based on a large panel of Chinese listed firms over the period 2003-2010. Controlling for unobserved firm characteristics and potential endogeneity, we find that increased managerial ownership and debt financing work as effective governance mechanisms in mitigating the costs of agency conflicts in Chinese listed firms. Specially, we find that higher managerial ownership and debt help the firms lower the agency costs they face. We also find evidence that legal person shareholders helps to mitigate agency costs in privately controlled firms in the post-split share structure reform period. Our results also suggest that board characteristics do not generally affect agency costs, with the exception of large boards which are associated with higher agency costs in government controlled firms.

The remainder of the paper is organized as follows. Section 5.2 reviews previous literature that focuses on the relationship between ownership and internal governance mechanisms, on the one hand; and agency costs, on the other. Section 5.3 presents our hypotheses. The model specifications and estimation method are described in Section 5.4. In Section 5.5, we describe the data that we use in this study and provide basic descriptive statistics. Section 5.6 discusses our main empirical results, as well as some further tests. Finally, Section 5.7 concludes.

5.2 Review of the Literature

In this section, we discuss the literature that links agency costs and the corporate governance mechanisms including ownership structure, board structure and debt, by paying a particularly attention to the Chinese listed companies.

For a 100% owner-managed firm, equity agency costs are zero (Jensen and Meckling, 1976). Yet, when ownership and management (or control) of a firm are separated, as happens in modern corporations, the divergence of interest between owners and professional managers results in considerable agency costs for the owners (Berle and Means, 1932 and Jensen and Meckling, 1976). The agency costs can come in the form of managers' insufficient work effort (shirking), consumption of excessive perquisites, choice of inputs or outputs according to their own wishes, or other non-value-maximizing conducts. Hence, the alignment of management's incentive with those of owners becomes critically important for firms. Following Jensen and Meckling's (1976) seminal work on agency costs, a vast body of theoretical and empirical literature has focused on the conflicts of interest between managers and equity owners and the resultant agency costs. This literature also suggests a number of governance mechanisms, which can mitigate agency conflicts in firms.

To test the impact of agency conflicts on firms' outcomes, the empirical approach that has been commonly used in the literature has been to investigate the impact of governance mechanisms on various firm decisions, such as capital structure and investment decisions, and on firm value. Here, the basic idea is that the governance structure of a firm reflects the degree of agency problems it faces. Specifically, the weaker the governance structure, the higher the agency conflicts in the firm. Yet, only a limited number of studies have looked at the direct relationship between ownership and governance mechanisms, on the one hand, and the magnitude of agency costs, on the other. In what follows, we review this literature.

5.2.1. Evidence on the links between agency costs and ownership based on SMEs (Small and Medium-sized Enterprises)

In their seminal empirical work, Ang et al. (2000) suggest empirical proxies to measure agency costs, namely, the assets utilization ratio (which is measured by the sales to assets ratio), and the expenses ratio (which is measured by the operating expenses scaled by assets). Using these measures, they provide direct tests of the theoretical predictions made by Jensen and Meckling (1976), according to which agency costs are higher among firms that are not 100 percent owned by their managers, and these costs should decrease as the equity shareholdings of the owner-manager increase. They use a sample of 1,708 small corporations from the Federal Reserve Board's National Survey of Small Business Finances (NSSBF) database in their analysis. No publicly traded firm is entirely owned by management. By contrast, many of the small firms are owned solely by a single owner-manager, and, as such, the interest of the owner and the manager should be closely aligned, and therefore agency costs should be nil. Thus, small corporations provide an ideal setting for measuring agency costs for corporations under different ownership and management structures. Ang et al. (2000) analyse the impact of ownership structure and outside monitoring on measures of agency costs of firms. They find that agency costs are significantly higher in firms which are managed by an outsider rather than an insider, and are inversely associated with the manager's shareholdings in the firms. They further find that agency costs increase with the number of non-manager shareholders. Furthermore, they find some evidence that greater monitoring of small firms by banks helps to reduce agency costs.

Similarly, Fleming et al. (2005) use a sample of approximately 3800 Australian small and medium enterprises for the periods 1996–1997 and 1997–1998 to examine the relationship between equity agency costs and ownership structure. Similar to Ang et al. (2000), they find that agency costs are lower in firms managed by equity-holders. However, as the authors point out, the magnitude of the agency costs are lower for Australian SMEs compared to their US counterparts. This may suggest that country-specific factors may have a role on the agency costs incurred by the firms. Fleming et al. (2005) also find that the agency costs faced by firms are inversely related to managerial and employee equity holdings. This is consistent with the 'convergence-of-interests' hypothesis of Jensen and Meckling (1976). Furthermore, the authors report that the

agency costs of the firm decrease as the proportion of family ownership increases, suggesting that families have unique ability to undertake effective monitoring and thus discipline managers due to their special relationships with the firm. In addition, they find that the level of parent company ownership increases the agency costs in their sample of SMEs. They attribute this result to insufficient controls exercised by parent company on the management of subsidiaries. Finally, unlike Ang et al. (2000), Fleming et al. (2005) do not find any definite relationship between the debt-to-asset ratio (which they use as a proxy for bank's incentive to monitor borrowers) and agency costs.

While both of these studies provide important insight into the impact of ownership and bank monitoring on the agency costs, they do not examine the impact of board of directors on the agency costs faced by SMEs. Yet, other studies suggest that boards of directors of SMEs play an important role in mitigating potential agency problem and hence in the development of SMEs (see Huse, 2000, for a review of this literature).

5.2.2. Evidence on the links between agency costs, ownership, and internal governance mechanisms based on listed companies

Adopting a similar approach, but using data from large listed US-firms, Singh and Davidson (2003) extend the work of Ang et al. (2000) by examining the effects of ownership and other internal governance mechanisms on agency costs. Unlike Ang et al. (2000), they also examine how firms' board structure affects agency costs. They use the sales and general and administrative expenses to total assets ratio, in addition to the asset utilization ratio to measure agency costs.[65] Similar to the results of Ang et al. (2000), they find a positive relationship between managerial ownership and asset utilization efficiency, meaning that increasing managerial ownership helps to align the interests of managers with those of the shareholders, to enhance the utilization of assets, thus reducing the agency costs arising from the separation of ownership and control in large corporations. However, their results show that managerial ownership cannot

[65] Singh and Davidson (2003) argue that sales and general and administrative (SG&A) expenses are more likely to represent agency induced managerial excessive pay and perquisite consumption. The SG&A expenses includes salaries which are an important element of total benefits flowing to firm management and may reflect managerial discretion in spending company resources. Further, the authors suggest that management can easily use advertising and selling expenses to camouflage expenditures on their perks. Therefore, higher agency conflict would be reflected in higher managerial discretionary SG&A expenses.

reduce excessive discretionary expenses. Furthermore, Singh and Davidson (2003) report that smaller boards are effective in reducing agency costs, while outside block ownership and outside directors are ineffective mechanisms. Yet, although Singh and Davidson (2003) control for unobserved fixed effects using a fixed effects estimator, they do not control for the potential endogeneity of ownership and other governance variables.

Florackis (2008) focuses on how choices of debt maturity structure affect the agency costs experienced by firms. Following Singh and Davidson (2003), he also examines the impact of several corporate governance mechanisms on two alternative proxies for agency costs: the asset utilization ratio (total sales to total assets ratio) and the ratio of selling, general and administrative expenses to total sales. Based on a large panel of UK listed firms, he finds that the capital structure characteristics of firms including bank debt and debt maturity, especially short-term debt, play an important role in mitigating agency related problems for UK firms, and thus reducing agency costs. Furthermore, he reports that consistent with the findings in Ang et al. (2000), Singh and Davidson (2003), and Fleming et al. (2005), managerial ownership is an important governance mechanism to mitigate agency costs of UK firms. Additionally, the author finds that, managerial compensation and ownership concentration can help UK firms mitigate agency costs. His results also show that the impact exerted by specific internal governance mechanisms on agency costs varies with firms' growth opportunities. As in Singh and Davidson (2003), Florackis (2008) does not control for potential endogeneity of ownership and other governance variables.

Improving on previous studies, Florackis and Ozkan (2009) use a GMM estimator to examine the relationship between managerial entrenchment and agency costs in a panel of UK listed firms over the period 1999–2005. To measure managerial entrenchment, they develop a managerial entrenchment index utilising detailed information on ownership and board structures and managerial compensation. The aim of this exercise is to capture the extent to which managers have the ability and incentives to expropriate wealth from other shareholders. They find that managerial entrenchment is negatively associated with their inverse proxy for agency costs (i.e. asset utilization ratio), meaning that firms with high levels of managerial entrenchment experience significantly higher agency costs. They also provide evidence that short-term

debt and dividend payments are important corporate governance mechanisms for UK firms, reducing the agency costs of manager-shareholder conflicts.

Wellalage and Locke (2011) study the relationship between agency costs, ownership structure and corporate governance for 100 unlisted New Zealand firms over the eleven year- period 1998-2008. Like Florackis and Ozkan (2009), they also use a GMM estimation methodology to analyse the data. They find that insiders' ownership has the most significant governance effect on agency costs. More specially, they find a U-shaped relationship between insiders' ownership and agency costs consistent with the incentive alignment as well as entrenchment effects of managerial ownership.

5.2.3 Studies focused on the changes to corporate governance structure

Recent empirical work focuses on how changes to corporate governance structure, and especially the introduction of new corporate governance codes, and changes to the board structure have affected the agency costs faced by firms. For example, using a panel of large UK listed companies, McKnight and Weir (2009) examine the impact of the changes in board structures that have occurred in the post-Cadbury period on agency costs experienced by these firms. They find that there has been an increasing adoption of recommendations of the Combined Code related to board structures (such as setting up of nomination committees, appointing majority non-executive directors in the board, and separating CEO and chair position of the board). However, the changes to board structures of UK firms that have occurred following the recommendations of the Combined Code have had little impact on agency costs. The authors also find that having a nomination committee is associated with increased agency costs[66], suggesting that firms incur additional costs when they adopt certain governance mechanisms. This finding is at odds with the recommendation of the Combined Code. The authors therefore argue that for a firm that is adopting an optimal governance structure, the appointment of an additional sub-committee may represent a move away from its optimal governance structure, resulting in significant costs to the firm. Yet, consistent with findings of previous studies the authors find that increasing board ownership as well as debt help to reduces agency costs.

[66] The main function of the nomination committee is to ensure that the board of directors (executive as well as non-executive) is appointed based on merit rather than by patronage. The Combined Code recommend that firms should setup sub-committees so as to ensure transparency within the process of appointing new directors

In a similar vein, Henry (2010) examines the expected impact of the Principles of Good Corporate Governance and Best Practice Recommendations which were introduced by the Australian Securities Exchange (ASX) in 2003. In contrast to McKnight and Weir (2009) whose analysis is based on ex-post settings (i.e. after firms' adoption of the UK combined code), Henry (2010) develops a 'structural' governance index which represents components of this code of governance practice now in force in Australia, and examines how firms' voluntary adoption of best corporate governance practices affects agency costs during the pre-adoption period from 1992 to 2002. His results suggest that although the adoption of individual 'structural' governance practices does not greatly affect agency costs, greater voluntary compliance with the index that represents the code of governance practice (which was later formally introduced by ASX) indeed helps in significantly reducing the level of agency costs experienced by Australian listed firms. Therefore, they conclude that Australian listed firms' increasing post-introduction compliance with the ASX Corporate Governance Council code of practice would help to lower agency-costs.

The contrasting findings of these two studies may suggest that impact of governance structure may vary depending on the institutional environment in which firms operate. This warrants additional research to assess the effectiveness of corporate governance mechanisms in a different institutional setting such as the Chinese one.

5.2.4. Evidence on the links between agency costs, ownership, and internal governance mechanisms in China

Only two papers consider the relationship between ownership structure and internal governance mechanisms, on the one hand, and agency costs, on the other, for Chinese listed firms. Tian and Estrin (2007) examine the governance role of debt in the context of Chinese firms. Focusing on a sample of 2660 firm–year observations pertaining to Chinese public listed companies over the period 1994-1998, they provide evidence suggesting that in contrast to the corporate governance literature, the use of debt capital among Chinese listed firms increases agency costs in the form of managerial perquisites (i.e. disguised income for management teams) and discretionary expenses. This can be explained considering that the main source of debt capital for Chinese listed firms is bank loans, and an increase in bank lending increases the size of managerial perks and free cash flows, decreasing corporate efficiency. However, when the authors

differentiate the governance role of the debt between state- and privately-controlled firms, they find that while bank financing facilitates managerial exploitation of corporate wealth in the former, it is negatively but insignificantly associated with agency costs in the latter. This can be explained considering that government ownership of both banks and firms and the resultant soft budget constraints make debt an ineffective governance mechanism in state-controlled firms. Yet, they do not examine how other governance mechanisms affect agency costs that firm faces.

Focusing on a sample of 1,647 firm-year observations for 549 non-financial listed companies over the period 1998-2000, Firth et al. (2008) examine the relationship between ownership structure and governance mechanisms, on the one hand; and agency costs, on the other, for Chinese listed firms. They find that firms with foreign shareholding experience higher levels of agency costs. This suggests that foreign investors do not closely monitor managers' non-value maximising behavior, and that foreign ownership is associated with increased managerial discretionary/non-necessary expenditures (i.e. agency costs). Furthermore, they find no evidence that government ownership and legal person shareholding exert influence on the level of agency costs. Consistent with the findings of Western studies such as, for example, Singh and Davidson, (2003) and McKnight and Weir (2009), they also report that the composition of the board of directors (proxied by the proportion of non-executive directors) is not effective in reducing agency costs. Overall, the findings in Firth et al.'s (2008) study suggest that that ownership and governance reforms which Chinese listed firms had undergone before 2000 have not been largely effective in reducing agency costs incurred by these firms.

Using data from earlier periods, these two studies provide valuable insight into the effectiveness of ownership and other internal governance mechanisms in mitigating agency costs in the early stage of the reform process of Chinese SOEs. Yet, as we discuss in the introduction, there has been significant changes to Chinese listed firms' ownership and governance structure in recent years. This creates an important research gap and provides an opportunity for assessing the successfulness of recent reforms for the firms.

5.2.5. Our contribution

Our study contributes to the existing literature in many ways. First, it provides the first evidence from China on the direct relationship between managerial ownership and agency costs. Previous studies have in fact looked at the effects of government, legal person, and foreign shareholding, as well as the effects of debt on the agency costs faced by firms (Firth et al., 2008; Tian and Estrin, 2007). Yet, to the best of our knowledge, there is no evidence on the direct effect of managerial ownership on agency costs in China.

Second, ours is the first study which provides empirical evidence on the agency costs for Chinese listed firms after the 2005-split-share-structure reform has been implemented, through which non-tradable shares were floated in the open markets and following which restrictions on managerial stock ownership were removed. This reform helped to align the interest of controlling shareholders with those of minority shareholders, thus significantly reducing agency costs, since following the reform, all the shareholders share not only the benefits from the market performance of companies' shares but also the idiosyncratic risk (Li et al., 2011).

Third, we offer first evidence on the impact of (long term) debt financing on agency costs after the significant banking sector reform that have been implemented following China's accession to WTO in 2001.

Fourth, like McKnight and Weir (2009) for UK firms, we provide evidence on the impact of the introduction of an independent director system on agency costs for Chinese listed firms, after the CSRC formally introduced the system as part of the corporate governance code in 2002. Although Firth et al. (2008) have examined the effects of the composition of the board of directors on the level of agency costs faced by firms, their study is based on data for the period of 1988 to 2000. Their study therefore only considers the reforms that had been implemented before 2000. Thus, Firth et al. (2008) test whether firms' voluntary appointment of outside directors on the board had any impact on agency costs.

Fifth, for the first time, we analyze the impact of ownership and board characteristics on agency costs, differentiating between state-controlled and privately-controlled firms.

Finally, unlike the study of Firth et al (2008), we properly address the endogeneity problem through the use of a system GMM estimator in our empirical analysis. This is important as endogeneity may be an important concern in our study for the following reasons. First, the observable and unobservable shocks which affect agency costs are also likely to affect governance and other firm characteristics used in the agency cost model. Second, it is likely that the observed relationship between governance structure and agency costs may reflect the effects of agency costs on the former rather than the other way around (Florakis and Ozkan, 2009). For example, firms facing higher agency costs may have provided their managers with equity stakes in them, so as to align the incentives of managers with those of owners. Similarly, banks may not be willing to lend to firms with potential for higher agency conflicts. Therefore, it is important to control for the endogeneity problem.

5.3. Hypotheses

In this section, we discuss how specific internal governance mechanism which have been suggested in the literature (see, for example, Shleifer and Vishny, 1997 and McKnight and Weir, 2009) are likely to affect agency costs of Chinese listed companies.[67]

5.3.1. Ownership structure

Ownership structure is considered as one of the core dimensions of governance of modern corporations. We focus in turn on managerial, state, legal person, and foreign ownership.

5.3.1.1. Managerial ownership

The separation of ownership and control and the resultant misaligned incentives of managers and owners in modern corporations generate agency costs, such as shirking, excessive consumption of perks, or other non-value maximising behavior by managers (Fama & Jensen, 1983; Jensen & Meckling, 1976). To solve this problem, the prescription of agency theory (Jensen and Meckling, 1976) is to give managers

[67] Also see Denis and McConnell, (2003) and Brown et al., (2011) for detailed reviews on corporate governance mechanisms.

incentives in the form of equity ownership stakes in the firm. This helps to resolve managers' moral hazard problems by aligning their incentives with the interests of the shareholders. By strongly linking the future financial outcomes of the managers to shareholders' returns, equity ownership motivate managers to direct their commitment, preferences (e.g. risk taking) and efforts toward those actions and corporate policy choices that maximise shareholders' wealth. Further, providing managers with equity ownership in their firm is specially considered as an appropriate mechanism when it is difficult or costly to monitor managers' behavior due to information asymmetries between insiders and outside shareholders, or when it is difficult to make a priori judgments about the benefits and costs of specific actions taken by managers (Eisenhardt, 1989).

In the light of these considerations, executives of US-corporations have increasingly received equity ownership in their firms and consequently, managerial ownership has become the dominant form of managerial incentives. As reported in Hall (2003), in US-based commercial corporations, by 2001, the median value of annual CEO equity-based pay has increased to about 66 percent from just about 1 percent prior to 1985.

Although studies on the performance effect of managerial ownership provide mixed evidence (e.g. Morck et al., 1988; McConnell and Servaes, 1990; Himmelberg et al., 1999; Demsetz and Vilollanga, 2001), studies on agency costs unanimously and consistently present strong evidence that managerial ownership is inversely associated with agency costs. This is consistent with the Jensen and Meckling's (1976) convergence of interest hypothesis (e.g. Ang et al., 2000; Singh and Davidson, 2003; Fleming et al., 2005; McKnight and Weir, 2009).

In the context of China, from the early stages of the reform process, various incentive mechanisms have been used to align the incentives of managers with those of owners.[68] In general, researchers find that whatever the managerial incentive system, it was associated with an improvement in the productivity and performance of firms, with limited effects in state controlled firms (Groves et al., 1994; Chow, 1997, Kato and Long, 2006 a, b, c). However, unlike the top managers of industrialised countries, due

[68] These mainly include managerial autonomy and a management responsibility system and corporatization and partial privatisation of former SOEs (Aivazian et al., 2005).

to the government policy and constrained personal wealth, managers of Chinese listed firms historically had very low equity ownership stakes in their firms. During the last decade there has been a considerable increase in the equity ownership of managers in China especially with the implementation of 2005 major ownership reform and the introduction of stock based incentive to top managers (Conyon and He, 2011 and 2012 and Walder, 2011).[69]

In light of these developments, a handful of studies have examined the impact of managerial ownership on corporate decisions and performance indicators. For instance, using data from 779 listed Chinese manufacturing firms over the period 2002-2005, Lu et al. (2009) find that firms' export propensity and intensity are positively affected by CEO share ownership. In a similar vein, using World Bank survey data of 1088 private manufacturing firms over the period 2000–2002, Lin et al. (2011) report that those firms whose CEOs have significant shareholding in their firms, and firms who give performance-based compensations to their CEOs are more likely to undertake R&D investment, and to allocate more resources to R&D activities. Using a panel of 1648 firm-year observations for Chinese listed firms over the period of 1999-2002, Lin et al. (2009) present evidence that the level of firm efficiency is positively associated with insiders' ownership. Similarly, using data from 970 Chinese listed firms over the period of 2007-2008, Liu et al. (2012) argue that managerial ownership is positively related to the performance of state-owned enterprises (SOEs). Yet, to the best of our knowledge, no existing study has analysed the links between managerial ownership and agency costs in the Chinese context. In the present study, we fill this gap in the literature by examining for the first time the direct impact of increased incentive alignment achieved through the equity ownership of managers in their firm on agency costs. To this end, we measure agency costs using both the asset utilization ratio and the expense ratio.

Consistent with the prediction of Jensen and Meckling (1976) that managerial ownership reduces agency costs, we expect to observe a negative relationship between managerial ownership and agency costs for Chinese listed firms. Following the finance

[69] In January 2006, the CSRC issued "The Administrative Rules of Equity Compensation of Listed Companies" which allows the companies that have successfully completed their split-share-reforms to adopt equity based compensation plans for their managers. This also provided a strong incentive for the top managers of listed companies to complete the reform at the earliest possible in order to participate in the new compensation scheme.

literature (Berger et al., 1997; Anderson et al., 2000 and Yuan et al., 2008), we define managerial ownership as the percentage of shares owned by all directors and officers (including members of the supervisory board)[70], and hypothesize that:

H1: There is an inverse relationship between managerial ownership and agency costs.

5.3.1.2. State ownership

Research from developed countries as well as transitional and emerging economies (including China) often shows that state ownership in firms contributes to governance problems and thus, operational inefficiency, increased agency costs and poor performance in firms (Shleifer and Vishny 1994; Megginson et al., 1994; Shleifer, 1998; Dewenter and Malatesta, 2001; Kato & Long, 2006a,b,c, & 2011; and Tian and Estrin, 2007). This is generally attributed to the following: first, weak incentives to the top management team; second, pursuit of multi-goals, namely social and political goals which leads excess labor and wages and appointment of people with political influence to the senior positions by government without considering their expertise; third, soft budget constraints and higher transaction costs; fourth, divergence between cash flow rights and control rights for the controlling shareholder: while government agents/bureaucrats have control over SOEs, the cash flow rights of SOEs belong to the state or the Treasury; fifth, there is an extra agency relationship in state-owned firms compared to privately-owned firms, as the government agents/bureaucrats are themselves agents of the true owners namely the state/ the general public.

Substantial state ownership is observed in transformed SOEs in China. Prior studies on performance effects of state ownership among Chinese listed corporations argue that because of complex agency problems and soft budget constraints, state ownership leads to inefficiency and unsatisfactory firm performance (e.g., Xu and Wang, 1999; Sun and Tong, 2003; Wei et al., 2005). More recently, Chen et al. (2010) examine how transfers of controlling ownership from one state entity to another, as well as to a private entity affect performance of Chinese listed firms. They find that when

[70] Most of the studies based on U.S. data also investigate the effects of high powered incentives such as holding of common stocks and options on investment decisions. Given that in China stock options are still an underdeveloped incentive mechanism for managers, we consider stock holdings and not stock options as the main incentive mechanism for managers.

controlling ownership is transferred to the hands of a private entity, efficiency and performance significantly improve, mainly driven by the savings in costs and reduction in the labor force. In contrast, the transfer of control to other branches of the state results in small gains in performance. These findings lead the authors to conclude that the Chinese government should proceed to sell down its equity ownership stake in partially privatized listed firms.

As for agency costs, Firth et al. (2008) do not find any relationship between state shareholding and agency costs. However, Tian and Estrin (2007) demonstrate that state controlled firms experience higher agency costs than privately controlled firms. Research on governance of Chinese listed firms suggests that government control over the firms weakens the efficacy of managerial incentives (Kato & Long, 2006a, b, c, and 2011; Tian and Estrin, 2007). Thus, we to argue that state ownership should be associated with higher agency costs for firms. We therefore hypothesize that:

H2: Firms with a high level of state-ownership are associated with a high level of agency costs.

5.3.1.3. Legal person ownership

Legal person shareholders in China are represented by domestic institutions such as domestic mutual funds, pension funds, brokerage firms, government agents, insurance companies and other corporate entities, which are similar to institutional investors in Western countries. Several studies suggest that this sort of shareholders have the opportunity, necessary capacity, and incentives (due to their large stake in a firm) to monitor managers' activities in order to enhance firm performance, and thus minimize agency costs (Shleifer and Vishny, 1986; Zeckhauser and Pound, 1990; Cornett, et al, 2007).

In the case of Chinese firms, some studies show that legal person shareholding is positively associated with firm performance since institutional shareholders have diverse professional background and are usually the largest shareholder of the firm (Xu and Wang, 1999; Sun and Tong, 2003). Using a sample of 1211 listed firms over the period of 2001-2005, Yuan et al. (2008) find that mutual funds' ownership in corporations enhances firm performance.

By contrast, researchers also point out that because many of these institutions are owned wholly or partially by different levels of government, it is also possible for agency problems to arise (Wei et al., 2005; Lin and Su, 2008)[71]. After controlling for endogeneity, Wei et al. (2005) report a negative relationship between legal person shareholding and firm value measured using Tobin's Q. Firth et al.'s (2008) study fails to find any significant association between legal person ownership and agency costs for their sample of firms. More recently, studies on the 2005 split share structure reform present evidence to suggest that mutual funds are associated with lower compensation for tradable shareholders, which suggests higher agency costs for the latter (Firth et al., 2010). Given the contrasting findings in the literature, we make no ex-ante prediction on the effects of the legal persons' shareholding on agency costs.

5.3.1.4. Foreign ownership

The literature has traditionally argued that in emerging economies, the participation of foreign capital in domestic firms helps to adopt international standards of governance, as well as international business practices and technologies (Jackson and Strange, 2008), which all help to closely monitor managers' self-interested behavior. Anderson et al. (2001) suggest that foreign investors are more likely to give pressure for the management to increase efficiency and the reduce agency costs faced by the firms which they invest in. By contrast, research also indicates that geographical distance, liability of foreignness, lack of knowledge about local conditions in the host country may often impede the governance role of foreign investors (Boardman et al., 1994).

In the context of China, previous studies provide mixed results on the performance effects of foreign shareholders.[72] Firth et al. (2008) provide evidence suggesting that in Chinese listed firms, foreign shareholders indeed do not provide effective monitoring of management, but, instead, encourage managers' consumption of perquisites, privileges, and "trappings of Western executives". They conclude that because of this increased unnecessary expenditures, foreign ownership in Chinese listed

[71] Specifically, legal persons may expropriate assets or cash flows from the listed firms, harming the interest of minority shareholders.

[72] See for example, Sun and Tong (2003), Bai et al. (2004), and Wei et al. (2005). Also, see the literature surveyed in Greenaway et al. (2013) for details. The latter authors show that there is an inverted U-shaped relationship between the degree of foreign ownership and corporate performance in Chinese unlisted companies.

firms is associated with higher agency costs. In line with their findings, we hypothesize that:

H3: There is no association/ a negative association between foreign ownership and the level of agency costs.

5.3.2. Board characteristics

Agency costs arise mainly because of asymmetric information between managers and shareholders and shareholders' inability to directly monitor management. Therefore, board of directors are expected to align the interests of the management with those of the stockholders by monitoring the actions and decisions of management (Fama and Jensen, 1983; Jensen, 1993; and Shleifer and Vishny, 1997). Hence, by solving governance issues, boards of directors should help firms reduce the agency costs associated with the separation of ownership and control. In this study, we consider two important variables related to board of directors, namely board independence and board size.

5.3.2.1. Board independence

Because of their independence and concern to maintain their reputation in the external labor market, non-executive directors will effectively monitor the actions of the executive directors and managers so as to ensure that they are pursuing policies congruent with the interests of shareholders and complement expert knowledge of top management (Fama, 1980; Fama and Jensen, 1983; Cadbury, 1992). Researchers also suggest that because of their education and broad knowledge, experience, reputation, and networks with other institutions, outside directors may play an information and service role, as well as a resource role, and also assist in making important strategic decisions (Pfeffer, 1972; Pearce and Zahra, 1992; Zahra, 2003).

Yet, the empirical evidence is mixed. For example, using event study analysis, Rosenstein and Wyatt (1990, 1997) and Shivdasani and Yermack (1999) report evidence to support the view that the appointment of outside directors to the board is associated with increases in company value. By contrast, several empirical studies report evidence that the proportion of independent directors/outside directors negatively affects corporate performance (see, for example, Yermack, 1996; Agrawal and Knoeber,

1996; Weir and Laing, 1999). Singh and Devidson (2003) find direct evidence that the independent directors are not helpful in reducing agency costs for US listed firms. Researchers generally attribute these findings to the fact that outside directors do not have inside information about the firm, lack the required skills to attend their responsibilities, and are unwilling to play a confrontational monitoring role. Furthermore, some empirical studies fail to find any relationship between board composition and performance and argue that the proportion of independent directors is endogenously determined to the firm performance (Hermalin and Weisbach, 1991; Wintoki et al., 2012). For example, poorly performing firms may appoint more independent directors who are expected to closely monitor managers' actions and thus help to improve performance. Yet, if one does not control for endogeneity properly, there could be a negative relationship between the proportion of independent directors and firm performance.

Since a conductive institutional environment for the effective functioning of outside directors has not yet been well established in China, some researchers cast doubt on the qualities and independence of outside directors. They also argue that outside directors are appointed merely to meet the requirements of the regulations and for the prestige of their value and, consequently, do not play their role as effectively as their counterparts in developed countries (Tenev and Chunlin, 2002, Clarke, 2003, 2006; Lau et al., 2007). They also point out that in China, independent directors are lacking necessary financial and practical business knowledge, or are too busy to care about the problems of listed companies to exert any substantial influence on important corporate decisions, other than ornamenting the board. Firth et al. (2008) present evidence that Chinese listed firms' voluntary appointment of outside directors, which was in place before the introduction of the independent director system in 2003, did not help to reduce agency costs. We therefore pose the following hypothesis:

H4: There is no association/ a negative association between the proportion of independent directors in the board and agency costs.

5.3.2.2. Board size

Several papers provide evidence that the size of the board is an important governance mechanism as it affects its ability to be an effective monitor and guide. Monks and

Minow (2004) suggest that since larger boards are able to commit more time and effort to overseeing management, board monitoring can improve the quality of managerial decision-making and lead to better firm performance. Adams and Mehran (2003) provide evidence suggesting that larger boards increase monitoring effectiveness and guarantee greater board expertise. This evidence, thus, suggests that large boards can help to reduce agency costs.

By contrast, Lipton and Lorsch (1992) and Jensen (1993) theoretically argue that larger boards are less effective in group decision-making and strategy formulation, and help to entrench CEOs' power. The reason for this is that large boards hardly reach consensus on their decisions and agency problems such as directors' free-riding may increase within large boards. Prior studies also suggest that larger boards may lead to a low level of individual motivation and thus adversely affect its members' commitment and effective participation in decision making (Goodstein et al., 1994 and Dalton et al., 1999). Yermack (1996) and Eisenberg et al. (1998) support this argument by providing empirical evidence that firm performance is enhanced by smaller boards. Consistent with these arguments, Singh and Devidson (2003) report evidence suggesting that smaller boards are effective in reducing agency costs for US-listed firms.

In the Chinese context, Li et al. (2007a) and Conyon and He (2012) show that larger boards are inconsequential or less effective in specific actions such as the determination of CEO compensation. Huyghebaert and Wang (2012) provide empirical evidence to suggest that the board size does not influence related party transactions, but is associated with larger labor redundancies, thus resulting in higher agency costs in Chinese listed SOEs. They conclude that large board of directors might favor the expropriation of minority investors. In line with the above arguments, we hypothesize that:

H5: There is a negative association between the size of the board of directors and agency costs.

5.3.3. Debt financing

Corporate finance theories and especially the agency literature show that debt financing can act as an important governance mechanism in aligning the incentives of corporate managers with those of shareholders, thus reducing agency costs of equity (e.g., Jensen

and Meckling, 1976; Grossman and Hart, 1982; Jensen, 1986; Stulz, 1990; and Zwiebel,1996). This assertion mainly comes from the following benefits related to debt financing. First, the potential positive incentive effects of debt come from the discipline imposed by the obligation to continually earn sufficient cash to meet principal and interest payments. In other words, debt is a commitment device for executives (Zwiebel, 1996). The greater probability of financial distress and the resultant potential for the threat of bankruptcy encourage managers to work hard and consume fewer perquisites by aligning their incentive with those of owners (Grossman and Hart, 1982 and Zwiebel, 1996). As shown in Aghion and Bolton (1992) and Gilson (1990), financial distress or continuous low profits may lead to a shift of control to debt holders, resulting in the replacement of incumbent managers.

Second, Jensen (1986) and Stulz (1990) argue that leverage reduces free cash flows available for managers' discretionary expenses (because of the legal requirement to pay interest and settle loans), and thereby helps to reduce managerial agency costs. Otherwise, managers who are often reluctant to distribute cash flows to owners have incentive to consume perks, or waste resources in unprofitable investments yielding sizable private benefits (i.e. empire building). Consistent with this view, McConnell and Servaes (1995) report evidence that leverage positively affects the value of those firms which have fewer growth opportunities.

Third, higher leverage also provides incentives to lenders to monitor closely managers' actions. The increase in leverage is associated with the risk of bankruptcy (default). Further, McConnell and Servaes (1990) point out that when leverage increases, managers may invest in high-risk projects in order to meet interest payments. This suggests that the increase in leverage provides greater incentive for lenders to monitor more closely managers' actions and decisions, reducing agency costs. Moreover, the theory of financial intermediation suggests that bank loans have special advantages to the firms. The specialized knowledge of bankers enables them to gather necessary information, develop a detailed knowledge of the firms, and thus effectively monitor them so as to guarantee the returns to the depositors (Diamond, 1984; Ang et al., 2000).

In the context of China, using data for listed firms prior to 2000, Tian and Estrin, (2007) and Firth et al. (2008) argue and provide evidence that due mainly to soft budget constraints and the inefficient banking system, debt financing does not act as a

governance mechanism in reducing agency costs. Instead, the former authors further show that it facilitates increased managerial perks, mainly due to substantial government ownership and control in the firms.

In contrast, recent research shows that following a series of reforms in the banking system and the resultant improvement in the governance of the Chinese financial sector[73], banks now use more and more commercial judgment and prudence in their lending decisions (Cull and Xu, 2005, Ayyagari et al., 2008, Firth et al. 2009). Similarly, recent research on financing constraints of Chinese listed firms (Chan et al, 2012; Lin and Bo, 2012; Tsai et al. 2014) provide evidence suggesting that state-ownership does not necessarily reduce firms' financial constraints via soft budget constraints or easy access to finance. Tsai et al. (2014) further show that the banking system reforms helped not only to alleviate politically-oriented investment distortions (i.e. overinvestment) in SOEs, but also to alleviate under-investment problems in non-state-controlled listed firms because of increased availability of bank loans to the private sector. This evidence suggests that bank financing no longer facilitates unwise investment and overconsumption of perquisites in SOEs, but tends instead to improve investment efficiency in both state-controlled and privately controlled firms.

Thus, the recent banking system reforms can explain the contrasting findings obtained in older studies such as Tian and Estrin (2007) and Firth et al. (2008), and more recent ones such as Chan et al. (2012), Lin and Bo (2012) and Tsai et al. (2014). It is therefore reasonable to argue that the deregulated and reformed Chinese banks can now monitor corporate activities, thus improving the efficiency of firms. In other words, debt financing can now act as a governance mechanism in constraining managers' misuse of resources, thus reducing agency costs in Chinese listed firms. We therefore hypothesize that:

H6: There is a negative association between the debt financing and agency costs.

[73] See section 2.5 of Chapter 2 for detailed discussion on the China's banking sector reform.

5.4. Base line specification and estimation methodology

5.4.1. Base line specification

Our baseline model links measures of agency costs with corporate governance factors and firm characteristics. Following previous studies (Ang et al., 2000; Singh and Davidson, 2003; McKnight and Weir, 2009), we initially estimate the following equation:

$$AC_{it} = \beta_0 + \beta_1 DOS_{i(t-1)} + \beta_2 SOS_{i(t-1)} + \beta_3 LPS_{i(t-1)} + \beta_4 FOWNS_{i(t-1)} + \beta_5 INDIR_{i(t-1)} + \beta_6 BODSIZE_{(t-1))} + \beta_7 LEV_{i(t-1)} + \beta_8 FIRSIZE_{i(t-1)} + \beta_9 FAGE_{it} + v_i + v_t + v_j + v_r + \varepsilon_{it} \quad (\mathbf{5.1})$$

where *i* indexes firms and *t*, years. The error term in Equation (1) is made up of five components. v_i is a firm-specific effect; v_t, a time-specific effect, which we control for by including time dummies capturing business cycle effects; v_j, an industry-specific effect, which we take into account by including industry dummies; and v_r, a region-specific effect, which we control for by including a full-set of regional dummies. Finally, ε_{it} is an idiosyncratic component.

AC_{it} indicates alternative measures of agency costs. The independent variables include proxies aimed at testing the effects of ownership and corporate governance mechanisms and other control variables proved by previous studies to be influential determinants of agency costs. Table A5.1 in the Appendix provides definitions for all variables used in this paper.

5.4.1.1 Agency costs

Following Ang et al. (2000) and Singh and Devidson (2003) among others, we measure agency costs in two ways, namely using the asset utilization ratio and the ratio of general, administrative and selling expenses to total sales (GA&S).

It is argued that the asset utilization ratio, which is defined as the ratio of total sales to total assets, measures the efficiency with which management uses the firm's assets to generate sales. As inefficient assets utilization results in revenue loss to the firm, agency costs are inversely related to this ratio. A firm with higher turnover ratio indicates that the firm is generating significant sales out of its assets and thus facing low agency costs. In contrast, a firm with lower ratio indicates management's sub-optimal

behavior such as poor investment decisions (i.e. undertaking non-value maximising investment), insufficient effort/ shirking, or consumption of excessive perks. This would indicate conflict of interest between managers and shareholders, which in turn result in higher agency costs for shareholders.

As discussed in McKnight and Weir (2009, p.141), this measure has a number of potential drawbacks. First, higher sales turnover may not always be synonymous with shareholder wealth because the sales may not actually come from profitable activities. For example a subsidiary may sell goods at lower price to the parent company. Second, the sales to assets ratio does not indicate how cash generated from sales is utilised: the management may expropriate the cash instead of distributing it to shareholders. Yet, as argued in previous studies (Ang et al., 2000; Singh and Davidson, 2003; McKnight and Weir, 2009), this measure is widely used in the accounting and financial economics literature as a useful indicator of agency costs.

Our second measure of agency costs is the expense ratio, which is defined as the sum of general, administration and selling expenses (GA&S) divided by total sales. The expenses in the numerator of this ratio are incurred by firms in relation to the organization and management of its production and operation, and to the sale of products. These expenses typically include those expenses incurred by the board of directors and the management in operating and managing the business, such as corporate cars, travelling expenses, entertainment expenses as well as other service bills. More importantly, much of these expenses are subject to managerial discretion, and, hence, a high expense ratio may indicate high agency costs for shareholders. The expense ratio is generally used as a measure of how effectively the firm's management controls expenses, including excessive perquisite consumption, and other direct agency costs.

In the context of China, managerial perks are the main source of income for managers, as the average annual salary of Chinese general managers is much lower than that of their counterparts in Western countries (Kato and Long, 2006b and Conyon and He, 2011). For example, Chinese firms typically pay dining, communication, transportation, and entertainment bills for a senior manager's family. Most managerial perquisites are not explicitly reported in financial statements, but are included in the

administration costs. Therefore, Tian and Estrin (2007) suggest that the expense ratio is a good indicator of managerial perquisites.

Finally, asset utilization ratio and the ratio of general, administrative and selling expenses to total sales (GA&S) are more commonly used as proxies for agency costs in various research settings including China. For example, Tian and Estrin (2007) and Firth et al. (2008) use these variables to measure agency costs for Chinese listed firms. From 1993 China started to adopt a new accounting system that is closer to international accounting standards and provides better information disclosure. Furthermore, from 2000, all Chinese-listed firms have applied a consistent and unified set of accounting standards (Chen et al., 2012). Components of these two variables, namely general, administrative and selling expenses, total sales, total assets are measured in similar manner as in the Western countries. We believe therefore that asset utilization ratio and the ratio of general, administrative and selling expenses to total sales can also be used to measure agency costs for Chinese listed firms.

5.4.1.2 Ownership and other internal governance mechanisms

Focusing on corporate governance mechanisms, we include managerial shareholding *(DOS)* to represent the alignment of managerial interest with that of shareholders.[74] Following Firth et al (2008), we also include legal person shareholding *(LPS)*, state shareholding *(SOS)*, and foreign shareholding *(FOWNS)* to see the impact of other major shareholders. As for the board characteristics, we include the board size *(BOARDSIZE)*; and the proportion of independent directors in the board *(INDIR)*. Finally, following the governance literature (see for example, McKnight and Weir, 2009) we include leverage as a governance mechanism which constrains managers' expropriation of free cash flow. Leverage (*LEV*) is measured as the percentage of total debt to total assets. We include these corporate governance variables first one by one and then all together.

If the above corporate governance mechanisms are effective in reducing agency costs, as predicted by our hypotheses, we would expect the level of asset utilization to

[74] All shareholding variables are calculated as the percentage of shares owned by various agents. For instance, managerial shareholding (DOS) is defined as the percentage of shares owned by managers, directors, and supervisors. We also estimated alternative specifications, which included the squares of Managerial, state, legal person, and foreign ownership, but these quadratic terms were never statistically significant. The results are not reported for brevity, but available upon request.

be positively associated with better governance, and the discretionary expenses to be negatively related with it. This is consistent with the notion that firms with strong governance structures show lower levels of discretionary expenses and greater levels of asset utilization.

5.4.1.3 Control variables

In line with previous studies, Equation (5.1) includes several additional variables to control for a set of firm-specific characteristics that are likely to be correlated with the agency costs faced by firms. These include firm size *(FIRSIZE)* and firm age and *(FAGE)*. We also control for territory specific, industry-specific and time-specific effects by including dummies for regions, industries and sample years in all specifications.

Firm size *(FIRSIZE)* is measured by the natural logarithm of total real sales at the firm level. A stylized fact in the corporate finance literature is that firm size is an important determinant of a firm's outcome such as investment and financing decisions, performance and agency costs. The main reason is that the firm size is associated with the realization of economies of scale in terms of asset utilization, operations and expenses. Additionally, a larger firm size reflects firms' ability to attract and deploy resources (such as finance, expertise, and so on), and thus may lead the firm to adopt a better corporate governance system (Guillen (2000). Consequently, large firms are likely to operate at lower average cost and may display lower agency costs than smaller firms. Previous studies report a negative relationship between the firm size and agency costs (see, for example, Ang et al., 2000, and Singh and Davidson, 2003). By contrast, Doukas et al. (2000 and 2005) argue and present evidence that since large firms are associated with greater informational difficulties, as they are more diversified and complex, it is difficult for owners and security analysts to closely monitor managerial misconducts, leading to higher agency costs. It is therefore clearly important to control for the firm size in our agency costs regressions, but the literature does not provide a clear prediction of the sign it should have.

The sign of firm age *(FAGE)* is also unclear. Ang et al. (2000) argue that because of the effects of learning and survival bias, mature firms are more efficient than younger firms. In addition, a firm with a long history can establish its reputation in the

debt market, and with banks, and, is thus likely to suffer less from asymmetric information problems, which may make it easier to obtain the debt financing. This in turn could be related to higher efficiency because the higher the leverage, the higher the potential for default risk, and the higher the incentive for banks to closely monitor these firms' operations (Ang et al., 2000). Conversely, in the context of China, older firms are more likely to be former SOEs and thus to face more severe governance problems (Lin et al., 1998; Kato and Long, 2006a,b,c). When compared to younger privately-controlled enterprises, they are therefore likely to be less efficient and to face higher agency costs . Consistent with these arguments Tian and Estrin (2007) and Firth et al. (2008) find a negative relationship between agency costs and firm age.

We control for differences in agency costs across industries in our analysis by including a set of dummy variables, one for each of the industries considered in the CSMAR B classification. We also control for any systematic differences in regional development by including regional dummies. Finally, time-specific effects are accounted for by including year dummies in all specifications.

5.4.2. Estimation methodology

To empirically analyze the relationship between ownership and other governance mechanisms and agency costs, we use the system Generalized Methods of Moments (GMM) technique developed by Arellano and Bond (1991) and Arellano and Bover (1995). This technique simultaneously controls for firm-specific fixed effects, and endogeneity problems, by using lagged values of the potentially endogenous variables as internal instruments. The system GMM estimator estimates the relevant equation both in levels and in first-differences. First-differencing is used to control for unobserved heterogeneity. We use all right-hand side variables (except age and the dummies) lagged twice or more as instruments in the first-differenced equation, and first-differences of these same variables lagged once as instruments in the level equation. Blundell and Bond (1998) point out that the first-differenced GMM procedure may suffer from weak instrument problems and might produce biased results. Therefore, to reduce the potential biases and imprecision associated with the first-differenced GMM estimator, we use the system GMM estimation.

We use the Sargan/Hansen test for over identifying restrictions, and the test for second order autocorrelation of the differenced residuals (AR (2)) to test the validity of our instruments. In the case of failure of the Sargan/Hanson test and/or AR (2) test[75], regressors lagged three times or more are included in the instrument set (Bond, 2002)[76].

5.5.Data and descriptive statistics

5.5.1. Sample and dataset

The data used in this study are obtained from two Chinese databases, namely the China Stock Market Accounting Database (CSMAR) and Sino-fin for the period of 2003-2010. The sample is composed of publicly listed non-financial firms traded on the Shanghai and Shenzhen stock exchanges. Following the literature, we exclude financial firms from our analysis. To reduce the influence of potential outliers, we exclude observations in the one percent tails of each of the regression variables. Since we lag all our independent variables once, in our empirical analysis, we end up with a panel of 9237 firm-year observations on 1420 companies over the period 2004-2010. The panel has an unbalanced structure, with an average of 6 observations per firm.

5.5.2. Descriptive statistics

Table 5.1 reports descriptive statistics for the variables used in our analysis. We observe that the pooled mean (median) value of managerial ownership is 2.3% (0%), with a minimum value of 0% and maximum value of 65.4%. The state and legal persons hold on average (at the median) 23.3% (17.3%) and 14% (1.2%) of the shares, respectively. Foreign shareholders, on average (at the median), hold 4 % (0%) of total issued shares. The average (median) board size is 9.360 (9.0), with an average (median) proportion of independent outside directors of 35.2% (33.3%). The average (median) debt to total asset ratio is 51.3% (51.6%).

As for the control variables included in our baseline model, the average (median) firm size is just over 1 billion RMB (0.464), and the average (median) firm

[75] For example, this could happen due to measurement error.
[76] See sections 4.3.2.1 and 4.3.2.2 of Chapter 4 for a detailed discussion on the system GMM estimator and the tests for the validity of the instruments.

age measured by number of years from the establishment of firm is 11.41 (11)[77]. Average (median) productivity, measured as real sales per employee, is 0.55 million RMB (0.24).

Table 5.2 presents the Pearson correlation coefficients between variables. Since corporate governance mechanisms are highly likely to be endogenous, we do not concentrate much on the interpretation of correlation coefficients. Nonetheless, Table 5.2 suggests that given that the observed correlation coefficients are relatively low, multicollinearity should not be a serious problem in our study.

5.6. Empirical results

5.6.1. Links between ownership, internal governance mechanisms, and agency costs measured by the asset utilization ratio

Table 5.3 presents system GMM estimation results of our baseline model (1), where the dependent variable is the asset utilization ratio. This ratio varies inversely with agency costs. Thus, a negative sign of the estimated coefficient of our independent variables indicates higher agency costs for the firm.

In column 1 of Table 5.3, we first estimate a naïve model in which we include managerial ownership and a set of control variables such as firm size, firm age, and regional, industry, and year dummies. In columns 2 through 4, we then separately include other ownership variables. In columns 5 and 6, we include our two board structure variables, and in column 7, leverage. In column 8, we estimate our baseline model with all the variables included at the same time.

Focusing on column 1, we observe that the coefficient on managerial ownership is positive and statistically significant at the 1% level. In line with hypothesis H1, this finding suggests that there is strong evidence in support of Jensen and Mackling's (1976) incentive alignment hypothesis. The alignment of managers' incentives with those of shareholders encourages managers to utilize a firm's assets effectively, thus

[77] It should be noted that although firm size is measured as the logarithm of total real sales in the regression analysis, the figures reported in the descriptive statistics Table are not in logarithms as actual values are easier to interpret.

reducing agency costs. This result is consistent with the findings of previous empirical studies such as Ang et al. (2000); Singh and Davidson (2003); Fleming et al. (2005); Florackis (2008); and McKnight and Weir (2009), who also report an inverse relationship between managerial ownership and agency costs. Furthermore, its magnitude also appears to be economically significant: incrementing managerial ownership by one-standard deviation reduces agency costs (increase assets utilization efficiency) by 6.53 % [78].

From column 2 of Table 5.3, we observe that, in line with hypotheses H2, the estimated coefficient on state ownership is negative and significant at the 10% level. Focusing on economic significance, a one standard deviation increase in state shareholdings decreases asset utilization efficiency (i.e., an increase in agency costs) by approximately 2.5% in column 2[79]. This result is consistent with the view that state ownership in Chinese listed firms leads to governance problems and thus, operational inefficiency, increased agency costs and poor performance of the firms (Kato & Long, 2006a,b,c, & 2011; Tian and Estrin, 2007). This result is inconsistent with Firth et al. (2008) who find insignificant effects of state ownership on agency costs using random-effects and fixed-effects estimators. Yet, their results may be biased by the fact that they do not take endogeneity into account. After controlling for endogeneity, Wai et al. (2005) also document that increased state ownership in a firm results in poor performance (higher agency costs for the shareholders).

Legal person ownership and foreign ownership are introduced respectively in columns 3 and 4. Yet, these variables do not exhibit significant coefficients, which supports our hypothesis H3. Firth et al. (2008) also report insignificant effects of legal person shareholding on agency costs. Yet, they find a significant negative relationship between foreign shareholdings and agency costs for Chinese listed firms.

In column 5 and 6, the proportion of independent directors and board size are included in the model. The estimated coefficient on the proportion of independent directors is statistically insignificant, in line with our Hypothesis 4. This finding is consistent with the Singh and Davidson, (2003) and McKnight and Weir (2009), who

[78] This number is obtained as the estimated coefficient on managerial ownership (0.494) times its standard deviation (0.090) divided by the mean value of the assets utilization ratio (0.680).
[79] This number is obtained as the estimated coefficient on state shareholdings (-0.075) times its standard deviation (0.233) divided by the mean value of the assets utilization ratio (0.680).

focused on US and UK, listed firms, respectively. As for the board size, it is negatively associated with the asset utilization ratio, but its coefficient is not significant, which contradicts Hypothesis 5. Taken together, these results lend support to the view that board of directors in Chinese listed firms are unable to contribute to the effective monitoring of top managers' non-value maximizing behavior. Our results are also consistent with Clarke (2003 and 2006), and Lau et al. (2007), who argue that independent directors in the Chinese market are just appointed to meet regulatory and legal requirements.

In column 7, we examine the effects of leverage on agency costs. As discussed earlier, if the recent reforms in the Chinese banking system and the governance of banks have been increased banks' lending and monitoring efficiency as found in recent studies (Chan et al., 2012; Tsai et al., 2014), we would expect positive effects of leverage on the asset utilization ratio, and hence lower agency costs for the firms. The results support this conjecture and are therefore in line with Hypothesis 7. The estimated coefficient on leverage is in fact positive and statistically significant at the 5% level. The magnitude of the coefficient indicates that the effects are economically meaningful: a one standard deviation increase in leverage increases asset utilization efficiency by 6.66%[80], on average.

This result is inconsistent with the findings of Tian and Estrin (2007) and Firth et al. (2008) who, focusing on the data from an earlier period, report evidence of an ineffective role of debt in mitigating agency conflict between managers and shareholders in Chinese listed firms. The difference between our findings and theirs can be explained considering that we use more recent data, and considering that, in recent years, China banks not only increased their lending and monitoring efficiency, but were no longer forced to lend unlimited amounts of money to SOEs. In fact, the Chinese government no longer provides guarantee for the borrowing of SOEs from the banks, resulting in the soft budget constraints which SOEs enjoyed for a long time being eliminated (Cull and Xu, 2005; Bhabra et al., 2008; Firth et al., 2009 and Lin and Bo, 2012, Chan et al., 2012; Tsai et al., 2014). Leverage can therefore potentially act as an effective corporate governance mechanism in constraining managers from consuming

[80] This number is obtained as the estimated coefficient on managerial ownership (0.473) times its standard deviation (0.081) divided by the mean value of investment (0.060).

excessive perks, and from spending corporate resources in wasteful investments (Jensen and Meckling, 1976; Grossman and Hart, 1982; Jensen, 1986; Stulz, 1990).

Column 8 of Table 5.3 shows parameter estimates for our baseline model (1), when all the independent and control variables are include at the same time. We can see that the estimated coefficient on managerial ownership variable remains positive and precisely determined. The coefficient estimate on the leverage ratio also remains positive. Yet, the coefficient on state ownership is no longer significant at conventional levels, which may indicate that the result in column 2 was driven by omitted variable bias.

As for the effects of the control variables, the results show that in all specifications, the estimated coefficient on firm size is positive and significant at the 1% level, suggesting that larger firms are associated with lower agency costs. This is consistent with the prediction that large firms have more resources, experience economies of scale, and are able to effectively monitor managers' misconduct. This result is also consistent with Ang et al. (2000), Singh and Davidson, (2003) and Firth et al. (2008) among others. The coefficient associated with firm age is negative and statistically significant at the 1% level in five out of eight regressions in Table 5.3. This finding is consistent with our prediction that Chinese older firms are more likely to be former SOEs with a long history of operation (which were then converted into listed companies), and as such face more agency problem leading to less efficient utilization of assets and higher agency costs. This result is also consistent with the findings of Tian and Estrin (2007) and Firth et al. (2008).

The AR2 and Sargan tests generally indicate that our models are correctly specified and that the instruments are generally valid.

In summary, our results indicate that managerial ownership and debt financing are the main internal governance mechanisms that help mitigating agent costs among Chinese listed firms.

5.6.2. Links between ownership, internal governance mechanisms and agency costs measured by the expense ratio

We now turn to results obtained when using the expense ratio as an alternative measure of agency costs. Table 5.4 present the system GMM estimation results. As shown in columns 1 and 8, consistent with our findings from Table 5.3, the coefficient on managerial ownership is negative and precisely determined, further supporting our incentive alignment hypothesis (H1) that increased managerial ownership help reduce agency costs among Chinese listed firms. Furthermore, its magnitude is also economically significant. Focusing on column 1, we find that incrementing managerial ownership by one-standard deviation decreases general, administration and selling expenses ratio by 24.68 %.

Focusing on columns 2 to 8, we observe that other ownership variables do not have influence on agency costs, with the exception of state ownership, which, in accordance with our hypothesis H2, exhibits a negative and statistically significant coefficient in column 2. Moving to board characteristics, we observe that, once again, board size and the proportion of independent directors do not influence agency costs. Finally, consistent with the findings in Table 5.3, we observe that leverage exhibits a positive and significant coefficient in both columns 7 and 8. This effect is economically meaningful: focusing on column 7, a one standard deviation increase in leverage decreases the expense ratio approximately by 16.4%[81].

The coefficients on the other control variables indicate that, consistent with previous findings, young and large firms, are more likely to have lower agency costs. The AR3 and Sargan tests generally indicate that our models are correctly specified and that the instruments are generally valid[82]. In summary, the results obtained using the expense ratio as a measure of agency costs are consistent with those obtained using the asset utilization ratio.

[81] This number is obtained as the estimated coefficient on managerial ownership (0.42.5) times its standard deviation (0.081) divided by the mean value of investment (0.060).
[82] We report the AR(3) test instead of the AR(2) test because, contrary to Table 3, all instruments in this table are lagged three or more times.

5.6.3. Further tests

In this section, to assess the robustness of our results, we re-estimate our baseline model (equation 5.1) separately for the pre- and post-2006 period, and for state-controlled and privately-controlled firms. In doing so, we use the asset utilization ratio to measure agency costs. All results were robust to using the expense ratio.

5.6.3.1. Estimating separate regressions for the pre- and post-2005 period

The results in the previous sub-sections establish that managerial ownership and debt financing are the two important governance devices that help mitigate agency conflicts in Chinese listed firms. As our data spans the 2005-2006 split share structure reform, we next analyze whether our results hold both before and after the reform. This exercise can be motivated considering that as a consequence of the reform; firms' ownership has changed tremendously. In particular, a large number of non-tradable shares which were mainly held the government and government related agents became tradable, increasing the liquidity in the capital markets. Further, as a result of the reform, government ownership has significantly declined in listed firms. This may have given banks incentives to consider commercial terms when issuing loans to firms, and to closely monitor the firms to which they have provided finance. Additionally, managerial ownership became more important in recent years, since, as a consequence of the reform, Chinese corporations have been allowed to incentivize their top management with stock and stock options. As a consequence of this, average managerial ownership rose from 0.5.% in 2003 to 8.2% in 2010, managers' interests became aligned with stock return performance, and their conflicts of interest with outsider investors were reduced.

Columns 1 and 2 of Table 5.5 provide separate estimates of Equation (5.1) for the pre- and post-2006 period, respectively. Focusing on column 1, we observe that, in the pre-reform period, the coefficients on foreign ownership and debt financing are negative and significant at conventional levels, suggesting that both foreign ownership and leverage are associated with high levels of agency costs. These results are consistent with the findings of Firth et al. (2008) and Tian and Estrin (2007) respectively. The negative coefficient on leverage suggests that prior to the stock market and banking reforms, Chinese banks were less efficient in monitoring their borrowers, leading bank

debt to facilitate wasteful investment which increased agency costs. Similarly, before the reform, foreign shareholders were not effective in monitoring of management, but, instead, encouraged managers' consumption of perks.

Column 2 of Table 5.5 shows that only the coefficients on managerial ownership and debt financing are positive and significant at conventional levels in the post-reform period. These results suggest that, in the post-reform period, managerial ownership and bank monitoring of borrowers through leverage work as effective governance devises, providing incentive to managers to refrain from non-value maximizing activities, reducing therefore agency costs. Similar findings are reported by Sarkar and Sakar (2007), who show that in the early period of institutional change in India, debt did not work as a disciplining device in either standalone or group affiliated firms, but became an important mechanism in constraining managers' opportunistic behavior in the later period when institutions had become more market oriented.

Interestingly, in column 2 of Table 5.5, we also observe that the coefficient of legal person ownership, which was insignificant in the pre-reform period, becomes positive and significant at the 10% level after 2006. This suggests a monitoring role of legal person shareholders, and can be explained in the light of the alignment of the incentives of large shareholders with those of minority shareholders that followed the reform. This may have happened because, after the reform, non-tradable shares have become tradable in the two exchanges. This gave legal shareholders the incentive not only to stop expropriating corporate resources (Lin, 2009; Chen et al. 2012), but also to closely monitor managers' misconducts

Another interesting finding from the post-reform period results is that the estimated coefficient on foreign shareholders becomes insignificant, though still negative. We do not have any convincing explanation for this result but this might be due to the fact that with the general improvement in the corporate governance of Chinese listed firms, foreign shareholders may have increased their monitoring incentives in line with the expectation of future growth potential of the firms.

5.6.3.2. Estimating separate regressions for state and non-state firms

We now turn to investigate how the impact of ownership and governance mechanisms on agency costs differs between the subsamples of state and non-state firms classified

based on controlling owner. This exercise is motivated considering that in the case of China, firms with larger state ownership and control are more likely to exhibit poor governance structure and high agency costs (Qian, 1996; Lin et al., 1998; Su, 2005). Consistent with this argument, current research on Chinese listed firms provide evidence that managerial ownership and other incentive mechanisms are negatively associated with state ownership (Conyon and He, 2011 and 2012; Kato and Long, 2006a,b,c and 2011), and that government ownership is positively associated with fraud (Hou and Moore, 2010), but negatively related to the corporate governance quality index (CGI) constructed by Cheung et al. (2010). This suggests that agency costs are higher for state controlled firms compared to their privately controlled counterparts.

Furthermore, according to Lin et al. (1998) and Chow et al. (2010), firms with larger state ownership and control typically benefit from soft budget constraints, as the government is both creditor and borrower. As the managers of SOEs believe that the government will bail them out in the event of financial difficulties, they have incentives to expropriate corporate resources (Shleifer and Vishny, 1994). In line with these arguments, Tian and Estrin (2007) provide evidence consistent with the view that debt financing increases managerial agency costs in state-controlled firms. Nonetheless, with the recent improvements in the governance of both firms and banks, and in the lending efficiency of banks (Firth et al., 2009; Tsai et al.,2014), we would expect that whilst debt financing plays a governance role in privately controlled firms, it is not necessarily associated with high agency costs in state controlled firms (i.e. debt has ceased its facilitating role of managerial perks).

In columns 3 and 4 of Table 5.7, we provide separate GMM estimates of the equation (1) for non-state and state firms, respectively. The results show that managerial ownership and debt financing are only effective in reducing agency costs at non-state firms, whilst the coefficients on these two variables are poorly determined for state firms. Whilst the results concerning managerial ownership are consistent with Conyon and He (2011, 2012), and Kato and Long (2006 a,b,c and 2011), the results on debt financing are consistent with Ding et al., (2014a) who show that debt contributes positively to the investment efficiency of private firms, but not to that of state owned enterprises (SOEs). This implies that the preferential lending to the state sector by the banking system may still be problematic.

Interestingly, the estimated coefficient of legal person shareholders is positive and significant at 10% level only for privately-controlled firms, suggesting that privately controlled institutional shareholders such as mutual funds in privately controlled firms closely monitor managers, thus reducing agency costs This result is consistent with Bhabra et al. (2008), who show that legal person shareholders in privately controlled firms helps to improve corporate governance by encouraging managers to use more debt financing, which is an important device to constrain inappropriate use of free cash flow.

The estimated coefficient of board size is negative and significant at the 1% level only for state-controlled firms, suggesting that larger boards are associated with higher agency costs. This result is consistent with the findings with Huyghebaert and Wang (2012) for Chinese SOEs. The authors suggest that board size does not influence related party transactions, but is associated with larger labor redundancies in Chinese SOEs.[83] This result can also be explained considering that almost 90% of the board members of the state controlled listed firms are government officials who are likely to pursue social and political objectives, resulting in higher agency costs for minority shareholders (Su, 2005).

5.7. Conclusions

A vast number of empirical studies have analysed the impact of ownership and governance mechanisms on various firm decisions and performance indicators. In contrast, following Ang et al.'s (2000) influential contribution to the empirical analysis of agency costs, which are measured by the asset utilization ratio and the expense ratio, only a limited number of studies have presented evidence on the direct effects of ownership and governance mechanisms on agency costs. In the context of China, early studies show that ownership and board structure do not generally affects agency costs, while debt financing facilitates managerial perquisites. During the last decade there have been significant changes in the ownership and governance structure of listed firms

[83] This result is also consistent with the arguments and empirical evidence in Bai et al. (2000) and Bai and Xu (2002), who suggest that the chief executive officer of a SOE typically faces multiple tasks (i.e. profitability, political and social objectives). Shleifer and Vishny (1994) also note that maintaining employment is an important agenda for SOEs.

with a view to mitigate agency conflicts, and thereby enhance efficiency and profitability in these firms.

In this study, we use a large panel of listed Chinese firms over the period 2003-2010 to examine the impact of ownership, other internal governance mechanisms, and debt financing on the agency costs that firms face. Using the system GMM estimator to control for unobserved firm characteristics and endogeneity, we find that managerial ownership and debt financing work as effective corporate governance mechanisms in mitigating agency costs for the firms. In particular, we find that high levels of managerial ownership and debt help the firms lower the agency costs. We also find some evidence that legal person shareholdings help to mitigate agency costs.

We then distinguish the effects of governance mechanisms on agency costs between state-controlled and privately-controlled firms, as well as between the pre and post–2005 split share structure reform period. We find that the beneficial effects of managerial ownership and debt financing mainly operate in the latter part of the sample. We also find that that managerial ownership and debt financing are only effective in reducing agency costs at non-state firms. Furthermore, whilst the proportion of independent directors and board size generally do not affect agency costs in Chinese listed firms, larger boards are associated with higher agency costs in state-controlled firms.

Our study has policy implications. First, the Chinese government's commitment to reform the previously segmented ownership structure of Chinese listed firms has been successful, which is evidenced by the fact that managerial ownership has emerged as an important governance mechanisms in the post-reform period. Second, China's banking sector reform has been successful in terms of improving lending and monitoring efficiency of the banks, especially after 2005. This suggests that the removal of much of the restriction on foreign banks as per WTO accession agenda[84], and the listing of state owned banks have been positive developments.

Although like Tian and Estrin (2007) and Firth et al. (2008), our study has focused on listed firms, it would be interesting to examine how ownership structure

[84] See Lin, (2011) who suggests that profitable firms and private firms have much benefited from foreign bank entry, and use more long-term bank loans.

affects the agency costs of non-listed firms[85]. It would also be interesting to measure agency costs using relative as well as absolute measures of agency costs as in Ang et al. (2000) and Fleming et al. (2005). These issues are in the agenda for future research.

Appendix

85 See, for example, Greenway et al. (2013) and Guariglia and Liu (2014) for an analysis of impact of ownership structure on these firms' performance and innovation activities, respectively.

Appendix: Table A5.1 Variables' names and definitions

Variables	Name	Definition
Dependent Variables		
Asset utilization ratio	AC1	Ratio of total sales to total assets
Expense ratio	AC2	Sum of general, administration and selling expenses (GA&S) divided by total sales
Corporate governance variables		
Managerial share ownership	DOS	Percentage of shares owned by managers, directors and supervisors
State-owned shares	SOS	Percentage of shares owned by the central government, local governments, or any entity representing the central or local governments
Legal person shares	LPS	Percentage of shares owned by non-individual legal entities or institutions
Foreign share ownership	FOWNS	Percentage of shares owned by foreign investors
Independent directors	INDIR	Proportion of independent directors on the board of directors.
Board size	BODSIZE	Total number of directors on the board
Leverage ratio	LEV	Ratio of total leverage to total assets
Control Variables		
Firm size	FIRSIZE	Natural logarithm of the firm's total real sales
Firm age	FAGE	Logarithm of the number of years since the establishment of the firm
Regional dummies		Dummies indicating whether the firm is located in the Coastal, Western, or Central region of China
Year dummies		Year dummies for the years 2005 to 2010.
Industry dummies		Dummies for the following four industrial groups based on the CSMAR B classification: Properties, Conglomerates, Industry, Commerce. Utilities and financial industries are excluded.

Note: Real variables are derived from nominal ones using China's GDP deflator.

Table 5.1 Summary statistics of governance and firm characteristics for the pooled sample of companies

variable	N	mean	sd	p50	min	max
Asset utilization ratio (AC1)	9226	0.680	0.445	0.582	0.036	2.660
Expense ratio (AC2)	9062	0.155	0.132	0.119	0.016	1.285
Managerial shareholding (DOS)	8142	0.023	0.090	0.000	0.000	0.654
State shareholding (SOS)	8776	0.233	0.240	0.173	0.000	0.750
Legal person shareholding (LPS)	8776	0.140	0.198	0.012	0.000	0.733
Foreign shareholding (FOWNS)	8776	0.039	0.108	0.000	0.000	0.513
Independent directors (INDIR)	8249	0.353	0.045	0.333	0.000	0.545
Board size (BODSIZE)	8249	9.360	1.882	9	5	15
Leverage to assets ratio (LEV)	9226	0.513	0.205	0.516	0.060	1.677
Firm size (billion RMB)(FIRSIZE)	9226	1.126	2.103	0.464	0.019	19.478
Firm age (FAGE)	9226	11.407	4.045	11.000	1.000	28.000

Notes: This table reports summary statistics of the main variables used in our study. Sd indicates the standard deviation; N, the number of observations; p50, the median; min, the minimum value; and max, the maximum value. All variables are defined in Table A5.1 in the Appendix.

Table 5.2 Correlation matrix

		1	2	3	4	5	6	7	8	9	10	11
AC1	1	1.00										
AC2	2	-0.29*	1.00									
$DOS_{i(t-1)}$	3	0.00	0.03*	1.00								
$SOS_{i(t-1)}$	4	0.01	-0.07*	-0.26*	1.00							
$LPS_{i(t-1)}$	5	-0.06*	0.10*	-0.02	-0.46*	1.00						
$FOWNS_{i(t-1)}$	6	0.04*	0.00	-0.06*	0.01	-0.03*	1.00					
$INDIR_{i(t-1)}$	7	0.01	-0.03*	0.09*	-0.12*	-0.01	0.00	1.00				
$BODSIZE_{(t-1)}$	8	0.02	-0.06*	-0.09*	0.15*	-0.08*	0.08*	-0.28*	1.00			
$LEV_{i(t-1)}$	9	0.10*	-0.04*	-0.21*	-0.00	0.02*	0.00	0.00	0.04*	1.00		
$FIRSIZE_{i(t-1)}$	10	0.52*	-0.43*	-0.13*	0.13*	-0.21*	0.15*	0.00	0.21*	0.21*	1.00	
AGE	11	0.00	0.01	-0.30*	-0.21*	-0.08*	0.05*	0.05*	-0.05*	0.25*	0.11*	1.00

Notes: All variables are defined in Table A5.1 in the Appendix.

Table 5.3 Internal governance mechanisms, firm characteristics, and agency costs measured by the asset utilization ratio

	System GMM							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Governance variables								
$DOS_{i(t-1)}$	0.494***							0.603***
	(0.146)							(0.181)
$SOS_{i(t-1)}$		-0.075*						0.065
		(0.044)						(0.056)
$LPS_{i(t-1)}$			-0.001					0.092
			(0.046)					(0.059)
$FOWNS_{i(t-1)}$				-0.428				0.081
				(0.355)				(0.292)
$INDIR_{i(t-1)}$					0.538			0.321
					(0.399)			(0.380)
$BODSIZE_{(t-1)}$						-0.170		-0.160
						(0.119)		(0.125)
$LEV_{i(t-1)}$							0.221**	0.204*
							(0.095)	(0.108)
Control variables								
$FIRSIZE_{i(t-1)}$	0.161***	0.167***	0.172***	0.162***	0.171***	0.177***	0.157***	0.173***
	(0.019)	(0.019)	(0.019)	(0.020)	(0.019)	(0.019)	(0.019)	(0.020)
AGE_{it}	-0.025	-0.064***	-0.046***	-0.038**	-0.050***	-0.053***	-0.045	-0.032
	(0.019)	(0.021)	(0.018)	(0.018)	(0.018)	(0.019)	(0.028)	(0.035)
Regional dummies	yes	yes	yes	Yes	yes	yes	yes	yes
Industry dummies	yes	yes	yes	Yes	yes	yes	yes	yes
Year dummies	yes	yes	yes	Yes	yes	yes	yes	yes
Observations	8564	8741	8741	8741	8688	8688	9237	8564
Hansen test (*p* values)	7.84	1.54	3.87	1.80	2.35	2.31	2.05	13.45
	(0.347)	(0.462)	(0.144)	(0.407)	(0.142)	(0.140)	(0.153)	(0.414)
AR1 (*p* values)	-8.10	-7.99	-8.00	-7.55	-7.91	-7.96	-7.94	-7.93
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
AR2 (*p* values)	1.42	1.01	-0.96	1.01	1.12	1.26	1.33	-1.39
	(0.157)	(0.314)	(0.335)	(0.315)	(0.132)	(0.129)	(0.182)	(0.166)

Notes: The dependent variable in all columns is agency costs measured using the asset utilization ratio. All equations are estimated using a system GMM estimator. *AR1 (AR2)* is a test for first- (second-) order serial correlation of the differenced residuals, asymptotically distributed as $N(0,1)$ under the null of no serial correlation. The Hansen *J* test of over-identifying restrictions is distributed as *Chi*-square under the null of instrument validity. We treat all right-hand side variables except firm age as potentially endogenous: levels of these variables dated *t*-2 and further are used as instruments in the first-differenced equations and first-differences of these same variables lagged once are used as additional instruments in the level equations. Regional, industry, and time dummies are always included in the instrument set. Standard errors are in parentheses. ***, **, and * denote significance levels of 1%, 5% and 10%, respectively. See Table A5.1 in the Appendix for definitions of all variables.

Table 5.4 Internal governance mechanisms, firm characteristics and agency costs measured by the expense ratio

	System GMM							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Governance Variables								
$DOS_{i(t-1)}$	-0.425***							-0.174**
	(0.091)							(0.085)
$SOS_{i(t-1)}$		0.048**						-0.013
		(0.019)						(0.017)
$LPS_{i(t-1)}$			-0.018					-0.017
			(0.017)					(0.024)
$FOWNS_{i(t-1)}$				-0.082				0.114
				(0.117)				(0.102)
$INDIR_{i(t-1)}$					-0.023			0.152
					(0.149)			(0.157)
$BODSIZE_{(t-1)}$						0.010		0.044
						(0.043)		(0.043)
$LEV_{i(t-1)}$							-0.124**	-0.087*
							(0.049)	(0.046)
Control variables								
$FIRSIZE_{i(t-1)}$	-0.061***	-0.061***	-0.061***	-0.063***	-0.060***	-0.060***	-0.057***	-0.059***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)	(0.006)
AGE_{it}	0.018*	0.022***	0.011*	0.014**	0.014**	0.014**	0.029***	0.004
	(0.011)	(0.007)	(0.006)	(0.006)	(0.006)	(0.006)	(0.008)	(0.012)
Regional dummies	yes	yes	yes	yes	Yes	yes	yes	yes
Industry dummies	yes	yes	yes	yes	Yes	yes	yes	yes
Year dummies	yes	yes	yes	yes	Yes	yes	yes	yes
Observations	8413	8588	8588	8588	8537	8537	9064	8413
Hansen test (*p* values)	8.01	0.72	7.37	2.75	3.00	0.95	0.721	7.48
	(0.156)	(0.697)	(0.117)	(0.431)	(0.223)	(0.621)	(0.110)	(0.126)
AR1 (p values)	-6.38	-6.47	-6.46	-6.49	-6.26	-6.28	-6.23	-6.04
	(0.000)	(0..000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
AR3 (p values)	-0.56	-0.11	-0.09	-0.08	-0.04	0.-02	-0.66	-0.04
	(0.575)	(0.914)	(0.930)	(0.933	(0.969)	(0.985)	(0.510)	(0.966)

Notes: The dependent variable in all columns is agency costs measured using the expense ratio. All equations are estimated using a system GMM estimator. *AR1 (AR3)* is a test for first- (third-) order serial correlation of the differenced residuals, asymptotically distributed as $N(0,1)$ under the null of no serial correlation. The Hansen *J* test of over-identifying restrictions is distributed as *Chi*-square under the null of instrument validity. We treat all right-hand side variables except firm age as potentially endogenous: levels of these variables dated *t*-3 and further are used as instruments in the first-differenced equations and first-differences of these same variables lagged twice are used as additional instruments in the level equations. Regional, industry, and time dummies are always included in the instrument set. Standard errors are in parentheses. ***, **, and * denote significance levels of 1%, 5% and 10%, respectively. See Table A5.1 in the Appendix for definitions of all variables.

Table 5.5 Further tests

	System GMM			
	Pre-reform (1)	Post- reform (2)	Non-state (3)	State (4)
Governance variables				
$DOS_{i(t-1)}$	0.754	0.464**	0.639***	0.540
	(0.507)	(0.183)	(0.190)	(0.797)
$SOS_{i(t-1)}$	-0.023	0.074	0.142	0.018
	(0.373)	(0.053)	(0.099)	(0.063)
$LPS_{i(t-1)}$	-0.061	0.108*	0.112*	0.092
	(0.202)	(0.061)	(0.062)	(0.078)
$FOWNS_{i(t-1)}$	-1.608***	-0.144	-0.315	0.394
	(0.461)	(0.281)	(0.338)	(0.368)
$INDIR_{i(t-1)}$	-0.118	0.213	-0.031	-0.105
	(0.718)	(0.433)	(0.675)	(0.359)
$BODSIZE_{(t-1)}$	-0.313	-0.144	-0.048	-0.413***
	(0.273)	(0.137)	(0.199)	(0.143)
$LEV_{i(t-1)}$	-0.252*	0.224*	0.152*	0.168
	(0.144)	(0.123)	(0.082)	(0.153)
Control variables				
$FIRSIZE_{i(t-1)}$	0.309***	0.132***	0.189***	0.189***
	(0.041)	(0.019)	(0.030)	(0.025)
AGE_{it}	-0.011	-0.024	0.031	-0.076*
	(0.071)	(0.041)	(0.043)	(0.045)
Regional dummies	yes	yes	yes	yes
Industry dummies	yes	yes	yes	yes
Year dummies	yes	yes	yes	yes
Observations	3418	5037	2856	5448
Hansen test (*p* values)	16.59 9 0.121)	14.66 (0.329)	11.21 (0.426)	12.14(0.353)
AR1 (*p* values)	-3.99 (0.000)	-7.77 (0.000)	-6.48 (0.000)	-6.32 (0.000)
AR2 (*p* values)	-0.84 (0.476)	-0.62 (0.532)	-1.27 (0.202)	-1.47 (0.143)

Notes: The dependent variable in all columns is agency costs measured using the asset utilization ratio. All equations are estimated using a system GMM estimator. *AR1 (AR2)* is a test for first- (second-) order serial correlation of the differenced residuals, asymptotically distributed as $N(0,1)$ under the null of no serial correlation. The Hansen *J* test of over-identifying restrictions is distributed as *Chi*-square under the null of instrument validity. We treat all right-hand side variables except firm age as potentially endogenous: levels of these variables dated *t*-2 and further are used as instruments in the first-differenced equations and first-differences of these same variables lagged once are used as additional instruments in the level equations. Regional, industry, and time dummies are always included in the instrument set. Standard errors are in parentheses. ***, **, and * denote significance levels of 1%, 5% and 10%, respectively. See Table A5.1 in the Appendix for definitions of all variables.

Chapter 6

Conclusions

6.1. Background

Corporate governance plays a central role in the direction and control of corporations in order to ensure the interest of shareholders and other stakeholders are met through efficient and effective use of resources. The main focus of corporate governance research is the establishment of mechanisms that can align the conflicting interest of shareholders and managers, on the one hand, as well as between majority shareholders and minority shareholders, on the other, thereby mitigating agency costs. Agency theory is used as the dominant theoretical framework underlying corporate governance research.

As part of China's wider economic reform initiated in the late 1970s, the government has adopted various strategies aimed at improving the corporate governance of former SOEs. In the 1990s, the Chinese government resorted to the corporatization and partial privatization of former SOEs, which are characterized by the separation of ownership and control. Yet, the Chinese government has often retained considerable ownership stakes in former SOEs. These features of China's modern corporations resulted in conflicts of interest not only between the managers and the owners, but also between the controlling shareholders and minority shareholders. This was mainly due to weaker incentives for managers, and soft budget constraints, as well as from the fact that the government often tended to use firms to achieve its social and political objectives such as full employment (Lin et al., 1998; Kato and Long, 2006a,b,c and 2011). Additionally, since before the 2005 split-share-reform, the majority of shares were non-tradable, controlling shareholders could not benefit from share market performance, leading them often to reap private benefits via tunnelling at the expenses of minority shareholders (Jiang et al., 2010; Chen et al, 2012). Furthermore, external disciplining mechanisms such as the market for corporate control and managerial labour markets were not well developed.

In this study, we have investigated the impact of managerial ownership and other internal governance mechanisms on various aspects of Chinese listed firms' behavior. Making use of a large panel of Chinese listed firms over the period 2003-2010, we have focused our investigation on three main themes.

Our first empirical study (Chapter 3) uses a dataset made up of 1240 Chinese listed companies over the period 2004-2010[86], to examine the effects of managerial ownership, other ownership types, and board characteristics on firms' exporting decisions, distinguishing firms into state- and privately-controlled. This study uses a variety of estimation methodologies such as the random effects probit and tobit, and the system generalized method of moment (system GMM) estimators to draw robust statistical inferences.

Our second empirical study (Chapter 4) uses the same dataset to examine, for the first time in the Chinese context, the extent to which managerial ownership affects investment both directly, and indirectly by mitigating the effects of financing constraints. This study thus fits into the vast literature that follows Jensen and Meckling (1976) to show that managerial incentives can have a real impact on both corporate financial structure and investment. Although limited evidence is available from developed countries on this topic, to the best of our knowledge, no study has examined the impact of managerial ownership on the investment and financial constraints of Chinese firms. This study fills this gap. Our empirical analysis uses the Euler investment equation framework, which is explicitly derived from the dynamic optimization "Euler condition" for imperfectly competitive firms that accumulate productive assets under the assumption of symmetric and quadratic adjustment costs. The system GMM estimator is used to estimate investment equations, which control for unobserved heterogeneity and endogeneity.

In contrast to a large body of empirical studies that have analysed the impact of ownership and governance mechanisms on various types of firm behavior and performance indicators, only a limited number of studies have presented evidence on the direct effects of ownership and governance mechanisms on agency costs. In China, during the last decade, there have been significant changes in the ownership and

[86] Although we use data over the period from 2003 to 2010 in the other empirical chapters, in the first empirical study we start with 2004 since we were able to purchase export data from GCCET LTD. only from 2004 onwards.

governance structure of listed firms with a view to mitigate agency conflicts and thereby enhance efficiency and profitability in these firms. Yet, to the best of our knowledge, there is no single study providing direct evidence on the relationship between agency costs and ownership and other governance mechanisms in China. Our third empirical chapter (Chapter5) is directed towards providing fresh and new evidence on this relationship using recent data over the period of 2003-2010.

6.2. Summary of main findings

The core hypothesis tested in our first empirical chapter is that there is a non-monotonic (inverted U-shaped) relationship between managerial ownership and firms' export propensity and intensity. Consistent with our prediction we find that increasing managerial ownership is associated with a higher probability to enter export markets, and higher export intensity. Yet, after a threshold level of ownership of 23%-27% is reached, managers' entrenchment tendencies become prominent, discouraging internationalization activities. We also observe that state ownership is negatively associated with export intensity; that the larger the board size, the lower the firm's export propensity and intensity; and that firms with a higher proportion of independent directors in the board are generally less likely to export. Finally, larger, younger firms with higher liquidity are more likely to export and are also more likely to display higher export intensity. Our findings, which are robust to using different estimation methods, are mainly driven by non-state firms in the post-reform period.

Based on the empirical investigation undertaken in Chapter 4, we document that investment decisions are systematically related to managerial ownership in two ways. Firstly, by aligning managers' incentives with the interests of shareholders, managerial ownership exerts a positive direct effect on corporate investment decisions. Secondly, we document that, by acting as a form of credible guarantee to lenders and by signalling the quality of information in the capital markets, managerial ownership helps to reduce the degree of financial constraints faced by firms (which we measure by the sensitivity of investment to cash flow). These results are consistent with theoretical predictions of agency and signalling arguments according to which by lowering agency and

information costs, insider ownership stakes in the firm reduce the cost of external finance, relax liquidity constraints, and, hence, promote optimal investment decisions.

Managerial ownership exerts a positive direct and indirect effect on corporate investment as it provides managers with residual claims on the firm and thus incentives to mitigate the agency costs arising from the separation of ownership and control which characterizes Chinese listed firms (Lin et al 1998; Kato and Long, 2006a,b,c). Furthermore, in an environment with severe information asymmetries such as the Chinese one (Morck et al., 2000; Wang et al., 2009; Gul et al., 2010), increasing managerial ownership further helps to pass to the capital market the information that managers are committed to reduce agency costs and make value enhancing investment decisions. This helps to reduce costs of adverse selection resulting from the asymmetric information between the firm and outside investors/lenders. These findings provide new insights into the mechanisms aimed at enhancing investment efficiency by alleviating agency and information problem for Chinese listed firms.

When distinguishing the effects of managerial ownership on investment between state- and privately controlled firms as well as between the pre- and post-reform period, we find that managerial ownership works as an effective governance device influencing investment and financial constraints only in the post-reform period for privately controlled-firms. Moreover, we provide additional evidence that state ownership lowers the sensitivity of investment to investment opportunities.

Combining the direct and indirect effects of managerial ownership on corporate investment suggests that Chinese privately listed firms face underinvestment problem. Thus, in line with the vast majority of studies on Western countries, we confirm that Chinese listed firms face financial constraints, and that privately-controlled firms tend, as a consequence, to underinvest. This finding is consistent with recent literature on China (Xu et al., 2013; Tsai et al., 2014). Although our analysis is mainly based on Euler investment equation, our results are robust to estimating a reduced form investment equation which has traditionally been used to estimate investment equations based on the Q theory of investment.

In our third chapter, controlling for unobserved firm characteristics and endogeneity, we document that managerial ownership and debt financing work as

effective corporate governance mechanisms in mitigating agency costs. In particular, we find that high levels of managerial ownership and debt help the firms to lower the agency costs they face. When distinguishing the effects of governance mechanisms on agency costs between state-controlled and private-controlled firms, as well as between the pre and post– split share structure reform period, we find that the internal governance mechanisms mainly affect agency costs in privately-controlled firms and in the post-reform period. Furthermore, whilst the proportion of independent directors and board size generally do not affect agency costs in Chinese listed firms, larger boards are associated with higher agency costs in state-controlled firms. By contrast, we also find some evidence that legal person shareholding helps to mitigate agency costs in the post reform period for private- controlled firms.

6.3. Implications

Our research has significant policy implications. First, the Chinese government's recent policies aimed to reform firms' ownership structure and encourage managerial ownership in listed firms have been successful. All three empirical chapters in this thesis consistently provide evidence suggesting that managerial ownership has emerged as an important governance mechanism in the post reform period, which influences firm's outcomes significantly. Managerial ownership helps to reduce agency problems and improve the informational environment in the capital markets. It also induces more efficient investment decisions and exporting activities. Yet, these positive effects of managerial ownership are mainly seen in non-state firms. This is consistent with our data which show that managerial ownership has increased significantly only in private-controlled firms, and suggests that managerial ownership should be further encouraged in the state-controlled sector. This can be addressed through optimal incentive contract systems. Furthermore, given the concave relationship between managerial ownership and risk taking activities such as international expansion, firms should decide the optimal level of managerial ownership depending on the nature of their business. [87]

[87] In this case, firms can also consider stock options, which other research based on US data shows to increase managers' risk aptitude. See, for example, Panousi and Papanikolaou (2012) for a detailed discussion.

Our findings show that although managerial ownership has emerged as an important governance mechanism in the post reform period consistent with the prediction of Walder (2011), it does not work as a useful mechanism in state-controlled firms. While Martine and He (2011) show that managerial ownership is negatively associated with state ownership, Chen et al. (2011) and Kato and Long, (2006 a, b, c) provide evidence suggesting that large government ownership and control weaken the positive effects of these managerial incentives in SOEs. Lin et al., (1998) argue that due to government's policy burdens and soft budget constraints, managerial incentive contracts may not work effectively in state controlled firms. Fan et al. (2011) suggest that top executives in SOEs are more concerned with satisfying politicians and political career advancement rather than maximising profit. These arguments suggest that managerial ownership may not work as an effective governance mechanism in mitigating agency problem.[88]

Second, our study shows that state ownership is negatively associated with the sensitivity of investment to investment opportunities, and with exporting activities. Taken together, these pieces of evidence suggest that the considerable government ownership which still characterizes the majority of Chinese listed firms should be further reduced so as to increase operational efficiency (which reduce agency costs) and enhance efficient resource allocation.[89]

In addition, our findings also suggest that companies should be encouraged to have smaller boards and to pay particular attention to the quality of the independent directors in their boards.

Finally, consistent with recent empirical evidence, our study shows that state owned firms face financial constraints to an even greater extent than private-controlled firms. This suggests that the recent banking system reform has been successful in mitigating the soft budget constraints which had been for a long time enjoyed by the state controlled firms, and in reducing the long standing lending bias against the private sector.

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[88] In contrast, using data from 970 Chinese listed firms over the period of 2007-2008, Liu et al. (2012) argue that managerial ownership is positively associated with the performance of state-owned enterprises (SOEs).

[89] Also see Kato and Long (2006a,b,c and 2011) and Chen et al. (2008) who also reach a similar conclusion.

6.4. Limitations and suggestions for further research

Whilst our research suffers from a number of limitations, these limitations stimulate a number of researchable ideas and open more avenues for future investigation.

Firstly, since a limited number of firms have been involved in Outbound Foreign Direct Investment (OFDI) during our sample period (Morck et al., 2008), we only use exports as a measure of firms' degree of internationalization. In the future, we aim at complementing our study by also employing other measures of internationalization, such as OFDI.

Secondly, we do not focus on the quality of the CEOs/top management team, such as their international experience and education. Yet, these may have an important bearing on firms' efforts in venturing abroad. As these data are not available in standard databases, a questionnaire-based survey would have to be conducted in order to complement this study. This is on the agenda for future research.

Third, in future research, we plan to undertake a comparative analysis of the effects of managerial ownership and other forms of corporate governance on a range of different corporate activities in China, other emerging economies, and developed countries.

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