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Executive Compensation, Firm Performance, and Ownership Structure: An Empirical Study of Listed Firms in China*

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October 2004

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*This research was funded by grants from the ABDI (Asian Development Bank Institute) and the Asian Studies program of Colgate University, as well as a Picker Research Fellowship from the Research Council of Colgate University. Kevin J. Murphy, Runtian Jing, and Jan Svejnar provided us with advice and encouragement on our research program on executive compensation in China in general. The data used in the paper are provided by Shenzhen GuoTaiAn IT Co. and SinoFin Inc. We are grateful for support from these individuals and organizations.

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Abstract

This paper provides evidence on how executive compensation relates to firm performance in listed firms in China. Using comprehensive financial and accounting data on China's listed firms from 1998 to 2002, augmented by unique data on executive compensation, we find statistically significant sensitivities and elasticities of annual cash compensation (salary and bonus) for top executives with respect to shareholder value in China. In addition, sales growth is shown to be significantly linked to executive compensation and that Chinese executives are penalized for making negative profit although they are neither penalized for declining profit nor rewarded for rising profit insofar as it is positive. More importantly, we find that the ownership structure of China's listed firms has important effects on the pay-performance link in these firms. Private ownership seems to be strengthening the executive pay-performance link and thus making the listed firms more effective in solving the agency problem, compared to both government ownership and collective ownership. In contrast, government ownership weakens the pay-performance link and such effects persist, be it direct or indirect. In addition, foreign shares enhance the pay sensitivity to company stock performance and so do tradable shares to a less degree. These results are consistent with the logic in the Coase Theorem that clearly assigned and well protected property rights lead to efficient incentive mechanisms. As such, ownership restructuring may be needed for Chinese SOEs' successful transformation into efficient modernized corporations as well as China's overall successful economic transition.

Keywords: executive compensation, firm performance, corporate governance, ownership structure, China, and transition economies.
JEL Categorization: P34, M12, M52, G30, G15, J33

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I. Introduction

Research on executive compensation has drawn a lot of attention from economists in the past two decades, but most work on executive compensation has been concentrated on a few developed countries such as the U.S. and Britain, mainly due to data availability.[1] Because executive compensation is a major component of the incentive mechanisms adopted by firms to align the interests of their management with those of their shareholders, one might argue that barring the issue of data availability, it is just as important, if not more important, to study how firms in developing countries compensate their top executives, because these are the countries that will benefit the most from adopting more efficient incentive mechanisms and better corporate governance practices. In particular, for transition economies struggling to transform their state-owned enterprises (SOEs) into profitable modern firms through reforms, studying the compensation-performance link can give us an opportunity to understand how incentive mechanisms evolve during these reforms, which in turn will help us evaluate the success of various reform measures.

Aided by two newly available data sets, in this paper we conduct such a study on a group of firms from the largest transition economy in the world, China. These are firms listed in one of China's two stock markets, the Shanghai Stock Exchange and the Shenzhen Stock Exchange. Because firms aspiring to become listed are required to go through corporate restructuring according to the Corporate Law, a legal document that largely fashions the corporate structure in China after the typical Western firms, the process of getting listed has the potential of enhancing

[1] See, for example, Murphy (1999) for an excellent survey of the mostly empirical literature on top management incentives; and Gibbons and Waldman (1999) for the largely theoretical literature. For an authoritative survey of earlier work, see Rosen (1990) who concludes his survey by urging scholars to broaden their inquiry beyond the U.S. to other countries. For an excellent survey of the corporate governance literature in general, see for instance Shleifer and Vishny (1997).

the quality of corporate governance in these firms. This may explain why getting listed on the stock market has been trumpeted as a major vehicle for China's SOE reform in recent years. On the other hand, although privately controlled firms have gradually increased their presence, the majority of listed firms on the Chinese stock market are still controlled by the government. In other words, the ownership structure of most listed firms in China is still dominated by government shares, which casts doubt on the effectiveness of the corporate restructuring process (or *GongSi GaiZhi* in Chinese). In order to draw some conclusions about China's success in using stock market listing as a vehicle for SOE reforms, we explore how these firms relate their executive compensation to their firm performance and how such relationships are influenced by their ownership structures.

Specifically, we find statistically significant sensitivities and elasticities of annual cash compensation (salary and bonus) for top executives with respect to shareholder value in China. The size of the estimated sensitivities imply that a 1000 RMB increase in shareholder value yields a 0.020 RMB to 0.053 RMB increase in annual cash compensation, whereas the size of the estimated elasticities suggest that a 10 percent increase in shareholder value results in 3.7 to 4.0 percent increase in annual cash compensation for top executives. We also find that sales growth is significantly linked to executive compensation and that Chinese executives are penalized for making negative profit although they are neither penalized for declining profit nor rewarded for rising profit insofar as it is positive.

In addition, the strength of the link between compensation and performance varies across firms with different ownership structures. Our findings suggest that private ownership and control of listed firms in China enhance the link between firm performance and executive compensation, while government ownership weakens executive pay-performance link and thus makes the firms less effective in solving the agency problem between their shareholders and the management. The private firm enhancement effect remains even when compared with firms

controlled by collective ownership, while the government weakening effect persists whether direct government ownership (state shares) or indirect government ownership (domestic legal person shares) is used to measure government control. Furthermore, firms with higher percentage of foreign shares and those with higher percentage of tradable shares both have greater executive pay sensitivity and elasticity with respect to company stock performance.

These results suggest that the interests of top executives in firms that are more privatized, have more foreign shares, or have more tradable shares, are more in line with those of the shareholders and thus these companies operate more like firms in the West. This is consistent with the key insight of Coase (1960) that the creation of an efficient incentive structure results from clearly defined and well secured property rights, and also conforms to the belief that the piecemeal enterprise reforms adopted in China will need to be supplemented by changes in ownership structures in order to ensure the successful transformation from SOEs into profitable modern corporations.[2] As such, China may be in great need for ownership restructuring to fully succeed in transforming its SOEs to efficient modernized corporations as well as its overall economic transition.

Finally, to our knowledge, this paper is also the first study to look at pay-performance sensitivities and elasticities for listed firms in China.[3] Systematic research outside of the U.S. on executive compensation is still in its infancy, especially in emerging markets, mostly due to the limited data availability. Our study thus takes a step in filling in this gap.[4]

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[2] For previous results on China suggesting the importance of ownership structure, see, for instance, Chang, McCall, and Wang (2003), who find that Chinese township and village enterprises with better defined ownership have significantly better performance. In addition, Zhang, Zhang, and Zhao (2003) find that state ownership leads to lower R&D and productive efficiency in industrial firms.

[3] Groves et al. (1995) examine a sample of SOEs in China in the 1980s (prior to the opening of stock exchanges in China), and present early evidence on the link between managerial pay and accounting measures of firm performance in pre-stock market China. Liu and Otsuka (2004) provide useful information and findings on top management incentives in steel industry in four provinces in China although they do not examine pay-performance sensitivity. Mengistae and Xu (2004) give a detailed study of how CEO compensation was determined in SOEs in China, but the time period studied is the 1980s, before the era of the stock market and the listed firms.

[4] For a literature review of prior studies on U.S. CEO compensation, see for example Murphy (1999). The U.K. is one other country where CEO compensation data are readily available (Conyon, 1997). For other countries, in

The structure of the paper is as follows. Section II provides some background information on China's stock market, listed firms, and executive compensation in the context of its enterprise reforms. In addition, we review some relevant literature and outline the questions to be studied in our paper. Section III describes data and econometric specifications used in the empirical study. The main results are contained in Section IV and Section V. Section VI concludes.

II. Enterprise Reforms and Listed Firms in China: Background and Research Questions[5]

II.1 Stock Market, Listed Firms, and Enterprise Reforms in China

The best perspective for studying China's stock market and its listed firms is to view them as part of China's heroic attempts to reform its long beleaguered SOEs, not only because their revival in the late 1980s and early 1990s has been largely prompted by the government's effort to help SOEs raise capital and reduce debt burden, but also because they have become one of the new frontiers of China's enterprise reform in recent years.[6] This perspective suggests a fruitful research agenda on how the incentive mechanisms evolve in listed firms and also leads to our focus on ownership structure in the research plan. We discuss the importance of ownership structure for Chinese listed firms in this section after providing some background information on China's stock market. In the next section, we will justify this study's focus on executive compensation.

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particular Asian countries, data on CEO compensation are typically not publicly available and thus most studies use average pay for all executives. See, for instance, Kaplan (1994), Xu (1997), Ang and Constand (1997), Joh (1999) and Kubo (2001) on Japan; and Kato, Kim and Lee (2004) on Korea. The rare exception is Kato and Kubo (2003), which use proprietary data on Japanese CEO compensation. For recent exceptions, see Campbell and Keys (2003) and Kato, Kim and Lee (2004) on managerial incentives and corporate governance in Korea.

[5] This section is greatly enriched by the many conversations the authors conducted with executives of listed firms and securities firms, staff of government regulatory agency, and researchers studying corporate governance issues in four Chinese cities, Chengdu (Sichuan), Shanghai, Beijing, and Tianjin, during the summer of 2004. The field work, which includes both the interviews as well as two surveys targeting listed and non-listed firms in Sichuan Province, is sponsored by a Colgate University Picker Fellowship, for which the authors greatly appreciate.

[6] The government's policy stance to emphasize the role of the stock market and the listed firms in China's SOE reforms can be observed from numerous speeches given by policy makers in charge of enterprise reforms. For instance, in a speech given at the "Meeting on How to Establish the Modern Enterprise System in Listed Firms" held in December of 2002, the chairman of the Economic and Trade Commission, Mr. Rongrong Li, stated that China's enterprise reform and modernization in the coming years will be focused on listed firms.

The stock market's revival in China started in the late 1980s, with stock exchanges established in Shanghai at the end of 1990 and Shenzhen in early 1991 and the first Chinese company going public in 1991. But its high speed development did not begin until the mandate of the Chinese Communist Party's (the CCP) 14th Congress. In contrast to the largely piece-meal SOE reform measures adopted in the 1970s and 1980s, the CCP's 14th Congress in October 1992 opened a new chapter in China's SOE reform by proposing to establish a modern corporation system that resembles the West.[7] This decision was made possible only after the Party accepted as the target for China's economic reform to build "a market economy with Chinese characteristics" and has made SOE reform a major component of China's economic reform since then.

Soon after the 14th Congress, the National Peoples' Congress (NPC) and its Standing Committee passed the Corporate Law in 1993, which laid out the fundamental rules for corporate governance in modern Chinese corporations and provided blueprints for SOE restructuring and reform. In 1997, the Chinese Communist Party's 15th Party Congress made the shareholding system a centerpiece of China's enterprise restructuring, leading to a rapid increase in the number of firms listed in the two stock exchanges in China.[8] The development of the stock market was further prompted by the passage of the Securities Law in 1998. By early 2004, China's stock market has emerged as the eighth largest in the world with close to 1,300 listed firms and market capitalization of over $550 billions.[9]

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[7] Earlier SOE reforms were mainly designed to align the interests of SOE management and the government, and they include the administrative decentralization and profit retention policies (*fangquan rangli*) in the late 1970s to the early 1980s, the changes in the forms of profit sharing and funding sources for SOEs during the mid to late 1980s (*ligaishui* and *bogaidai)*, and the incentive contracts for managers and workers during the late 1980s (*chengbaozhi*). For a detailed discussion on China's earlier enterprise reforms from a historic perspective, see Naughton (1995) and Yang (1997). For a general discussion on enterprise reforms in transition economies, see Megginson and Netter (2001).

[8] See Jefferson et al. (2003).

[9] There were 1288 firms listed in the Shanghai and Shenzhen Stock Exchanges. Source: Shanghai and Shenzhen Stock Exchanges. One estimate puts the market capitalization in China's stock markets at about 50% of China's GDP, which is comparable to the ratio in Japan (See People's Daily, Feb. 22, 2001). A more conservative estimate discounting values of shares owned by the state and legal persons puts the ratio at 20%.

According to the 1993 Corporate Law of China, listed firms are publicly held corporations approved by the Chinese Securities Regulatory Commission (CSRC) to issue and trade shares in one of the two stock exchanges in China, the Shanghai Stock Exchange or the Shenzhen Stock Exchange. The Corporate Law recognizes two types of corporations: closely held corporations (Youxian Zeren Gongsi) and publicly held corporations (Gufen Youxian Gongsi), with the latter requiring higher levels of registered capital and a larger number of shareholders. Both types of corporations are required to establish three corporate governing bodies: (i) the shareholders (acting as a body at the shareholder general meeting); (ii) the board of directors; (iii) and the board of supervisors, although a closely held corporation with "few shareholders" and "small capital size" can take exceptions to the rules.[10]

In terms of property rights created by share ownership, the Corporate Law clearly stipulates that shareholder rights include the right to investment interests, the right to make decisions regarding corporations' development strategies, and the right to hire management.[11] Although the final source of power in the corporation rests with the shareholder general meeting, the general meeting delegates to the board of directors the rights to make daily operation decisions including hiring and firing the management and determining the compensation of the management, while the board of supervisors in Chinese firms consists of both shareholder representatives and company employee representatives and oversees the board of directors and the management.[12]

In addition to abiding by the stipulations in the Corporate Law, the listed firms are also regulated by the Securities Law of 1998 and other stipulations issued by the CSRC. In particular, the CSRC has various disclosure requirements for the listed firm in China, including publication

[10] Specifically, a small closely held corporation can opt to not set up a board of directors. Instead it suffices to have a single executive director and the executive director may serve concurrently as the manager. In addition, such a corporation is not required to have an entire board of supervisors. One or two supervisors will suffice. See Corporate Law §3 (1993). For a detailed discussion on China's Corporate Law of 1993, see Schipani and Liu (2001).
[11] Corporate Law §1 (1993).
[12] Corporate Law §3 (1993).

of its annual report in at least two newspapers with large circulations approved by the commission, in which basic information of the firm's ownership structure, investment decisions, and financial conditions is disclosed. The firm is also required to provide several measures of executive compensation in its annual report, which makes this study possible.

Although on the surface the corporate structure of listed firms in China looks very much like listed firms in the West, the ownership structure of these firms is very different from that in the U.S. and other market economies, with the most important feature being the dominance of government ownership. Most listed firms are restructured from SOEs, and when going public state owned assets in these firms are converted into shares owned directly or indirectly by the government and in addition they are encouraged to issue new shares to other SOEs. As a result, the government dominates the ownership as well as the control of many listed firms in China.[13] But in recent years, listed firms controlled by private individuals started to emerge either through public listing or through share transfers (called "Buying Shell," *MaiKe*). Although still in the minority, these firms contrast sharply with the government controlled firms in how they operate. Our own calculation indicates that less than 20% of listed firms in China are controlled by private individuals or private firms (owned by the people, *MinYing*), while over 80% had a state agency or an SOE as their largest shareholders in 2003 (owned by the state, *GuoYou*).

A second feature of listed firms in China is the existence of many different share types. Firstly, Chinese stocks can be divided into tradable shares and non-tradable shares, where tradable shares can be traded freely on the secondary market without the approval of the CSRC and the Department of Finance (DOF), whereas non-tradable shares can only be transferred between government agencies or various types of legal persons after the related parties reach an agreement and the relevant government agencies (the CSRC and the DOF) approve the transfer. Tradable shares include shares owned by domestic individuals (public shares) and those owned

[13] See for instance Sun and Tong (2003) and Bai, et. al.(2003).

by foreign individuals (foreign tradable shares), while non-tradable shares include shares owned by government agencies (state shares), domestic legal persons (domestic legal person shares), foreign legal persons (foreign legal person shares), and company employees (company employee shares).

Depending on the residence of investors and issuance place of the stocks, shares are also divided into A-shares, B-shares, H-shares, S-shares, and N-shares. Both A-shares and B-shares are Chinese company stocks issued in China, but while A-shares are subscribed and traded in Chinese RMB, B-shares can only be traded in foreign currencies. A-shares are bought and sold by Chinese investors (not including investors from Taiwan, Hong Kong or Macao). Although the restriction on investor residence was lifted for B-Shares since February 19, 2001, most investors of B-Shares are foreign investors due to the foreign exchange regulations that are still in existence concerning investment. Some Chinese firms also issue stocks on the stock markets in Hong Kong, Singapore, and New York City, and these shares and are traded in the local currencies and called H-shares, S-shares, and N-shares, respectively.

Because they provide information on the scope and security of the property rights originated from various share ownerships, these features of China's listed firms have important implications on how these firms structure their incentive mechanisms, according to the logic of the Coase Theorem. Private versus government ownership determines whether there exists any unambiguous and legitimate ownership interest that creates the incentive to increase the value of the assets in question.[14] Tradability of shares constitutes an important component of property rights and thus is a crucial indicator of their completeness. The share of foreign ownership, on the other hand, is an indicator of how well one can expect the property rights to be protected. We will explore the empirical implications of these features in more detail in Section V.

[14] The lack of real interest in preserving and increasing the value of state assets is referred to as "the absence of owner for state assets" (*GuoYou ZiChan SuoYouZhe QueWei*) by Chinese researchers as well as Chinese media.

II.2 Corporate Governance and Executive Compensation in China

Given that the goal of the reform is to transform SOEs into modern corporations capable of competing successfully in the world market, the success of China's stock market as an SOE reform measure can be evaluated by studying its influence on the quality of corporate governance in China's listed firms. Unlike firm performance, which can be affected by market conditions and policy changes, corporate governance concerns "the ways in which suppliers of finance to corporations assure themselves of getting a return on their investment" (Journal of Finance, Shleifer and Vishny, 1997, page 737). A corporation with better corporate governance, therefore, has better ways of securing higher returns to its financers' investment. In other words, such a company will end up on top during the fierce market competition due to more efficient management of corporations by the use of more effective incentives.[15]

Different views, however, exist in the literature as to whether getting listed has produced the desirable results of improving firm performance and enhancing corporate governance quality in China's listed firms.[16] Relying on disclosure information, Bai et. al (2003) finds evidence that listed firms with better corporate governance measures are associated with higher stock market valuation. More strikingly, the premiums related to better corporate governance are found to be substantially higher than those in other emerging markets in the world, suggesting that the Chinese stock market may be conducive to improving the quality of corporate governance in China's listed firms.

In contrast, Lin (2000) argues that China's SOE restructuring has failed to facilitate any major improvement in corporate governance. Based on interviews with government officials,

[15] Mathiesen [2002]

[16] For a summary of arguments on the negative role played by government ownership in firm performance, see Shleifer (1998). For a model implying positive effects of state ownership in SOEs, see Perotti (1995). Megginson and Netter (2001) provide a comprehensive survey of empirical studies on the effects of government versus private ownership on firm performance. Laffont and Tirole (1993) emphasize the importance of theoretical studies as follows, "theory alone is thus unlikely to be conclusive in this respect."

stock exchange regulators, CPAs, security and corporate lawyers, and officials at both listed and non-listed firms, the author concluded that corporate governance in listed firms in China is of very low quality, characterized by excessive powers of the CEO and insider control, inadequate safeguards for outsiders, weak managerial incentives, and inadequate transparency and disclosure. According to Lin (2000), the source of poor corporate governance practices in Chinese-listed firms is the large percentage of company shares owned by the state, which results in the government's dominant role in firm management and control and renders many listed firms as merely the reincarnations of SOEs that have inherited both the inferior corporate governance and the poor firm performance. [17]

Clearly, this view contrasts with the belief that the gradual and piecemeal approach adopted by the Chinese government for reforming its SOEs will succeed in the long run without undertaking seriously implementing privatization policies. Has the stock market helped China's SOE reform or has it merely lengthened its process? We attempt to provide some answers to this question by focusing on the incentive mechanism provided to the firm's management, which is one of the most important components of a firm's corporate governance. By focusing on the link between top executive compensation and firm performance, the efficiency gauge of compensation mechanisms suggested by both theory and empirical evidence, this paper thus contributes to the important policy debate on the effects of stock market on China's SOE reform.

We describe how the mechanism for determining executive compensation in Chinese firms, especially Chinese SOEs, has evolved in the past two decades, with a focus on the current form of executive compensation reform in China, the "yearly salary system" in this section. Against such background, we will outline the research questions to be answered relating firm performance to executive compensation in Chinese listed firms based on economic theory and our empirical knowledge in the section that follows.

[17] For a similar view, see Schipani and Liu (2001).

Before economic reform started in the late 1970s, executive compensation, as part of the rigid compensation system employed in pre-reform Chinese enterprises, was largely determined based on factors that do not reflect either firm performance or individual contributions, and the factors include the region, industry, level of management (central or local government) and size of the enterprise, and job title, occupation, and seniority of the individual. The profit retention policies introduced in the late 1970s and the "economic responsibility contract" system adopted in the 1980s represented the early steps in China's executive compensation reform, where managers were allowed to use a portion of the residual profit to increase compensation for workers and themselves.[18]

Two waves of SOE compensation reforms promulgated in 1985 and 1992 allowed the SOE's wage budget to be linked to its economic performance and permitted the SOE to set its own internal wage structure within the wage budget, thus helped introduce more profit-oriented incentives to employees working for SOEs in general. One main compensation mechanism that emerged from these reforms is the system of fixed wage plus bonus payment for SOE employees. Two constraints, however, limited the scope for reforms in executive compensation. The wage budget for SOEs still had to be approved in advance by the former Ministry of Labor (MOL) to avoid paying a Wage Adjustment Tax for the part exceeding the governmental standard wage bill. In addition, the management in an SOE still did not have the ability to effectively hire and fire employees. As a result, the bonus payment in this system is largely egalitarian compensation that lacked real incentive effects.[19]

It was only after the pilot implementation of the "yearly salary system" in 1992 that substantive executive compensation reforms really took off. This was the year when the CCP accepted "a market economy with Chinese characteristics" as the target for China's economic

[18] See Groves et al. (1995) and Mengistae and Xu (2004) for empirical evidence that executive compensation was linked to firm performance under the "economic responsibility contract" system.
[19] See Liu and Otsuka (2004). For a detailed discussion on general compensation reforms in China, see Yueh (2004).

reform and a modern corporation system resembling corporations in the West as the goal for SOE reform. In the same year, the State Council approved the Shanghai Hero Pen Company to try out the pilot "yearly salary system." By 1994, Shenzhen, Sichuan, Beijing, Henan, and Liaoning had also started their own pilot programs, followed by the national pilot program implemented in 100 large SOEs throughout the country. The pilot experiment was well received and the "yearly salary system" thus has become the most important form of executive compensation reform in China since 1997, when the former MOL advocated "vigorous and smooth implementation" of the system in SOEs.[20]

The compensation for CEOs in the "yearly salary system" consists of two parts: a fixed component (known as the base salary) that depends on both the average wage for ordinary employees and the size of the enterprise and a variable component (known as the risk salary) that is linked to both the base salary and the economic performance of the firm in the year. The base salary is paid to executives on a monthly basis, while the risk salary (or at least a large part of it) is distributed at the end of the year. The following formula illustrates how the variable component is determined in a typical "yearly salary system":

*Risk salary = prior year risk salary + base salary * Σ(performance measures*weights),*

where the performance measures are growth rates in some accounting profit measures including net profit and ROE (pretax-profit/equity ratio). For SOEs, another financial measure normally used is the growth rate of the value of the asset owned by the government. Some SOEs including public utilities also include non-financial measures such as production safety and employment level among the performance measures.[21]

As shown above, the pay-performance structure of the variable component in the "yearly salary system" is very much like "bonus" in the compensation package of a CEO working for a

[20] See the former MOL circular "The Main Goals and Policy Measures for Enterprise Compensation Reform during the Ninth Five Year Plan Period" issued in March of 1997.
[21] The discussion on the "yearly salary system" is greatly enriched by the compensation plans provided by two firms in Sichuan. For an authoritative discussion on the various components of CEO pay in the U.S., see Murphy (1999).

western firm. The "yearly salary system," therefore, corresponds to a typical cash compensation package in western firms. Like the "salary plus bonus" system adopted in other countries, the "yearly salary system" has provided real incentives for top executives in Chinese firms, but it still has a long way to go before becoming the norm of executive compensation in China. According to one large national survey, although 51.5% of the CEOs surveyed in 2002 chose the "yearly salary system" as their favorite compensation mechanism, only 17.7% of these CEOs were being compensated according to this system. Other firms have experimented with alternative incentive compensation mechanisms, with 17% of the CEO receiving part of their compensation in the form of dividends, company shares, or options, but the majority of firms surveyed were still using the conventional "monthly salary system" (42.7%) or "monthly salary plus bonus system" with largely egalitarian bonus compensations (37.1%). [22]

Apparently, incentive compensation mechanisms of various kinds have been introduced to many but not all Chinese firms. Are listed firms among the ones adopting the more efficient incentive mechanisms? Different pictures painted for listed firms regarding their corporate governance quality suggest different answers. The first question to be studied in this paper is therefore:

Question One*: Does a significant and positive link exist between firm performance and executive compensation among Chinese listed firms?*

Whether there exists a significant pay-performance link will provide some information on the efficiency of the incentive mechanisms in these firms, but listed firms may not be uniform in adopting the incentive mechanisms. According to the logic of the Coase Theorem, the quality of the property right system determines the efficiency of incentive mechanisms, thus the different

[22] See "Report on Chinese Entrepreneurs: Growing up and Evolution," p27, issued by the Survey System for Chinese Entrepreneurs 2004.

ownership structures that exist in China's listed firms imply different pay-performance linkages. To test whether the logic applies in the case of China, we study the following question:

Question Two*: How does ownership structure affect the behaviors of Chinese listed firms in setting up efficient incentive mechanisms for their top executives?*

In answering this question, we will not only study the effects of private versus government ownership but also explore the effects of foreign ownership and share tradability.

III. Data and Econometric Specifications

III.1 Data

We now turn to the empirical study of the research questions outlined above. Accounting and financial information is obtained from the China Stock Market and Accounting Research Database (CSMAR) developed by Shenzhen GTA Information Technology Company, while executive compensation and ownership structure information is based on the database developed by Sinofin Information Services. The CSMAR data set has been used in previous studies,[23] but on our reading of the literature, we are the first to use the Sinofin dataset in academic research. Determined by data availability, the time frame for our study is between 1998 and 2002.

Because of data limitation, the pay-performance sensitivities and elasticities estimated in this study are for cash compensation (including salary and bonus) only, but we expect many of the main results to be robust even when other components of executive compensation are considered.[24] Although no information is available for perquisites enjoyed by executives of China's listed firms, we do know that these perks mostly come with the position in the firm and

[23] See, for instance, Sun and Tong (2003), Bai, et. al (2003), and Bai, Liu, and Song (2003).

[24] According to the rules from the CSRC (China Securities Regulatory Commission) that regulates the contents of listed firms' annual reports, all listed firms have been required to report executive compensation including salary, bonus and other cash compensation. Unfortunately they are not required to report salary and bonus separately and hence we are unable to analyze these two components of cash compensation separately as Kato and Kubo (2003) did for their study of Japanese CEO compensation.

do not vary with firm performance and therefore can be viewed as part of the firm fixed effects.[25] Stock holding and stock option information is either unavailable or impossible to combine with the cash component to compute total compensation.[26] Thus to the extent that shareholdings and stock options do not decrease when firm stock performance improves as shown by our data, the pay-stock-performance estimates should be considered only as the lower bound estimates for sensitivities and elasticities of total compensation with respect to firm stock performance.[27] The different compensation arrangements in different types of listed firms in China, however, suggest that all the other results regarding stock performance in this study are robust even when the omission of stockholdings is taken into account, as will be discussed in more detail in Section IV and Section V.[28]

Among the several measures of executive compensation provided in the Sinofin database, TOP THREE EXECUTIVE AVERAGE PAY that includes total annual cash compensation for CEO and two other highest-paid executives (often vice CEOs) is the closest to what most prior studies on executive compensation use (typically CEO pay) and thus will be the focus of our study. We also test the robustness of various results using alternative measures for compensation including TOP THREE DIRECTOR AVERAGE PAY (total annual cash compensation for the highest-paid three directors divided by three), TOTAL EXECUTIVE PAY (total annual cash compensation for all directors, supervisors, and high-level executives) and AVERAGE EXECUTIVE PAY (TOTAL EXECUTIVE PAY divided by the number of all directors,

[25] For instance, see Liu and Otsuka (2004) that reports helpful institutional information on compensation packages provided for steel industry top executives in four provinces in China. Our field work in four Chinese cities during the summer of 2004 also confirms this point.

[26] Our data sets only provide the shares of the executives who rank among the top ten highest percentages, a different group from those with the highest cash compensation, thus making it impossible to compute the total compensation for the top executives. Stock options have also been adopted in a small number of high-tech firms in China, but listed firms are not required to disclose such information.

[27] We do not observe any significant correlation between the percentage of executive shareholdings and company stock performance measured by stock return.

[28] In particular, executives working for privately controlled listed firms in China hold higher percentage of company shares compared to those working for publicly controlled firms. Therefore, the difference found in this paper between pay-performance links in private versus public firms may be underestimated.

supervisors and high-level executives). As expected, the main results are robust with TOP THREE DIRECTOR AVERAGE PAY,[29] but weaker and often insignificant with TOTAL EXECUTIVE PAY (total annual cash compensation for all directors, supervisors, and high-level executives) and AVERAGE EXECUTIVE PAY (TOTAL EXECUTIVE PAY divided by the number of all directors, supervisors and high-level executives).[30]

For ownership structure, the following information is available, the type of the actual controlling shareholder of the firm's controlling or largest shareholders (referred to as "actual controller" hereafter) since 1999. The possible types of the actual controller include six categories: government (including the state and state legal persons), private individuals or firms, foreign individuals or firms, collective enterprises, non-profit organizations, and unions or employee stock holding committees. For convenience, the list can be reduced to three categories of ownership: government ownership that includes the state, private ownership that includes private individuals or firms and foreign individuals or firms, and collective ownership that includes collective enterprises, non-profit organizations, and unions or employee stock holding committees.

In addition, the data set also provides information on the percentages of different company shares belonging to the following categories: state shares, domestic legal person shares,

[29] Compensation for directors is considered in some previous studies on executive compensation since many board directors also hold executive positions in the company. For Chinese-listed firms, such duality is particularly prevalent, with 84% of the listed companies having the same person as CEO and Chairman or Vice Chairman of the board of directors, while only 8% of all the board members not affiliated with the company through employment or other business relations. Similar results when using TOP THREE DIRECTOR AVERAGE PAY confirms that the agency theory also applies to members of the board of directors in Chinese listed firms.

[30] The weaker pay-performance and often insignificant relations for TOTAL EXECUTIVE PAY and AVERAGE EXECUTIVE PAY can be explained by the fact that they include pay for not only top executives and directors but also other executives and members of the board of supervisors, many of whom are employee representatives (typically union leaders). The 1999 listed firm survey conducted by the Shanghai Stock Exchange (Shanghai Stock Exchange 1999) finds that 73.4% of the supervisory board chairs and the vast majority of supervisors serving in Chinese-listed firms are employee representatives. Similarly, Fleisher and Wang (2003) find for their sample of Chinese township and village enterprises that the ratio between management wage and worker wage is positively related to the potential residual of the company, suggesting that management pay is more aligned with firm performance than worker pay.

foreign legal person shares, shares owned by company employees, public shares, and foreign tradable shares. However, caution is needed in using the percentages of various shares to measure ownership structure. Although some of these categories have clear implications on the type of ownership, for instance, state shares can be owned only by the government while public shares can only be owned by private individuals, other categories have some overlapping in their ownership types. In particular, both government ownership, collective ownership, as well as private ownership can be obtained through domestic legal person shares.

Table 1 reports descriptive statistics on the level of executive compensation, ownership structure and several other key firm characteristics, where all value variables are adjusted for inflation using CPI (FY1995=100) and are thus expressed in 1995-constant RMBs. These statistics were calculated based on a pooled cross-sectional time series dataset on 942 firms. They can be readily compared to prior studies such as Kaplan (1994) for Japan and the U.S., Kato and Kubo (2003) for Japan and Kato, Kim and Lee (2004) for Korea that report similar statistics. In particular, although the cash compensation for top executives in Chinese listed firms is much lower (RMB97,000 to RMB107,000, or approximately $12,000 to $13,000) compared to their counterparts in Japan or Korea, the ratio of top executive/average worker pay (at around 12) is substantially higher in China. The ratio is also higher than in other transition economies.[31] Similarly, the average executive in China's listed firms appears to be better paid relative to the average worker in manufacturing (with a ratio of around 7) than their counterparts in Japan and Korea. Using data from Kubo (2001) for Japan and Kato, Kim and Lee (2004) for Korea and the ILO average manufacturing worker wage, we found that the ratio of average executive pay to average manufacturing worker wage was 4.2 for Japan in 1995-96 and 5.6 for Korea in 1998-

[31] See Jones and Kato, 1996 and 1998 for Bulgaria, and Jones and Mygind, 2004 for Estonia.

2001. But the Chinese ratio as well as its executive pay is still considerably lower than the comparable U.S. figures.[32]

Several other key firm characteristics are also shown in Table 1. The average listed firm in China employed over 3,000 workers. The average size of the board of directors and supervisors were 9.7 and 4.3 respectively whereas the average number of directors, supervisors and other top-level executives considered in calculating TOTAL EXECUTIVE PAY was 11.2, suggesting that there were a non-negligible number of directors and supervisors who were not paid by the firm.[33] Sales revenue of the average listed firm was 1.4 billions of 1995-constant RMBs and the market value of the average listed firm was 1.7 billions of 1995-constant RMBs. Over the period of 1998-2002, many listed firms in China experienced poor stock market performance. Thus, the average rate of inflation-adjusted stock return was negative 14 percent over the sample period. On the other hand, ROA (a standard accounting performance measure) was on average positive although small (0.01). The average probability of China's listed firms reporting a negative before-tax profit was about 12 percent over 1998-2002.

Finally, regarding ownership structure, over 80% of listed firms in China are controlled by the government, 13% by private individuals or private firms, while 4% collectively controlled by collective enterprises, non-profit organizations, unions or employee stockholding committees. In terms of company shares, the majority of shares of a typical listed company (59.3%) are held by government agencies ("state shares") and domestic institutions that are mostly state owned enterprises and other state legal entities ("domestic legal person shares"), among which 32.6% are state shares held directly by the government and 26.7% are indirectly held by the government through domestic legal person shares. Foreign ownership accounts for less 3% of all company shares, while only about 38% of all company shares are tradable.

[32] See, for example, Kaplan (1994, Table 4) and Murphy (1999, Figure 1) for the comparable U.S. figures.
[33] In fact, according to our data, the average number of such directors and supervisors are 5.3 and 2.1 respectively.

III.2 Econometric Specifications

We begin with estimating two standard measures of pay-performance relations for executives (see, for example, Murphy, 1999). First, we estimate the sensitivity of pay with respect to shareholder value by regressing the change in executive compensation on the change in shareholder value of the firm. Second, we estimate the elasticity of pay with respect to shareholder value by regressing the change in the log of executive compensation on the change in the log of shareholder value of the firm. Specifically, we estimate,

(1) $\Delta(PAY)_{it} = a + b\Delta(VALUE)_{it} + (\text{year effects}) + u_{it}$

(2) $\Delta\ln(PAY)_{it} = \alpha + \beta\ln(1+ROR_{it}) + (\text{year effects}) + u_{it}$

where PAY_{it} is the level of executive compensation of firm i in year t (measured by each of the aforementioned four compensation variables); $VALUE_{it}$ is shareholder value of firm i in year t; and ROR_{it} is stock return of firm i in year t.[34] We control for time-specific shocks that are common to all firms by including year effects in our regressions. For the disturbance term, u_{it}, we assume $u_{it} \sim NID(0, \sigma^2)$.[35]

Some prior studies on executive compensation (especially in countries outside of the U.S.) consider alternative performance measures, such as accounting performance measures as opposed to stock market performance measures, and estimate "semi-elasticities" of pay with

[34] As shown in Murphy (1999), $\ln(1+ROR_{it})$ is equal to $\Delta\ln(VALUE)_{it}$.

[35] Since both pay and performance variables are first-differenced, all firm fixed effects that may affect the level of pay are controlled for (we used first-differences so that we can compare our study to prior studies that tend to use first differences rather than estimating fixed effects directly). We also estimated each equation without year effects, and found no discernable differences. These results as well as all other unreported results are available upon request from the authors.

respect to such alternative performance measures.[36] Following such prior studies on other Asian countries (Japan and Korea), we estimate:[37]

(3) $\Delta \ln(PAY)_{it} = \alpha_r + \beta_r ROR_{it} + (\text{year effects}) + u_{it}$

(4) $\Delta \ln(PAY)_{it} = \alpha_g + \beta_g GSALES_{it} + (\text{year effects}) + u_{it}$

(5) $\Delta \ln(PAY)_{it} = \alpha_d + \beta_d DROA_{it} + (\text{year effects}) + u_{it}$

(6) $\Delta \ln(PAY)_{it} = \alpha_n + \beta_n NEGPROF_{it} + (\text{year effects}) + u_{it}$

(7) $\Delta \ln(PAY)_{it} = \alpha_t + \beta_r ROR_{it} + \beta_g GSALES_{it} + \beta_d DROA_{it} + \beta_n NEGPROF_{it} + (\text{year effects}) + u_{it}$

where $DROA_{it}$ =change in ROA (pre-tax profit/assets ratio) of Firm i from Year t-1 to Year t; $GSALES_{it}$ =rate of growth of sales of Firm i from Year t-1 to Year t (in percent); and $NEGPROF_{it}$ =1 if Firm i's pre-tax profit is negative in Year t, 0 otherwise.[38] Eq. (3)-(6) estimate the responsiveness of pay to the four performance variables individually whereas Eq. (7) considers all performance variables simultaneously and thus the estimated coefficient on each performance variable indicates the relative importance of each performance variable.[39]

Based on these specifications, the effects of ownership structure on the performance-compensation linkage will be studied by adding two terms to the right hand side of the equation, a measure of the ownership structure and the interaction term between the ownership measure

[36] See Rosen (1990) for the origin of the term "semi-elasticity.
[37] See, for example, Kaplan (1994), Kubo (2001), and Kato and Kubo (2003) for Japan; Kato, Kim and Lee (2004) for Korea.
[38] Sun and Tong (2003) argue that ROA is not an appropriate accounting performance measure due to a peculiar regulatory rule in China's stock market. Because listed firms in China are allowed to have rights issue up to 30% of their outstanding stocks annually and many companies take advantage of such a rule to increase equity capital even in the absence of investment opportunities. ROA, which decreases mechanically with such rights issue, does not reflect accurately the profitability of the firm. Instead, Sun and Tong (2003) suggest the use of ROS, or return on sales. We also use ROS instead of ROA in the regressions and obtain results very similar to those to be presented below.
[39] Kaplan (1994) also considered lagged performance variables. We too considered such lagged performance variables and found that our estimates without such lagged performance variables are robust.

and some firm performance measure such as shareholder value or the growth rate of shareholder value, as shown below:

$$(8)\quad \Delta(PAY)_{it} = a + b\Delta(VALUE)_{it} + s(PRIVATE)_{it} + d\Delta(VALUE)_{it}*(PRIVATE)_{it} + (\text{year effects}) + u_{it}$$

$$(9)\quad \Delta\ln(PAY)_{it} = \alpha + \beta\ln(1+ROR_{it}) + \eta(PRIVATE)_{it} + \lambda\ln(1+ROR_{it})*(PRIVATE)_{it} + (\text{year effects}) + u_{it},$$

where $(OWNER)_{it}$ is some ownership structure measure for firm *i* in year *t*. The estimated coefficients on the interaction terms involving firm performance and ownership structure of the firm (d and λ) will show whether and how listed firms with different ownership and control behave differently in using managerial incentives to align the interests of top management with the interests of shareholders.

IV. Firm performance and Executive Compensation

Since we use first differences in our econometric analysis, only firms for which data are available for at least two consecutive years can be used. Among the 918 firms for which we have data for at least one year over the period of 1998-2002, 827 firms provided data for at least two consecutive years. A standard two-sample test of means establishes that the new sample of 827 firms does not differ significantly from the original sample of 918 firms with regard to all the compensation and key firm characteristic variables listed in Table 1. The total number of observations in our pooled cross-sectional time series data used for the first-differenced regressions is 922, the bulk of which are for 2001-2002 since most of the 827 firms do not provide detailed compensation data prior to 2001. Table 2 presents summary statistics of variables used in the regressions.

We first study the effects of firm stock market performance on compensation. Column (1) and Column (2) in Table 3 present the OLS estimates of Eq. (1) and Eq. (2). As shown in the

table, for the highest-paid three executives (TOP THREE EXECUTIVE AVERAGE PAY) both the estimated sensitivities and elasticities of pay with respect to shareholder value are positive and statistically significant at the 1 percent level. The size of the estimated sensitivity suggests that a 1000 RMB increase in shareholder value yields a 0.053 RMB increase in annual cash compensation for the highest-paid three executives.[40] Since pay-performance elasticities are relatively invariant to firm size, for international comparisons of pay-performance relations for executives, pay-performance elasticities may be particularly useful. As Table 3 shows, the size of our estimated elasticity suggest that a 10 percent increase in shareholder value results in 3.7 percent increase in annual cash compensation for the highest-paid three executives.[41,42]

We then use alternative measures for firm performance, with the results shown in Eq. (3) through Eq. (7) in Table 3. Consistent with our pay-performance sensitivity and elasticity estimates above, the estimated coefficients on ROR (or "semi-elasticities" of pay with respect to stock return) are positive and statistically significant and the magnitude of the estimated semi-elasticity comparable to those found in Japan and Korea. The estimated coefficient on GSALES (or sales growth) is also positive and statistically significant, with the size of the estimated semi-elasticity somewhat lower than what has been reported for Japan yet substantially higher than

[40] The estimated pay-shareholder-value sensitivity appears to be greater than what Jensen and Murphy (1990) and Murphy (1999) found for the U.S. We believe that the higher sensitivities in China than in the U.S. in part due to the inverse relationship between pay-performance sensitivities and firm size (see Gibbons and Murphy, 1992, and Murphy 1999). Smaller firms tend to have larger sensitivities and Chinese listed firms are generally substantially smaller than U.S. listed firms. More importantly, the different compositions of executive compensation between China and the U.S. may account for the higher pay-performance sensitivities observed for Chinese listed firms. While they are not commonly used for executives in listed firms in China, stock options constitute the bulk of executive compensation in the U.S. When stock options are taken into account in executive compensation, much higher pay-performance sensitivities have been found in U.S. firms than in China. Jensen and Murphy (1990) estimate that a 1000 dollar increase in shareholder value leads to a 0.307 dollar increase in CEO's total compensation for 73 U.S. manufacturing firms between 1969 and 1983. However, due to data limitation (see Footnote 26), it is currently impossible to study total compensation sensitivities for Chinese firms.

[41] Our elasticity estimates are considerably greater than what Kato and Kubo (2003) report for CEOs of listed firms in Japan in 1986-1995 and also greater than what Murphy (1999) reports for CEOs of S&P 500 Industrials in the U.S. in the first half of the 1990s. See the previous footnote for possible explanations.

[42] As expected, weaker pay-performance link is observed for the boarder category of executives (TOTAL EXECUTIVE PAY and AVERAGE EXECUTIVE PAY), while similar sensitivity and elasticity are found for TOP THREE DIRECTOR AVERAGE PAY. Estimation results are omitted due to space limit, but will be available upon request from the authors.

what has been reported for Korea.[43] Turning to accounting profitability measures, it appears that Chinese executives are not penalized for weak showing of ROA, nor are they rewarded for strong showing of ROA, although they do seem to be penalized when the firm makes negative pretax profit.[44] Finally, these results remain even when various alternative performance measures are considered simultaneously.

In summary, we have found evidence that the cash compensation of Chinese executives is significantly affected by firm accounting performance as well as stock market performance. In addition to stock rate of return and changes in shareholder value, measures such as sales growth and whether the firm makes negative pretax profit also significantly affect the growth rate of executive compensation. In fact, the evidence suggests that Chinese managers' cash compensation is not less sensitive to the stock market performance of their firms than companies in the U.S. and Japan. Since stock holdings of top executives in Chinese listed firms do not seem to decrease when stock performance increases, we expect these findings to be robust for total executive compensation.

V. Ownership Structure and Pay-Performance Linkage

We now turn to the effects of ownership structure on how executive compensation is determined.[45] Three topics will be addressed in this section, the role of private versus government ownership, the difference between direct and indirect government ownership, and the effects of share tradability and foreign ownership.

[43] See Kaplan (1994) and Kato, Kim and Lee (2004) for comparable estimates on the "semi-elasticity" of executive pay with respect to alternative firm performance measures in Japan and Korea.
[44] See Kaplan (1994) and Kato and Kubo (2003) for Japan and the U.S. and Kato, Kim and Lee (2004) for Korea.
[45] There is a growing literature on the link between ownership structure and executive compensation in advanced industrialized nations. See, for example, Core, Holthausen, and Larcker (1999), Ke, Petroni, and Safieddine (1999), Harvey and Shrieves (2001), Bertrand and Mullainathan (2001), Cyert, Kang and Kumar (2002) and Hartzell and Starks (2003) for the U.S.; Conyon (1997), Cosh and Hugh (1997), and Cragg and Dyck (2003) for the U.K.; Kato (1997) for Japan; Elston and Goldberg (2002) for Germany; and Randoy and Nielsen (2002) for Norway and Sweden. For transition economies, see for instance, Jones and Kato (1996, 1998) for Bulgaria and Jones and Mygind (2004) for Estonia.

V.1 Private, Collective, and Government Ownership

As discussed above, a defining feature of China's stock market is the large percentage of company shares owned directly or indirectly by the government, which according to the Coase Theorem implies unclearly defined property rights and consequently inefficient incentive mechanisms. One empirical fact is especially supportive of the above theory. Although the "yearly salary system" was first advocated by the government as a mechanism to improve SOE performance, but the new compensation system saw much faster adoption among private firms after it proved to be an effective incentive mechanism. According to one survey conducted in 2002, the percentages of enterprises that had adopted this more progressive compensation system ranged from 15.2% for SOEs, to 20.2% for collective firms and 41.4% for private firms.[46] Furthermore, both our interviews with firm executives and a review of several compensation plans used in these firms highlight the differences between how SOEs and private firms in China implement the "yearly salary system." The SOE firms often include factors such as employment and production safety in their performance indicators, while the private firms tend to be more focused on profit and stock performance.[47]

The procedures for determining executive compensation in China also suggest that firms dominated by government shares will face more resistance in reforming executive compensation. Although top executive compensation should be determined by the board of directors or its compensation committee according to the Corporate Law, since their largest shareholders are still governments of various levels and thus their boards of directors controlled by the government, the executive compensation in these firms is still largely determined following government policies and bureaucratic procedures. These procedures for determining SOEs'

[46] See "Report on Chinese Entrepreneurs: Growing up and Evolution," p27, issued by the Survey System for Chinese Entrepreneurs 2004.

[47] Dong and Putterman (2003) provide empirical support for a similar argument explaining why state ownership slows down the interest alignment process between top managers and shareholders, namely that state-owned enterprises and thus their top executives in transition economies are often required to pursue non-financial objectives such as employment provision. For a more formal theoretical argument, see Schmidt and Schnitzer (1993).

executive compensations differ substantially from the procedures mandated by the market to design effective incentive mechanisms and render it extremely difficult to link compensation to performance.

Specifically, the bureaucratic structure used till very recently for managing government shares in a listed firm involves at least three separate government agencies.[48] The CCP's Department of Organization (DOO), the Economic and Trade Committee or the Industrial Committee (ETC), and the Department of Finance (DOF) at the corresponding level were in charge of the personnel, operations, and asset management of the listed firm, respectively. Since each agency has its own line of duties and there is not much communication among them, the determination of executive compensation, which is mainly under the authority of the DOO, rarely depends on the firm's performance, which is evaluated by the ETC and DOF. Instead, in determining the compensation for a top executive, the DOO uses the compensation level for government officials at the same rank as a reference and makes certain adjustments based on firm size and the executive's education and working experience. The compensation for the other executives will then be a certain proportion of the top executive. For instance, the VP's salary will be 80% of the CEO's salary, and so on. The compensation figure will then be submitted the board of directors, which will inevitably approve them. Although sometimes the board of directors of a listed firm does make recommendations to give bonuses to executives because of good firm performance, these instances are far and few in between.

In contrast, private firms in China have always enjoyed more freedom in their executive compensation as well as personnel decisions. Outside of the state sector ever since they started to emerge in the late 1970s, these firms are not required to submit salary budget to the MOL for approval and they are also less constrained by the egalitarian tradition engrained in the SOEs'

[48] It was only in March 2003 that the State Council decided to set up the State Asset Supervision and Management Commission, which would combine the management of personnel, operations, and assets of state owned enterprises.

long history. More importantly, profit making is the only goal for these firms, thus they are not burdened by the multiple social goals faced by the SOEs and the consequent multitude of supervision and interference from numerous government agencies.

Against these facts and the logic of the Coase Theorem, however, is the well-known fact that private firms in China are inferior to SOEs in both their level of management and technology as well as the quality of their employees.[49] Since superior incentive mechanisms are often initiated by capable executives who have superior managerial skills, it could then be argued that private firms are not as quick as their SOE counterparts in adopting the more efficient incentive measures including executive compensation reforms. To help resolve this dispute, we now empirically compare privately controlled listed firms with those controlled by the government.[50]

We use the type of "actual controller" discussed in Section II.1 to distinguish different types of company ownership and control. Since collective ownership is somewhat murky in its definition, we first focus on the difference between private and government ownership and control by excluding collective firms from the sample. Specifically, we estimate Equations (8) and (9) by substituting OWNER with PRIVATE, where PRIVATE is a dummy variable with the value of 1 when the firm is privately controlled and 0 otherwise. The results from these estimations are shown in Column 1 and Column 2 of Table 4. Column 1 shows that private ownership significantly increases executive compensation growth by about 38,000 RMB per year. Furthermore, the compensation-share value linkage is significantly stronger for listed firms controlled by private shareholders. In fact, without private control, the change in shareholder value in a listed firm does not have any significant effect on executive compensation, while

[49] See, for example, Naughton (1995).

[50] A potential concern with studying the effects of ownership structure on pay-performance linkage is that the former may be endogenous. However, we believe such an endogeneity problem is less severe in the Chinese context since in general the introduction of different ownership structure is often policy-induced and motivated by political considerations rather than economic logic. For instance, Han (1997) discusses how the quota system plagued with political idiosyncrasies determines which companies get listed on the stock market and how many shares can be issues. In addition, reassuringly Sun and Tong (2003) report econometric evidence that state share ownership is not significantly affected by firm performance.

private control brings out an increase in executive compensation of 0.28 RMB for each additional 1,000 RMB worth of shareholder value. Column 2 provides evidence for the compensation-stock rate of return linkage. Private control significantly enhances the pay-performance link, more than doubling the pay elasticity.

To study how well collect firms fare compare with private and government firms, we add collective firms back into the sample and introduce an additional dummy COLLECT and its interaction term with firm performance to the estimations. As the results show (Column 3 and Column 4 in Table 4), firms with private controlling shareholders have significantly tighter pay-performance linkage than those controlled by the government, while collectively controlled listed firms do not significantly differ from the government controlled firms in this regard. The same results are obtained whether we measure firm stock performance by the change or the growth rate in shareholder value.

In summary, we have observed stronger linkage between compensation and performance for firms that are privately controlled, and these results conform to the logic in the Coase Theorem that clearly assigned property rights lead to efficient incentive mechanisms. In addition, given that privately controlled listed firms in China tend to give more stockholdings to their top executives, these results are expected to be robust even if stockholdings are taken into consideration in computing the compensation package.

V.2 Direct versus Indirect Government Ownership: State Shares and Legal Person Shares

Government ownership in a listed firm in China can be obtained directly through state shares or indirectly through state legal person shares. State shares are owned and thus controlled directly by the government, while state legal person shares are owned by government asset

management agencies or SOEs to which the government delegates the authority to manage state owned assets and thus are controlled indirectly by the government.

Although state shares and legal person shares have many features in common, including the eventual control by the government and the non-tradability on the stock market, it has been argued that these two categories of shares may have different effects on firm performance. Direct control by the government through state share ownership implies more government intervention but also greater policy support, while indirect government control through legal person share ownership leads to more autonomy but also less leverage for direct government assistance in times of need. Empirical evidence has been mixed in accessing the importance of these arguments.[51] Thus we now study the different effects of direct government control versus indirect government control in the context of pay-performance linkage.

As discussed in Section II.1, in addition to the type of its "actual controller," the listed firm is also required to disclose information on the percentages of different company shares including state shares, domestic legal person shares, foreign legal person shares, shares owned by company employees, public shares, and foreign tradable shares. To minimize the overlapping of ownership types captured in domestic legal person shares, we focus on the group of listed firms that are controlled by the government, because domestic legal person shares in these firms are predominantly state legal person shares.

As a robustness test for the effects of private ownership demonstrated in the previous section, Columns 1 and 2 of Table 5 give the results from substituting "OWNER" in Eq. (8) and Eq. (9) with "GVTSHARE," where GVTSHARE is the percentage of company shares owned by

[51] Chen (1998) finds evidence that state ownership positively affects firm performance, whereas legal-person ownership negatively affects firm performance. In contrast, Xu and Wang (1997) argue that legal-person ownership enhances firm performance because legal-persons are in a better position monitoring the firm's operation, a claim supported by their empirical evidence that legal-person ownership has a positive impact on the firm, whereas state ownership has no impact. Sun and Tong (2003) also find evidence in support of the latter argument. Specifically, they find that state ownership has negative effects while legal-person has positive effects on firm performance.

the government directly (through state shares) or indirectly (through domestic legal person shares). In Column 1, the estimated coefficient on Δ(VALUE)*GVTSHARE is negative and statistically significant at the 1 percent level, suggesting that a decrease in government ownership of listed firms will increase pay-performance sensitivities for the highest-paid three executives. The agency problem appears to be better dealt with in less government-controlled firms. The magnitude of the impact of weakening state control is also rather substantial. For example, a 1-percentage point decrease in GVTSHARE (or the proportion of state-owned stock, both directly and indirectly) will result in an increase in the pay-performance sensitivity of 0.002 for the highest-paid three executives. This is hardly negligible, considering the estimated pay-performance sensitivities in this study as well as in earlier studies elsewhere range from 0.014 (the U.S.) to 0.034 (Japan) to 0.053 (China).[52] Column 2 of Table 5 provides evidence on the significant negative impact on executive pay-performance link of government ownership when we study pay-performance elasticities, further confirming that the pay-performance link is weaker for firms with higher percentage of government shares. Again, the magnitude of the impact is of substantial economic importance.

The rest of Table 5 compares the influences of shares directly owned by the government (through state shares) and those indirectly owned by the government (through domestic legal person shares). Specifically, we will estimate the following:

$$(10)\quad \Delta(PAY)_{it} = a + b\Delta(VALUE)_{it} + s_1(STATESHARE)_{it} + d_1\Delta(VALUE)_{it}*(STATESHARE)_{it} + s_2(LGPSHARE)_{it} + d_2\Delta(VALUE)_{it}*(LGPSHARE)_{it} + (\text{year effects}) + u_{it}$$

$$(11)\quad \Delta\ln(PAY)_{it} = \alpha + \beta\ln(1+ROR_{it}) + \eta_1(STATESHARE)_{it} + \lambda_1\ln(1+ROR_{it})*(STATESHARE)_{it} + \eta_2(LGPSHARE)_{it} + \lambda_2\ln(1+ROR_{it})*(LGPSHARE)_{it} + (\text{year effects}) + u_{it},$$

[52] See, Murphy (1999) and Kato and Kubo (2003).

where $(STATESHARE)_{it}$ is the proportion of company shares that are directly owned by the state, and $(LGPSHARE)_{it}$ is the proportion of company shares that are owned by domestic legal persons, or in other words, indirectly owned by the government. As discussed above, we are interested in whether the estimated coefficients on the interaction terms involving firm performance and government control of the firm (d's and λ's) will be different for the two types of government ownership, direct versus indirect.

As shown in Column 3 of Table 5 (Eq. (10)), the estimated coefficients on both Δ(VALUE)* STATESHARE and Δ(VALUE)* LGPSHARE are negative and statistically significant at the conventional levels. This suggests that a decrease in either direct or indirect state ownership of listed firms will increase pay-performance sensitivities for executives and directors. Column 4 of Table 5 provides the OLS estimates of Eq. (11). There is evidence that a decrease in either direct or indirect state ownership of listed firms will increase pay-performance elasticities for top three executives. Moreover, the magnitudes of the estimated coefficients are very similar for either direct or indirect state ownership. Overall, the negative impact on the pay-performance link of state ownership is statistically significant whether we consider direct or indirect state ownership. However, one difference does seem to exist between collective ownership and government ownership. In addition to a lower pay-performance link, the government control also implies lower growth rate of executive compensation compared to privately controlled firms. In contrast, there is no such significant difference between collectively controlled and privately controlled firms.

V.3 Tradability and Foreign Ownership of Shares

Although the Corporate Law does not discriminate against different types of shareholder when delineating their rights, the existence of multiple types of shares in China implies very different property rights for the owners of these shares. To the extent that different types of share

ownership have different implications on how clearly property rights are assigned and how well they are protected, the Coase Theorem suggests that the different share types will also have different implications on how the listed firms with different ownership structures adopt efficient incentive mechanisms.

Since the right to transfer is a main component of property rights, non-tradable shares have fewer property rights than tradable shares. In particular, stocks that can be freely traded on the secondary market ensure that the stock market can effectively discipline listed firms and thus may be more influential in bringing out more efficient incentive mechanisms. This will lead to an expectation of stronger pay-performance linkage for firms with higher percentage of tradable shares. But on the other hand, the majority of the owners of tradable shares are small individual investors who do not have much say in how to run the firms, which may eliminate the tradability effects.

In terms of the residence of the share owners, China's dubious reputation in protecting private property rights of its residents implies that foreign share ownership vested in B or H or S or N-shares may secure better protection than domestic share ownership vested in A-shares. Because shares owned by foreign investors are better protected than those owned by domestic investors, one may expect a higher percentage of foreign shares leads to more vested interest in the firm's good performance and thus better designed incentive mechanisms including larger pay-performance sensitivities and elasticities. But on the other hand, it has been argued that many foreign investors are speculative in nature and tend not to be involved in long term operations of the listed firms, because China is still lagging behind in developing a legal system that clearly defines and effectively protects private property rights.

To explore the effects of these two share type differences empirically, we estimate Equations (8) and (9) with $GVTSHARE_{it}$ substituted by $TRADESHARE_{it}$ and $FRGNSHARE_{it}$, where $TRADESHARE_{it}$ is the percentage of company shares that are tradable shares (the sum

public share percentage and tradable foreign share percentage) and $FRGNSHARE_{it}$ the percentage of company shares that are owned by foreign investors (the sum of tradable foreign share percentage and foreign legal person share percentage) for firm *i* in year *t*. Because these share types are of particular importance in affecting power balance in firms controlled by the government, we focus on this group first.

Table 6 provides results from the estimations. The results show in Column 1 suggest that listed firms with higher percentage of foreign shares increase the compensation of their top executives faster than other firms. For every 10 percentage point increase in tradable share ownership, the executive compensation increase is greater by about 10,000 RMB. More importantly, foreign ownership also seems to cause listed firms to adopt more efficient incentive mechanisms for their management, although the magnitude is not very large. When the foreign share ownership increases by 10 percentage points, a 1000 RMB increase in shareholder value will yield an additional 0.01 RMB rise in the annual cash compensation for the company's top executives. The results from Column 2 further confirm that foreign ownership leads to stronger pay-performance ties. Specifically, a 10 percentage point rise in foreign share ownership increases the pay-stock-return elasticity by 0.2 percent. In addition, tradability of shares also seems to have a significant and positive effect on the pay-stock-return elasticity with the same magnitude as foreign share ownership.

We conduct the estimations again using all the listed firms as the sample, adding PRIVATE dummy and its interaction term with firm performance. As shown in Column 4, in addition to the significant positive effect on pay-stock performance sensitivity from private ownership, foreign ownership also is shown to have positive and significant effect.

In summary, we have found evidence that foreign ownership of shares (and to a less degree the tradability of shares) help enhance the pay-performance link in Chinese listed firms, consistent with the predictions of the Coase Theorem.

VI. Conclusions and Policy Implications

Corporate governance concerns "the ways in which suppliers of finance to corporations assure themselves of getting a return on their investment" (Journal of Finance, Shleifer and Vishny, 1997, page 737), and a corporation with better corporate governance has better ways of securing higher returns to its financers' investment.[53] The quality of corporate governance of a firm, therefore, is the ultimate measure of the firm's competitiveness. Given that the goal of China's SOE reform is to transform SOEs into modern corporations that can compete successfully in the world market, measuring the quality of corporate governance for Chinese firms will help evaluate the effectiveness of the reform.

Because executive compensation is a major component of a firm's incentive structures, which are at the core of the firm's corporate governance, our study on executive compensation helps evaluate the quality of corporate governance and in turn the success of SOE reform in China. Since both economic theory and empirical evidence shows that an efficient compensation system involves close links between firm performance and executive compensation, in this study we attempt to determine the existence and magnitude of such links in Chinese listed firms.

We have found consistently for firms listed in China's emerging stock market statistically significant sensitivities and elasticities of cash compensation for the highest-paid executives and directors with respect to shareholder value. The size of the estimated sensitivities and elasticities is comparable or greater than what has been found for other countries (particularly the U.S., Japan and Korea). Among other firm performance measures, we have found strong evidence that sales growth is linked to executive compensation in China's listed firms and some evidence that Chinese executives are penalized for making negative profit although they are neither penalized nor rewarded for changes in profit insofar as it is positive.

[53] Mathiesen [2002]

Caution is needed, however, in inferring from the above results that the pay-performance linkage emerged from the stock market. Since compensation reforms started around the same time as the revival of the stock market and we do not have information on the incentive mechanisms adopted by the listed firms before their listing, we cannot conclusively argue that the pay-performance linkage observed in these firms has been brought about going public on the stock market. But we do have evidence showing that the ownership structure plays an important role in affecting the pay-performance sensitivities.[54]

First of all, we have found that government ownership of China's listed firms is weakening pay-performance link for top managers and thus possibly making China's listed firms less effective in solving the agency problem and such effects exist for both direct government ownership through state shares and indirect government ownership through legal person shares. In contrast, private ownership seems to strengthen the pay-performance link, compared to both government ownership and collective ownership. These results are consistent with the logic of the Coase Theorem that efficient incentive mechanisms spring from clearly defined property rights.

In addition, the multiple types of company shares that exist in China also affect the pay-performance relationship differently. We study two such share types, the tradability of shares and the foreign versus domestic ownership of shares. Our findings suggest that tradable shares enhance the pay-performance linkage, and so does foreign share ownership. The observed positive effects of tradability and foreign ownership on the pay-performance link are consistent with Coase's theory of property rights. More complete, better defined and better protected property rights, as in the case of tradable shares, lead to more efficient incentive mechanisms, as evidenced by higher pay-performance sensitivities and elasticities.

[54] These results will be robust even if stock holdings and other non-cash compensation components are included

These findings have important implications for China's enterprise reform. The public trading of China's state owned enterprises seems to result in the better alignment of interests between top managers and shareholders and such an interest alignment is stronger when accompanied by a reduction in government ownership of listed firms and a better defined bundle of property rights. Therefore, ownership restructuring may be needed for China to successfully transform its SOEs to efficient modernized corporations and reform its overall economy.

Finally, an alternative way to align the interests between top executives and shareholders is to tie their employment to firm performance. A full understanding of the incentive structure of top executives in China's listed firms will thus require an examination of the link between executive turnover and firm performance and how such a link is affected by ownership structure. To do so will require the collection of new data on top executive turnover in China's listed firms that can be matched with our CSMAR and Sinofin databases, a project we plan to do in the near future.[55]

[55] There is yet another growing literature on executive turnover. Some of the literature examine specifically the link between executive turnover-performance sensitivities and ownership structure in industrialized countries: for instance, see Denis, Denis, and Sarin (1997) on the U.S.; Kaplan and Minton (1994), Kang and Shivdasani (1995), and Morck and Nakamura (1997) on Japan; Volpin (2002) on Italy; and Campbell, II. and Keys (2002) on Korea.

References

Ang, James S. and Richard L. Constand. 1997. "Compensation and Performance: The Case of Japanese Managers and Directors." *Journal of Multinational Financial Management*, 7:4, pp. 275-304.

Bai, Chong-en, Qiao Liu, Joe Lu, Frank M. Song, and Junxi Zhang. 2003. "Corporate Governance and Market Valuation in China." William Davidson Working Paper No. 564.

Bai, Chong-en, Qiao Liu, and Frank M. Song. 2003. "The Value of Private Benefits: Evidence from an Emerging Market for Corporate Control." Working Paper, University of Hong Kong.

Bebchuk, Lucian Arye and Jesse M. Fried. 2003. "Executive Compensation as an Agency Problem." *Journal of Economic Perspectives*, 17:3, pp. 71-92.

Bertrand, Marianne and Sendhil Mullainathan. 2001. "Are CEOs Rewarded for Luck? The Ones without Principles Are." *Quarterly Journal of Economics*, 116:3, pp. 901-32.

Campbell, Terry L., II and Phyllis Y. Keys. 2002. "Corporate Governance in South Korea: The chaebol Experience." *Journal of Corporate Finance: Contracting, Governance and Organization*, 8:4, pp. 373-91.

Chen, Y. 1998. "Ownership structure and corporate performance: some Chinese evidence." Unpublished working paper, San Francisco State University.

Conyon, Martin J. 1997. "Corporate governance and executive compensation." *International Journal of Industrial Organization*, 15:4, pp. 493-509.

Core, John E., Robert W. Holthausen, and David F. Larcker. 1999. "Corporate Governance, Chief Executive Officer Compensation, and Firm Performance." *Journal of Financial Economics*, 51:3, pp. 371-406.

Cosh, Andy and Alan Hughes. 1997. "Executive Remuneration, Executive Dismissal and Institutional Shareholdings." *International Journal of Industrial Organization*, 15:4, pp. 469-92.

Cragg, Michael I. and I. J. Alexander Dyck. 2003. "Privatization and Management Incentives: Evidence from the United Kingdom." *Journal of Law, Economics, and Organization*, 19:1, pp. 176-217.

Cyert, Richard M., Sok-Hyon Kang, and Praveen Kumar. 2002. "Corporate Governance, Takeovers, and Top-Management Compensation: Theory and Evidence." *Management Science*, 48:4, pp. 453-69.

Denis, David J., Diane K. Denis, and Atulya Sarin. 1997. "Ownership Structure and Top Executive Turnover." *Journal of Financial Economics*, 45:2, pp. 193-221.

Gibbons, Robert and Kevin J. Murphy. 1992. "Optimal Incentive Contracts in the Presence of Career Concerns: Theory and Evidence." *Journal of Political Economy*, 100:3, pp. 468-505.

Gibbons, Robert and Michael Waldman. 1999. "Careers in Organizations: Theory and Evidence." *Handbook of labor economics. Volume 3B*: 2373-437. Elsevier Science, North-Holland: Amsterdam; New York and Oxford.

Groves, Theodore, Yongmiao Hong, John McMillan, and Barry Naughton. 1995. "China's Evolving Managerial Labor Market." *Journal of Political Economy*, 103:4, pp. 873-92.

Hall, Brian J. and Kevin J. Murphy. 2003. "The Trouble with Stock Options." *Journal of Economic Perspectives*, 17:3, pp. 49-70.

Hartzell, Jay C. and Laura T. Starks. 2003. "Institutional Investors and Executive Compensation." *Journal of Finance*, 58:6, pp. 2351-74.

Harvey, Keith D. and Ronald E. Shrieves. 2001. "Executive Compensation Structure and Corporate Governance Choices." *Journal of Financial Research*, 24:4, pp. 495-512.

Jefferson, Gary H., Su Jian, Jiang Yuan, and Yu Xinhua. 2003. "The Impact of Shareholding Reform on Chinese Enterprise, 1995-2001." William Davidson Institute Working Paper No. 542.

Jensen, M. and W. Meckling. 1976. ""Theory of the Firm: Managerial Behavior, agency costs an ownership structure"." *Journal of Financial Economics*, 3, pp. 305-60.

Jensen, Michael C. and Kevin J. Murphy. 1990. "Performance Pay and Top-Management Incentives." *Journal of Political Economy*, 98:2, pp. 225-64.

Joh, Sung Wook. 1999. "Strategic Managerial Incentive Compensation in Japan: Relative Performance Evaluation and Product Market Collusion." *Review of Economics and Statistics*, 81, pp. 303-13.

Jones, Derek C. and Takao Kato. 1996. "The Determinants of Chief Executive Compensation in Transitional Economies: Evidence form Bulgaria." *Labour Economics*, 3:3, pp. 319-36.

Jones, Derek C. and Takao Kato. 1998. "Chief Executive Compensation During Early Transition: Further Evidence from Bulgaria." William Davidson Working Paper No. 146.

Jones, Derek C. and Niels Mygind. 2004. "Majority Ownership and Executive Compensation." *Paper presented at the 2004 ASSA Meetings, San Diego*.

Kang, Jun-Koo and Anil Shivdasani. 1995. "Firm Performance, Corporate Governance, and Top Executive Turnover in Japan." *Journal of Financial Economics*, 38:1, pp. 29-58.

Kaplan, Steven N. 1994. "Top executive rewards and firm performance: A comparison of Japan and the United States." *Journal of Political Economy*, 102:3, pp. 510-46.

Kaplan, Steven N. and Bernadette A. Minton. 1994. "Appointments of Outsiders to Japanese Boards: Determinants and Implications for Managers." *Journal of Financial Economics*, 36:2, pp. 225-58.

Kato, Takao. 1997. "Chief executive compensation and corporate groups in Japan: New evidence from micro data." *International Journal of Industrial Organization*, 15:4, pp. 455 -67.

Kato, Takao, Woochan Kim, and Ju Ho Lee. 2004. "Executive Compensation and Firm Performance in Korea." Paper presented at the 2004 ASSA Meetings, San Diego.

Kato, Takao and Katsuyuki Kubo. 2003. "CEO Compensation and Firm Performance in Japan: Evidence from New Panel Data On Individual CEO Pay." Working Paper No. 210, Center on Japanese Economy and Business, Columbia Business School.

Ke, Bin, Kathy Petroni, and Assem Safieddine. 1999. "Ownership Concentration and Sensitivity of Executive Pay to Accounting Performance Measures: Evidence from Publicly and Privately-Held Insurance Companies." *Journal of Accounting and Economics*, 28:2, pp. 185-209.

Kubo, Katsuyuki. 2001. "The Determinants of Executive Compensation in Japan and the UK: Agency Hypothesis or Joint Determination Hypothesis?," in *Designing Financial Systems for East Asia and Japan, forthcoming*. M. Hanazaki, J. Fan and J. Teranishi eds. London: Routledge.

Laffont, Jean-Jacques and Jean Tirole. 1993. *A Theory of Incentives in Procurement and Regulation*. Cambridge, MA: MIT Press.

Lin, Cyril. 2000. "Corporatisation and Corporate Governance in China's Economic Transition." Department of Economics Series Ref: 020, Oxford University.

Liu, Deqiang and Otsuka Keijiro. 2004. "A Comparison of Management Incentives, Abilities, and Efficiency between SOEs and TVEs: The Case of the Iron and Steel Industry in China." *forthcoming in Economic Development and Cultural Change*.

Megginson, William L. and Jeffry M. Netter. 2001. "From State to Market: A Survey of Empirical Studies on Privatization." *Journal of Economic Literature*, 39:2, pp. 321-89.

Morck, Randall and Masao Nakamura. 1999. "Banks and Corporate Control in Japan." *Journal of Finance*, 54:1, pp. 319-39.

Murphy, Kevin J. 1999. "Executive Compensation," in *Handbook of labor economics. Volume 3B*. Amsterdam; New York and Oxford: Elsevier Science, North-Holland, pp. 2485-563.
Perotti, Enrico C. 1995. "Credible Privatization." *American Economic Review*, 85:4, pp. 847-59.
Rosen, Sherwin. 1990. "Contracts and the Market For Executives." NBER Working Paper, No. 3542.
Schipani, Cindy A. and Liu Junhai. 2001. "Corporate Governance in China: Then and Now." William Davidson Institute Working Paper No. 407.
Shanghai Stock Exchange. 1999. "Corporate Governance Survey of Listed Firms." Union News Net, 2000:12, accessed on March 19, 2004 at http://www.people.com.cn/GB/paper87/2352/369554.html
Shleifer, Andrei. 1998. "State versus Private Ownership." *Journal of Economic Perspectives*, 12:4, pp. 133-50.
Shleifer, Andrei and Robert W. Vishny. 1997. "A Survey of Corporate Governance." *Journal of Finance*, 52:2, pp. 737-83.
Sun, Qian and Wilson H. S. Tong. 2003. "China Share Issue Privatization: The Extent of Its Success." *Journal of Financial Economics*, 70:2, pp. 183-222.
Volpin, Paolo F. 2002. "Governance with Poor Investor Protection: Evidence from Top Executive Turnover in Italy." *Journal of Financial Economics*, 64:1, pp. 61-90.
Xu, Peng. 1997. "Executive Salaries as Tournament Prizes and Executive Bonuses as Managerial Incentives in Japan." *Journal of the Japanese and International Economies*, 11:3, pp. 319-46.
Xu, X. and Y. Wang. 1997. "Ownership structure, corporate governance, and corporate performance." Policy Research Working Paper 1794, The World Bank, Washington, DC.
Yang, Qixian. 1997. "SOE Reforms and Institutional Renovations," in *The Future Road of State Owned Enterprises*. Funai Dong, Yining Li and Zhiguo Han eds. Beijing, P.R. China: Economic Science Publishing, pp. 30-52.
Yueh, Linda Y. 2004. "Wage Reform in China during the 1990s." *Asian Economic Journal*, 18:2, pp. 149.

Table 1: The Level of Executive Compensation and Key Firm Characteristics of China's Listed Firms, 1998-2002.

Variable	Mean	Standard Deviation	Observations
Executive compensation			
TOP THREE EXECUTIVE AVERAGE PAY (total annual salary for the highest-paid three executives divided by three)	97,795.18	101,849.30	1890
TOP THREE DIRECTOR AVERAGE PAY (total annual salary for the highest-paid three directors divided by three)	107,428.70	114,676.70	1890
TOTAL EXECUTIVE PAY (total annual salary for all directors, supervisors, and high-level executives)	840,481.00	878,566.40	1890
AVERAGE EXECUTIVE PAY (TOTAL EXECUTIVE PAY divided by the number of all directors, supervisors and high-level executives)	77,204.96	76,037.62	1890
Key firm characteristics			
Number of employees	3,324.79	14,422.44	1890
Size of board of directors	9.72	2.46	1890
Size of board of supervisors	4.32	1.39	1890
Number of directors, supervisors, and executives included in TOTAL EXECUTIVE PAY	11.23	5.82	1890
Sales (in 1000 RMB)	1.37e+06	9.42e+06	1890
VALUE (shareholder value in 1000 RMB)	1.70e+06	4.15e+06	1890
ROR (stock return)	-0.14	0.25	1890
ROA (pre-tax profit/assets)	0.01	0.33	1890
NEGPROF=1 if the firm's pre-tax profit is negative, 0 otherwise	0.12	0.33	1890
PRIVATE=1 if the firm is controlled by private individuals or private firms, 0 otherwise	0.13	0.34	1890
GOVT=1 if the firm is controlled by the government, 0 otherwise	0.83	0.38	1890
COLLECT=1 if the firm is collectively controlled, 0 otherwise	0.04	0.20	1890
FRNSHARE (percentage of company shares owned by foreign investors, the sum of foreign legal person share percentage and tradable foreign share percentage)	2.75	2.29	1890
TRADESHARE (percentage of company shares that are tradable, the sum of public share percentage and tradable foreign share percentage)	37.94	12.56	1890

Sources: Accounting and financial data are from the China Stock Market and Accounting Research Database (CSMAR) developed by Shenzhen GTA Information Technology Company. Data on executive compensation are from the database developed by Sinofin Information Services.
Note: The data are based on a pooled cross-sectional time series dataset on 923 listed firms over the sample period of 1998 to 2002. All compensation measures, VALUE, and Sales are adjusted for inflation using CPI (1995=100). VALUE and Sales are in thousands of 1995 RMB, while all compensation measures are in 1995 RMB.

Table 2: Summary Statistics of Variables Used in the Regressions

Variable	Mean	Standard Deviation	Observations
Executive compensation			
Δ(TOP THREE EXECUTIVE AVERAGE PAY)	14,677.05	215,992.80	922
Δ(TOP THREE DIRECTOR AVERAGE PAY)	26,644.91	159,906.90	922
Δ(TOTAL EXECUTIVE PAY)	187,802.50	708,938.80	922
Δ(AVERAGE EXECUTIVE PAY)	15,860.01	455,68.03	922
Δ ln(TOP THREE EXECUTIVE AVERAGE PAY)	0.25	0.55	922
Δ ln(TOP THREE DIRECTOR AVERAGE PAY)	0.35	0.61	922
Δ ln(TOTAL EXECUTIVE PAY)	0.26	0.51	922
Δ ln(AVERAGE EXECUTIVE PAY)	0.24	0.48	922
Stock performance			922
Δ(VALUE) (in 1000 RMB)	-2.54e+05	5.91e+05	922
ROR	-0.14	0.25	922
Ln(1+ROR)	-0.18	0.23	922
Alternative firm performance measures			
GSALES (rate of growth of sales from t-1 to t)	0.19	0.41	922
DROA (change in ROA from year t-1 to year t)	-0.03	0.45	922
NEGPROF	0.13	0.34	922
Ownership structure			
PRIVATE=1 if the firm is controlled by private individuals or private firms, 0 otherwise	0.15	0.35	922
GOVT=1 if the firm is controlled by the government, 0 otherwise	0.79	0.40	922
COLLECT=1 if the firm is collectively controlled, 0 otherwise	0.04	0.19	922
GVTSHARE (percentage of company shares owned directly or indirectly by the state)	59.12	13.11	922
STATESHARE (percentage of company shares owned directly by the state)	32.30	26.90	922
LGLPSHARE (percentage of company shares owned by "legal persons")	26.83	25.33	922
FRNSHARE (percentage of company shares owned by foreign investors, the sum of foreign legal person share percentage and tradable foreign share percentage)	2.58	9.15	922
TRADESHARE (percentage of company shares that are tradable, the sum of public share percentage and tradable foreign share percentage)	38.44	12.46	922

Sources: Accounting and financial data are from the China Stock Market and Accounting Research Database (CSMAR) developed by Shenzhen GTA Information Technology Company. Data on executive compensation are from the database developed by Sinofin Information Services.
Note: The data are based on a pooled cross-sectional time series dataset on 827 listed firms. All compensation measures, VALUE, and Sales are adjusted for inflation using CPI (1995=100). VALUE and Sales are in thousands of 1995 RMB, while all compensation measures are in 1995 RMB.

Table 3: Executive Compensation and Alternative Performance Measures in China

Independent Variable	Eq. (1)	Eq. (2)	Eq. (3)	Eq. (4)	Eq. (5)	Eq. (6)	Eq. (7)
	Dependent Variable=						
	Δ(TOP THREE EXECUTIVE AVERAGE PAY)	Δln(TOP THREE EXECUTIVE AVERAGE PAY)					
Δ(VALUE)	0.054 (4.13)**						
ln(1+ROR)		0.373 (3.92)**					
ROR			0.357 (3.57)**				0.303 (3.02)**
GSALES				0.172 (4.07)**			0.135 (3.06)**
DROA					-0.012 (0.22)		-0.073 (1.29)
NEGPROF						-0.165 (3.21)**	-0.116 (2.12)*
Observations	922	922	911	911	911	911	911
R-squared	0.02	0.02	0.02	0.03	0.01	0.02	0.04

Sources: See Table 1.
Note: The data are based on a pooled cross-sectional time series dataset on 827 listed firms. All models include constant term and year dummy variables. All compensation measures are in 1995 RMB. Absolute value of t statistics in parentheses.
+ significant at 10%; * significant at 5%; ** significant at 1%

Table 4: Executive Pay-Performance Linkage and Private Ownership in China

	Sample=Listed Firms excluding Collective Firms		Sample=All listed firms	
	Dependent Variable =			
	Δ(Top Three Executive Average Pay)	Δln(TOP THREE EXECUTIVE AVERAGE PAY)	Δ(Top Three Executive Average Pay)	Δln(TOP THREE EXECUTIVE AVERAGE PAY)
PRIVATE	37,799.255 (2.18)*	0.110 (1.57)	37,792.555 (2.21)*	0.110 (1.56)
COLLECT			6,422.096 (0.21)	-0.106 (0.84)
Δ(VALUE)	6.60e-03 (0.66)		6.56e-06 (0.66)	
Δ(VALUE)* PRIVATE	0.278 (7.34)**		0.278 (7.43)**	
Δ(VALUE)* COLLECT			-0.010 (0.22)	
ln(1+ROR)		0.371 (3.13)**		0.370 (3.17)**
ln(1+ROR)* PRIVATE		0.437 (1.92)+		0.434 (1.91)+
ln(1+ROR)* COLLECT				-0.304 (0.73)
Constant	-12,725.285 (0.31)	0.147 (0.97)	-11,612.234 (0.30)	0.170 (1.20)
Observations	869	869	905	905
R-squared	0.07	0.03	0.07	0.03

Sources: See Table 1.
Note: PRIVATE is a dummy variable with value of 1 for firms controlled by private individuals or private firms and value 0 otherwise. COLLECT is a dummy variable with value of 1 for firms controlled by unions, company employee stockholding committees, or non-profit organizations, an 0 otherwise. The data are based on a pooled cross-sectional time series dataset on 827 listed firms. All models include constant term and year dummy variables. VALUE is in thousands of 1995 RMB, while all compensation measures are in 1995 RMB. Absolute value of t statistics in parentheses.

+ significant at 10%; * significant at 5%; ** significant at 1%

Table 5: Executive Pay-Performance Linkage and Direct versus Indirect Government Ownership

Sample=Listed Firms Controlled by the Government							
Eq. (8)		Eq. (9)		Eq. (10)		Eq. (11)	
Dependent Variable=							
	Δ(Top Three Executive Average Pay)		Δln(Top Three Executive Average Pay)		Δ(Top Three Executive Average Pay)		Δln(Top Three Executive Average Pay)
Explanatory Variables		Explanatory Variables		Explanatory Variables		Explanatory Variables	
Δ(VALUE)	0.035 (1.96)*	ln(1+ROR)	1.202 (2.63)**	Δ(VALUE)	0.037 (2.05)*	ln(1+ROR)	1.257 (2.76)**
GVTSHARE	-413.468 (1.87)+	GVTSHARE	-0.005 (2.26)*	STATESHARE	-456.460 (2.06)*	STATESHARE	-0.005 (2.51)*
Δ(VALUE)* GVTSHARE	-4.55e-04 (1.76)+	ln(1+ROR)* GVTSHARE	-0.014 (1.89)+	Δ(VALUE)* STATESHARE	-4.76e-04 (1.83)+	ln(1+ROR)* STATESHARE	-0.013 (1.83)+
				LGPSHARE	-336.983 (1.40)	LGPSHARE	-0.003 (1.47)
				Δ(VALUE)* LGPSHARE	-6.03e-04 (1.73)+	ln(1+ROR)* LGPSHARE	-0.017 (2.15)*
Constant	28014.9 (1.22)	Constant	0.458 (2.27)*	Constant	29373.89 (1.28)	Constant	0.462 (2.29)*
Observations	732	Observations	732	Observations	732	Observations	732
R-squared	0.01	R-squared	0.02	R-squared	0.01	R-squared	0.03

Sources: See Table 1.
Note: GVTSHARE is the sum of the percentage of company shares owned directly by the state (STATESHARE) and the percentage of company shares owned by "legal persons" (LGPSHARE), which are indirectly owned by the government. The data are based on a pooled cross-sectional time series dataset on 827 listed firms. All models include constant term and year dummy variables. VALUE is in thousands of 1995 RMB, while all compensation measures are in 1995 RMB. Absolute value of t statistics in parentheses
+ significant at 10%; * significant at 5%; ** significant at 1%

Table 6: Executive Pay-Performance Linkage and Tradability of Shares

Sample=All Listed Firms Controlled by the Government				Sample=All Listed Firms			
Dependent Variable=							
Δ(Top Three Executive Average Pay)		Δln(Top Three Executive Average Pay)		Δ(Top Three Executive Average Pay)		Δln(Top Three Executive Average Pay)	
Explanatory Variables	(1)	Explanatory Variables	(2)	Explanatory Variables	(3)	Explanatory Variables	(4)
Δ(VALUE)	-1.24e-03 (0.21)	ln(1+ROR)	-0.348 (1.28)	Δ(VALUE)	0.013 (1.00)	ln(1+ROR)	-0.037 (0.13)
TRADESHARE	89.530 (0.40)	TRADESHARE	0.003 (1.33)	TRADESHARE	692.341 (1.50)	TRADESHARE	0.003 (1.48)
Δ(VALUE)* TRADESHARE	1.66e-04 (0.83)	ln(1+ROR)* TRADESHARE	0.016 (2.41)*	Δ(VALUE)* TRADESHARE	-3.77e-04 (0.90)	ln(1+ROR)* TRADESHARE	0.009 (1.31)
FRGNSHARE	968.650 (3.16)**	FRGNSHARE	0.002 (0.92)	FRGNSHARE	940.065 (1.49)	FRGNSHARE	0.003 (1.28)
Δ(VALUE)* FRGNSHARE	8.34e-04 (1.71)+	ln(1+ROR)* FRGNSHARE	0.016 (1.66)+	Δ(VALUE)* FRGNSHARE	3.30e-04 (0.31)	ln(1+ROR)* FRGNSHARE	0.019 (1.93)+
				PRIVATE	37668.12 (2.22)*	PRIVATE	0.110 (1.56)
				Δ(VALUE)* PRIVATE	0.289 (7.68)**	ln(1+ROR)* PRIVATE	0.453 (1.99)+
Constant	8223.763 (0.39)	Constant	0.127 (0.78)	Constant	-36029.87 (0.88)	Constant	0.127 (0.78)
Observations	732	Observations	732	Observations	922	Observations	922
R-squared	0.01	R-squared	0.02	R-squared	0.07	R-squared	0.03

Sources: See Table 1.
Note: TRADESHARE is the percentage of company shares that are tradable. FRGNSHARE is the percentage of company shares that are owned by foreign investors. The data are based on a pooled cross-sectional time series dataset on 827 listed firms. All models include constant term and year dummy variables. VALUE is in thousands of 1995 RMB, while all compensation measures are in 1995 RMB. Absolute value of t statistics in parentheses.
+ significant at 10%; * significant at 5%; ** significant at 1%