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# AGENCY COSTS, OWNERSHIP, AND INTERNAL GOVERNANCE MECHANISMS: EVIDENCE FROM CHINESE LISTED COMPANIES

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## *ABSTRACT*

In recent years, there has been an increasing interest in assessing the effectiveness of corporate governance in China. This paper examines the impact of internal governance mechanisms such as ownership structure and board characteristics and debt financing on agency costs making use of a large panel of Chinese listed firms. We find that managerial ownership and debt financing work as effective corporate governance mechanisms for Chinese listed firms to mitigate agency conflicts and the resultant agency costs.

**Contribution/ Originality:** The study contributes to the finance literature in three meaningful ways. First, it contributes to the literature on agency costs in the context of emerging economies. Second it contributes to the growing literature on managerial incentives, and in particular managerial ownership, in the context of transition economies. Third, it extends the literature on the role of debt financing and the monitoring role of banks in China.

## 1. INTRODUCTION

Agency costs represent one of the central aspects of the linkages between corporate governance and corporate finance (Jensen and Meckling, 1976; Williamson, 1988). For a 100% owner-managed firm, agency costs of equity are zero (Jensen and Meckling, 1976). Yet, when ownership and management (or control) of a firm are separated, as happens in modern corporations, the divergence of interest between owners and managers results in considerable agency costs for the owners (Berle and Means, 1932; Jensen and Meckling, 1976). In their influential empirical contribution to the analysis of agency costs, Ang *et al.* (2000) suggest empirical proxies to measure agency costs, namely the asset utilization ratio and the operating expenses ratio. They then provide direct tests of the theoretical predictions made by Jensen and Meckling (1976) according to which agency costs are higher for firms whose managers have less than a 100 percent ownership stake, and should decrease as the equity shareholdings of the owner-manager increase. In line with these predictions, they find an inverse relationship between inside ownership and agency costs. Singh and Davidson (2003) extend the work of Ang *et al.* (2000) to a sample of large listed US-

corporations, and others researchers, to other economic settings such as the UK and Australia (See, for example, (Singh and Davidson, 2003; Fleming *et al.*, 2005; Florackis, 2008; McKnight and Weir, 2009; Henry, 2010)).

In the context of China, Firth *et al.* (2008) suggest that the ownership and governance reforms which Chinese SOEs have undergone before 2000[1], have not been effective in reducing the agency costs experienced by these firms. They attribute this finding to the fact that the Chinese government often retains a considerable ownership stake in privatised SOEs. Similarly, Tian and Estrin (2007) provide evidence suggesting that the Chinese government's ownership of both banks and firms, and the resultant soft budget constraints make debt an ineffective governance mechanism in reducing agency costs for Chinese listed firms.

In this paper, we build on this literature to examine the linkages between corporate governance mechanisms, on the one hand; and agency costs, on the other, focusing on the Chinese economy in recent years. We believe that China provides an excellent laboratory to study these linkages because its corporate governance has been evolving and improving rapidly so as to cope with its fast economic growth and the desire to integrate with the global economy. For instance, from June 2003 onwards, companies were required to appoint one third of independent directors to their boards. In addition, a crucial share ownership reform was successfully implemented in 2005-2006, following which (from January 2006) Chinese corporations have been allowed to incentivize their top-management with equity shares and share options. The main objective of these reforms was to improve the governance of listed firms, helping to solve the long standing agency conflicts characterizing these firms, and thereby enhancing corporate efficiency and performance. In recent years, there has been an increasing interest in assessing the effectiveness of corporate governance in China (see, for example, (Kato and Long, 2006b;2006c;2011; Conyon and He, 2012)). In their survey article, Denis and McConnell (2003) suggest that the context of privatization provides an interesting setting in which to investigate the effects of ownership structure on agency conflicts.

Using a large panel of Chinese listed firms over the period 2003-2010, this study examines the effect corporate governance mechanisms agency costs. Controlling for unobserved firm characteristics and potential endogeneity, we find that managerial ownership and debt financing work as effective governance mechanisms in mitigating the costs of agency conflicts in Chinese listed firms. Specially, we find that higher managerial ownership and debt help the firms lower the agency costs they face.

Our study contributes to the existing literature in many ways. First, it provides the first evidence from China on the direct relationship between managerial ownership and agency costs. Previous studies have in fact looked at the effects of government, legal person, and foreign shareholding, as well as the effects of debt on the agency costs faced by firms (Tian and Estrin, 2007; Firth *et al.*, 2008). Yet, to the best of our knowledge, there is no evidence on the direct effect of managerial ownership on agency costs in China. Second, like McKnight and Weir (2009) for UK firms, we provide evidence on the impact of the introduction of an independent director system on agency costs for Chinese listed firms, after the CSRC formally introduced the system as part of the corporate governance code in 2002. Although Firth *et al.* (2008) examine the effects of the composition of the board of directors on the level of agency costs faced by firms, their study is based on data for the period of 1988 to 2000. Their study therefore only considers the reforms that had been implemented before 2000 and tests whether firms' voluntary appointment of outside directors on the board had any impact on agency costs. Finally, unlike the study of Firth *et al.* (2008) we properly address the endogeneity problem through the use of a system GMM estimator in our empirical analysis.

The remainder of the paper is organized as follows. Section 2 reviews previous literature that focuses on the relationship between ownership and internal governance mechanisms, on the one hand; and agency costs, on the other and presents our hypotheses. The model specification and estimation method are described in Section 3. In

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

Section 4, we describe the data that we use in this study and provide basic descriptive statistics. Section 5 discusses our empirical results. Finally, Section 6 concludes.

## 2. LITERATURE REVIEW AND HYPOTHESES

### *2.1. Relevant Literature*

For a 100% owner-managed firm, equity agency costs are zero (Jensen and Meckling, 1976). Yet, when ownership and management (or control) of a firm are separated, as happens in modern corporations, the divergence of interest between owners and professional managers results in considerable agency costs for the owners (Berle and Means, 1932; Jensen and Meckling, 1976). Jensen and Meckling (1976) define the agency costs as the sum of (1) the monitoring expenditures by the principal, (2) the bonding expenditure by the agent, and (3) the residual loss. The agency costs can come in the form of managers' insufficient work effort (shirking), consumption of excessive perquisites, choice of inputs or outputs according to their own wishes, or other non-value-maximizing conducts. Hence, the alignment of management's incentive with those of owners becomes critically important for firms. Following Jensen and Meckling (1976) seminal work on agency costs, a vast body of theoretical and empirical literature has focused on the conflicts of interest between managers and equity owners and the resultant agency costs. To solve the agency problems various governance mechanisms have been devised such as providing equity ownership and compensation to managers, monitoring by the board of directors/large shareholders, the use of debt financing, the discipline by capital markets and the managerial labour market, the market for corporate control and so on.

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

### *2.2. Hypotheses*

In this section, we discuss how specific internal governance mechanism which have been suggested in the literature (see, for example, (Shleifer and Vishny, 1997; McKnight and Weir, 2009)) are likely to affect agency costs of Chinese listed companies.[2]

#### *2.2.1. Ownership Structure*

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

##### *2.2.1.1. Managerial Ownership*

The separation of ownership and control and the resultant misaligned incentives of managers and owners in modern corporations generate agency costs, such as shirking, excessive consumption of perks, or other non-value maximising behaviour by managers (Jensen and Meckling, 1976; Fama and Jensen, 1983). To solve this problem, the prescription of agency theory (Jensen and Meckling, 1976) is to give managers incentives in the form of equity ownership stakes in the firm. This helps to resolve managers' moral hazard problems by aligning their incentives with the interests of the shareholders. By strongly linking the future financial outcomes of the managers to

[2] Also see Denis and McConnell, (2003) and Brown, Beekes and Verhoeven (2011) for detailed reviews on corporate governance mechanisms.

shareholders' returns, equity ownership motivate managers to direct their commitment, preferences (e.g. risk taking) and efforts toward those actions and corporate policy choices that maximise shareholders' wealth. Further, providing managers with equity ownership in their firm is specially considered as an appropriate mechanism when it is difficult or costly to monitor managers' behaviour due to information asymmetries between insiders and outside shareholders, or when it is difficult to make a priori judgments about the benefits and costs of specific actions taken by managers (Eisenhardt, 1989).

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

In the context of China, from the early stages of the reform process, various incentive mechanisms have been used to align the incentives of managers with those of owners.[3] In general, researchers find that whatever the managerial incentive system, it was associated with an improvement in the productivity and performance of firms, with limited effects in state controlled firms (Groves *et al.*, 1994; Chow, 1997; Kato and Long, 2006a;2006b;2006c). However, unlike the top managers of industrialised countries, due to the government policy and constrained personal wealth, managers of Chinese listed firms historically had very low equity ownership stakes in their firms. During the last decade there has been a considerable increase in the equity ownership of managers in China (Walder, 2011; Conyon and He, 2011;2012).[4] Consistent with the prediction of Jensen and Meckling (1976) that managerial ownership reduces agency costs, we expect to observe a negative relationship between managerial ownership and agency costs for Chinese listed firms. Following the finance literature (Berger *et al.*, 1997; Yuan *et al.*, 2008) we define managerial ownership as the percentage of shares owned by all directors and officers (including members of the supervisory board)[5], and hypothesize that:

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

#### *2.2.1.2. State Ownership*

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

[3] These mainly include managerial autonomy and a management responsibility system and corporatization and partial privatisation of former SOEs Aivazian, Ge and Qiu (2005)

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

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

owned firms, as the government agents/bureaucrats are themselves agents of the true owners namely the state/ the general public.

Substantial state ownership is observed in transformed SOEs in China. Prior studies on performance effects of state ownership among Chinese listed corporations argue that because of complex agency problems and soft budget constraints, state ownership leads to inefficiency and unsatisfactory firm performance (e.g., (Xu and Wang, 1999; Sun and Tong, 2003; Wei *et al.*, 2005)). More recently, Chen *et al.* (2010) examine how transfers of controlling ownership from one state entity to another, as well as to a private entity affect performance of Chinese listed firms. They find that when controlling ownership is transferred to the hands of a private entity, efficiency and performance significantly improve, mainly driven by the savings in costs and reduction in the labor force. In contrast, the transfer of control to other branches of the state results in small gains in performance. These findings lead the authors to conclude that the Chinese government should proceed to sell down its equity ownership stake in partially privatized listed firms.

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

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

#### *2.2.1.3. Legal Person Ownership*

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

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

By contrast, researchers also point out that because many of these institutions are owned wholly or partially by different levels of government, it is also possible for agency problems to arise (Wei *et al.*, 2005; Lin and Su, 2008)[6]. After controlling for endogeneity, Wei *et al.* (2005) report a negative relationship between legal person shareholding and firm value measured using Tobin's Q. Firth *et al.* (2008) study fails to find any significant association between legal person ownership and agency costs for their sample of firms. More recently, studies on the 2005 split share structure reform present evidence to suggest that mutual funds are associated with lower compensation for tradable shareholders, which suggests higher agency costs for the latter (Firth *et al.*, 2010). Given the contrasting findings in the literature, we make no ex-ante prediction on the effects of the legal persons' shareholding on agency costs.

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

*2.2.1.4. Foreign Ownership*

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

In the context of China, previous studies provide mixed results on the performance effects of foreign shareholders.[7] Firth *et al.* (2008) provide evidence suggesting that in Chinese listed firms, foreign shareholders indeed do not provide effective monitoring of management, but, instead, encourage managers' consumption of perquisites, privileges, and "trappings of Western executives". They conclude that because of this increased unnecessary expenditures, foreign ownership in Chinese listed firms is associated with higher agency costs. In line with their findings, we hypothesize that:

*H3: There is a negative association between foreign ownership and the level of agency costs.*

*2.2.2. Board Characteristics*

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

*2.2.2.1. Board Independence*

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

Yet, the empirical evidence is mixed. For example, using event study analysis, (Rosenstein and Wyatt, 1990) and Shivdasani and Yermack (1999) report evidence to support the view that the appointment of outside directors to the board is associated with increases in company value. By contrast, several empirical studies report evidence that the proportion of independent directors/outside directors negatively affects corporate performance (see, for example, (Yermack, 1996; Weir and Laing, 2000). Singh and Davidson (2003) find direct evidence that the independent directors are not helpful in reducing agency costs for US listed firms. Researchers generally attribute these findings to the fact that outside directors do not have inside information about the firm, lack the required skills to attend their responsibilities, and are unwilling to play a confrontational monitoring role. Furthermore, some empirical studies fail to find any relationship between board composition and performance and argue that the

[7] See for example, Sun and Tong (2003) ; Bai, Liu, Lu, Song and Zhang (2004) and Wei, Xie and Zhang (2005) Also, see the literature surveyed in Greenaway, Guariglia and Yu (2014) for details. The latter authors show that there is an inverted U-shaped relationship between the degree of foreign ownership and corporate performance in Chinese unlisted companies.

proportion of independent directors is endogenously determined to the firm performance (Hermalin and Weisbach, 1991; Wintoki *et al.*, 2012). For example, poorly performing firms may appoint more independent directors who are expected to closely monitor managers' actions and thus help to improve performance. Yet, if one does not control for endogeneity properly, there could be a negative relationship between the proportion of independent directors and firm performance.

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

*H4: There is a negative association between the proportion of independent directors in the board and agency costs.*

#### *3.2.2.2. Board Size*

Several papers provide evidence that the size of the board is an important governance mechanism as it affects its ability to be an effective monitor and guide. Monks and Minow (2004) suggest that since larger boards are able to commit more time and effort to overseeing management, board monitoring can improve the quality of managerial decision-making and lead to better firm performance. Adams and Mehran (2003) provide evidence suggesting that larger boards increase monitoring effectiveness and guarantee greater board expertise. This evidence, thus, suggests that large boards can help to reduce agency costs.

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

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

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

### *2.2.3. Debt Financing*

Corporate finance theories and especially the agency literature show that debt financing can act as an important governance mechanism in aligning the incentives of corporate managers with those of shareholders, thus reducing agency costs of equity (e.g., (Jensen and Meckling, 1976; Grossman and Hart, 1982; Jensen, 1986; Stulz, 1990;

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

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

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

In the context of China, using data for listed firms prior to 2000, Tian and Estrin (2007) and Firth *et al.* (2008) argue and provide evidence that due mainly to soft budget constraints and the inefficient banking system, debt financing does not act as a governance mechanism in reducing agency costs. Instead, the former authors further show that it facilitates increased managerial perks, mainly due to substantial government ownership and control in the firms.

In contrast, recent research shows that following a series of reforms in the banking system and the resultant improvement in the governance of the Chinese financial sector[8], banks now use more and more commercial judgment and prudence in their lending decisions (Cull and Xu, 2005; Ayyagari *et al.*, 2008; Firth *et al.*, 2009). It is therefore reasonable to argue that the deregulated and reformed Chinese banks can now monitor corporate activities, thus improving the efficiency of firms. In other words, debt financing can now act as a governance mechanism in constraining managers' misuse of resources, thus reducing agency costs in Chinese listed firms. We therefore hypothesize that:

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

## 3. BASE LINE SPECIFICATION AND ESTIMATION METHODOLOGY

### *3.1. Base Line Specification*

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

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

[8] See Ratnam and Vijayakumaran (2017). for detailed discussion on the China's banking sector reform.

where $i$ indexes firms and $t$, years. The error term in Equation (1) is made up of five components. $v_i$ is a firm-specific effect; $v_t$, a time-specific effect, which we control for by including time dummies capturing business cycle effects; $v_j$, an industry-specific effect, which we take into account by including industry dummies; and $v_r$, a region-specific effect, which we control for by including a full-set of regional dummies. Finally, $\varepsilon_{it}$ is an idiosyncratic component. $AC_{it}$ indicates alternative measures of agency costs. The independent variables include proxies aimed at testing the effects of ownership and corporate governance mechanisms and other control variables proved by previous studies to be influential determinants of agency costs. Table A1 in the Appendix provides definitions for all variables used in this paper.

### *3.1.1 Agency Costs*

Following Ang *et al.* (2000) and Singh and Davidson (2003) among others, we measure agency costs in two ways, namely using the asset utilization ratio and the ratio of general, administrative and selling expenses to total sales (GA&S). It is argued that the asset utilization ratio, which is defined as the ratio of total sales to total assets, measures the efficiency with which management uses the firm's assets to generate sales. As inefficient assets utilization results in revenue loss to the firm, agency costs are inversely related to this ratio. A firm with higher turnover ratio indicates that the firm is generating significant sales out of its assets and thus facing low agency costs. In contrast, a firm with lower ratio indicates management's sub-optimal behavior such as poor investment decisions (i.e. undertaking non-value maximising investment), insufficient effort/ shirking, or consumption of excessive perks. This would indicate conflict of interest between managers and shareholders, which in turn result in higher agency costs for shareholders.

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

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

In the context of China, managerial perks are the main source of income for managers, as the average annual salary of Chinese general managers is much lower than that of their counterparts in Western countries (Kato and Long, 2006b; Conyon and He, 2011). For example, Chinese firms typically pay dining, communication, transportation, and entertainment bills for a senior manager's family. Most managerial perquisites are not explicitly reported in financial statements, but are included in the administration costs. Therefore, Tian and Estrin (2007) suggest that the expense ratio is a good indicator of managerial perquisites.

Finally, asset utilization ratio and the ratio of general, administrative and selling expenses to total sales (GA&S) are more commonly used as proxies for agency costs in various research settings including China. For example, Tian and Estrin (2007) and Firth *et al.* (2008) use these variables to measure agency costs for Chinese

listed firms. From 1993 China started to adopt a new accounting system that is closer to international accounting standards and provides better information disclosure. Furthermore, from 2000, all Chinese-listed firms have applied a consistent and unified set of accounting standards (Chen *et al.*, 2012). Components of these two variables, namely general, administrative and selling expenses, total sales, total assets are measured in similar manner as in the Western countries. We believe therefore that asset utilization ratio and the ratio of general, administrative and selling expenses to total sales can also be used to measure agency costs for Chinese listed firms.

### *3.1.2. Ownership and Other Governance Mechanisms*

Focusing on corporate governance mechanisms, we include managerial shareholding *(DOS)* to represent the alignment of managerial interest with that of shareholders.[9] Following Firth *et al.* (2008) we also include legal person shareholding *(LPS)*, state shareholding *(SOS)*, and foreign shareholding *(FOWNS)* to see the impact of other major shareholders. As for the board characteristics, we include the board size *(BOARDSIZE)*; and the proportion of independent directors in the board *(INDIR)*. Finally, following the governance literature (see for example, McKnight and Weir (2009) we include leverage as a governance mechanism which constrains managers' expropriation of free cash flow. Leverage (*LEV*) is measured as the percentage of total debt to total assets. We include these corporate governance variables first one by one and then all together.

If the above corporate governance mechanisms are effective in reducing agency costs, as predicted by our hypotheses, we would expect the level of asset utilization to be positively associated with better governance, and the discretionary expenses to be negatively related with it. This is consistent with the notion that firms with strong governance structures show lower levels of discretionary expenses and greater levels of asset utilization.

### *3.1.3. Control Variables*

In line with previous studies, Equation (1) includes several additional variables to control for a set of firm-specific characteristics that are likely to be correlated with the agency costs faced by firms. These include firm size *(FIRSIZE)* and firm age and *(FAGE)*. We also control for territory specific, industry-specific and time-specific effects by including dummies for regions, industries and sample years in all specifications.

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

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

The sign of firm age *(FAGE)* is also unclear. Ang *et al.* (2000) argue that because of the effects of learning and survival bias, mature firms are more efficient than younger firms. In addition, a firm with a long history can establish its reputation in the debt market, and with banks, and, is thus likely to suffer less from asymmetric information problems, which may make it easier to obtain the debt financing. This in turn could be related to higher efficiency because the higher the leverage, the higher the potential for default risk, and the higher the incentive for banks to closely monitor these firms' operations (Ang *et al.*, 2000; Owusu-Antwi *et al.*, 2018). Conversely, in the context of China, older firms are more likely to be former SOEs and thus to face more severe governance problems (Lin *et al.*, 1998; Kato and Long, 2006a;2006b;2006c). When compared to younger privately-controlled enterprises, they are therefore likely to be less efficient and to face higher agency costs. Consistent with these arguments Tian and Estrin (2007) and Firth *et al.* (2008) find a negative relationship between agency costs and firm age.

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

**Table-1.** Summary statistics of governance and firm characteristics for the pooled sample of companies

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

**Notes:** This table reports summary statistics of the main variables used in our study. Sd indicates the standard deviation; N, the number of observations; p50, the median; min, the minimum value; and max, the maximum value. All variables are defined in Table A1 in the Appendix.

### *3.2. Estimation Methodology*

To empirically analyze the relationship between ownership and other governance mechanisms and agency costs, we use the system Generalized Methods of Moments (GMM) technique developed by Arellano and Bond (1991) and Arellano and Bover (1995). This technique simultaneously controls for firm-specific fixed effects, and endogeneity problems, by using lagged values of the potentially endogenous variables as internal instruments. The system GMM estimator estimates the relevant equation both in levels and in first-differences. First-differencing is used to control for unobserved heterogeneity. We use all right-hand side variables (except age and the dummies) lagged twice or more as instruments in the first-differenced equation, and first-differences of these same variables lagged once as instruments in the level equation. Blundell and Bond (1998) point out that the first-differenced GMM procedure may suffer from weak instrument problems and might produce biased results. Therefore, to reduce the potential biases and imprecision associated with the first-differenced GMM estimator, we use the system GMM estimation. We use the Sargan/Hansen test for over identifying restrictions, and the test for second order autocorrelation of the differenced residuals (AR (2)) to test the validity of our instruments. In the case of failure of the Sargan/Hanson test and/or AR (2) test, regressors lagged three times or more are included in the instrument set (Bond, 2002).

## 4. DATA AND DESCRIPTIVE STATISTICS

### *4.1. Sample and Dataset*

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

### *4.2. Descriptive Statistics*

Table 1 reports descriptive statistics for the variables used in our analysis. We observe that the pooled mean (median) value of managerial ownership is 2.3% (0%), with a minimum value of 0% and maximum value of 65.4%. The state and legal persons hold on average (at the median) 23.3% (17.3%) and 14% (1.2%) of the shares, respectively. Foreign shareholders, on average (at the median), hold 4 % (0%) of total issued shares. The average (median) board size is 9.360 (9.0), with an average (median) proportion of independent outside directors of 35.2% (33.3%). The average (median) debt to total asset ratio is 51.3% (51.6%).

As for the control variables included in our baseline model, the average (median) firm size is just over 1 billion RMB (0.464), and the average (median) firm age measured by number of years from the establishment of firm is 11.41 (11)[10]. Average (median) productivity, measured as real sales per employee, is 0.55 million RMB (0.24).

Table 2 presents the Pearson correlation coefficients between variables. Since corporate governance mechanisms are highly likely to be endogenous, we do not concentrate much on the interpretation of correlation coefficients. Nonetheless, Table 2 suggests that given that the observed correlation coefficients are relatively low, multicollinearity should not be a serious problem in our study.

**Table-2.** Correlation matrix

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $AC1_{it}$ | 1 | 1.00 | | | | | | | | | | |
| $AC2_{it}$ | 2 | -0.29* | 1.00 | | | | | | | | | |
| $DOS_{i(t-1)}$ | 3 | 0.00 | 0.03* | 1.00 | | | | | | | | |
| $SOS_{i(t-1)}$ | 4 | 0.01 | -0.07* | -0.26* | 1.00 | | | | | | | |
| $LPS_{i(t-1)}$ | 5 | -0.06* | 0.10* | -0.02 | -0.46* | 1.00 | | | | | | |
| $FOWNS_{i(t-1)}$ | 6 | 0.04* | 0.00 | -0.06* | 0.01 | -0.03* | 1.00 | | | | | |
| $INDIR_{i(t-1)}$ | 7 | 0.01 | -0.03* | 0.09* | -0.12* | -0.01 | 0.00 | 1.00 | | | | |
| $BODSIZE_{i(t-1)}$ | 8 | 0.02 | -0.06* | -0.09* | 0.15* | -0.08* | 0.08* | -0.28* | 1.00 | | | |
| $LEV_{i(t-1)}$ | 9 | 0.10* | -0.04* | -0.21* | -0.00 | 0.02* | 0.00 | 0.00 | 0.04* | 1.00 | | |
| $FIRSIZE_{i(t-1)}$ | 10 | 0.52* | -0.43* | -0.13* | 0.13* | -0.21* | 0.15* | 0.00 | 0.21* | 0.21* | 1.00 | |
| $AGE$ | 11 | 0.00 | 0.01 | -0.30* | -0.21* | -0.08* | 0.05* | 0.05* | -0.05* | 0.25* | 0.11* | 1.00 |

**Notes:** All variables are defined in Table A1 in the Appendix.

## 5. EMPIRICAL RESULTS

### *5.1. Links between Ownership, Internal Governance Mechanisms, and Agency Costs Measured by the Asset Utilization Ratio*

Table 3 presents system GMM estimation results of our baseline model (1), where the dependent variable is the asset utilization ratio. This ratio varies inversely with agency costs. Thus, a negative sign of the estimated coefficient of our independent variables indicates higher agency costs for the firm.

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

In column 1 of Table 3, we first estimate a naïve model in which we include managerial ownership and a set of control variables such as firm size, firm age, and regional, industry, and year dummies. In columns 2 through 4, we then separately include other ownership variables. In columns 5 and 6, we include our two board structure variables, and in column 7, leverage. In column 8, we estimate our baseline model with all the variables included at the same time. Focusing on column 1, we observe that the coefficient on managerial ownership is positive and statistically significant at the 1% level. In line with hypothesis H1, this finding suggests that there is strong evidence in support of Jensen and Meckling (1976) incentive alignment hypothesis. The alignment of managers' incentives with those of shareholders encourages managers to utilize a firm's assets effectively, thus reducing agency costs.

**Table-3.** Internal governance mechanisms, firm characteristics, and agency costs measured by the asset utilization ratio

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

**Notes:** The dependent variable in all columns is agency costs measured using the asset utilization ratio. All equations are estimated using a system GMM estimator. *AR1 (AR2)* is a test for first- (second-) order serial correlation of the differenced residuals, asymptotically distributed as $N(0,1)$ under the null of no serial correlation. The Hansen *J* test of over-identifying restrictions is distributed as *Chi*-square under the null of instrument validity. We treat all right-hand side variables except firm age as potentially endogenous: levels of these variables dated *t*-2 and further are used as instruments in the first-differenced equations and first-differences of these same variables lagged once are used as additional instruments in the level equations. Regional, industry, and time dummies are always included in the instrument set. Standard errors are in parentheses. ***, **, and * denote significance levels of 1%, 5% and 10%, respectively. See Table A1 in the Appendix for definitions of all variables.

This result is consistent with the findings of previous empirical studies such as Ang *et al.* (2000); Singh and Davidson (2003); Fleming *et al.* (2005); Florackis (2008) and McKnight and Weir (2009) who also report an inverse relationship between managerial ownership and agency costs. Furthermore, its magnitude also appears to be economically significant: incrementing managerial ownership by one-standard deviation reduces agency costs (increase assets utilization efficiency) by 6.53 %. From column 2 of Table 3, we observe that, in line with hypotheses H2, the estimated coefficient on state ownership is negative and significant at the 10% level. Focusing on economic significance, a one standard deviation increase in state shareholdings decreases asset utilization efficiency (i.e., an increase in agency costs) by approximately 2.5% in column 2. This result is consistent with the view that state

ownership in Chinese listed firms leads to governance problems and thus, operational inefficiency, increased agency costs and poor performance of the firms (Kato and Long, 2006a;2006b;2006c;2011; Tian and Estrin, 2007; Tahir and Sabir, 2014). This result is inconsistent with Firth *et al.* (2008) who find insignificant effects of state ownership on agency costs using random-effects and fixed-effects estimators. Yet, they do not take endogeneity into account. After controlling for endogeneity, Wei *et al.* (2005) document that increased state ownership in a firm results in poor performance (higher agency costs for the shareholders).

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

In column 5 and 6, the proportion of independent directors and board size are included in the model. The estimated coefficient on the proportion of independent directors is statistically insignificant.. This finding is consistent with the Singh and Davidson (2003) and McKnight and Weir (2009) who focused on US and UK, listed firms, respectively. As for the board size, it is negatively associated with the asset utilization ratio, but its coefficient is not significant.. Taken together, these results lend support to the view that board of directors in Chinese listed firms are unable to contribute to the effective monitoring of top managers' non-value maximizing behavior. Our results are also consistent with Clarke (2003;2006) and Lau *et al.* (2007) who argue that independent directors in the Chinese market are just appointed to meet regulatory and legal requirements.

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

This result is inconsistent with the findings of Tian and Estrin (2007) and Firth *et al.* (2008) who, focusing on the data from an earlier period, report evidence of an ineffective role of debt in mitigating agency conflict between managers and shareholders in Chinese listed firms. The difference between our findings and theirs can be explained considering that we use data aftter 2003, and considering that, in recent years, Chinese banks not only increased their lending and monitoring efficiency, but were no longer forced to lend unlimited amounts of money to SOEs. In fact, the Chinese government no longer provides guarantee for the borrowing of SOEs from the banks, resulting in the soft budget constraints which SOEs enjoyed for a long time being eliminated (Cull and Xu, 2005; Bhabra *et al.*, 2008; Firth *et al.*, 2009; Chen *et al.*, 2012; Lin and Bo, 2012; Tsai *et al.*, 2014). Leverage can therefore potentially act as an effective corporate governance mechanism in constraining managers from consuming excessive perks, and from spending corporate resources in wasteful investments (Jensen and Meckling, 1976; Grossman and Hart, 1982; Jensen, 1986; Stulz, 1990).

Column 8 of Table 3 shows parameter estimates for our baseline model (1), when all the independent and control variables are include at the same time. We can see that the estimated coefficient on managerial ownership variable remains positive and precisely determined. The coefficient estimate on the leverage ratio also remains positive. Yet, the coefficient on state ownership is no longer significant at conventional levels.

As for the effects of the control variables, the results show that in all specifications, the estimated coefficient on firm size is positive and significant at the 1% level, suggesting that larger firms are associated with lower agency costs. This is consistent with the prediction that large firms have more resources, experience economies of scale, and is able to effectively monitor managers' misconduct. This result is also consistent with Ang *et al.* (2000); Singh and Davidson (2003) and Firth *et al.* (2008) among others. The coefficient associated with firm age is negative and

statistically significant at the 1% level in five out of eight regressions in Table 3. This finding is consistent with our prediction that Chinese older firms are more likely to be former SOEs with a long history of operation (which were then converted into listed companies), and as such face more agency problem leading to less efficient utilization of assets and higher agency costs. This result is also consistent with the findings of Tian and Estrin (2007) and Firth *et al.* (2008).

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

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

### *5.2. Links between Ownership, Internal Governance Mechanisms and Agency Costs Measured by the Expense Ratio*

We now turn to the results obtained when using the general, administration and selling expenses ratio as an alternative measure of agency costs. Table 4 present the system GMM estimation results. As shown in columns 1 and 8, consistent with our findings from Table 3, the coefficient on managerial ownership is negative and precisely determined, further supporting our incentive alignment hypothesis (H1) that increased managerial ownership help reduce agency costs among Chinese listed firms. Furthermore, its magnitude is also economically significant. Focusing on column 1, we find that incrementing managerial ownership by one-standard deviation decreases general, administration and selling expenses ratio by 24.68 %.

Focusing on columns 2 to 8, we observe that other ownership variables do not have influence on agency costs, with the exception of state ownership, which, in accordance with our hypothesis H2, exhibits a negative and statistically significant coefficient in column 2. Moving to board characteristics, we observe that, once again, board size and the proportion of independent directors do not influence agency costs. Finally, consistent with the findings in Table 3, we observe that leverage exhibits a negative and significant coefficient in both columns 7 and 8. This effect is economically meaningful: focusing on column 7, a one standard deviation increase in leverage decreases the expense ratio approximately by 16.4%.

The coefficients on the other control variables indicate that, consistent with previous findings, young and large firms, are more likely to have lower agency costs. The AR3 and Sargan tests generally indicate that our models are correctly specified and that the instruments are generally valid[11]. In summary, the results obtained using the expense ratio as a measure of agency costs is consistent with those obtained using the asset utilization ratio.

[11] We report the AR(3) test instead of the AR(2) test because, contrary to Table 3, all instruments in this table are lagged three or more times.

**Table-4.** Internal governance mechanisms, firm characteristics and agency costs measured by the expense ratio

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

**Notes:** The dependent variable in all columns is agency costs measured using the expense ratio. All equations are estimated using a system GMM estimator. *AR1 (AR3)* is a test for first- (third-) order serial correlation of the differenced residuals, asymptotically distributed as $N(0,1)$ under the null of no serial correlation. The Hansen *J* test of over-identifying restrictions is distributed as *Chi*-square under the null of instrument validity. We treat all right-hand side variables except firm age as potentially endogenous: levels of these variables dated *t*-3 and further are used as instruments in the first-differenced equations and first-differences of these same variables lagged twice are used as additional instruments in the level equations. Regional, industry, and time dummies are always included in the instrument set. Standard errors are in parentheses. ***, **, and * denote significance levels of 1%, 5% and 10%, respectively. See Table A1 in the Appendix for definitions of all variables.

## 6. CONCLUSIONS

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

In this study, we use a large panel of listed Chinese firms over the period 2003-2010 to examine the impact of ownership, board characteristics, and debt financing on the agency costs that firms face. Using the system GMM estimator to control for unobserved firm characteristics and endogeneity, we find that managerial ownership and debt financing work as effective corporate governance mechanisms in mitigating agency costs for the firms. In

particular, we find that high levels of managerial ownership and debt help the firms lower the agency costs. We also find some evidence that legal person shareholdings help to mitigate agency costs.

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

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## APPENDIX

**Table-A1.** Variables' names and definitions

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

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