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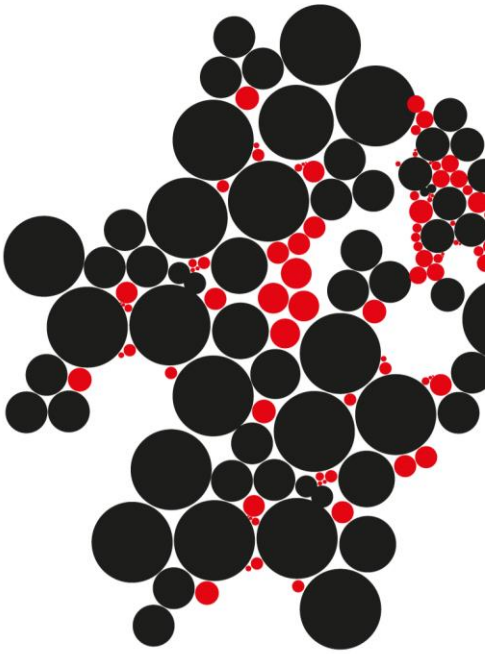

THE IMPACT OF OWNERSHIP STRUCTURE ON CAPITAL STRUCTURE

Evidence from listed firms in China

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Abstract

This study examines the impact of ownership structure on capital structure of non-financial Chinese listed firms from 2007 to 2012. Pooled OLS regression is used to investigate the influence of ownership related variables on firm's capital structure decision. The independent variables include ownership concentration, managerial ownership, state ownership and legal person ownership, controlling for the influence of common firm-related variables and industry effects.

The significantly reversed U-shape nonlinear relation between ownership concentration and capital structure suggests that there might be an optimal level of ownership concentration. There is no evidence that managerial ownership affects firm's capital structure. The positive relation between state ownership and capital structure confirms the role of state in firms' corporate financing decisions, firms with state ownership prefer issue more debt to resolve severe agency problem between shareholders and managers. Besides, firms with state ownership access to bank loans easier than firms without state ownership, as well as access to long-term loans. There is a weak positive relation between legal person ownership and capital structure, the highly correlation between state and legal person makes the result less reliable.

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Contents

1 Introduction

1.1 Background of the study

Since the proposed Modigliani and Miller theory (Modigliani & Miller, 1958) in last century, capital structure has been one of the most important topics in corporate financial fields. Capital structure refers to the financing structure of the firm through debt, equity and combination securities. The constitution of debt and equity reflects the way firms seeking profit maximization. Thus, capital structure will markedly influence firm value.

Capital structure theory studies firm's financing structure and the factors influencing capital structure. Bulk literatures focus on trade-off and pecking order theory to explain firms' debt financing decisions. These studies have already identified certain key determinants of capital structure, such as firm size, growth opportunity, profitability and tangible assets, etc. (Booth et al., 2001; Rajan & Zingales, 1995; Titman & Wessels, 1988). Other than these common determinants, agency theory as proposed by Jensen & Meckling (1976) argues that, agency costs arising from the conflict of interests between managers and shareholders also influence firm's capital structure. Regarding to the well research of other two capital structure theories, this study mainly focus on agency theory and try to find out agency costs related determinants which influence firms' capital structure decisions.

Corporate finance theories suggest that, agency cost influence capital structure choice, while corporate governance aims to mitigate the agency problems (Hasan & Butt, 2009). Thus the agency theory postulates the potential relationship between capital structure and corporate governance structure through the connection with agency costs. Corporate governance is used as manage and control system for the corporation. According to modern capital structure theory, shareholders and creditors provide funds for the corporation and control the company, while managers in fact manage the company to maximize the value of shareholders. The different preference and impact between managers and shareholders, as well as the interests of

different parties will influence the financing decision, and thus determine different capital structure choice of the firm.

Corporate governance system could effectively govern and mitigate the corporate conflicts between shareholders and mangers and between controlling shareholders and minority shareholders through internal and external control mechanisms (Bai et al., 2004). Internal controls aim to mitigate the conflicts between shareholders, managers, board of directors and other stakeholders through surveillance and control of management, which is under control of managers and shareholders within the corporation. Among the internal governance mechanisms, ownership structure is crucial. Shareholders exert influence on managers to reduce agency conflicts by managing ownership structure (Bai, et al., 2004). External corporate governance mechanisms focus on disciplining and monitoring roles outside of the firm, such as market for corporate control (Ehikioya, 2008).

According to the requirement of corporate law of China, the corporate governing structure of listed firms in China consists three parts, which are shareholders, board of directors and board of supervisors (Kato & Long, 2006). Despite the similarity of corporate structure with European countries and the United States, the ownership structure of listed firms in China is significantly different with firms in those market economies.

The most important feature of this concentrated ownership structure is the dominance of government ownership (Sun & Tong, 2003). Most listed firms are reorganized from state-owned enterprises (SOEs), after the IPO, the shares of listed SOEs are essentially controlled by the government. Even after share split reform in 2005[1], the government still maintains its ownership control and influence the capital structure choice of listed firms (Liu et al., 2011). Furthermore, the high level of ownership concentration and low level of managerial ownership lead to sever agency conflicts between managers and investors. With lower percentage of managerial ownership, managers have no incentive to increase investor wealth and firm value, but pursue personal benefits.

[1] In 2005, China's Securities Regulation Commission (CSRC) published the document of Split Share Structure

These distinctive characteristics illustrate the importance of corporate governance on firm's financial decisions. Moreover, corporate takeovers are nearly scarce in China, thus market for corporate control is not used as a device for disciplining corporate managers (Zhuang et al., 2000). Bhabra et al. (2008) argue the distinctive characteristics of Chinese financial market that are related with corporate capital structure choice, such as high information asymmetry, highly concentrated ownership and a lack of external market for corporate control. Therefore, internal corporate governance mechanism, to be specific, ownership structure is more crucial for Chinese listed firms. While external control may be less influential. Based on these arguments, it's believed that the determinants of capital structure of Chinese firms are consistent with the conventional theories but also driven by specific Chinese characteristics (Moosa et al., 2011). The unique ownership structure of Chinese listed firms makes it as important determinant to influence firm's capital structure.

1.2 Objective

In line with the above background, the primary objective of this study is to investigate the impact of ownership structure on capital structure choice of listed firms in China.

Despite the recent literatures discussing the impact of ownership structure on firm's capital structure, most studies investigate partial aspects of ownership structure. Several literatures discuss the impact of ownership concentration and state ownership, but neglect the managerial ownership. The reason is the relatively low level of managerial ownership in Chinese listed firms. However, with the development of corporate governance, managerial incentive has been important to solve agency conflicts between management and investors. Institutional ownership as an important part of influencing financial decisions is ignored by most literatures. Therefore, this study will add value to introduce broad ownership structure factors and their impacts on capital structure.

This study aims to find the most relative ownership structure related factors of

influencing capital structure of Chinese listed firms during 2007 to 2012. This study uses annual data to investigate the impact of ownership concentration and the identity of ownership structure, whichever in the hands of state, institutions or families, and the impact of managerial ownership on capital structure decisions.

The following main research question can be formulated:

- How does the ownership structure influence the capital structure choice of listed firms in China?

In order to answer this research question, the following sub questions need to be answered:

- How can agency theory be used to explain capital structure?
- To what extent could ownership structure influence capital structure?

1.3 Introduction to capital structure

Capital structure is the way a firm raising capital to support its operations and future growth by using composition of debt and equity. Debt financing and equity financing are two main capital sources in business. Firms issue more debt bear high risk. An optimal capital structure should be the balance of debt and equity. Debt can be classified as long term debt and short term debt, long term debt includes bonds, long term loan and long-term notes payable. Short term debt consist short term bank loan and account payable. Equity capital usually consist common stock, preferred stock and retained earnings. Most firms employ the combination of debt and equity to finance their assets to minimize costs of capital. The formed capital structure is usually referred as leverage.

Leverage is the ratio of debt to total assets of the firm. Leverage reflects the proportion of debt financing in total assets, and could be used to measure the level of protection for creditors once the firm facing liquidation. High level of leverage usually means that a firm takes aggressive strategy for financing its future growth by issuing debt. This may increase firm's earning volatility due to the arising interest expense.

New businesses usually take certain amount of debt when raise capital. The common form of debt is bank loan, firms issuing debt need to pay interest regularly and repay

principal in due. Firms can issue long term or short term debt according to their financial strategy. Short term debt has maturity with or less than one year of borrowing. Long term debt refers to the debt that is taken for 10 years or longer.

Regarding to equity, common stock is the shares possessed by common shareholders. Common shareholders own the equity of the firm and have voting rights for the control of important company matters. Common stock holders don't have fixed dividend and thus their income is highly uncertain and contingent with company earning and market value. Like common shareholders, preferred shareholders receive dividends from firm's profits but have priority in the payment of dividend and upon bankruptcy. Besides, preferred shareholders usually have no voting rights. Retained earnings refer to the portion of profits that firm doesn't distribute to shareholders but are reserved for future investments.

In the point of creditors, leverage ratio is expected to be lower. Firms with lower leverage generally have enough assets to repay debt and thus creditors bearing less risk. If the total profits are higher than debt costs, shareholders obtain the increased earnings. For this reason, shareholders would prefer higher level of leverage. However, if the costs of debt financing exceed the returns of debt, it would cause financial dilemma for the firm and eventually lead to bankruptcy, which leave shareholders nothing. Firms raise too much funds from debt financing will increase future financial risk. Creditors will require adequate collateral to assure their pay-off. If risky investments fail, firm faces bankruptcy risk and creditors will take over the operation. The optimal capital structure is to balance the costs of debt financing and firm's economic benefits and future development.

1.4 The concept of corporate governance

Corporate governance determines the target and direction of corporate operation. The separation of ownership and control gives management powers to purse private benefits with the expense of shareholders, which increases agency costs and decreases economic efficiency. Corporate governance has been an important element for managing corporate operation and improving economic efficiency. John and

Senbt (1998) state that corporate governance is effective control mechanism through which firm's stakeholders could exercise control over corporate insiders and management to protect their interests. Firm's stakeholders include shareholders and creditors, as well as other stakeholders like employees and suppliers.

Corporate governance commits to resolve the agency problems which arising from the separation of ownership and control. Effective corporate governance depends on the combination of internal and external governance mechanisms (Bai, et al., 2004). Internal governance aims to diminish the conflicts between management, shareholders, board of directors and other stakeholders within the firm and in the control of managers and shareholders of the corporation. The internal corporate governance mechanisms include ownership structure which reflects the distribution structure of corporate control, board structure like board size and board of supervisors (Ehikioya, 2008). External governance depends on the public laws and disciplining mechanism which exert influence to the board of directors, management and firm operation from the outside of the corporation.

The common external governance includes product market competition, market manager competition, market for corporate control and creditor monitoring mechanism. An active market for corporate control is essential for the managers to allocate resources efficiently (Bai, et al., 2004). Good corporate governance helps firms to raise funds and guarantee the return of investments to capital providers. It provides effective incentives, restrains and surveillance for managers to reduce agency costs arising from moral hazard and adverse selection and maximize the value of shareholder and the firm.

1.5 Structure

The thesis is structured as follows. Chapter 1 introduces the research question, discussed the background, objective and structure of the study. Chapter 2 reviews the agency theory and ownership structure, as well as and corporate governance practice and ownership structure in China. Chapter 3 presents empirical evidence and develop testable hypotheses. Chapter 4 describes the data and research methodology.

Chapter 5 presents the main empirical results and interpretation. Chapter 6 summarizes the conclusion of the study.

2 Literature review and background in China

Since the seminal work of Modigliani and Miller (1958), several major theories have been developed to explain firms' capital structure decisions. The trade-off theory, pecking order theory and agency theory are three main theories to investigate capital structure both in developed and developing countries. Extensive studies have already investigated capital structure by using trade-off and pecking order theory, and show quite consistent results. Thus this study focuses on agency theory to explain the possible corporate conflicts and the impact on capital structure decisions[2]. Meanwhile, theoretical framework about ownership structure is illustrated. And then introduce the ownership related background situation in China.

2.1 Theoretical framework

2.1.1 The agency theory

The agency theory proposed possible conflicts of interest between related parties when firms make financial decisions: conflicts between shareholders and managers, and conflicts between shareholders and debt holders (Jensen, 1986; Jensen & Meckling, 1976).

The agency theory postulates that agency costs arising from the conflict of interest between corporate managers and shareholders, is due to the separation of ownership and control. The conflict is a potential determinant of capital structure. This agency costs is known as free cash flow hypothesis (Jensen, 1986). Corporate managers possess substantial free cash flow tend to increase resources under their control and invest in low return projects but not distributing to shareholders. Firms could change capital structure to solve this agency problem. To be specific, increase leverage level to constraint management activities. If the firm has expected future growth opportunities, debt obligation helps to limit the overinvestment of free cash flow. Debt could also be used to indicate management's willingness to pay out cash flows (Harvey et al., 2004). Increased debt forces managers to pay future excess free cash

[2] See appendix for the brief review of the trade-off theory and pecking order theory

flows for interest and repayment. Thus, firms reduce agency costs of free cash flow through debt. Besides, high level of debt increases the bankruptcy risk if firm couldn't repay debt in time. The potential bankruptcy costs force managers to work hard to make valuable investment decisions, and consequently reduce the risk of bankruptcy (Grossman & Hart, 1980).

Another potential conflict arises between shareholders and debt holders which causes agency costs of debt financing (Jensen & Meckling, 1976). Firstly, shareholders may choose to invest high risk projects to maximize returns of shareholders but damage the benefits of debt holders. When the investment successfully receives profits against the debt, shareholders capture most of extra benefits. However, debt holders undertake the failure costs if investment is failed. As a result, shareholders might benefit from investing risky projects even if they are value decreasing (Harris & Raviv, 1991). Secondly, as Myers (1977) discussed, when firms have high amount of debt, the expected benefits of investing projects will be used to repay debt. Thus, shareholders will lack incentives to support these investments or invest suboptimally.

Similarly, corporate governance literatures also stress the conflict of interests between large controlling shareholders and minority shareholders (Hasan & Butt, 2009; Liu, et al., 2011; Shi, 2010). The expropriation hypothesis suggests that, with concentrated ownership, large controlling shareholders expropriate wealth from minority shareholders, with the expense of minority shareholders (Shleifer & Vishny, 1997). This conflict would decrease firm value.

When firm uses debt financing, it decreases the conflicts of interest between managers and shareholders, but increases the conflicts between shareholders and debt holders. Thus the agency theory states that the optimal capital structure of the firm could be determined by minimizing the possible agency costs arising from stakeholders involved conflicts.

2.1.2 Corporate governance and ownership structure

Generally, there are two levels to discuss ownership structure. The first one is the percentage of shares held by first largest or first five largest shareholders, which indicates the concentration level of ownership. The second aspect is the identity of ownership, which refers to the percentage of shares held by different shareholders. Ownership structure plays monitoring role in firm's financial operation through ownership concentration or identity of shareholders (Jong, 2002).

Agency theory suggests that ownership structure could be used to mitigate the conflict of interests between managers and shareholders (Jensen & Meckling, 1976), as well as the conflicts between large controlling shareholders and minority shareholders (La Porta et al., 1999). Ownership structure determines the organizational structure of the corporation, and different shareholding parts play different function in corporate governance. The differed corporate governance function influences the financing choice and effect the proportion of debt and equity the firm will choose (Shi, 2010). Thus, firm's capital structure choice depends on who actually control the firm (Pindado & La Torre, 2011).

Based on the extent of ownership concentration, there are dispersed and concentrated ownership structures. In developed countries such as the US and the UK, ownership structure is widely dispersed and there are no large controlling shareholders (Xu & Wang, 1999). Dispersed shareholders have no willing and capacity to monitor management, thus managers virtually control the business. In this condition, corporate governance largely relies on legal system to protect shareholders' benefits. In developing and emerging economies, legal system is weak to protect the interests of investors. Ownership structure is highly concentrated in the hands of a few large shareholders. Large shareholders are active in corporate governance, they have incentives to monitor management activities to maximize firm value (La Porta, et al., 1999).

2.1.2.1 Ownership concentration

Large shareholders have incentive and power to monitor and control management (Shleifer & Vishny, 1986). With the increase of ownership share level, shareholders have more economic interests in the firm. Thus concentrated ownership give shareholders incentive to control and monitor the action of managers. Debt as corporate governance is cheaper than direct intervention, thus is chosen by large shareholders to mitigate management perquisite consumption (Short et al., 2002). The existence of large external shareholders makes it difficult for managers to adjust debt ratio as their own interests (Friend & Lang, 1988). Thus, ownership concentration mitigates the agency cost between shareholders and managers. Besides, as control mechanism argued, shareholders may prefer debt than equity financing to avoid ownership dilution, and thus retain control on the firm. This suggests a positive relation between ownership concentration and capital structure.

On the other hand, large shareholders with concentrated ownership can be used to substitute debt to monitor management activities (Grier & Zychowicz, 1994). Thus substitution hypothesis predicts a negative relation between ownership concentration and leverage. Moreover, expropriation hypothesis suggests that, large controlling shareholders also have motive and the power to expropriate their personal interests with firm insiders at the expense of minority shareholders (Shleifer & Vishny, 1997). This increases agency cost for debt and largest shareholders would prefer equity financing to expropriate from minority shareholders (Liu, et al., 2011).

Large shareholders possess excess control rights than cash-flow rights would have incentives to engage in tunneling activities to extract corporate resources for private benefits (Zou & Xiao, 2006). Large shareholders expropriate minority shareholders by transferring resources out of companies, or supporting nonprofitable projects for their private benefits (Johnson et al., 2000).

Furthermore, with excess control rights, large shareholders might engage in risky investments to grab private interests but leave cost of financial failure behind for creditors (Lin et al., 2011). Such tunneling activities increase monitoring costs and

make banks face potential credit risk. Thus, lenders would raise loan price and borrowers will have to pay high interests (Lin, et al., 2011). If so, firms would have incentive to issue equity to reduce debt cost. Under this situation, ownership concentration might be negatively related with capital structure.

2.1.2.2 Managerial ownership

The increase of managerial ownership force managers to take the responsibility of wealth consequence and thus coordinates the interests of management and shareholders. This reduces managerial incentives to consume perquisites and expropriate shareholders wealth (Jensen & Meckling, 1976). As mentioned before, debt can be used to monitor managerial activities. Thus, debt and managerial ownership can be considered as alternative mechanisms to mitigate agency costs (Moh'd et al., 1998). Then with the increase of managerial ownership, debt used as disciplining role can be reduced.

In addition, corporate managers face higher level of non-diversifiable risks than shareholders (Brailsford et al., 2002). Manager self-interest view argues that with the increase of managerial ownership, managers become more risk averse and have incentives to reduce debt level (Firth, 1995; Friend & Lang, 1988). The higher level of managerial ownership, the higher motivations managers would have to reduce risk (Huang & Song, 2006).

On the other hand, large shareholders could force managers to engage in high risky investments, which increase agency conflicts between shareholders and debtholders, thus increase the agency costs of debt (Pushner, 1995). With the increase of managerial ownership, managers are more risk averse and thus have less incentive to involve in this asset substitution (Short, et al., 2002). Then managers have consistent interests with debtholders, which reduces the agency costs for debt. This suggests a positive relation between managerial ownership and debt level. Moreover, managers prefer debt financing than equity to reduce potential risk of hostile takeover. Debt increases mangers' voting rights, give them control on the given level of investment in the firm (Stulz, 1988).

2.1.2.3 Ownership identity

The major external (non-management) shareholders include individual investors, institutional investors and firm's founding family (Firth, 1995). Individual investors with widely dispersed ownership own small percentage of shares in the firm, and would have no or weak impact on firm's financial decisions.

Institutional investors include banks, pension funds and insurance companies, etc. Institutional investors could effectively lower non-systematic risk the firm faced through financial portfolios (Wang, 2009). Institutional investors have well-diversified portfolios and focus on the profitability of the firm. They have large stake and interest in the firm, and thus have incentive to monitor management's activities and influence firm's financing decisions (Firth, 1995). Thus institutional investors prefer high level of debt to restrict managerial opportunism. On the other hand, if institutional investors effectively engage in monitoring managers, then the use of debt as disciplining role can be reduced. Firms with concentrated institutional ownership should have lower level of leverage (Grier & Zychowicz, 1994).

Family held firms are important part of large shareholders with special incentive structures (Margaritis & Psillaki, 2010). Family shareholders concern long-term survival of the firm than other shareholders, thus have more consistent interests with bondholders (Anderson et al., 2003). This long-term investment focus increases trust between family owners and debtholders, and reduces expropriation and information asymmetries of owners on debt lenders (Schmid, 2013). If so, family firms may have lower agency costs of debt and tend to issue more debt. On the other hand, family firms have relatively non-diversifiable portfolios than widely held firms, and thus have incentives to minimize firm risk, in this situation, equity financing is suitable choice as firms bear lower risk of default (Anderson & Reeb, 2003).

2.2 Corporate governance and ownership structure in China

2.2.1 Corporate governance practice

Corporate governance in China has achieved markedly development with the development of stock market and SOEs reform (OECD, 2011). The stock market regulations has been developed to control and supervise the securities markets. SOEs reform restructures the central administration system of state-owned enterprises to market economy. SOEs reform drives the listed firms to modern enterprise system.

However, despite the great progress in China, the particular ownership structure leads to quite low quality of corporate governance (Kato & Long, 2006). Different with developed countries, there are few institutional investors in Chinese stock market. Instead of are so called legal person shares held by domestic institutions. In China, most listed firms are restructured from SOEs, state ownership and legal person ownership are led into ownership structure to maintain the position of the state. Thus state still actually control and exerts impact on listed firms. Dispersed individual shareholders have no incentive and capability to monitor managerial performance (Gao & Yueh, 2009). Managerial ownership is one of the way Chinese corporations to adopt Western corporate governance, though still with very low proportion (Ruan et al., 2011). The low quality of board of directors and board supervisors makes them difficult to monitor and control management. State and legal person ownership can't freely trade on stock market, thus it's impossible for other firms to carry out merge or acquisition. Therefore the market for corporate control is relatively low. All these indicate a low quality of corporate governance in China.

2.2.2 Ownership structure

The overall feature of ownership structure in China is the leading position of state shares, concentrated ownership and lower percentage of managerial ownership. These unique ownership characteristics make the corporate governance practice of Chinese listed firms different from other countries.

Most listed companies are restructured from SOEs, though ltate shares are dramatically reduced after the share split reform, state continues to be the dominant shareholders of non-tradable A-shares. Common shares are classified as four categories: A-shares, B-shares, H-shares and N-shares, which are traded based on shareholders' residency and nationality. A-shares include state, legal-person, employees and public shares. A-shares are the largest part of stock market and can only be sold to domestic investors. B-shares are held by foreign investors and large domestic financial institutions, H- and N-shares are issued for foreign investors. Among the shares, only public shares and B-shares are publicly traded in the stock market, others are non-tradable shares. State and legal-person shares are non-tradable and largely controlled by the state and legal-person shareholders. Employees and foreign investors only possess small majority of total outstanding shares, and thus are not included in this study.

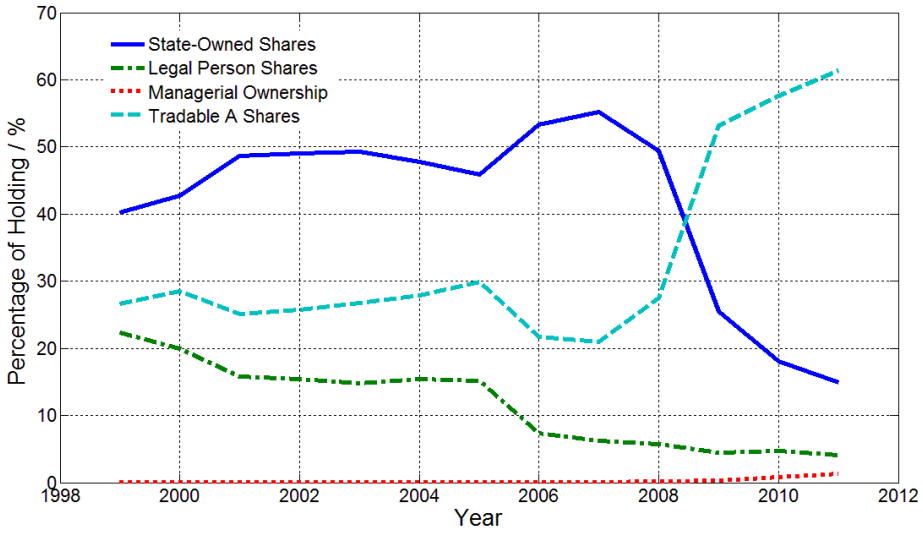
The state shares are held by the central government, local government bureaus and local state assets management companies or held by state-owned enterprises (Delios et al., 2008). The legal person shares are held by domestic institutions with a legal person status, including non-bank financial institutions, joint stock companies, banks, foundation and mutual funds, and SOEs. The legal person shares can be divided as state owned legal person shares and non-state owned legal person shares. State owned legal person shares refer to the shares held by SOEs and joint stock companies, state is the majority shareholder but possesses less than 100% shares. Despite the ultimate control of state for legal person shares, they have different profit objective with state shareholders.

Most listed companies in China have a mixed ownership structure, the state, legal person and public investors are the three dominant ownership forms. Prior to share split reform, state and legal person shares are major parts of non-tradable shares, among which is the leading position of state share. Among the total shares, only small fraction is tradable shares which are mostly possessed by dispersed individual investors. Since the share split reform in 2005, state ownership fraction has gradually declined, and parts of non-tradable shares are transferred to tradable shares and can

be freely traded in market. However, the state still exerts pressure on the financial policy of SOEs.

Figure 2-1 shows the ownership structure trend of A-share listed firms in China from 1999 to 2011. The percentage of state ownership climbs from 40.3% in 1999 to 55.2% in 2007, though with a decrease in 2005. Legal person ownership declined from 22.4% to 6.2% during the years 1999 to 2007. The share split reform, which started from 2005 and with basic completion in 2007, markedly changed the ownership structure. The proportion of state and legal person ownership declines to 15% and 4% in 2011. while the portion of tradable A shares is gradually increased to 61.3% in 2011, and public investors hold more shares to participate in corporate operation. However, the state still controls substantial ownership of privatized firms and influence financial decisions of these firms. Compared with state and legal person shareholders, managers own very low percentage of shares in listed firms. However, the average percentage of shareholding gradually increases from 0.0094% in 1999 to 1.3733% in 2011, shows the effect of managerial equity compensation.

Figure 2- 1 Ownership structure of A-share listed firms in China (1999-2011)



Data source: China Stock Market and Accounting Research (CSMAR) database

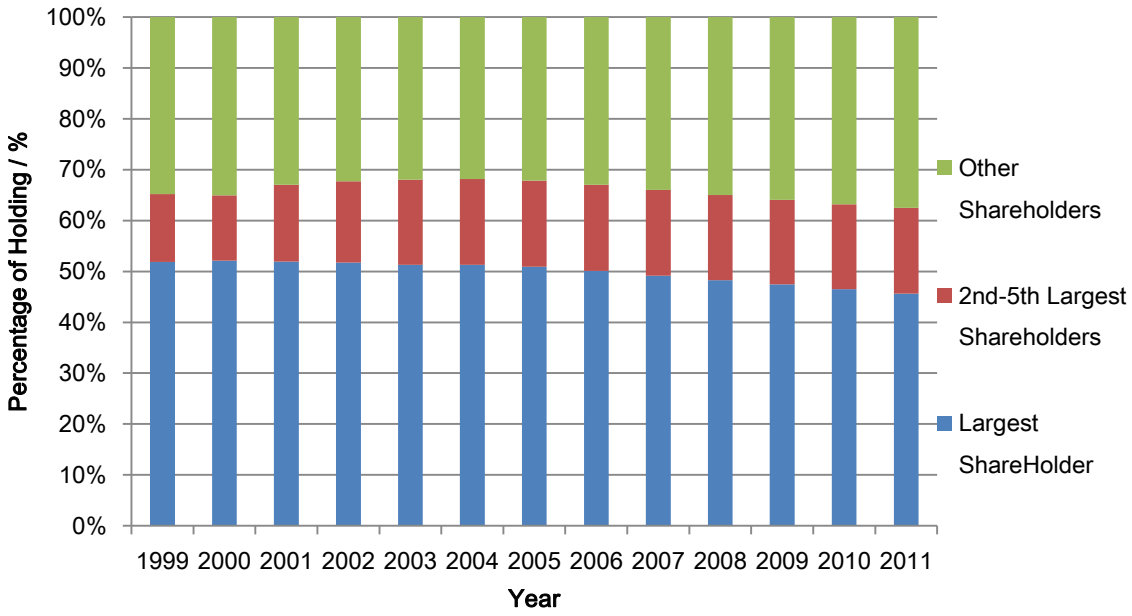
2.2.2.1 Ownership concentration

The most significant feature of Chinese listed firms is the relatively high degree of ownership concentration. The government established capital market to resolve the financing difficulty of SOEs. In order to protect the controlling position of

government capital, state owns relatively high percentage of shares, and can't be traded in the market. Thus, most listed firms restructured from SOEs have single large shareholder. Despite the share split reform, the capital market development still lags behind developed countries. The tradable shares are very dispersive, and most listed firms are still controlled by single large shareholder. The first large shareholder has absolute control for the firm. Other small shareholders possess fewer shares and thus have no power to influence firm's financial decisions.

According to Protiviti report of 2012 corporate governance of top 100 listed firms in China, the ownership concentration level of top 100 listed firms remains high. The average ratio of the largest shareholder declined for the past three years, though retained at high level of over 40% (Provititi, 2012). The report also shows that, in 2012, the highest shareholding proportion of the largest five shareholders came to 90%, and the average ratio was 59%, which shows the high ownership concentration of Chinese listed firms (Provititi, 2012).

Figure 2- 2 Ownership concentration of A-share listed firms in China (1999-2011)



Data source: CSMAR

Figure 2-2 illustrates the percentage of largest shareholder and five largest shareholders of Chinese A-share listed firms from 1999 to 2011. It demonstrates that five largest shareholders possess around 70% of total shares, which means over 70% of equity is controlled in the hands of five largest shareholders. The figure also

shows that, the first largest shareholder averagely possesses nearly 50% of total shares, and actually controls the firm. With the progress of share split reform, the percentage of largest shareholder gradually decreases from 51.9% in 2001 to 45.6% in 2011, as well as proportion of five largest shareholders.

2.2.2.2 Managerial ownership

Prior to share split reform, managers own very low percentage of firm shares in China. With the development of corporate governance and managerial incentive, managerial ownership gradually increases though still has very low proportion. Managers have incentive to pursue firm profits and achieve maximization of firm value. However, as the relatively low level of managerial ownership, the equity benefits are far away attractive than salary. Managers as the actual operator of listed firms, but without managerial compensation, they care about their position and salary but not shareholders' interests and firm value. Managers prefer equity financing than debt to avoid bankruptcy risk and the consequence of losing control on firm.

2.2.2.3 State ownership

In China, the ownership is still highly concentrated in the hand of state. Even after share split reform, the percentage of state ownership decreases, state still relatively controls the firm. Except economic objective, the state as the owner also has social and political objectives. This brings government intervention, and thus wastes social resources. Theoretically, Chinese people are the owners of state shares, however, central and local government and other agency institutions or companies actually manage the state assets instead of citizens. The agencies and institutions are not the real shareholders of the firm, thus have no incentive to monitor and control managers. This gives managers the chance to actually control and tunnel the firm, thus leads to severe agency problem between managers and shareholders. In 2012, state owned shareholders dominated the top 100 listed firms. In top 100 listed firms, 84% of the largest shareholder was state owned shareholders, state owned entity, and 49% of the second largest and 39% of third largest shareholders were also state owned

shareholders (Provititi, 2012). As the owner of SOEs and major stated owned banks, the state put pressure on banks to provide bank loans to SOEs, thus firms with state ownership could access bank loans easier than firms without state ownership.

2.2.2.4 Legal person ownership

Legal person shares are held by domestic enterprises or institutions with a legal person status. Legal person shares can't be traded in the open market, dividend is the main approach to earn investing return. Thus legal person shareholders may focus on long term investment. Legal person shareholding represents not only state interests, but also private and collective interests. Contrasts with dispersed public shareholders, legal person shareholders have position in director of boards and supervisory board, and thus have voting rights for management alternation, capital structure policy and dividend policy. Then have incentive and capacity to monitor managers. With the process of share split reform, the percentage of shares possessed by legal person and institution investors slowly decrease, though still has relatively proportion in non-tradable shares.

3 Empirical evidence and hypotheses

Prior studies show mixed results of the relation between ownership structure and capital structure. This chapter reviews empirical evidence of ownership structure in both developed and developing economies, and develops testable hypotheses.

3.1 Evidence from developed economies

3.1.1 Ownership concentration

Empirical evidences from developed economies provided mixed results. Brailsford et al. (2002) use data of Australian listed companies to investigate the relationship between ownership structure and corporate finance policies, the result reports a positive relationship between external blockholders and leverage. Using sample of French firms, Margaritis & Psillaki (2010) investigate the effect of ownership on leverage choice. Their result find that more concentrated ownership is related with high level of debt in the capital structure, which confirms the monitoring hypothesis that shareholders use debt to discipline and monitor managers' activities. Pindado & La Torre (2011) study the impact of corporate ownership structure on capital structure of Spanish listed companies. The positive relation between ownership concentration and capital structure supports the active monitoring hypothesis. Large controlling shareholders actively monitor management and seek to control managerial discretion by issuing high level of debt.

Short et al. (2002) examine the effect of ownership on the capital structure of UK firms, the result indicates the negative relationship between large external shareholders and leverage ratio. The negative relation between large external shareholders and leverage is consistent with substitution hypothesis that large external shareholders are actively engaged in monitoring management to replace the disciplining role of debt.

La Bruslerie & Latrous (2012) sample listed firms on French stock market over the period 1998 to 2009 to test firm's leverage choice. Their research reveals a reverse U-shape non-linear relationship between shareholders' ownership and leverage.

When controlling shareholders possess small percentage of a firm's capital, debt ratio increases with shareholders' ownership, debt allows shareholders to allocate firm resources and meanwhile hold their control stake. When controlling shareholders' ownership increases, they tend to use less debt to reduce potential financial distress risk.

3.1.2 Managerial ownership

Previous studies show contrary results of managerial ownership on capital structure. Mehran (1992) investigate the relationship between firm's capital structure policy and ownership structure of US manufacturing firms from 1973 to 1983. Their research reports a positive relationship between firm's leverage ratio and managerial shareholdings. Berger et al. (1997) investigate the managerial entrenchment and capital structure of U.S. public corporations from 1984 to 1991. The result shows that CEO direct stock ownership is positively related with firm leverage, which shows the convergence of interests between shareholders and managers with the increase of financial incentives. Managers' incentive to issue debt is enhanced with the increase of share ownership. Short et al. (2002) also report a positive relation between managerial ownership and capital structure.

Jensen et al. (1992) and Firth (1995) use samples of US firms to investigate the relation of managerial ownership and debt policy and find that managerial ownership is negatively related with firm leverage. Managers possess less diversified portfolios than other shareholders and thus have more incentive to reduce potential bankruptcy risk. Bathala et al. (1994) and Chen & Steiner (1999) report negative relation between managerial ownership and leverage. The negative relation between managerial ownership and firm leverage confirms the substitution mechanism that managerial ownership instead of debt plays monitoring effect.

In addition, Brailsford et al. (2002) investigates the relation between ownership structure and capital structure and find a non-linear relation between managerial ownership and leverage. The result shows that, when managers possess lower percentage of firm shares, managers tend to issue more debt as high leverage

increases share price and consequently enhances the value of managerial holdings. However, with the increase of managerial ownership, managerial entrenchment characteristic makes managers have incentive to against risky investment, and thus decrease debt level to protect their substantial interests in the firm.

3.1.3 Ownership identity

Pushner (1995) sample the publicly listed Japanese firms between 1976 to 1989 to measure the effects of ownership structure on leverage choice. The results find negative relation between financial institutional ownership and leverage, but a positive relation between non-financial institutional ownership and leverage. Moh'd et al.(1998) use data on U.S. companies and report negative relationship between leverage and institutional shareholdings.

King & Santor (2008) employ data of Canadian listed firms from 1998 to 2005 to investigate the effects of family ownership. The result indicates that family owned companies have higher leverage than non-family firms. Family firms prefer finance their assets by using debt to control the firm, and consequently reduce ownership dilution and the risk of hostile takeover. Schmid (2013) analyze the capital structure of German non-financial firms, the result illustrates that German family firms use less debt than non-family firms. This confirms the argument that family firms tend to issue less debt to reduce potential financial distress.

3.2 Evidence from developing economies

3.2.1 Ownership concentration

There is increased empirical evidence of ownership structure on capital structure in developing and emerging markets. Céspedes et al. (2010) investigate the impacts of ownership concentration on capital structure decisions of Latin American companies from 1996 to 2005. The study shows a U-shape non-linear relation between ownership concentration and leverage. The contrary result with La Bruslerie & Latrous (2012) may be the differences of shareholder protection in developed and developing countries. At low level of ownership concentration, shareholders are more risk averse as their undiversified features, they tend to use less debt to reduce

any financial distress. With the high level of concentrated ownership, firms tend to issue more debt to avoid losing control.

Deesomsak et al (2004) investigate the capital structure determinants of four Asia Pacific countries, the result shows that the leverage is positively related with ownership concentration in three of four countries, which family holding dominates a significant proportion. The close relationship between owners and debtholders reduces agency costs of debt and thus easier access for borrowing. Driffield et al (2007) examines the effects of ownership structures on capital structure in East Asian countries and found a positive relationship between ownership concentration and leverage in family firms in Indonesia, Malaysia and Thailand. Large shareholders prefer debt financing to avoid ownership dilution.

More and more scholars pay attention to the impact of ownership structure on capital structure choice of Chinese firms. Shi (2010) study the corporate financing policy of Chinese listed firms from 1995 to 2001, the results illustrate a U-shape non-linear relationship between largest shareholding and leverage. The high level of controlling largest shareholding corresponds to lower level of leverage. The result confirms the expropriation hypothesis of largest shareholders on minority shareholders. However, when largest shareholder possesses more than certain percentage of firm shares, there is a positive relation.

Liu et al. (2011) examine the effect of ownership structure on leverage choice of Chinese listed firms and report a negative relationship of ownership concentration with firm's leverage. The result is consistent with expropriation hypothesis that largest shareholders are apt to use equity financing to expropriate minority shareholders.

3.2.2 Managerial ownership

With regard to the impact of managerial ownership on leverage in developing economics, Hasan & Butt (2009) study the relationship between corporate governance and capital structure in Pakistan equity markets and find that managerial ownership is negatively associated with capital structure. This result is consistent

with risk averse hypothesis that with the increase of managerial ownership within the firm, managers are more risk averse and thus tend to borrow less debt to reduce bankruptcy risk.

Due to the lower level of managerial ownership, there is few literatures discusse the impact of ownership structure on leverage in China. Huang & Song (2006) explore the determinants of capital structure of Chinese listed firms during 1994 to 2003, and report a negative relation between managerial ownership and leverage, with the increase of managerial ownership, managers are more risk averse due to their non-diversifiable portfolios, thus they tend to borrow less to reduce the cost of bankruptcy. This result is quite consistent with Hasan & Butt (2009).

3.2.3 Ownership identity

Hasan & Butt (2009) explore the relationship between corporate governance and capital structure in Pakistan equity markets, their research demonstrate that institutional shareholdings effectively monitor management and reduce managerial opportunism. Thus reduces agency cost for debt and firms would tend to borrow more.

Gonz á lez et al.(2012) examines family ownership and control on capital structure of Colombian firms, the study shows that family ownership is positively related with debt level. Family firms exert high level of debt to reduce the potential losing control over their firms.

As mentioned earlier, in most Chinese restructured SOEs, state acts as the dominant shareholder or a majority shareholder. State as the owner of major banks help firms more easily access to bank loans. The institutional investors are mostly legal person shareholders in Chinese listed firms. Legal person ownership is largely controlled by the government, state helps firms to reduce financial distress and makes institutions easy to apply bank loan, this postulates a positive relation between state and legal person ownership and leverage.

Bhabra, et al. (2008) investigate the capital structure of Chinese listed firms between 1992 and 2001, the positive relation between state ownership and legal person

shareholders and leverage confirms the argument that state and legal person ownership help firms to reduce financial distress costs. Li et al.(2009) study debt financing of non-publicly traded Chinese firms, the positive relation between state ownership and use of long term debt supports the result of Bhabra, et al.(2008). Shi (2010) report that firms with the state as the largest shareholder have higher level of leverage, this explains that state controlled companies may face lower financial distress and thus incline to borrow more debt. Liu, et al.(2011) also document a positive relation between state ownership and leverage. This indicates that government help firms applying for bank loans and leading to higher level of leverage. Wang (2009) study the relation between institutional ownership and capital structure of Chinese listed firms in manufacturing industry, the results show a positive relation.

In addition, there are empirical evidences that state or legal person ownership has no impacts on the capital structure of Chinese listed firms (Huang & Song, 2006; Zou & Xiao, 2006). Most publicly listed firms in China are restructured from SOEs and the state dominates the corporation. It seems state exerts effects on most listed firms, and thus no differentiation could be tested. However, with the process of share split reform, the effect of state will be reduced but still influence firm's financial decision over a long period. Thus, there should be a difference between firms with and without state and legal person ownership.

Table 3-1 summarizes the empirical evidences of the relationship between ownership structure and leverage from developed and developing economies.

Table 3- 1 Summary of selected empirical studies

	Sign	Empirical evidence from developed economies	Empirical evidence from developing economies
Ownership concentration	+	Brailsford, et al. (2002), Margaritis & Psillaki (2010), Pindado & La Torre (2011)	Céspedes, et al. (2010)
	-	Short, et al. (2002)	Liu, et al. (2011)
	Non-linear	La Bruslerie & Latrous (2012)	Shi (2010)
	No impacts		Huang & Song (2006)
Institutional ownership	+	Pushner (1995), Firth (1995)	Hasan & Butt (2009), Wang (2009)
	-	Moh'd, et al. (1998)	
Family owned	+	King & Santor (2008)	Deesomsak, et al. (2004), Driffield, et al. (2007), González, et al. (2012)
	-	Schmid (2013)	
Managerial ownership	+	Mehran (1992), Berger, et al.(1997), Short, et al.(2002)	
	-	Jensen, et al. (1992), Bathala, et al.(1994), Firth(1995), Moh'd, et al.(1998), Chen & Steiner (1999)	Huang & Song (2006), Hasan & Butt (2009)
	Non-linear	Brailsford, et al. (2002)	
State ownership	+		Bhabra, et al. (2008), Li, et al. (2009) Qian et al. (2009), Shi (2010), Liu, et al. (2011)
	-		
Legal person ownership	+		Bhabra, et al.(2008), Zou & Xiao (2006)
	-		

3.3 Hypotheses development

Lack of data on family ownership blockages us to test the impact of family ownership on firm's leverage decision. In addition, the small percentage of institutional investors in China capital market restricts its effect in corporate governance. The named institutional investors in China are largely legal person shareholders. Therefore, this study focuses on the relation between ownership concentration, managerial ownership, state and legal person ownership with capital structure. On the basis of the existing theoretical and empirical studies, the testable hypotheses are developed to examine the determinants of capital structure of Chinese listed firms.

3.3.1 Ownership concentration

Empirical evidences suggest that large controlling shareholders have concentrated ownership will have incentive to monitor and control managerial perquisite consumption. Thus debt is used as direct disciplining mechanism to control agency costs and complement other disciplinary intervention. Also, with the monitoring by large shareholders, it would be difficult for managers to adjust leverage to their own interests. The research of Margaritis & Psillaki (2010) and Pindado & La Torre (2011) support the monitoring hypothesis of large controlling shareholders. This suggests a positive relationship between ownership concentration and leverage.

However, in China, the relatively weak legal protection and corporate governance lead to highly concentrated ownership and severe expropriation behavior of large controlling shareholders on minority shareholders. Controlling shareholders control the firm and tunnel on minority shareholders by transferring and selling corporate assets, channeling funds back to support non-profit projects of parent company (Zou & Xiao, 2006). Management team of listed firms is often appointed and controlled by controlling shareholders, they tend to provide resources which only benefits controlling shareholders. In this situation, managers collude with large shareholders to expropriate minority shareholders. Thus equity financing is the best choice for listed firms to raise capital as it has no debt repayment pressure and without losing control (Xiao, 2011).

In addition, the severe expropriation problem makes creditors hesitate to provide long term debt for the firm due to the potential default risk. At the same time, high level of leverage restricts the tunneling behaviors of controlling shareholders as the resources and profits which could transferred out of the company are reduced, thus controlling shareholders have willing to reduce debt to facilitate tunneling (Xiao, 2011). Liu, et al.(2011) reports a negative relation between ownership concentration and capital structure of Chinese listed firms which confirms the expropriation problem between large controlling shareholders and minority shareholders. Further,

there are also empirical evidence that support the nonlinear relation between ownership concentration (La Bruslerie & Latrous, 2012; Shi, 2010).

Taken together, we predict that there will be a nonlinear relationship between ownership concentration and leverage.

Hypothesis1 *There is a nonlinear relationship between ownership concentration and firm leverage*

3.3.2 Managerial ownership

Due to the lower percentage of managerial ownership in Chinese listed firms, equity compensation has little incentive effects for managers and capital structure. Without effective manager market, managers are usually appointed by large shareholders and thus have tendency to collude with large shareholders to expropriate on small shareholders. If so, equity financing without restrict covenants from creditors is better choice for managers. Without monitoring and incentive mechanism, managers as actual controller of the firm would invest in non-value-maximizing projects to pursue perquisite consumption (Zou & Xiao, 2006). High level debt faces bankruptcy risk, thus equity financing is more attractive for managers to maintain their interests and position. Huang & Song (2006) and Hasan & Butt (2009) report a negative relation between managerial ownership and capital structure. Based on this, we predict that managerial ownership will negatively related with capital structure.

Hypothesis 2 *There is a negative relationship between managerial ownership and capital structure*

3.3.3 State ownership

In China, most listed firms are restructured SOEs which previously controlled by the state. Severer owner-manager conflicts occur with the existence of state ownership. The multilayered principal-agent framework and ambiguous confirmation of ultimate property rights lead to the ‘agent monitor agent condition’ (Shi, 2010). State as the principal represents all Chinese people, while the central and local governments are delegated agents to monitor and manage the firms on behalf of state. With only control rights but no cash flow rights, these government agents lack

incentives to monitor the firm operation and pursue interests for the state and the real principal. Besides, compared with tradable shareholders and legal person shareholders, state cares not only commercial objectives, but also political objectives, such as employment, social welfare and financial revenue. This multi-objective might contradict with maximizing firms' market value and interests of other shareholders (Zou & Xiao, 2006). Under this situation, state controlled listed firms bear harsh owner-manager agency problems and thus should utilize the disciplining role of debt to monitor management activities.

In addition, the dual role of state as large shareholder of SOEs and as the owner of all major banks makes SOEs easily get access to bank loans with lower interest than non-SOEs (Liu, et al., 2011). Moreover, representatives of the state will fight against rights offering when firms raising capital as it might dilute state shares (Zou & Xiao, 2006). Thus the corporation with a large state stake tends to rely more on debt financing, the findings of Li, et al.(2009), Shi (2010) and Liu, et al. (2011) support the positive relation. Based on the above arguments, it's predicted that there will be a positive relationship between state ownership and leverage decision of the firm.

Hypothesis 3 *There is a positive relationship between state ownership and firm leverage*

3.3.4 Legal person ownership

In Chinese listed firms, legal person shareholders focus more on long-term interests and seek for the growth of firm value to achieve the interests of institutions they represented. Legal person shareholders possess both voting and cash flow rights on important issues, and thus have motive and power to control and monitor management (Zou & Xiao, 2006). Despite the involvement of the state, legal persons are less influenced by political factors than state shareholders. Large legal person shareholders occupy certain positions on the board of directors and on the supervisory committee and thus have rights to elect and remove management team (Xu & Wang, 1999). Under direct control of legal person shareholders, managers would work in the interest of shareholders to keep their position. Thus managers

could not easily adjust debt to lower level and consequently prevent managerial opportunism. Besides, the direct and indirect involvement of state reduces the financial distress of listed firms with legal person ownership (Bhabra, et al., 2008). Thus it's easy for these firms to get bank loans, which indicates a positive relation between legal person ownership and leverage.

Hypothesis 4 *There is a positive relationship between legal person ownership and capital structure*

4 Data and methodology

4.1 Data

This research compiles domestic Chinese firms listed in Shanghai Stock Exchange (SHSE) or Shenzhen Stock Exchange (SZSE) between 2007 and 2012. The main reason to choose this time period is that the share split reform of Chinese listed firms is almost finished in 2007. This event significantly affect the ownership structure of Chinese listed firms, thus the year 2006 is excluded from the sample to avoid bias results.

The main financial data come from China stock market and Accounting Research (CSMAR) database, managed by Shenzhen GTA Information Technology Company and the University of Hong Kong, and annual reports of listed companies in China issued by SHSE and SZSE. Due to the differences between supervisory and financial reporting system, this study chooses main board listed A-shares firms in SHSE and SZSE. The A-share main board is the major stock market in China, it is different from small and medium enterprises (SMEs) board and growth enterprise market (GEM). Main board includes large mature corporations with moderate operation and profits, while SMEs and GEM focus on small and fast-growing innovative firms.

Consistent with previous studies, financial firms like banks, insurance and securities companies are excluded. The reason is that financial firms account and report differently due to unique institutional and regulatory environment compared with industrial companies. These firms also have distinct operating performance and incomparable amount of liabilities. As we focus on domestic listed Chinese firms, firms cross-listed in domestic and overseas stock exchanges are excluded due to the potentially mixed institutional differences.

For the total sample, we exclude firms don’t have complete data. Firms with negative equity are also excluded. All the variables are winsorized at 0.5% level at each tail to eliminate the impact of outliers (Li, et al., 2009).

With the above selection criteria, the sample is collected. The following is the summary of sampling:

- 7944 observations for 1395 non-financial firms listed in main board of SHSE and SZSE at the end of 2012;
- 7619 observations left when excluding firms with H shares and other overseas shares;
- 7126 observations left when eliminating observations without complete variables;
- 6999 observation left after excluding firms with negative equity value;
- 6628 observations left after winsorizing outliers.

The above selection criteria resulted in usable sample of 6628 annual observations during the period of 2007 to 2012. The sample firms are distributed in 12 different industries: farming, mining, manufacturing, utilities, construction, transportation and warehousing, information technology, wholesale and retail sale, real estate, social service, communication and cultural, and conglomerates. All the data are from CSMAR database.

4.2 Research methodology

Following (Li, et al., 2009), Deesomsak, et al (2004) and Liu, et al (2011), pooled ordinary least squares (OLS) regression model is used to investigate the relation between ownership structure and capital structure decision.

4.2.1 Regression model

The pooled OLS regression model is used for data analysis. According to the hypotheses and variables described in previous section, we establish the regression model to estimate the determinants of firm's leverage, the model specification is

$$\text{Leverage}_{it} = \alpha + \beta_1 ownership\ concentration_{it-1} + \beta_2 managerial\ ownership_{it-1} + \beta_3 state\ ownership_{it-1} + \beta_4 legal\ person\ ownership_{it-1} + \beta_5 controls_{it-1} + \varepsilon_{it} \quad (1)$$

Leverage_{it} denotes the dependent variable for firm *i* in year *t*. Independent variables include ownership concentration, managerial ownership, state ownership, legal person ownership, firm *i*'s size (natural logarithm), liquidity, profitability, growth opportunity and tangibility in year *t-1*. ε_{it} are error terms. In order to mitigate the

potential endogeneity of independent variables with respect to leverage, independent variables are all lagged for one year. With this term, one year's observations were dropped off and the final usable sample consists of 5075 annual observations for 1298 firms.

4.2.2 Variable measurement

4.2.2.1 Dependent variables

Literatures investigating the capital structure have used many definitions to measure leverage, which including total liabilities to total assets (Li, et al., 2009), total debt to total assets (Berger, et al., 1997; Harvey, et al., 2004), long-term debt to total assets (Bhabra, et al., 2008; Zou & Xiao, 2006). In this study, we use total liabilities to total assets ratio for our main result explanation, the other two ratios are used for comparison.

Ratio of total liabilities to total assets (TL) measures the residual interest of shareholders in liquidation. However, total liabilities including items such as accounts payable, which is used for transaction purposes but not financing, thus this indicator tends to overstate the leverage level (Rajan & Zingales, 1995). Considering the situation in China, as Huang & Song (2006) argued that, many Chinese firms use trade credit as a means of financing. Thus total liabilities which including accounts payable is appropriate proxy to measure leverage.

The second method is the ratio of total debt to total assets (LEV). Total debt includes both short-term and long-term debt. this measure doesn't consider the potential offset effects between particular assets and non-debt liabilities, and thus tends to understate the leverage (Rajan & Zingales, 1995).

The long-term debt ratio (LD) is the common debt measurement which is used as instrument for financial investment projects. Long-term debt is relatively time consistent than short-term debt, thus it can capture the essential features of firm's financial structure changing with time (Ehikioya, 2008).

In this study, we use the book value of the total assets to calculate leverage ratio. Literature show two different measures of leverage, which are book leverage and

market leverage. There are different opinions about these two measures. The reason researchers prefer book leverage is that financial markets fluctuate with time, thus managers regard market leverage as unreliable indicator for making financial policy (Frank & Goyal, 2009). Moreover, firms are likely to consider book leverage ratios as bank loan contracts are written in terms of book value (Harvey, et al., 2004).

4.2.2.2 Independent variables

The independent variable in this study is ownership structure. The variables include ownership concentration, managerial ownership, state ownership and legal person ownership. Following Jong (2002) and Liu, et al. (2011), ownership concentration is described by the proportion of largest shareholder to total shares. The squared largest shareholding term is included to capture the nonlinear relation between ownership concentration and leverage. Managerial ownership is defined as the proportion of equity shares possessed by executives. State ownership and legal person ownership are defined as the fraction of ownership by the state and legal persons.

4.2.2.3 Control variables

The main emphasis of our research is the impact of ownership structure on capital structure. But some variables still influence firm's capital structure and would probably disturb out test, such as firm size, liquidity, profitability, growth opportunity and tangibility. Thus there factors are set as control variables in regression analysis.

We use the natural logarithm of total assets to measure firm size. Liquidity is measured as the ratio of current assets to current liabilities. Profitability is defined as the ratio of earnings before interest and tax divided by total assets. Tobin's Q is used to measure growth opportunities. Tangibility is measured as the ratio of fixed assets to total assets. Table 4-1 shows the definition of variables used in this study.

Table 4- 1 Definition of variables

Variable	Sign	Definition
Leverage	TL	Total liabilities divided by total assets
	LD	Long term debt divided by total assets
	LEV	Total debt divided by total assets
Ownership concentration	LARG	Shares held by the largest shareholder divided by total shares
	$LARG^2$	Squared LARG
Managerial ownership	RO	Shares held by executives divided by total shares
State ownership	RS	Shares held by the state divided by total shares
Legal person ownership	RLP	Shares controlled by the legal person divided by total shares
Firm size	SIZE	Natural logarithm of total assets
Liquidity	LIQ	Current assets divided by current liabilities
Profitability	PROF	Earnings before interest and tax divided by total assets
Growth opportunity	Tobinq	Tobin's Q
Tangibility	TANG	Fixed assets divided by total assets

5 Empirical results

5.1 Descriptive statistics

Table 5-1 provides the summary statistics of major variables used in this study. Panel A presents the full sample descriptive results. The average (median) TL is 53.6% (54.7%), which is higher than LEV, this could be explained as the existence of large proportion of accounts payable in Chinese listed firms. The leverage ratio suggests that our sample of Chinese listed firms have lower leverage level compared with firms in other developing and developed countries, e.g., India, Pakistan, Japan and Germany (Booth, et al., 2001; Chakraborty, 2010).

The average (median) LEV is 24.6% (23.9%) with a standard deviation of 16.9%. the leverage ratio level is comparative with other developing countries, e.g, India, Brazil (Céspedes, et al., 2010; Chakraborty, 2010). But the number is lower compared with previous studies of Chinese listed firms (Liu, et al., 2011; Zou & Xiao, 2006). The average (median) LD is 8.72% (3.80%) and is notably lower than in developing and developed countries (Booth, et al., 2001). The average short term debt ratio (SD) is 15.9%, which accounts more than two thirds of total debt. This implies that Chinese listed firms prefer short-term loans than long-term debt.

As for the ownership, the largest shareholder holds on average about one-third of firm's outstanding shares, which show high level of ownership concentration. As mentioned before, managers possess very low percentage of firm shares in China, the average ratio is only 0.03%, and only 9.6% of sample firms hold any type of managerial shares in the sample with conditioning average of 0.27% (to be positive) (not reported), the really small percentage of managerial ownership restricts the power of managers to influence capital structure choice. On average (median) 15.4% (0.00%) and 7.88% (0.00%) of shares are owned by the state and legal persons. These two figures are generally smaller than reported in previous studies (Bhabra, et al., 2008; Zou & Xiao, 2006). This could be the reason of share split reform, large percentage of non-tradable state-owned shares and legal person shares are gradually converted to tradable shares and traded on the market. In fact, 49% of sample firms

have any state ownership, the conditioning average (median) state ownership (to be positive) is 31.61% (31.43%), and 35.7% of sample firms hold non-zero legal person ownership, conditional average (median) legal person ownership (to be positive) is 22.05% (18.87%) (Not reported).

Table 5- 1 Summary of descriptive statistics

This table provides descriptive statistics of variables. The sample includes year-end dataset of Chinese Main Board listed A-shares from 2007 to 2012. Panel A presents the variables averages, medians, S.D., minimum and maximum for the full samples. Panel B, C and D show subsample of firms with non-zero managerial, state and legal person ownership.TL=total liabilities/total assets; LD=long term debt/total debt; SD=short term debt/total assets; LEV=total debt /total assets; LARG= largest shareholding/total shares; RO=Managerial shareholding/total shares; RS=state shareholding/total shares; RLP= legal person shareholding/total shares; SIZE=Total assets (RMB); LIQ=Current assets/current liabilities; PROF= Earnings before interest and tax/assets; Tobinq=Tobin's Q; TANG= Fixed assets/total assets.

Variables	No. of firms	Mean	Median	S.D.	Minimum	Maximum
Panel A: All firms						
TL	5075	0.5363	0.5467	0.1855	0.0017	0.9970
LD	5075	0.0872	0.0380	0.1137	0.0000	0.8006
SD	5075	0.1590	0.1399	0.1257	0.0000	0.6612
LEV	5075	0.2462	0.2389	0.1694	0.0000	0.8287
LARG	5075	0.3594	0.3370	0.1573	0.2197	0.8941
RO	5075	0.0003	0.0000	0.0052	0.0000	0.2761
RS	5075	0.1537	0.0000	0.2118	0.0000	0.9172
RLP	5075	0.0788	0.0000	0.1571	0.0000	0.8523
SIZE	5075	3.0E+9	2.8E+9	3.3E+9	8.7E+9	5.1E+11
LIQ	5075	1.4304	1.2010	0.9799	0.0000	9.6865
PROF	5075	0.0555	0.0523	0.0718	-1.0942	0.5454
Tobinq	5075	1.9820	1.5889	1.3447	0.4772	21.896
TANG	5075	0.2700	0.2360	0.1902	0.0000	0.9709
Panel B: Firms with non-zero managerial ownership						
TL	487	0.5383	0.5458	0.1816	0.0826	0.9970
LD	487	0.0956	0.0490	0.1193	0.0000	0.6304
LEV	487	0.2519	0.2465	0.1619	0.0000	0.7452
Panel C: Firms with non-zero state ownership						
TL	2468	0.5472	0.5653	0.1835	0.0017	0.9958
LD	2468	0.0926	0.0413	0.1191	0.0000	0.6105
LEV	2468	0.2533	0.2460	0.1727	0.0000	0.7625
Panel D: Firms with non-zero legal person ownership						
TL	1813	0.5324	0.5438	0.1905	0.0017	0.9970
LD	1813	0.0800	0.0289	0.1099	0.0000	0.8006
LEV	1813	0.2401	0.2344	0.1637	0.0000	0.8287

Due to the large number of zero ownership, it's necessary to extract subsample with non-zero ownership variables to investigate the impacts of ownership on capital structure. Panel B, C and D illustrates the average leverage of subsample with non-zero ownership variables. As can see in the table, firms with non-zero managerial and state ownership have higher level of average leverage compared with full sample, there is no much change for firms with non-zero legal person ownership.

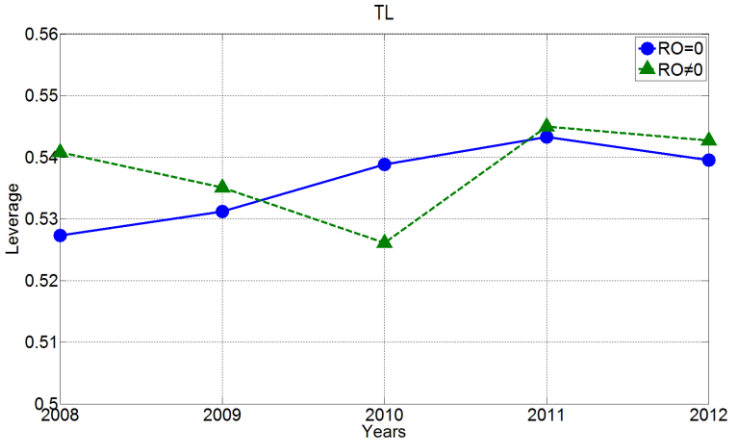
Figure 5-1 shows the time series trend in average leverage of subsample with zero and non-zero ownership portfolios. With regard to managerial ownership, as show in figure (a), in 2008, firms with managerial ownership have higher level of leverage ratio than firms without managerial ownership. While in 2010, firms with managerial ownership even have lower level of leverage ratio compared with firms without managerial ownership. There isn't substantial difference in rest sample years. In figure (b), firms with non-zero state ownership have notably higher level of leverage compared with firms without state ownership. For the legal person ownership portfolio in figure (c), firms with non-zero legal person ownership even have lower level of leverage, though have a reversed increase in 2012.

Considering the fluctuation of ownership cross sample years, figure 5-2 presents the change process of ownership with time. From the figure we can see that, during the sample time, managers possess very low percentage of firm shares, though the average holding percentage rises up gradually.

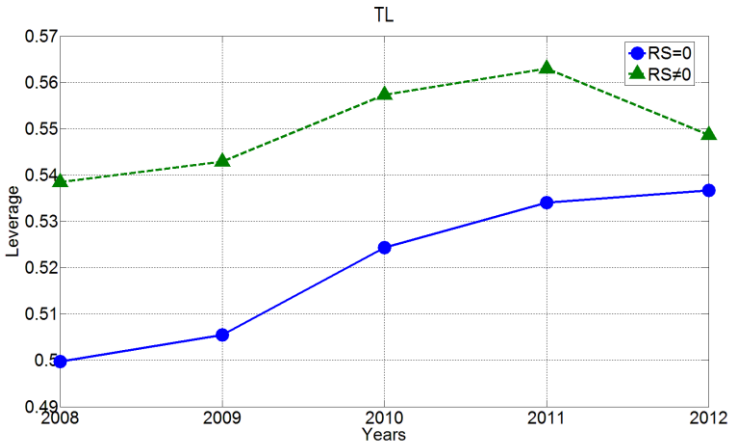
Figure 5-2 shows a continuous decrease during sample time for state and legal person ownership. State ownership decreases from 28% in 2007 to 5% in 2011, while legal person proportion declines from 15% to 2% during the sample years. The decrease tendency indicates that with share split reform, most non-tradable state and legal person ownership are transferred as tradable shares.

Figure 5-1 Time series trend in average leverage of ownership portfolios

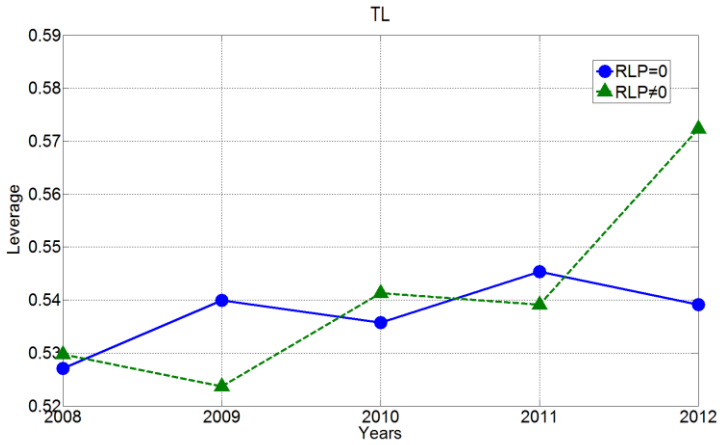
This figure illustrates the average leverage of ownership portfolios over sample years with TL. Figure (a) presents the average leverage of sample firms with and without managerial ownership. Figure (b) presents the average leverage of sample firms with and without state ownership. Figure (c) shows the average leverage of sample firms with and without legal person ownership.



(a) Average leverage of managerial ownership portfolios



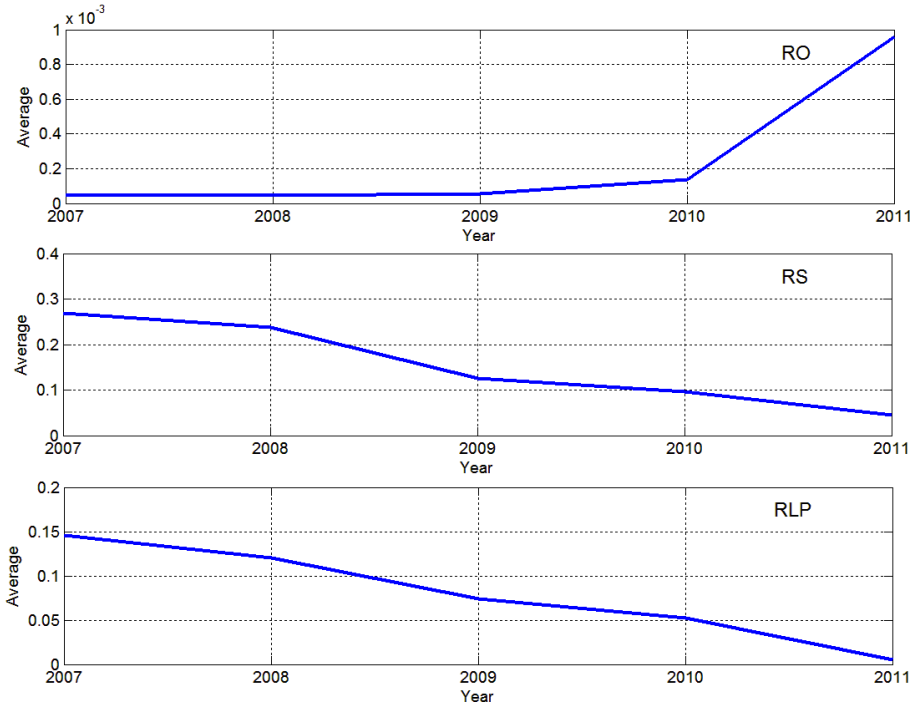
(b) Average leverage of state ownership portfolios



(c) Average leverage of legal person ownership portfolios

Figure 5-2 Time series trend of ownership structure

This figure illustrates the average trend of managerial ownership, state ownership and legal person ownership over sample years.



Multicollinearity could largely influence model fitting when applying pooled ordinary least square regression (OLS) due to the highly correlation between independent variables. Thus it's necessary to make multicollinearity test to check potential multicollinearity problem. Table 5-2 presents the Pearson correlation coefficients between major variables. There is a weak positive correlation between largest shareholder and state ownership. There is also a weak negative correlation between state ownership and legal person ownership, firms hold more state shares tend to have less legal person shares. The positive correlation between largest shareholder and state ownership indicates even after share split reform, ownership of listed firms still concentrated in the hand of the state. As shown in the table, the majority of variable correlation coefficients are generally moderate with absolute value less than 0.4, thus multicollinearity isn't very severe for regression test.

Table 5- 2 Correlation coefficient matrix

	TL	LEV	LD	LARG	RO	RS	RLP	SIZE	LIQ	PROF	Tobinq	TANG
TL	1											
LEV	0.614***	1										
LD	0.365***	0.670***	1									
LARG	0.060***	0.055***	0.123***	1								
RO	0.002	-0.013	0.006	-0.009	1							
RS	0.048***	0.044***	0.079***	**0.367*** **	0.009	1						
RLP	-0.023	-0.024	-0.031***	0.031**	-0.018	**-0.231*** **	1					
SIZE	0.294***	0.381***	0.381***	0.319***	0.041***	0.099***	-0.170***	1				
LIQ	-0.057***	-0.362***	-0.095***	-0.008	0.022	-0.061***	0.043***	-0.120***	1			
PROF	-0.202***	-0.116***	-0.011	0.145***	0.012	0.036**	0.050***	0.161***	0.130***	1		
Tobinq	-0.283***	-0.266***	-0.232***	-0.167***	-0.018	-0.172[a]***	-0.022	-0.428***	0.162***	0.095***	1	
TANG	0.011	0.268***	0.189***	0.038***	-0.036***	0.110***	-0.074***	0.045***	-0.388***	-0.025	-0.045***	1

Pearson correlation is used to analyze the coefficients between capital structure and firm specific characteristics. The marked boldface indicates relatively high correlation coefficients. ***,**,* are statistically significant at the 1%, 5% and 10% level (two-tailed) respectively. From here after, SIZE=Natural logarithm of total assets

5.2 Empirical results

Table 5-3, 5-4 and 5-5 report the results of pooled OLS regressions on the sample firms. The dependent variables are total liabilities divided by total assets (TL), long term debt divided by total assets (LD) and total debt scaled by total assets (LEV) respectively, the independent variables are defined in previous section. In all three tables, column 1 reports the regression results without any dummy variables, column 2 and 3 with either industry or year dummy, column 4 includes all dummies.

As shown in all tables, there is a reverse U-shape nonlinear relation between largest shareholding and leverage of Chinese listed firms, though significant with TL and LEV, thus verifies hypothesis 1 and is consistent with the findings of La Bruslerie & Latrous (2012). Though the result with reversed direction with Shi (2010). The insignificant relation between long-term debt ratio and largest shareholding could be the very low level of long-term debt in China, ownership concentration are expected not only related with long-term debt but also with short-term debt. In addition, as discussed before, ownership concentration leads to potential expropriation problem. Firms with highly concentrated ownership would find it's difficult to attract long-term debt. Creditors may hesitate to provide long-term debt for these firms due to the potential default risk. Firms with high level of the controlling largest shareholding have a higher level of leverage, however, after a certain point, a reverse relationship emerges.

The finding suggests that there might be an optimal level of ownership concentration. Shareholders with moderate concentrated ownership actively monitor management. This mitigates the managerial opportunism, and thus allows firms to increase debt until to the optimal level of ownership. On the other hand, with the increase of ownership concentration, large controlling shareholders have incentive to expropriate minority shareholders by tunneling resources out of the firm. Due to the restrictive debt covenants, the expropriation can be better met by raising cash from equity issues, thus firms have the willing to borrow less.

Turning to the managerial ownership variables based on three leverage proxies, the managerial ownership is negatively but insignificantly related with leverage. This indicates that managerial ownership does not significantly impact firm's leverage. This result is contrast with Huang & Song (2006), who report a significant and negative relation between managerial ownership and leverage. The possible explanation for the insignificant result could be that, the level of managerial ownership in Chinese listed firms during the sample period is very low and thus it may difficult for managers to affect corporate financing decisions.

Despite the gradually increase of managerial ownership in Chinese listed firms year by year, the very low percentage of managerial shareholding and large number of sample firms without managerial ownership weakens the power of managerial ownership on capital structure, and possibly leads to insignificant statistics. Thus, it's necessary to use subsample firms with only positive managerial ownership to analyze the relation with capital structure.

Table 5-3 and 5-4 report positive and significant relation between state ownership and leverage, the results are consistent with hypothesis 3 and the findings in the research of Li, et al. (2009), Qian, et al. (2009) and Liu, et al. (2011). The positive relation indicates that firms with state ownership tend to issue more debt than firms without state shareholdings. Firms with state ownership face severe agency problems and thus have incentive to issue debt to monitor management. Besides, the dual role of state as large shareholder of SOEs and as the owner of major banks makes state controlled firms get bank loans easily than other firms, thus firms with state ownership rely more on debt financing. Also, state shareholdings increase the likelihood that firms could better access to long term debt. Given the dual role of state as owners of SOEs and state banks, firms with state ownership would more rely on long-term debt than firms without state ownership.

The possible reason for the insignificant relation between state ownership and total debt ratio is that, short-term debt accounts most part of total debt, we even found strong significantly negative relation between state ownership and short-term debt ratio (not reported), firms with state ownership tend to have less short-term debt.

Thus the existence of short-term debt disturbs the pooled test and lead to insignificant result.

The positive and significant relation between legal person ownership and leverage presented in all three tables verifies the effect of legal person ownership in reducing firms' financial distress costs. The results test and verify hypothesis 4 and the findings of Hasan & Butt (2009) and Wang (2009). In China, the direct and indirect involvement of the state makes firms with legal person ownership access to bank loans easily than firms without legal person investors. Also, different with state shareholders, legal person investors have more focus on the interests of the firm and have incentive to monitor management activities, thus managerial opportunism of reducing debt level could be mitigated.

With regard to the control variables, the results are all significantly related with leverage. Firm size is positively related with leverage, large firms have less information asymmetric problem. The diversified operation and less volatility reduce bankruptcy costs, and thus could bear more debt than small firms. Firms with high level of liquidity borrow less money, which confirms pecking order theory. The negative relation between profitability and leverage indicates that profitable firms have adequate retained earnings and thus wish to refinance internally to avoid high costs of issuing debt. Firms with high growth opportunity prefer issue less debt to avoid financial distress and guarantee future profits. Finally, tangibility is negatively related with leverage, firms with more tangible assets are likely to encounter less information asymmetry, and thus have incentive to issue more equity.

Table 5- 3 Pooled OLS regression coefficients (Full sample)

This table presents the results of pooled OLS regressions. The dependent variable is total liabilities scaled by total assets (TL), the independent variables are as defined in previous section. ***, **, * are significant at the 0.01, 0.05 and 0.10 level. Figures reported in parentheses are t-statistics.

	(1)	(2)	(3)	(4)
Intercept	-0.088*	-0.087*	-0.035	-0.041
	(-1.761)	(-1.723)	(-0.682)	(-0.792)
LARG	0.178**	0.245***	0.167**	**0.236*** **
	(3.091)	(4.379)	(2.912)	(4.221)
$LARG^2$	-0.243***	-0.329***	-0.242***	**-0.331*** **
	(-3.398)	(-4.744)	(-3.383)	(-4.770)
RO	-0.098	-0.227	-0.126	-0.268
	(-0.251)	(-0.602)	(-0.321)	(-0.712)
RS	0.017	0.019*	0.039**	**0.044*** **
	(1.560)	(1.797)	(2.963)	(3.435)
RLP	0.045***	0.015	0.065***	**0.039** **
	(3.212)	(1.116)	(4.079)	(2.507)
SIZE	0.038***	0.035***	0.036***	**0.033*** **
	(18.015)	(16.870)	(16.5571)	(15.494)
LIQ	-0.099***	-0.099***	-0.099***	**-0.100*** **
	(-43.023)	(-44.259)	(-43.072)	(-44.354)
PROF	-0.445***	-0.403***	-0.441***	**-0.399*** **
	(-14.950)	(-13.896)	(-14.769)	(-13.742)
Tobinq	-0.012***	-0.009***	-0.015***	**-0.012*** **
	(-6.601)	(-5.377)	(-7.767)	(-6.402)
TANG	-0.206***	-0.124***	-0.204***	**-0.122*** **
	(-17.622)	(-9.445)	(-17.483)	(-9.243)
Industry dummies	No	Yes	No	Yes
Year dummies	No	No	Yes	Yes
Adj-R^2	0.392	0.438	0.395	0.441
N	5075	5075	5075	5075

Table 5- 4 Pooled OLS regression coefficients (Full sample)

This table presents the results of pooled OLS regressions. The dependent variables is long term debt scaled by total assets (LD), the independent variables are as defined in previous section. Column 1 without any dummy variables, column 2 and 3 with either industry or year dummy, column 4 includes all dummies. ***, **, * are significant at the 0.01, 0.05 and 0.10 level. Figures reported in parentheses are t-statistics.

	(1)	(2)	(3)	(4)
Intercept	-0.715***	-0.646***	-0.716***	**-0.655*** **
	(-20.297)	(-18.826)	(-19.858)	(-18.650)
LARG	-0.027	0.012	-0.029	0.012
	(-0.653)	(0.325)	(-0.709)	(0.313)
$LARG^2$	0.017	-0.046	0.009	-0.054
	(0.343)	(-0.983)	(0.178)	(-1.142)
RO	-0.059	-0.107	-0.077	-0.117
	(-0.213)	(-0.419)	(-0.276)	(-0.456)
RS	0.019**	0.008	0.037***	**0.021** **
	(2.452)	(1.064)	(3.975)	(2.433)
RLP	0.039***	0.025**	0.057***	**0.038*** **
	(3.994)	(2.731)	(5.053)	(3.637)
SIZE	0.036***	0.032***	0.035***	**0.032*** **
	(23.802)	(22.902)	(22.894)	(22.246)
LIQ	0.005**	0.002	0.004**	0.001
	(2.764)	(1.100)	(2.437)	(0.823)
PROF	-0.106***	-0.090***	-0.098***	**-0.082*** **
	(-5.022)	(-4.546)	(-4.611)	(-4.151)
Tobinq	-0.005***	-0.003**	-0.005***	**-0.003** **
	(-4.045)	(-2.369)	(-3.920)	(-2.042)
TANG	0.110***	0.101***	0.111***	**0.102*** **
	(13.291)	(11.312)	(13.401)	(11.408)
Industry dummies	No	Yes	No	Yes
Year dummies	No	No	Yes	Yes
Adj-R^2	0.185	0.309	0.189	0.311
N	5075	5075	5075	5075

Table 5- 5 Pooled OLS regression coefficients (Full sample)

This table presents pooled OLS regression results. The dependent variable is total debt scaled by total assets (LEV), other variables are as defined in previous section. Column 1 without any dummy variables, column 2 and 3 with either industry or year dummy, column 4 includes all dummies. ***, **, * are significant at the 0.01, 0.05 and 0.10 level. Figures reported in parentheses are t-statistics.

	(1)	(2)	(3)	(4)
Intercept	-0.633***	-0.628***	-0.588***	**-0.588*** **
	(-12.600)	(-12.212)	(-11.437)	(-11.176)
LARG	0.183**	0.202***	0.176**	**0.195*** **
	(3.143)	(3.544)	(3.017)	(3.425)
$LARG^2$	-0.296***	-0.327***	-0.283***	**-0.314*** **
	(-4.098)	(-4.635)	(-3.912)	(-4.440)
RO	-0.429	-0.502	-0.402	-0.474
	(-1.085)	(-1.311)	(-1.016)	(-1.235)
RS	0.001	-0.003	-0.004	-0.010
	(0.069)	(-0.267)	(-0.299)	(-0.764)
RLP	0.057***	0.035**	0.051**	**0.027***
	(4.04)	(2.518)	(3.149)	(1.686)
SIZE	0.042***	0.039***	0.041***	**0.038*** **
	(19.457)	(18.576)	(18.508)	(17.781)
LIQ	-0.041***	-0.045***	-0.041***	**-0.044*** **
	(-17.642)	(-19.457)	(-17.408)	(-19.217)
PROF	-0.274***	-0.227***	-0.275***	**-0.230*** **
	(-9.089)	(-7.681)	(-9.125)	(-7.768)
Tobinq	-0.011***	-0.009***	-0.014***	**-0.012*** **
	(-6.409)	(-5.403)	(-7.312)	(-6.204)
TANG	0.142***	0.144***	0.142***	**0.144*** **
	(12.065)	(10.768)	(12.085)	(10.720)
Industry dummies	No	Yes	No	Yes
Year dummies	No	No	Yes	Yes
Adj-R^2	0.256	0.301	0.257	0.303
N	5075	5075	5075	5075

5.3 Robustness tests

In this part, additional regressions are carried out over the determinants of leverage to check the robustness of the main results. First, in order to detect the systematic differences over time, yearly cross-sectional regressions are performed to investigate the role of ownership in capital structure over sample period from 2008 to 2012. Due to the highly correlation between LARG and RS, and RLP with RS (See Appendix Table 5-6A and 5-6B), we drop RS when analyze LARG and RLP, and drop LARG

and RLP when analyze RS in regression models for sample year 2008 and 2009 (not reported).

Table 5-7 shows yearly cross-sectional results with dependent variable TL. There is significant and nonlinear relation between largest shareholding and TL in 2009, 2011 and 2012. The result is consistent with main result. With regard to the long-term debt and firm's leverage choice, the nonlinear relation only emerged in 2012. The only one year significant result is probably the reason of insignificant relation between long-term debt and leverage for main result. For LEV, the significant nonlinear relation emerged in 2009 and 2012 dominates the full sample pooled result (See Appendix Table 5-7A and 5-7B).

We didn't find any relation between managerial ownership and leverage over sample years with LD and LEV. However, there is a significantly positive relation between managerial ownership and TL in 2008. The result is contrast with the main result and our hypothesis. Figure 5-1 shows that firms with managerial ownership have higher level of leverage than firms without managerial ownership. However, the very low percentage of managerial ownership presented in figure 5-2, as well as large coefficient standard error (not reported) makes me hesitate to confirm this significant result.

Over the sample years, significant and positive result between state ownership and TL is emerged in 2008 and 2012, which is generally consistent with main result. The These two years' results contribute large percentage to the pooled significant result. Similar result is found between state ownership and firm's long-term debt. There are significant and positive relation between state ownership and LD in 2010 and 2012, though other years show insignificant results (See appendix). Turning to state ownership and LEV, the converse negative relation in 2011 and positive relation in 2012 might neutralize the total effects of state ownership on LEV, which explains the insignificant relation in main result. Legal person ownership is positively related with TL only in 2008, as well as with LD in 2010 and with LEV in 2010. The single year result is consistent with main result though with weak power, considering the

highly correlation between state and legal person ownership, we should be cautious about the interpretation.

Table 5- 7 Yearly cross-sectional regression coefficients (Full sample)

This table presents the cross-sectional analysis from 2008 to 2012. The dependent variable is TL, other variables are defined in previous section, industry dummies are included. ***, **, * are significant at the 0.01, 0.05 and 0.10 level. Figures reported in parentheses are t-statistics.

	2008	2009	2010	2011	2012
Intercept	**0.363****	-0.121	-0.083	0.037	**-0.311****
	(2.923)	(-1.016)	(-0.670)	(0.320)	(-2.994)
LARG	-0.010	**0.371****	**0.216***	**0.237***	**0.304****
	(-0.071)	(2.704)	(1.657)	(1.906)	(2.896)
$LARG^2$	-0.128	**-0.522*****	-0.266	**-0.331****	**-0.403****
	(-0.712)	(-3.161)	(-1.637)	(-2.130)	(-3.150)
RO	**66.187****	5.805	-11.694	2.759	-0.386
	(2.439)	(0.243)	(-0.766)	(0.666)	(-1.078)
RS	**0.131****	0.050	0.010	0.014	**0.117*****
	(2.891)	(1.440)	(0.377)	(0.540)	(3.749)
RLP	**0.088****	0.041	0.044	0.031	0.060
	(2.021)	(1.122)	(1.385)	(0.903)	(0.614)
SIZE	**0.016****	**0.035*****	**0.034*****	**0.032*****	**0.044*****
	(3.120)	(6.957)	(6.837)	(6.94)	(10.500)
LIQ	**-0.119*****	**-0.110*****	**-0.090*****	**-0.098*****	**-0.092*****
	(-19.482)	(-19.087)	(-17.699)	(-20.341)	(-22.486)
PROF	**-0.132****	**-0.392*****	**-0.408*****	**-0.432*****	**-0.722*****
	(-2.124)	(-6.156)	(-6.254)	(-6.239)	(-10.216)
Tobinq	**-0.028*****	-0.006	**-0.012****	**-0.010*****	-0.002
	(-5.877)	(-0.571)	(-3.022)	(-3.253)	(-0.429)
TANG	**-0.134*****	**-0.172*****	**-0.136*****	**-0.089****	**-0.098*****
	(-4.562)	(-5.546)	(-4.551)	(-2.983)	(-3.540)
Industry dummies	Yes	Yes	Yes	Yes	Yes
Adj-R^2	0.412	0.411	0.417	0.443	0.533
N	1018	1000	987	996	1074

There are two possible reasons for the insignificant results in certain years by cross-yearly regressions. On the one hand, the highly correlation between independent variables in 2008 and 2009 might disturb the regression results, which makes cross-yearly regression without much usefulness. On the other hand, the existence of large number of firms with zero ownership also interfere the regression. As mentioned before, only 9.6% of sample firms hold any type of managerial shares, 49% of sample firms have positive state ownership, and only 36.8% of sample firms

hold non-zero legal person ownership. The large number of zero ownership variables possibly disturbs the regression and downplay the testing results, and thus weaken the impacts of ownership on capital structure choice.

Table 5- 8 Yearly cross-sectional regression coefficients (Subsample)

This table presents the yearly cross-sectional analysis in 2008 and 2009 with elimination of zero managerial, state or legal person ownership. The dependent variable is TL, other variables are as defined in previous section, industry dummies are included. ***, **, * are significant at the 0.01, 0.05 and 0.10 level. Figures reported in parentheses are t-statistics.

	2008			2009		
	Non-zero RO	Non-zero RS	Non-zero RLP	Non-zero RO	Non-zero RS	Non-zero RLP
Intercept	0.664	0.222	**0.466****	-0.566	-0.108	-0.121
	(1.578)	(1.578)	(2.670)	(-1.277)	(-0.778)	(-0.693)
LARG	-0.049	-0.038	-0.117	0.675	0.163	**0.568****
	(-0.082)	(-0.230)	(-0.564)	(1.033)	(0.956)	(2.829)
$LARG^2$	-0.129	-0.133	0.042	-0.550	-0.306	**-0.769****
	(-0.170)	(-0.669)	(0.154)	(-0.649)	(-1.533)	(-3.182)
RO	**86.528****	**69.278****	**80.207****	6.734	3.520	7.893
	(2.251)	(2.295)	(2.637)	(0.172)	(0.122)	(0.228)
RS	0.228	**0.139****	**0.157****	-0.048	0.044	**0.111***
	(1.219)	(2.440)	(2.741)	(-0.237)	(0.821)	(1.845)
RLP	0.146	**0.111****	0.094	-0.069	0.024	0.086
	(0.890)	(2.064)	(1.639)	(-0.384)	(0.432)	(1.423)
SIZE	0.004	**0.024*****	**0.015****	**0.048****	**0.038*****	**0.034*****
	(0.226)	(4.110)	(2.037)	(2.411)	(6.775)	(4.564)
LIQ	**-0.124*****	**-0.113*****	**-0.120*****	**-0.104*****	**-0.116*****	**-0.113*****
	(-5.314)	(-16.237)	(-15.379)	(-3.523)	(-16.811)	(-14.531)
PROF	-0.140	**-0.180****	-0.075	**-1.511*****	**-0.294*****	**-0.453*****
	(-0.996)	(-2.551)	(-0.991)	(-5.316)	(-4.201)	(-5.432)
Tobinq	**-0.032****	**-0.032*****	**-0.030*****	0.056	-0.004	0.002
	(-2.410)	(-5.887)	(-4.602)	(1.266)	(-0.269)	(0.133)
TANG	**-0.328****	**-0.107*****	**-0.116****	-0.190	**-0.173*****	**-0.162*****
	(-2.913)	(-3.236)	(-2.962)	(-1.585)	(-4.711)	(-3.648)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Adj-R^2	0.462	0.431	0.405	0.430	0.450	0.401
N	104	761	617	89	697	516

Based on this, yearly subsamples with non-zero ownership variables are processed to capture the essential characteristics of ownership in capital structure. We expect to find significant relation between ownership and leverage after elimination of zero ownership variables. Table 5-8 presents the regression results of TL with non-zero

ownership subsample in 2008 and 2009, the rest sample years show insignificant results, thus are not reported here.

As can see from table 5-8, after eliminating firms with zero managerial, state or legal person ownership, the nonlinear relation between largest shareholding and TL existed only in 2009 with non-zero legal person ownership subgroup. Again we find significantly positive relation between managerial ownership and leverage in 2008. Similar with the result in table 5-7, the coefficient standard error of RO is quite large, thus I doubt the reliability of this result.

There is positive relation between state ownership and TL in 2008 with non-zero state and legal person subgroup. The significant and positive relation between legal person ownership and TL is only emerged in 2008 with non-zero state ownership subgroup, the other subgroup show insignificant relation with TL.

The possible reason for the insignificant results could be that, subsample with non-zero managerial ownership contains more than half number of firms that with zero state and legal person ownership, similar happens in other two subsamples. In this situation, with split subgroup, we further enlarge the correlation between largest shareholding and state ownership, and state with legal person ownership, which highly disturb the regression and leads to volatile results.

Table 5-9 illustrates the pooled OLS regression with dependent variable TL when eliminating either zero managerial, state or legal person ownership variables, table 5-9A and 5-9B present leverage proxies with LD and LEV (See Appendix). There is nonlinear relation between largest shareholding and TL when using subsample with non-zero legal person ownership. There is no significant relation between managerial ownership and leverage. State and legal person ownership are positively related with TL and LD when applying subsample with non-zero state or legal person ownership.

From the cross-yearly result in table 5-8 and pooled result in table 5-9 we can see that, even after elimination of zero ownership variables, the regression results are still volatile. Thus the ideal method is to extract subsample with non-zero ownership variables simultaneously, however, this would lead to extremely small sample size, and it’s very difficult to implement year by year regression. As shown in Figure 5-1,

firms whether with managerial ownership present no difference on leverage, which confirms our main result. Firms with state ownership tend to have higher level of leverage than firms without state ownership. For legal person ownership, the reversed relation between legal person ownership and leverage makes it difficult to verify the main result. Combined with the results of non-zero ownership subsample, it's clear that, it's not the magnitude of non-zero ownership, but the existence of non-zero ownership impact the leverage choice of Chinese listed firms.

Table 5- 9 Pooled OLS regression coefficients (Subsample)

This table presents the results of pooled OLS regressions with elimination of either zero managerial, state and legal person ownership variables. The dependent variable is TL, the independent variables are as defined in previous section, industry and year dummies are included in the regressions. ***, **, * are significant at the 0.01, 0.05 and 0.10 level. Figures reported in parentheses are t-statistics.

	Non-zero RO	Non-zero RS	Non-zero RLP
Intercept	-0.120	**-0.072*****	0.094
	(-0.821)	(-0.993)	(0.987)
LARG	0.287	0.097	**0.185***
	(1.598)	(1.159)	(1.766)
$LARG^2$	-0.347	-0.222**	**-0.262****
	(-1.404)	(-2.218)	(-2.007)
RO	-0.470	-0.371	0.869
	(-1.320)	(-0.976)	(0.158)
RS	0.062	**0.050****	**0.079****
	(1.392)	(2.367)	(2.850)
RLP	0.032	**0.047***	**0.048***
	(0.604)	(1.771)	(1.771)
SIZE	**0.034*****	**0.036*****	0.027
	(5.572)	(12.201)	(6.828)
LIQ	**-0.092*****	**-0.108*****	**-0.106*****
	(-12.053)	(-31.326)	(-26.389)
PROF	**-0.668*****	**-0.376*****	**-0.243****
	(-7.751)	(-9.517)	(-5.365)
Tobinq	**-0.014****	**-0.010*****	**-0.013*****
	(-2.845)	(-3.353)	(-4.076)
TANG	**-0.236*****	**-0.125*****	**-0.128*****
	(-5.486)	(-6.634)	(-5.420)
Industry dummies	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
Adj-R^2	0.526	0.452	0.387
N	487	2468	1813

Table 5- 10 Pooled OLS regression coefficients (Subsample)

This table presents the results of subsample pooled OLS regressions with squared terms of ownership variables. The dependent variables are TL, the independent variables are as defined in previous section, industry and year dummies are included in the regressions. ***, **, * are significant at the 0.01, 0.05 and 0.10 level. Figures reported in parentheses are t-statistics.

	Non-zero RO	Non-zero RS	Non-zero RLP
Intercept	-0.143	-0.070	0.089
	(-0.970)	(-0.969)	(0.934)
LARG	**0.392****	0.106	**0.216****
	(1.989)	(1.161)	(1.958)
$LARG^2$	**-0.540***	-0.245[b]	**-0.314****
	(-1.858)	(-2.152)	(-2.133)
RO	-0.477	-0.373	0.863
	(-1.338)	(-0.982)	(0.157)
RS	-0.097	0.037	**0.126****
	(-0.797)	(0.663)	(1.998)
RS^2	0.329	0.023	-0.095
	(1.406)	(0.287)	(-0.828)
RLP	-0.013	-0.010	-0.027
	(-0.096)	(-0.161)	(-0.419)
RLP^2	0.092	0.121	0.134
	(0.357)	(1.043)	(1.277)
SIZE	**0.035*****	**0.036*****	**0.027*****
	(5.697)	(12.195)	(6.855)
LIQ	**-0.091*****	**-0.108*****	**-0.106*****
	(-11.997)	(-31.195)	(-26.285)
PROF	**-0.682*****	**-0.378*****	**-0.244*****
	(-7.842)	(-9.199)	(-5.378)
Tobinq	**-0.014****	**-0.009*****	**-0.013*****
	(-2.858)	(-3.321)	(-4.051)
TANG	**-0.233****	**-0.125*****	**-0.129*****
	(-5.386)	(-6.622)	(-5.453)
Industry dummies	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
Adj-R^2	0.526	0.452	0.387
N	487	2468	1813

Moreover, residual analysis is processed to check if the predicted value is independent with residual. From Figure 5-3 and 5-4 (See Appendix), we can see that, standardized residuals are randomly distributed and most fall between -2 and +2 which indicates quite good model fitting, pooled and cross-yearly regression results are generally reliable.

The fluctuant results between state ownership with leverage indicate that there might be nonlinear relation between ownership and leverage. Following Bhabra, et al.(2008) and Jong (2002), additional squared terms of state and legal person ownership variables are added in regression model to examine nonlinearity effects between ownership and capital structure. Table 5-10 reports the empirical results of subsample with non-zero ownership. We didn't find any significant nonlinear relation between state and legal person ownership and leverage, the other variables remain unchangeable.

6 Conclusion

6.1 Main research conclusion

This study attempts to test the agency theory in explaining the impacts of ownership structure on capital structure choice of Chinese listed firms between 2007 and 2012. The particular ownership characteristic of Chinese listed firms reveals the importance of ownership structure in corporate governance and as important determinant for firm's capital structure decision.

The pooled OLS regression indicates that there is a reverse U-shape nonlinear relation between largest shareholding and leverage, which testified hypothesis1. The results are also consistent with the findings of La Bruslerie & Latrous (2012). The finding suggests that there might be an optimal level of ownership concentration. Shareholders with moderate concentrated ownership actively monitor management, which mitigates the managerial opportunism, and thus allows firms to increase debt until to the optimal level of ownership. On the other hand, with the increase of ownership concentration, large controlling shareholders have incentive to expropriate minority shareholders by tunneling resources out of the firm. Due to the restrictive debt covenants, the expropriation can be better met by raising cash from equity issues, thus firms have the willing to borrow less.

Our empirical result indicates that managerial ownership is negatively related with leverage, but the result is not significant with any of leverage proxy. With the lower level of managerial ownership in Chinese listed firms, equity compensation has rare motivation for management. Managers have incentive to pursue perquisite consumption. However, lack of significance makes us hesitant to draw corroborate conclusion, thus hypothesis 2 is rejected.

The reason for the insignificant results is the really low level of managerial ownership in Chinese listed firms. With the low percentage of managerial ownership, it's difficult for managers to exert influence on the financial decisions within the firms. This result is contradict with the study of Huang & Song (2006). Their research reports a significantly negative relation between managerial ownership and

leverage for Chinese firms. Considering the slow growth and quite low level of managerial shareholding in Chinese firms, we should not expect any significant relation between managerial ownership and leverage. The possible reason could be the difference of sample criteria and regression model. In this situation, we are cautious about the reliability of previous research and try to improve sample criteria and model construction in future study.

Consistent with our expectation, there is a significantly positive relation between state ownership and leverage, thus hypothesis 3 is also confirmed. The result is comparable with previous empirical research (Li, et al., 2009; Liu, et al., 2011; Qian, et al., 2009). Due to the severe agency conflicts between shareholders and managers, state controlled firms prefer high level of debt to monitor management activities. In addition, the dual role of state as large shareholder of SOEs and as the owner of major banks makes state controlled firms get bank loans easily than other firms, thus firms with state ownership rely more on debt financing. Also, state shareholdings increase the likelihood that firms could better access to long term debt. Given the dual role of state as owners of SOEs and state banks, firms with state ownership would more rely on long-term debt than firms without state ownership.

The positive and significant relation between legal person ownership and leverage confirms hypothesis 4 and is consistent with the findings of Hasan & Butt (2009). The result verifies the effect of legal person ownership in reducing firms' financial distress costs. The direct and indirect involvement of state makes firms with legal person ownership access to bank loans more easily than firms without legal person investors. Also, different with state shareholders, legal person investors have more focus on the interests of the firm and have incentive to monitor management activities, thus legal person shareholders actively control managerial opportunism by increasing leverage level.

It's noticed that, despite the significant relation between legal person ownership with capital structure in main results, the positive relation between legal person and leverage only emerged in single sample year, which dominates the main result. Due

to the high correlation between state and legal person ownership, we should be cautious about the power of main result.

Overall, the results suggest that the ownership structure of Chinese listed firms reflects the particular characteristics of corporate governance in China. The first largest shareholders actually control the firm, and have mixed impact on capital structure depending on concentration level. The very low level of managerial ownership restricts managers to exert impact on firm's capital structure decisions. The gradually decrease of state ownership and legal person ownership reflects the effects of share split reform, though they still actively impact firm's financial decisions.

6.2 Limitation and future research

Despite the generally consistent results reached as expectation, this study still has some limitations.

First, the methodology of this study used has certain limitation. We use pooled OLS regression based on annual observations. One shortcoming of OLS regression is that the errors tend to be correlated over time.

Second, this study focus on ownership structure of Chinese listed firms, which including ownership concentration, managerial ownership, state ownership and legal person ownership. With the rapid growth of Chinese stock market, public investors possess large percentage of firms' shares and have more interests in the firm, thus should have more incentive to monitor managerial activities and protect their interests. Therefore, future study about ownership structure includes could be more broad.

Second, as illustrated at empirical result part, the insignificant relation between managerial ownership and capital structure is contradict with previous research. The possible reasons could be different sample criteria and model specification. Also, with the gradually increase of mangerial ownerhip, future study with updated sample and improved model should find more interesing results.

Finally, this thesis focus on the the impact of ownership on capital structure. Other corporate governance factors, such as board structure and market for corporate control are not included in the study. Previous resarch indicate the importance of these factors, which should be included in the future study.

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Appendix

Capital structure theories

The trade-off theory

Trade-off theory states the benefits of debt financing such as tax shield benefits and costs of debt financing which including agency costs and bankruptcy cost. Modigliani-Miller model and subsequent research show that in complete and perfect capital markets, the firm's value is independent with its capital structure (Deesomsak, et al., 2004). When the capital market is imperfect, the taxation of corporate profits and bankruptcy penalties have important effects of capital structure on firm value (Kraus & Litzenberger, 1973). The main reason firms prefer debt than equity financing is that interest payments on debt are tax deductible, firms can obtain tax benefits through interest tax shield when they issue external debt, this decreases firm's income tax liability and thus increases firm's after-tax earnings. However, this also increases firm's financial distress. Firms with debt obligation have to repay high level of debt and face bankruptcy risk and associated penalties if they fail to fulfill the obligation.

Therefore, trade-off theory predicts that optimal capital structure is determined by balancing tax savings of debt and costs of debt (Chang, 1999). In order to set optimal capital structure and maximize its value, firms have to make trade-off between benefits of debt and costs of debt to set target capital structure (Myers & Majluf, 1984). According to Myers (1984), firm follows the trade-off theory and sets target leverage ratio, which is determined by balancing tax savings of debt and costs of debt, and then moves to achieve the target step by step.

The pecking order theory

Another well-known capital structure theory is the pecking order theory. The concept was first introduced by Myers & Majluf (1984) and Myers (1984) to recognize the role of corporate information asymmetry. The theory assumes that managers have more valuable information and know more about the value and opportunities of their companies than outside investors, thus it predicts a hierarchy

of preference when firms make financial investments. Myers and Majluf (1984) argue that this hierarchy order is motivated by adverse selection problem. Retained earnings have no adverse selection problem, debt has minor adverse selection problem while equity has adverse selection problem (Frank & Goyal, 2009). Thus firms prefer retained earnings to finance new investment, if additional funds are needed, firm will use less risky debt before issue new equity.

The costs of external finance such as administrative and underwriting costs, and underpricing of new securities make external financing less attractive than internal financing (Myers, 1984). When share price are overvalued, firms prefer issue new equity, the market would assume this as managerial incentive to maximize the value of the firm, as managers know more than external investors (Myers & Majluf, 1984), thus the share price will decline when firms announce new share issue. This information asymmetry between managers and outsider investors make equity to be undervalued, thus, equity financing is expensive for the firms and firms tend to use internal fund at first, as it's not affected by information asymmetry and thus better than debt and equity. If internal fund is not available, then firms will choose less risky external debt, and last for external equity financing when firms make financial decisions.

Table 5- 6A Reduced correlation coefficient matrix (2008)

Pearson correlation is used to analyze the coefficients between capital structure and firm specific characteristics. The marked boldface indicates relatively high correlation coefficients. ***, **, * are statistically significant at the 1%, 5% and 10% level (two-tailed) respectively

	TL	LD	LEV	LARG	RO	RS	RLP
TL	1						
LD	0.323***	1					
LEV	0.604***	0.618***	1				
LARG	0.026	0.094***	0.011	1			
RO	0.082***	0.020	0.033	-0.055	1		
RS	0.077***	0.131***	0.061	**0.580*** **	-0.057	1	
RLP	-0.042	-0.059	-0.058	-0.072**	-0.008	**-0.714*** **	1

Table 5- 6B Reduced correlation coefficient matrix (2009)

Pearson correlation is used to analyze the coefficients between capital structure and firm specific characteristics. The marked boldface indicates relatively high correlation coefficients. ***, **, * are statistically significant at the 1%, 5% and 10% level (two-tailed) respectively

	TL	LD	LEV	LARG	RO	RS	RLP
TL	1						
LD	0.371***	1					
LEV	0.599***	0.688***	1				
LARG	0.031	0.135***	0.057	1			
RO	0.033	0.037	0.008	-0.070**	1		
RS	0.071***	0.105**	0.066***	**0.535*** **	-0.058	1	
RLP	-0.040	-0.049	-0.069***	0.015	0.002	**-0.575*** **	1

Table 5- 7A Yearly cross-sectional regression coefficients (Full sample)

This table presents the cross-sectional analysis from 2008 to 2012. The dependent variable is LD, the independent variables are as defined in previous section, the industry dummies are included. ***, **, * are significant at the 0.01, 0.05 and 0.10 level. Figures reported in parentheses are t-statistics.

	2008	2009	2010	2011	2012
Intercept	-0.588***	-0.645***	-0.669***	-0.604***	-0.661***
	(-7.516)	(-7.685)	(-7.754)	(-7.729)	(-9.021)
LARG	-0.103	0.086	-0.056	-0.012	**0.137***
	(-1.126)	(0.891)	(-0.618)	(-0.144)	(1.846)
$LARG^2$	0.076	-0.094	0.050	-0.045	**-0.222****
	(0.671)	(-0.810)	(0.437)	(-0.424)	(-2.462)
RO	11.812	3.939	-1.139	2.182	-0.178
	(0.748)	(0.234)	(-0.107)	(0.773)	(-0.705)
RS	0.032	-0.011	**0.030***	-0.014	**0.063****
	(1.114)	(-0.449)	(1.647)	(-0.779)	(2.893)
RLP	0.043	0.016	**0.058****	0.026	-0.012
	(1.575)	(0.621)	(2.600)	(1.101)	(-0.170)
SIZE	**0.030*****	**0.033*****	**0.034*****	**0.031*****	**0.032*****
	(9.252)	(9.402)	(9.801)	(9.644)	(10.777)
LIQ	0.005	-0.003	0.003	0.004	-0.001
	(1.278)	(-0.712)	(0.754)	(1.123)	(-0.212)
PROF	-0.013	-0.030	**-0.155*****	**-0.087***	**-0.166*****
	(-0.324)	(-0.676)	(-3.411)	(-1.850)	(-3.331)
Tobinq	**-0.007****	-0.006	-0.002	-0.003	0.001
	(-2.390)	(-0.866)	(-0.701)	(-1.462)	(0.250)
TANG	**0.099*****	**0.106*****	**0.096*****	**0.108*****	**0.110*****
	(5.380)	(4.827)	(4.604)	(5.314)	(5.644)
Industry dummies	Yes	Yes	Yes	Yes	Yes
Adj-R^2	0.289	0.286	0.328	0.302	0.318
N	1018	1000	987	996	1074

Table 5- 7B Yearly cross-sectional regression coefficients (Full sample)

This table presents the yearly cross-sectional analysis from 2008 to 2012. The dependent variable is LEV, the independent variables are as defined in previous section, the industry dummies are included. ***,**,* are significant at the 0.01, 0.05 and 0.10 level. Figures reported in parentheses are t-statistics.

	2008	2009	2010	2011	2012
Intercept	-0.277**	-0.540***	-0.608***	-0.599***	-0.732^{a}
	(-2.277)	(-4.525)	(-4.756)	(-5.028)	(-6.615)
LARG	0.135	**0.347****	0.164	0.138	**0.294****
	(0.947)	(2.523)	(1.214)	(1.064)	(2.622)
$LARG^2$	-0.242	**-0.429****	-0.244	-0.259	**-0.454*****
	(-1.376)	(-2.592)	(-1.446)	(-1.606)	(-3.329)
RO	13.830	-15.513	-8.005	1.862	-0.621
	(0.563)	(-0.647)	(-0.506)	(0.432)	(-1.627)
RS	-0.040	-0.051	-0.018	**-0.066****	**0.091****
	(-0.912)	(-1.479)	(-0.644)	(-2.428)	(2.737)
RLP	-0.035	-0.020	**0.059***	0.053	0.030
	(-0.811)	(-0.544)	(1.791)	(1.469)	(0.293)
SIZE	**0.030*****	**0.038*****	**0.039*****	**0.039*****	**0.044*****
	(5.781)	(7.550)	(7.564)	(7.961)	(9.763)
LIQ	**-0.055*****	**-0.053*****	**-0.039*****	**-0.039*****	**-0.040*****
	(-9.146)	(-9.203)	(-7.494)	(-7.775)	(-9.125)
PROF	-0.014	**-0.235*****	**-0.325*****	**-0.204****	**-0.421*****
	(-0.224)	(-3.685)	(-4.807)	(-2.833)	(-5.583)
Tobinq	**-0.022*****	-0.016	**-0.011****	**-0.010*****	**-0.008****
	(-4.667)	(-1.595)	(-2.781)	(-3.261)	(-1.651)
TANG	**0.097*****	**0.133*****	**0.138*****	**0.185*****	**0.164*****
	(3.380)	(4.275)	(4.466)	(5.950)	(5.559)
Industry dummies	Yes	Yes	Yes	Yes	Yes
Adj-R^2	0.286	0.289	0.298	0.294	0.340
N	1018	1000	987	996	1074

Table 5- 9A Pooled OLS regression coefficients (Subsample)

This table presents the results of pooled OLS regressions with elimination of either zero managerial, state and legal person ownership variables. The dependent variable is LD, the independent variables are as defined in previous section, industry and year dummies are included in the regressions. ***,**,* are significant at the 0.01, 0.05 and 0.10 level. Figures reported in parentheses are t-statistics.

	Non-zero RO	Non-zero RS	Non-zero RLP
Intercept	-0.438***	-0.753***	-0.667***
	(-4.117)	(-14.570)	(-11.110)
LARG	-0.181	-0.005	-0.012
	(-1.387)	(-0.081)	(-0.179)
$LARG^2$	0.345*	-0.005	0.063
	(1.924)	(-0.903)	(0.763)
RO	-0.192	-0.191	2.890
	(-0.742)	(-0.707)	(0.835)
RS	0.014	**0.034****	0.008
	(0.437)	(2.253)	(0.446)
RLP	0.001	**0.010****	0.016
	(0.021)	(2.307)	(0.975)
SIZE	**0.023*****	**0.037*****	**0.032*****
	(5.202)	(17.367)	(12.758)
LIQ	0.002	-0.001	**0.002*****
	(0.431)	(-0.277)	(0.862)
PROF	**-0.159****	**-0.076****	-0.011
	(-2.545)	(-2.616)	(-0.384)
Tobinq	**-0.006***	-0.002	-0.002
	(-1.653)	(-1.031)	(-1.052)
TANG	**0.094****	**0.107*****	**0.100*****
	(3.021)	(7.983)	(6.714)
Industry dummies	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
Adj-R^2	0.423	0.341	0.271
N	487	2468	1813

Table 5- 9B Pooled OLS regression coefficients (Subsample)

This table presents the results of pooled OLS regressions with elimination of either zero managerial, state and legal person ownership variables. The dependent variable is LEV, the independent variables are as defined in previous section, industry and year dummies are included in the regressions. ***,**,* are significant at the 0.01, 0.05 and 0.10 level. Figures reported in parentheses are t-statistics.

	Non-zero RO	Non-zero RS	Non-zero RLP
Intercept	-0.490***	-0.704***	-0.553***
	(-3.397)	(-9.350)	(-6.149)
LARG	**0.358****	**0.182****	0.117
	(2.025)	(2.085)	(1.187)
$LARG^2$	**-0.457***	**-0.306****	-0.068
	(-1.878)	(-2.957)	(-0.556)
RO	-0.563	-0.506	4.809
	(-1.608)	(-1.283)	(0.926)
RS	0.062	-0.016	**-0.054****
	(1.417)	(-0.717)	(-2.084)
RLP	0.056	0.010	-0.009
	(1.089)	(0.365)	(-0.347)
SIZE	**0.032*****	**0.044*****	**0.037*****
	(5.282)	(14.319)	(9.755)
LIQ	**-0.038*****	**-0.049*****	**-0.041*****
	(-5.062)	(-13.785)	(-10.904)
PROF	**-0.417*****	**-0.228*****	**-0.106****
	(-4.922)	(-5.341)	(-2.486)
Tobinq	**-0.020*****	**-0.010*****	**-0.014*****
	(-3.985)	(-3.246)	(-4.558)
TANG	**0.116****	**0.150*****	**0.119*****
	(2.746)	(7.676)	(5.342)
Industry dummies	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
Adj-R^2	0.423	0.335	0.261
N	487	2468	1813

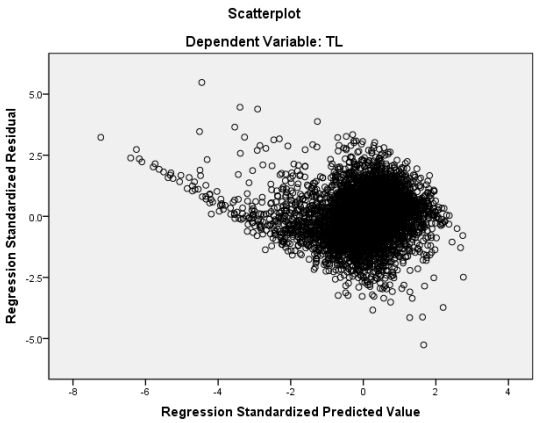

Figure 5-3 Pooled regression residual analysis

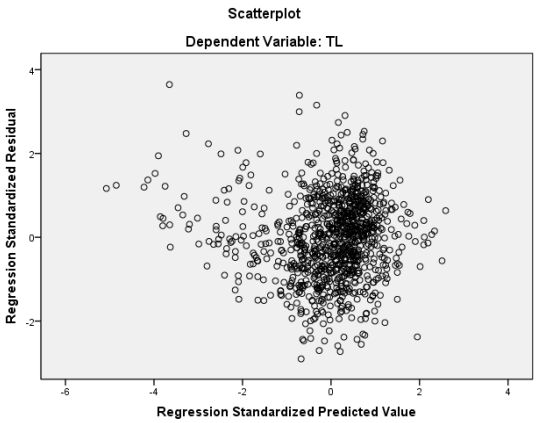

Figure 5-4 Cross-year residual analysis (2008)