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ScienceDirect
Journal of Comparative Economics 34 (2006) 796–817
Journal of COMPARATIVE ECONOMICS
www.elsevier.com/locate/jce

CEO turnover, firm performance, and enterprise reform in China: Evidence from micro data

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Received 12 August 2005; revised 10 August 2006

Available online 25 September 2006

Kato, Takao, and Long, Cheryl—CEO turnover, firm performance, and enterprise reform in China: Evidence from micro data

In this paper, we use unique data on China's listed firms from 1998 to 2002 to show that CEO turnover is significantly and inversely related to firm performance, although the magnitude of the relationship is modest. In addition, we find that this turnover-performance link is weaker for listed firms that are still controlled by the state and those that have a relatively weak non-state controlling shareholder. In contrast, the appointment of independent directors enhances the turnover-performance link. Moreover, the listing suspension mechanism, adopted by China's securities regulatory agency, appears to be effective in improving the turnover-performance tie. Finally, listed firms with CEOs holding additional positions among the controlling shareholders have a weaker turnover-performance link. *Journal of Comparative Economics* **34** (4) (2006) 796–817. Colgate University, Hamilton, NY 13346, USA; Columbia University, USA; IZA, Bonn, Germany; TCER, Japan; University of Electronic Science and Technology of China (UESTC), China.

JEL classification: M52; M12; J33; P34; G30; O16; O53; G30; G15

Keywords: CEO turnover; Firm performance; Corporate governance; Enterprise reform; China; Transitional economy

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0147-5967/$ – see front matter
doi:10.1016/j.jce.2006.08.002

1. Introduction

Executive turnover and its link to firm performance have been the focus of a large and growing literature because they provide a crucial measure of the effectiveness with which a firm solves two principal–agent problems. These are the diverging interests between top management and shareholders, which may result in managerial entrenchment, and the diverging interests between the controlling shareholders and the minority shareholders, which may lead to the expropriation of the latter by the former. The second agency problem is analyzed and referred to as tunneling by Bebchuk (1999), Bebchuk et al. (2000), Johnson et al. (2000), and Volpin (2002). By linking the personal fortune of top executives to the performance of the firm, the interests of the shareholders and those of management are aligned. In addition, the insider alliance between the controlling shareholder and management is also severed so that the interests of outside investors or minority shareholders are protected to some extent. Hence, the relationship between executive turnover and performance can be indicative of the quality of the corporate governance system in a firm.

In this paper, we study the link between executive turnover and firm performance in Chinese listed firms and provide systematic evidence of the turnover-performance sensitivities of top executives. The large literature on executive turnover focuses mostly on US firms but an increasing number of studies consider firms in other industrialized countries.[1] However, relatively limited attention has been paid to developing and transition economies.[2] In particular, no analysis of the turnover-performance sensitivity is available for listed firms in China, which is presently the largest transition economy in the world.[3] By early 2004, China's stock market had emerged as the eighth largest in the world with close to 1300 listed firms and a market capitalization of over $550 billion.[4] By focusing on China's listed firms, we attempt to fill a large gap in the growing literature on executive turnover.

Perhaps more importantly, China is an ideal case for the study of internal corporate governance, including CEO turnover, for at least two reasons. First, the internal disciplinary mechanism that determines CEO turnover is particularly important due to the lack of effective markets

[1] Murphy (1999) provides a review of the earlier literature on executive turnover, which tends to focus on the US, the UK, Japan and Germany. Studies on other industrialized countries include Volpin (2002) and Brunello et al. (2003) on Italy, Suchard et al. (2001) on Australia, Zhou (2000) on Canada, Lausten (2002) and Neumann and Voetmann (2005) on Denmark, and Campbell and Keys (2002) on South Korea.

[2] Studies on other developing and transitional economies include Claessens and Djankov (1999, 2000), Muravyev (2003), Eriksson (2005), Gibson (2003), Defond and Hung (2004), and Klapper and Love (2004).

[3] We are, however, aware of a few previous studies on a link between executive compensation and firm performance in China's SOEs before the beginning of the stock market. Groves et al. (1995), Liu and Otsuka (2004), and Mengistae and Xu (2004) find a positive and significant link between accounting measures of performance and executive compensation. In addition, these authors demonstrate that most reform measures in the 1980s and the 1990s were successful in enhancing the pay-performance link in SOEs. In particular, Groves et al. (1995) provide evidence consistent with the view that the reform measures in the 1980s, which include profit responsibility contracts, improved the relationship between pay and performance. Mengistae and Xu (2004) show that certain specific reform measures, e.g., profit retention, increase the pay-performance link while others, including autonomy in production and sales decisions, do not.

[4] A total of 1288 firms were listed in the Shanghai and Shenzhen Stock Exchanges by the end of April 2004 according to official sources. According to the estimate cited above, total market capitalization in China's stock markets is about 50% of China's GDP, which is comparable to that in Japan (*People's Daily*, Feb. 22, 2001). A more conservative estimate that discounts the values of shares owned by the state and legal persons is 20%.

for corporate control in China.[5] In addition, both agency problems are acute in China due to poorly defined property rights and weak investor protection. Volpin (2002) regards Italy as an ideal case for the study of top executive turnover in the absence of strong investor protection. However, the Chinese case adds an important new dimension to the issue of investor protection and agency problems, i.e., the majority shareholder is often the state with its complex objectives.

Specifically, we use financial and accounting data on China's listed firms from 1998 to 2002 augmented by data on CEO turnover, ownership structure, and board characteristics. Our findings present a mixed picture of corporate governance in China. Overall, the CEO turnover-performance sensitivities in China's listed firms are statistically significant but economically unimportant. The sensitivities of CEO turnover to firm performance are especially weak for listed firms controlled by the state and for firms having a relatively weak non-state controlling shareholder. However, we find a substantially stronger performance-turnover link in privately controlled firms, which suggests that an acceleration of the privatization process in China will lead to further improvement in corporate governance.[6] In addition, several specific measures adopted by the Chinese Securities Regulatory Commission (CSRC), including the introduction of the Special Treatment (ST) designation and independent directors, appear to be effective in strengthening the performance-turnover link.

Our findings are consistent with the agency literature, in particular, the hypothesis that weak protection for outside investors leads to poor corporate governance as developed in the law and finance approach to corporate governance by La Porta et al. (1999, 2000). We find that the presence of a large controlling shareholder strengthens the link of CEO turnover to firm performance for private firms whereas both the lack of independent directors and the presence of a CEO who simultaneously holds a position as the controlling shareholder firm weaken this link.[7] Our results provide support for the hypothesis that weak investor protection leads to a more acute agency problem between insiders and outside investors.[8] In other words, the difficulty faced by Chinese listed firms in solving the two types of principal–agent problems is fundamentally a result of the weak protection provided by China's legal system to investors.

As in many other developing countries, China does not have either a comprehensive set of legal rules that provide protection for outside investors or the ability to implement effectively the existing laws that govern the operations of corporations and the securities market. China's problem is further compounded by its socialist legacy as explicit protection for private property rights was instituted in the Constitution only in 1999. In addition, majority state ownership of

[5] Some Chinese listed firms have experienced changes in their controlling shareholders. However, these control changes tend to be heavily regulated or even orchestrated by the government. Cai and Chen (2004) provide a more detailed discussion on corporate control changes in China.

[6] This finding is consistent with the previous literature that finds SOE reforms without privatization to have no enhancing effect on firm performance. Shirley and Xu (2001) find no improvement in profitability, labor productivity, and total factor productivity of SOEs following the introduction of performance contracts. Chang et al. (2003) find that Chinese township and village enterprises with better defined ownership have significantly better performance. Zhang et al. (2003) find that state ownership leads to lower R&D and productive efficiency in industrial firms. In addition, Bai et al. (2000) explain the low profit incentives and poor performance in SOEs by the continuing need for multitasking, including employment provision. Finally, the results of Bai and Xu (2005) suggest that the Chinese government may have non-financial objectives for SOEs.

[7] These findings are consistent with the results in Wang et al. (2004). They find that the post-listing firm performance tends to be poor in China and that the effects depend on the balance of power between top shareholders, which is potentially another proxy for the likelihood of large shareholders to be exploiting smaller shareholders.

[8] Claessens et al. (2000) provide empirical evidence from East Asian countries that supports this hypothesis.

many of the listed companies implies that protection for even this largest investor is weak due to the ambiguity of public property rights. Hence, any fundamental improvement in the ability of Chinese firms to resolve the two types of principal–agent problems, or equivalently improve their corporate governance, requires a broad program encompassing not only privatization but also the promulgation and effective implementation of laws to provide better protection for investors, as Wu (2003) argues.

The structure of the remaining part of the paper is as follows. In Section 2, we present background information on the current Chinese corporate governance system and develop testable hypotheses. The data and the empirical strategy are discussed in Section 3. Section 4 contains the econometric specifications and presents the empirical results. Section 5 concludes with policy implications.

2. Background information and testable hypotheses

Perhaps the most distinguishing feature of firms listed on China's stock exchanges is the dominance of state ownership and control. From their beginning in the early 1990s, the stock markets in Shanghai and Shenzhen were designed primarily to help state-owned enterprises (SOEs) raise capital and reduce their debt burden rather than to promote efficient resource allocation. Based on this objective, quotas were applied to public listings until 2000 and these were reserved almost exclusively for SOEs. The policy of "grasping the big and letting go of the small," adopted at the Chinese Communist Party's 15th Party Congress in 1997, vowed support for privatization of small SOEs and opened the door for ownership restructuring for large SOEs. However, ownership restructuring of Chinese listed firms has been slow.[9] In 2002, the government remained the largest shareholder in over 80% of the listed firms. The state maintained control either by direct share ownership or by indirect ownership through legal person shares; together these holdings constitute about two thirds of the company stock of all listed firms.[10]

Dominance of state ownership has negative implications for meaningful SOE reform and the further development of China's stock market for multiple reasons. First, state ownership suffers from the separation between ownership by the general public and control by the bureaucrats in charge of the daily operations of the firm, who may have very different goals from the general public, as Shleifer and Vishny (1997) discuss. Second, even if the state is able to hold the bureaucrats accountable for implementing its goals, the multiple and oftentimes conflicting social objectives pursued by the state imply that the firm's economic performance is often sacrificed to achieve other social goals, e.g., full employment. Third, state and legal-person shares of Chinese listed firms held directly or indirectly by the government are non-tradable so that any transfer of these stocks must be approved by numerous government agencies, including both the CSRC and the Ministry of Finance. Hence, the disciplinary function of market takeovers is weakened considerably. Taken together, these characteristics weaken incentives for state-owned firms to pursue profit maximization and increase market value. Therefore, these firms lack corporate governance

[9] Naughton (1995) and Yang (1997) provide a detailed discussion on China's earlier enterprise reform from a historic perspective. Huang (2003) identifies the detrimental effects of China's delay in privatizing its SOEs. Megginson and Netter (2001) contains a general discussion on enterprise reform in transition economies.

[10] Unless noted otherwise, numbers cited are computed by the authors using the GTA and SinoFin data bases. Qiang (2003) provides similar estimates for different types of share percentages.

measures that link performance to the fortunes of the CEO.[11] Hence, we do not expect them to exhibit a strong link between firm performance and CEO turnover.

Moreover, most of the firms controlled by the government follow the same procedures as SOEs regarding top personnel decisions. Depending on the level of authority over the firm, the government of the corresponding level appoints top management. For SOEs at the central government level, the central government's CCP (Communist Party of China) Department of Organization has the final say in the selection of the CEO or General Manager. For SOEs in the charge of a provincial government, the Department of Organization at the provincial government makes these decisions.[12] For the listed firms that have the government or SOEs as their largest shareholders, the same procedures tend to apply. According to China's Corporate Law, personnel decisions should be made by the board of directors. In reality, however, the candidates for the Chairman of the board of directors and the General Manager are almost always nominated by the largest government shareholder and rubber-stamped by the board. Thus, the multiplicity of the goals of the government implies that the economic performance of the firm will often be a secondary consideration to political pressures and social connections in personnel decisions. Based on these observations, we state our first main hypothesis.

Hypothesis 1. *The sensitivities of CEO turnover to firm performance are lower for listed firms controlled by the state than for privately-controlled listed firms, all other things being equal.*

The second feature that Chinese listed firms have in common is a highly concentrated ownership structure. On average, the proportion of company stock owned by the largest shareholder is more than 44% and over 42% of listed firms have a majority controlling shareholder. This degree of concentration is both a reflection of the state's reluctance to let go of its control of former SOEs and a response of privately controlled firms to the weak protection for outside investors. Concentration of both control and ownership of listed firms is prevalent in countries with weak protection for investors; La Porta et al. (2000) argue that such concentration is a rational response by private entrepreneurs to the lack of investor protection. A larger stake in the company gives the controlling shareholder more incentive to monitor management and, thus, leads to higher performance-turnover sensitivities. Using Italian data, Volpin (2002) finds evidence of such a positive effect of the proportion of stock owned by the largest shareholder on the turnover-performance link for top executives. We predict that the favorable effect of the proportion of stock owned by the largest shareholder on the link between CEO turnover and performance is more powerful in listed firms for which private entities are the controllers. We also examine empirically this corollary of Hypothesis 1.

In addition to these two main features of stock markets in China, we also consider three potentially important factors that may affect the quality of corporate governance, namely independent directors, insider CEOs, and ST-designation. The first and second factors relate to the prevalence of insider control and the severity of the second type of agency problem in Chinese listed firms. The first and third factors are measures introduced by the CSRC to improve corporate governance in China. In this effort, its biggest challenge is insider control. The insider control resulting from ownership concentration helps to reduce the principal–agent prob-

[11] Bonin (1976), Weitzman (1976), Kornai (1992), Ickes and Samuelson (1987), Litwack (1991), and Dewatripont and Roland (1997) discuss the negative impact on managerial incentives of these arrangements.

[12] Our discussion of the personnel appointment process is based on surveys and interviews conducted in Beijing, Shanghai, and Chengdu, Sichuan in the summer of 2004.

lem between owners and management, particularly in countries with poor protection of outside investors. However, concentrated insider ownership also aggravates the conflict of interests between the controlling shareholders and the minority shareholders, as La Porta et al. (1999), Bebchuk (1999), and Bebchuk et al. (2000) discuss. We develop two hypotheses to characterize the extent to which Chinese listed firms resolve agency problems between the controlling shareholder and outside investors.

According to China's Corporate Law, the board of directors represents the interests of all shareholders. However, in reality, the board of directors in Chinese listed firms is often staffed with individuals that are directly or indirectly affiliated with the controlling shareholder so that small individual investors have no representation.[13] An average listed firm in China has a board of directors with about ten members; of these, only two were independent directors in 2002, the year in which the percentage is the highest in our sample. Under such circumstances, one way to protect the interests of minority shareholders is to guarantee a minimum number of independent directors who are not affiliated with either the controlling shareholder or the listed firm but rather serve on behalf of the outside investors.[14] According to the "Guidelines for Establishing Independent Director System in Listed Firms" issued by the CSRC on August, 16th, 2001, each listed firm in China is required to have at least two independent directors on its board by June 30th, 2002. In addition, by June 30th, 2003, at least one third of the board members is required to be made up of independent directors.[15] The CSRC also states in the "Guidelines" and in the "Corporate Governance Model Codes" that the board of directors should establish committees in charge of compensation, auditing, and nomination. In addition, at least half of the members serving on these committees should be independent directors and the chairs of these committees should also be independent directors.[16]

Conflicting views are found on the effectiveness of independent directors in improving corporate governance in China. According to recent newspaper coverage, independent directors are hiring independent auditors for listed firms, while others are refusing to acquiesce to decisions made by management and the controlling shareholder of listed firms.[17] However, independent

[13] Qiang (2003) and Wu (2003) provide discussions of insider control in Chinese listed firms.

[14] Following the Asian Crisis, several reforms in corporate governance were imposed on many crisis-hit Asian countries, e.g., South Korea, Indonesia, Thailand and Malaysia. All these countries now require a minimum percent of independent outside directors on the board. Nam and Nam (2004) provide a more detailed description of these reform measures.

[15] According to the Guidelines, an individual must meet the following conditions to be considered independent. First, neither the individual nor his or her relatives, including spouses, parents, children, siblings, parents in law, sons and daughters in law, spouses of siblings, and siblings of spouses may work for the listed firm or its subsidiaries. Second, the individual may not directly or indirectly own more than 1% of the stock of the listed firm. Third, neither the individual nor his or her close relatives, including spouses, parents and children, may be among the largest 10 shareholders of the listed firm. Four, neither the individual nor his or her close relatives may work for a company that owns more than 5% of the stock of the listed firm. Five, neither the individual nor his or her close relatives may work for one of the largest 5 shareholder companies.

[16] Another reform measure adopted by the CRSC is the separation of the CEO position from the board chairmanship. However, we find no discernible effect on turnover-performance sensitivities of a CEO holding this dual position. In contrast, Goyal and Park (2002) find evidence on the beneficial effect of the separation of the CEO position from the board chairmanship in the US. These and other unreported results are available upon request from the corresponding author at tkato@mail.colgate.edu.

[17] Examples of such sources are "Are Independent Directors Useful?" the *Economic Observer* (Jingji Guancha), June 26, 2004 edition and "How can Independent Directors Become Truly Independent?" the *Liberation Daily* (Jiefang Ribao), December 20, 2004 edition.

directors have had only very limited rights in litigation until recently so that their effectiveness is diminished. For testing the validity of these arguments, we state the next hypothesis.

Hypothesis 2. *The appointment of independent directors enhances turnover-performance sensitivities, all other things being equal.*[18]

Another manifestation of the prevalence of insider control is the close relationship between the firm's top management and its controlling shareholder company. Between 1998 and 2002, CEOs of 41% of China's listed firms simultaneously held executive positions in the controlling shareholder companies. Furthermore, our data indicate that both listed firms controlled by the state and those controlled by private firms or private individuals have high percentages of insider CEOs. Since appointing one of its own executives to be the firm's CEO is the most direct way for the controlling shareholder to exert control, the CEO is expected to serve the interests of the controlling shareholder more than those of the listed firm. Hence, for CEOs holding executive positions in the controlling shareholder firms, the criteria for measuring the success may be linked more to effectiveness in enhancing the interests of the controlling shareholder rather than those of the listed firm. For private controlling shareholders, the temptation clearly exists to steal wealth from their firms. Even for state-controlled firms, goals such as providing social welfare and political stability provide an incentive to transfer wealth from the firm. To the extent that such wealth transfer activities, i.e., tunneling activities, are more prevalent in firms in which CEOs pledge allegiance to the controlling shareholder and that the amount of tunneling is reflected negatively in the firm's performance, the link of CEO turnover to firm performance is expected to be weaker for such listed firms.[19] Hence, we state our hypothesis relating to the Chinese version of management entrenchment.

Hypothesis 3. *CEO turnover-performance sensitivities are weaker for listed firms having CEOs who also hold positions in the controlling shareholder firms, all other things being equal.*[20]

Finally, we study the effectiveness of a listing suspension measure adopted by the CSRC to improve corporate governance. In 1998, the CSRC introduced the ST designation policy. Under the CSRC guidelines, a firm may become an ST firm for a variety of reasons, e.g., experiencing net loss for two consecutive years or failing to keep the value of shareholders' equity above registered capital. In general, the CSRC uses the ST designation to warn firms experiencing serious financial difficulties or certain abnormalities because such troubles are detrimental to the interests of investors. Following an ST designation, the firm will be delisted if its performance does not improve in two years. In the interim, the ST firm receives more strict scrutiny from regulators. Facing the pressing risk of delisting, an ST firm has a strong incentive to improve performance and rid itself of the ST label. To achieve this objective, the firm will presumably strengthen the incentives faced by their CEOs.[21] Hence, we state our final hypothesis.

[18] Weisbach (1988), Dahya et al. (2002), and Suchard et al. (2001) test a similar hypothesis for listed firms in the US, the UK, and Australia, respectively.

[19] Several high-profile cases investigated by the CSRC since 2001 suggest that the most commonly used method of tunneling by controlling shareholders of Chinese listed firms is to borrow or to secure loan guarantees from their controlled listed firms, as documented in various issues of *Shanghai Securities* (Shanghai Zhengquanbao).

[20] Volpin (2002) develops and tests a similar hypothesis using Italian data.

[21] Bai et al. (2004) provides more details on the ST-designation mechanism.

Hypothesis 4. *An ST designation will result in a stronger performance-turnover link for the firm, all other things being equal.*

3. Data and measurement

Studies on executive turnover in the US and other developed countries focus on CEOs.[22] In China, the title of CEO is a relatively new concept and some companies have started to use it only recently. Since Chinese firms have historically used General Manager (*zongjinli*) as the title for their top executives, we could use this classification. However, the designation of the top executive of a Chinese company is complicated so that taking the General Manager may not always be appropriate. Corporate Law in China stipulates that the Chairman of the board of directors is the legal representative of a listed firm (Corporate Law §3, 1993). Moreover, the Chairman of the board of directors is appointed by the largest shareholder in the majority of listed firms in China, as Wu (2003) reports. Given the highly concentrated ownership structure of Chinese listed firms, the Chairman appointed by the largest shareholder tends to be powerful and often involved in the company's daily decision-making even without holding the position of General Manager simultaneously. According to a survey of firms listed on the Shanghai Stock Exchange in 2001, the Chairmanship is held by someone different from the General Manager in about 80% of these firms. Among these Chairmen, more than half receive salaries from the listed firm, work for the firm full time, and are generally involved in the company's daily decision making. Furthermore, if both the Chairman and the General Manager are responsible for a company's daily operations, the Chairman is considered to be more powerful than the General Manager.[23]

We adopt the following strategy to determine the top executive of a firm and use the title CEO for that person to avoid confusion. If the same individual serves as both Chairman and General Manager, he or she is considered to be the CEO of the firm. If two separate individuals hold the positions of Chairman and General Manager, we consider the Chairman to be the CEO as long as he or she is paid by the listed firm. Otherwise, we consider the General Manager, who is almost always on the firm's payroll, to be the CEO. For the few cases in which payroll information is not available, we search online sources for information about who is in charge of the company's daily operations, e.g., the person cited as the most powerful figure by the major newspapers. If we cannot determine the CEO by any of these methods, we rely on information from the previous and the following years to determine the person who corresponds to a CEO in the company.[24]

Information identifying the General Manager and the Chairman as well as accounting and financial data are obtained from the China Stock Market and Accounting Research Database (CSMAR) developed by Shenzhen GTA Information Technology Company. Data on ownership structure and corporate governance are assembled from the database developed by SinoFin Information Services. Sun and Tong (2003), Bai et al. (2003, 2004) have used the CSMAR data set, but we cannot find any reference in the academic literature in which authors use the SinoFin

[22] Murphy (1999) provides a review of the literature on executive turnover.

[23] An example of a source is "Chairman of the board or general manager: Who's the CEO in a Chinese company?" *China Securities*, Jan. 31, 2002. This situation was also confirmed during our interviews with Chinese executives in Beijing, Shanghai, and Chengdu in the summer of 2004.

[24] The Chairman may be involved in day-to-day business decisions and still be more powerful than the General Manager even if he is not paid by the listed firm. Reassuringly, our key results do not change qualitatively even if we limit our analysis to only those firms with the same individual serving as both the Chairman and the General Manager and with the Chairmen on the firm's payroll.

data set.[25] The CSMAR database provides data on the starting year of each CEO's current term, with a typical term being three years in China, but fails to supply the year in which he or she is first appointed to the position. To obtain data on total CEO tenure for those who serve more than one term, we supplement the CSMAR database with the annual reports of all listed firms.

Data are available annually for 1998 through 2002; the unit of observation in our analysis is a firm-year pair. We exclude observations in which the CEO has not served for at least a full year at that position because the data allow for only annual performance measures so that they do not apply to CEOs with less than one year of experience. To focus on CEO departures that are related to firm performance, we follow the standard approach used in the literature and exclude departures due to death, illness, or company control changes as missing values.[26] Since the data do not allow us to identify CEO departures due to normal retirement, we follow the literature and include the age of the CEO to control for the impact of normal retirement.[27]

After applying the above exclusion criteria to the data, we have 638 firms and a total of 2181 observations over the period from 1999 to 2002.[28] The summary statistics are given in Panel A of Table 1. As reported therein, the Chairmanship and the General Manager position are held by the same individual in 17% of the observations. Moreover, in 45% of the observations, the Chairman is paid by the listed firm so that we consider them to be the CEO. Finally, the remaining 38% of the observations have the General Manager as the CEO. On average, CEOs working in Chinese listed firms have similar characteristics to top executives in Chinese firms in general. CEOs in Chinese listed firms are on average 50 years old and only 4% of them are female, which is almost equivalent to the statistics for top Chinese executives in general.[29] The average tenure length of a CEO is 2.3 years, which is much shorter than the average tenure of a Chinese top executive in general.[30] However, this difference is not surprising due to the short history of Chinese listed firms.[31] Compared to CEOs of listed firms in the US and Japan, CEOs of Chinese listed firms are much younger and have shorter tenure.[32] The average annual turnover rate for CEOs of Chinese listed firms is 24%, which is substantially higher than the average CEO turnover rate reported

[25] In a companion paper, i.e., Kato and Long (2006), we use the SinoFin data set to examine executive compensation in Chinese listed firms.

[26] Kaplan (1994) and Denis et al. (1997) are examples of this approach. Changes in company control, e.g., takeover, may be caused by poor performance and, if so, they should be considered. As is also the case for previous studies, the data are not rich enough to distinguish changes in company control caused by poor firm performance from other such changes.

[27] In addition, we assign missing values to observations in which CEOs who depart their CEO positions but remain on board of the directors because such departures may be normal retirement decisions.

[28] Since we use lagged values in our subsequent regressions, our final sample time period becomes 1999 to 2002 rather than 1998 to 2002.

[29] According to "Report on Chinese Entrepreneurs: Emergence and Development" (*Zhongguo qiyejia chengzhang yu fazhan baogao*), p. 27, by the Survey System for Chinese Entrepreneurs 2004, the average age of all Chinese CEOs is 48 and the percentage of female CEOs is 4% in 2002.

[30] The Survey on Chinese entrepreneurs reports that, in 1998, the percentages of all CEOs with lengths of tenure between 1 and 5 years, between 6 and 10 years, between 11 and 15 years, between 16 and 20 years, and more than 20 years, were 36, 28.3, 26.7, 6.4, and 2.6%, respectively. In the same survey conducted in 2000, the entrepreneurs reported an average of 1.6 turnovers for top executives, who were working in their firms during the previous 10 year period.

[31] Data on educational attainment are available only for 89 firms. For this small subsample, we find that 71% of firms have a CEO with at least a bachelor's degree. This is a substantially higher percentage than that reported for Chinese CEOs in general at 4%. However, the difference may be due to the very small sample size of selected individuals who report such information.

[32] Kato and Rockel (1992) and Kaplan (1994) provide information about the educational attainment of CEOs in other countries.

Table 1
Summary statistics: 1999 to 2002

Variable	Mean	s.d.	Medium	*N*
Part A: CEO characteristics				
TURNOVER (= 1 if CEO departs)	0.24	0.43	0	2181
GENERAL (= 1 if CEO is General Manager)	0.38	0.47	0	2181
DUAL (= 1 if CEO holds Chairman/GM dual position)	0.17	0.37	0	2181
AGE	49.62	7.81	50	2181
FEMALE (= 1 if CEO is female)	0.04	0.19	0	2181
TENURE AS CEO	2.34	1.39	2	2181
INSIDER CEO (= 1 if CEO also works for the controlling shareholder)	0.41	0.49	0	1039
Part B: Firm characteristics				
RETURN (industry-adjusted stock return)	0.06	0.43	−0.09	2181
Total asset	1.78E + 09	2.45E + 09	1.13E + 09	2181
MCAP = Total market value of company stocks	1.58E + 09	1.41E + 09	1.21E + 09	2181
Sales	1.02E + 09	1.88E + 09	4.79E + 08	2181
Sales growth rate	0.16	0.44	0.11	2181
ROA (industry-adjusted return on asset)	0.02	0.22	0.04	2171
ΔROA (industry-adjusted change in return on asset)	−0.02	0.22	−0.01	2171
MAR (industry-adjusted profit margin)	−0.18	4.25	−0.01	2164
ΔMAR (industry-adjusted change in profit margin)	−0.13	3.25	0	2164
Proportion of firms controlled by the state ultimately	0.83	0.37	1	2181
Proportion of firms controlled by private individuals or firms	0.10	0.31	0	2181
Proportion of firms controlled by foreign individuals or firms	0.01	0.11	0	2181
SHARE (controlling shareholder share)	0.44	0.17	0.44	2181
MAJORITY (= 1 if controlling shareholder shares exceeds 50%)	0.42	0.49	0	2181
Size of board of directors	9.70	2.57	9	2181
Number of independent directors (1999–2002)	0.83	1.18	0	2181
1999	0.05	0.38	0	439
2000	0.11	0.49	0	483
2001	0.51	0.98	0	621
2002	2.24	0.80	0	638
INDEPENDENT = proportion of independent directors (1999–2002)	0.09	0.12	0	2181
Proportion of ST-firms 1999	0.02	0.19	0	439
Proportion of ST-firms 2000	0.07	0.27	0	483
Proportion of ST-firms 2001	0.10	0.33	0	621
Proportion of ST-firms 2002	0.16	0.37	0	638
Among all ST-firms (1999–2002), ST (= 1 if firm i is an ST-firm in the current year)	0.35	0.48	0	276

Notes. (1) Although data for 1998 are also available, we use lagged values in our subsequent regression analysis so that our final sample time period is 1999 to 2002.

(2) All value variables are measured in RMB and adjusted for inflation using the CPI with 1995 as the base year.
Sources: Data on CEOs as well as accounting and financial data are from the China Stock Market and Accounting Research Database (CSMAR) developed by Shenzhen GTA Information Technology Company. Data on ownership structure and corporate governance are from the database developed by SinoFin Information Services.

for the US and Japan by Kaplan (1994). Finally, over 41% of Chinese CEOs in the sample simultaneously hold positions in the controlling shareholder firms in 2001 and 2002, the years for which the CSRC required all listed firms to disclose the employment relationship between the CEO of the listed firm and the controlling shareholder. This percentage suggests a close relationship between the listed firm and its controlling shareholder.

Regarding the ownership structure, we separate the listed firms into state-controlled firms and non-state-controlled firms using the classification of the ultimate controller by SinoFin. With only one exception, the ultimate controller is defined by shareholding that equals or exceeds the 10% threshold level that is used in the corporate governance literature, e.g., La Porta et al. (1999), Claessens et al. (2000), and Faccio and Lang (2002). The definition of the ultimate controller used in these previous studies requires that firms in the middle layer of a control pyramid be listed as well. However, according to Liu et al. (2003), the main mechanism of indirect control for Chinese listed firms is through a pyramidal structure in which the largest shareholder of the listed firm is an unlisted firm or an organization controlled by the state. We cannot use the percentage of shares owned by the ultimate shareholder directly and indirectly because the SinoFin database only provides information on the ownership type of the ultimate controller, i.e., state or others.[33]

Part B in Table 1 reports descriptive statistics on the type of the ultimate controller and other key firm characteristics. All of the value variables are expressed in constant 1995 RMBs. A typical listed firm in China is relatively small having an average market value of about 1/20 of the typical firm listed on the NYSE. Among all listed firms, 83% have the government as the ultimate controller, 10% have a private individual or a private firm as the ultimate controller, while only about 1% are controlled by foreign firms or individuals.[34] Finally, the largest shareholder of a typical listed firm owns over 44% of total company stock and over 42% of all listed firms have a majority shareholder indicating a highly concentrated ownership structure for Chinese listed firms.

As reported in the table, the average size of the board of directors is around 10, while the number of independent directors has increased rapidly from 1998 to 2002. This change reflects the effectiveness of the CSRC's "Guidelines for the Use of Independent Directors in Listed Firms." In addition, the percentage of listed firms having independent directors rose from 2.5% at the end of 2000, to 6% in late 2001, and finally to 31% by the end of 2002. The median number of independent directors exceeded 2 by the end of 2002. Because the introduction of independent directors is largely an exogenous event imposed by the CSRC, our estimates on the impact of their introduction on the quality of corporate governance are less subject to endogeneity bias. Finally, we consider two variables related to ST status. First, the proportion of ST-firms, defined as those firms that have received ST-designation, increased steadily over time reaching 16 percent level at the beginning of 2002, as shown in the table. Second, for the group of ST-firms, we define a dummy variable, denoted ST, to be 1 if the firm received its ST-designation by the beginning of the current year. The table indicates that 35 percent of the observations from 1999 to 2002 for ST-firms are characterized as having ST = 1. In other words, for all ST-firms, 65 percent of their yearly observations during this period were pre-ST years and the remaining 35 percent were post-ST years.

[33] To the best of our knowledge, these are the only publicly available data on the ultimate controller of Chinese listed firms. Liu and Sun (2005) trace the chain of control for 1105 listed firms and calculate the shareholdings for their ultimate controllers. However, their information on ownership structure stops in 2001 and their data are not yet available publicly.

[34] The remaining 6% are mostly owned by collective enterprises, non-profit organizations, or employee stock holding committees.

4. Econometric specifications and results

Following the literature, we estimate turnover-performance sensitivities for CEOs using a logit model. We begin with the standard benchmark model used in prior studies given by:

$$\ln\left[\frac{\Pr(\text{TURNOVER})}{1-\Pr(\text{TURNOVER})}\right] = \alpha + \beta\text{PERFORMANCE} + \gamma Z + u, \tag{1}$$

where TURNOVER is equal to 1 if the firm replaces its CEO during the year and 0 otherwise, PERFORMANCE is the firm performance in the previous year, Z is a vector of control variables, α and β are the coefficients to be estimated, γ is a vector of coefficients on the control variables, and u is the disturbance term. For PERFORMANCE, we use a stock market measure given by the industry-adjusted stock return, denoted RETURN, to characterize economic performance and also four accounting measures of performance. These are industry-adjusted return on assets or ROA, industry-adjusted profit margin or MARGIN, the annual change in ROA, or ΔROA, and the annual change in MARGIN, or ΔMARGIN. These variables are used commonly in the studies in the literature, e.g., Kang and Shivdasani (1995), Denis et al. (1997), Murphy (1999), Campbell and Keys (2002), and Anderson and Campbell (2004).

The literature often considers firm performance measures in both the current period and the previous period, e.g., Kaplan (1994). However, since 57% of the CEO departures in our sample occur in the first six months of the year, firm performance in the current year is likely to be attributable to the job performance of the incoming replacement CEO as much as to the departing CEO. Thus, we use firm performance in the previous year only.[35] The control variables include a variety of dummy variables capturing the possible influence on turnover of CEO characteristics as well as firm size, measured by the logarithm of the firm's market value, and time effects.[36] Specifically, we created 11 dummy variables capturing the non-linear impact on turnover of CEO age and 10 dummy variables measuring the non-linear effects on turnover of CEO tenure.[37] In addition, we include dummy variables to control for the possible impact of the definitional differences determining the CEO. We identify three position types, namely, dual if the firm's CEO serves as both General Manager and Chairman of the Board, chair if the CEO serves only as the Chairman and is also on the firm's payroll, or general manager if the individual serves only as General Manager and is also on the firm's payroll. Controlling for age and tenure is particularly important because we do not have information on whether CEO turnover is due to normal retirement.[38]

Table 2 presents the maximum likelihood estimates of Eq. (1). For all specifications, the estimated coefficients on all performance measures are negative and statistically significant at least at the 10 percent level. To examine the magnitude of the estimated turnover-performance sensitivities, we use these coefficients and calculate the predicted change in the probability of CEO departure if performance improves from the 25th percentile to the 75th percentile. In calculating predicted CEO turnover, we assign the median value for size and the mode values for all

[35] For robustness, we also considered firm performance in the previous two years in these regressions. Despite the considerably smaller sample size, we find no discernible differences in our key results.

[36] We also used the number of employees as an alternative measure for firm size and find similar results.

[37] These variables are coded as follows: Age(35–37) = 1 if CEO is between 35 and 37 and 0 otherwise, Age(38–41) = 1 if CEO is between 38–41 and 0 otherwise, and so on. In a similar manner, we code Tenure1 = 1 if the tenure of the CEO is one year, Tenure2 = 1 if the tenure of the CEO is two years, and so on.

[38] In addition, we also considered board size as an additional control and find no discernible differences.

Table 2
Turnover-performance sensitivities: the benchmark logit model

	Using economic performance measure	Using accounting performance measures			
	PERFORMANCE =				
	RETURN (1)	ROA (2)	MAR (3)	ΔROA (4)	ΔMAR (5)
PERFORMANCE	−0.368	−3.853	−0.672	−0.962	−0.563
	(0.190)+	(0.741)**	(0.197)**	(0.578)+	(0.222)*
SIZE (= ln MCAP)	−0.209	−0.158	−0.157	−0.183	−0.168
	(0.070)**	(0.068)*	(0.068)*	(0.069)**	(0.069)*
DUAL	−0.469	−0.486	−0.485	−0.464	−0.497
	(0.179)**	(0.180)**	(0.180)**	(0.178)**	(0.181)**
GENERAL	0.119	0.170	0.132	0.105	0.114
	(0.113)	(0.115)	(0.115)	(0.113)	(0.114)
FEMALE	−0.372	−0.342	−0.476	−0.367	−0.463
	(0.300)	(0.309)	(0.329)	(0.299)	(0.317)
Age(35–37)	0.065	−0.005	0.020	0.017	0.035
	(0.380)	(0.392)	(0.382)	(0.378)	(0.379)
Age(38–40)	−0.141	−0.226	−0.267	−0.159	−0.243
	(0.348)	(0.359)	(0.354)	(0.349)	(0.352)
Age(41–43)	0.461	0.366	0.399	0.459	0.428
	(0.350)	(0.363)	(0.352)	(0.347)	(0.348)
Age(44–46)	0.046	−0.070	−0.068	0.020	−0.026
	(0.335)	(0.350)	(0.340)	(0.334)	(0.335)
Age(47–49)	−0.197	−0.358	−0.330	−0.222	−0.288
	(0.327)	(0.340)	(0.331)	(0.326)	(0.329)
Age(50–52)	0.196	0.079	0.088	0.142	0.092
	(0.329)	(0.343)	(0.333)	(0.330)	(0.331)
Age(53–55)	0.566	0.419	0.450	0.534	0.487
	(0.331)	(0.345)	(0.334)	(0.330)	(0.331)
Age(56–58)	0.252	0.142	0.168	0.226	0.206
	(0.336)	(0.348)	(0.338)	(0.335)	(0.335)
Age(59–61)	0.763	0.637	0.665	0.735	0.691
	(0.340)*	(0.351)	(0.342)	(0.338)*	(0.339)*
Age(⩾ 62)	1.224	1.168	1.154	1.222	1.172
	(0.361)**	(0.372)**	(0.362)**	(0.359)**	(0.359)**
Observations	2181	2171	2164	2171	2164

Notes. (1) The data are based on a pooled cross-sectional time series dataset of 634 listed firms from 1999 to 2002.

(2) All value variables are measured in RMB and adjusted for inflation using the CPI with 1995 as the base year.

(3) All models include various dummy variables to capture the possible influences on CEO turnover of tenure, i.e., 0 through 9, the CEO's job title (general manager or dual position) and time effects.

(4) Robust standard errors, which are presented in brackets, control for correlation and clustering at the firm level.

+ Statistical significance at the 10%.

* Idem, 5%.

** Idem, 1%.

other characteristics including age, gender, tenure, and position type of the CEO. In general, the turnover-performance sensitivities in China's listed firms are rather modest. For example, an improvement in stock return from the 25th percentile to the 75th percentile will lead to a reduction in the turnover probability from 19 percent to only 18 percent.

The other estimated coefficients have the predicted signs, although many are not statistically significant. The positive and statistically significant coefficients on two age groupings, i.e., Age(59–61) and Age($\geqslant 62$), indicate that CEOs over 59 years old are more likely to depart compared to those in the omitted category of Age(< 35). Because the mandatory retirement age in China is 60 for men and 55 for women, these results confirm the importance of including age variables to control for CEO turnover due to normal retirement. Table 2 also shows that CEO turnover is less likely in larger firms and for CEOs holding the dual position compared to the omitted category of CEOs having only the Chairman position. In addition, although it is not quite statistically significant, CEO turnover is more likely for CEOs holding only the General Manager position relative to those holding only the Chairman position. These findings are consistent with the notion that board members are less likely to make decisions involving their own dismissal.[39] Finally, although none of the estimated coefficients on the tenure dummy variables are statistically significant at the 10 percent level, the probability of CEO turnover tends to be higher at the third and sixth year of tenure. This result is consistent with the stipulation in the Corporate Law of China that the length of each term for the executive should not exceed three years, which appears to be a focal point chosen by most listed firms.

To mitigate potential endogeneity in investigating the impacts of various factors on the performance-turnover relationship, firm characteristics, e.g., ownership structure, board structure, ST-designation, and whether a CEO is an insider are measured in lagged values. To test Hypothesis 1, we augment the benchmark model by introducing a variable denoted PRIVATE, which equals 1 if the firm's ultimate controller is a private individual or private firm and 0 otherwise, and a variable denoted SHARE, which measures the proportion of the stock owned by the largest shareholder. In addition, we include two interaction terms using performance and each of the above variables. Thus, the specification becomes:

$$\begin{aligned}\ln\left[\frac{\Pr(\text{TURNOVER})}{1-\Pr(\text{TURNOVER})}\right] &= \alpha + \beta_1 \text{PERFORMANCE} + \beta_2 \text{PRIVATE} \\ &\quad + \beta_{21} \text{PERFORMANCE} * \text{PRIVATE} + \beta_3 \text{SHARE} \\ &\quad + \beta_{31} \text{PERFORMANCE} * \text{SHARE} + \gamma Z + u. \end{aligned} \tag{2}$$

The estimated coefficient on the interaction term denoted PERFORMANCE $*$ PRIVATE enables us to test Hypothesis 1, which claims that listed firms with private individuals or private firms as ultimate controllers have a higher turnover-performance sensitivity. In addition, we can study the impact on the CEO turnover-performance link of the proportion of stock owned by the controlling shareholder and whether this impact is stronger for privately owned firms.[40]

Columns (1) through (5) of Table 3 present the maximum likelihood estimates of Eq. (2). First, we note that the estimated coefficient on private ownership is positive and statistically significant at the one percent level for all specifications. All things equal, the CEO will enjoy less job security in listed firms having private individuals or private firms as their ultimate controllers. Regarding economic performance, the estimated coefficient on the interaction term PERFORMANCE $*$ PRIVATE is negative and statistically significant at the 5 percent level if

[39] We also tested to see whether turnover-performance sensitivities differ between CEOs if DUAL = 1 and CEOs if DUAL = 0 by adding an interaction term involving DUAL and PERFORMANCE. We find no discernible effect on turnover-performance sensitivities. Similarly, we do not find a significant impact of the General Manager position on turnover-performance sensitivities.

[40] We also tried a variable denoted MAJORITY, which equals 1 if the largest shareholder owns at least 50 percent of the stock and 0 otherwise, and find similar results.

Table 3
Ownership structure, board structure and turnover-performance sensitivities: logit estimation

	Using economic performance measure	Using accounting performance measures				Using economic performance measure	Using accounting performance measures			
	PERFORMANCE =									
	RETURN (1)	ROA (2)	MAR (3)	ΔROA (4)	ΔMAR (5)	RETURN (6)	ROA (7)	MAR (8)	ΔROA (9)	ΔMAR (10)
PERFORMANCE	0.807	−0.004	0.510	0.216	0.214	0.829	0.793	0.361	1.993	0.284
	(0.355)*	(1.748)	(0.417)	(1.359)	(0.454)	(0.356)	(1.874)	(0.335)	(1.072)	(0.461)
PRIVATE	0.707	0.628	0.625	0.589	0.595	0.718	0.632	0.604	0.626	0.588
	(0.205)**	(0.195)**	(0.198)**	(0.197)**	(0.199)**	(0.205)**	(0.196)**	(0.198)**	(0.199)**	(0.198)**
PERFORMANCE ∗ PRIVATE	−1.544	−1.706	−0.016	1.547	0.511	−1.494	−1.880	0.573	−0.787	0.526
	(0.729)*	(2.107)	(0.609)	(1.042)	(0.431)	(0.730)*	(2.107)	(0.467)	(1.629)	(0.418)
SHARE	0.366	0.358	0.348	0.213	0.313	0.374	0.368	0.337	0.211	0.317
	(0.306)	(0.322)	(0.313)	(0.306)	(0.308)	(0.304)	(0.323)	(0.312)	(0.309)	(0.309)
PERFORMANCE ∗ SHARE	−2.569	−9.664	−3.204	−6.352	−2.377	−2.429	−10.605	−2.703	−13.994	−2.365
	(0.845)**	(3.788)*	(0.934)**	(4.847)	(1.039)*	(0.839)**	(3.890)**	(0.883)**	(3.192)**	(1.060)*
INDEPENDENT						−0.931	−0.475	−0.242	−0.098	−0.036
						(1.038)	(0.495)	(0.263)	(0.222)	(0.199)
PERFORMANCE ∗ INDEPENDENT						−9.231	−15.044	−4.528	−14.941	−4.135
						(4.619)*	(11.354)	(2.673)+	(9.520)	(3.433)
Observations	2181	2171	2164	2171	2164	2181	2171	2164	2171	2164

Notes. (1) The data are based on a pooled cross-sectional time series dataset of 634 listed firms from 1999 to 2002.

(2) All value variables are measured in RMB and adjusted for inflation using the CPI with 1995 as the base year.

(3) All models include various dummy variables to capture the possible influences on CEO turnover of the CEO's age, gender, tenure as CEO, job title (general manager or dual position) in addition to firm size measured by the logarithm of the firm's market value and time effects.

(4) Robust standard errors, which are presented in brackets, control for correlation and clustering at firm level.

Sources: Data on CEOs as well as accounting and financial data are from the China Stock Market and Accounting Research Database (CSMAR) developed by Shenzhen GTA Information Technology Company. Data on ownership structure and corporate governance are from the database developed by SinoFin Information Services.

+ Statistically significant at the 10%.

* Idem, 5%.

** Idem, 1%.

stock return is used as a measure of performance. This result confirms our hypothesis that listed firms controlled by private individuals or private firms have a higher CEO turnover-performance sensitivity. In contrast, we find no statistically significant impact on turnover-performance sensitivities for privately owned firms if we substitute accounting measures of performance for stock return. One possible explanation is that privately owned listed firms rely more on stock market returns as a measure of economic performance than on accounting measures that tends to be more subject to management manipulation especially in China.[41]

The estimated coefficients on the interaction term PERFORMANCE ∗ SHARE are always negative and almost always statistically significant, except for ΔROA as a performance measure. These results are consistent with the hypothesis about incentives under weak investor protection. In other words, if the largest shareholder of the listed firm has a greater stake in the firm, this shareholder will monitor the CEO more carefully and link the CEO's fate more closely to firm performance.[42] Moreover, as we discuss below, such monitoring effects are stronger in privately owned firms as expected.

To demonstrate the economic importance of the effect of private control, we consider four distinct cases. We begin with two opposite extreme cases. First, we take firms having private individuals or private firms as their ultimate controller, i.e., PRIVATE = 1, with strong incentives for the largest shareholder to monitor the CEO because of a relatively large shareholding, i.e., SHARE = 75th percentile. Second, we examine firms having the state as the ultimate controller, i.e., PRIVATE = 0, with weak incentives for the largest shareholder to monitor the CEO because of a relatively small stockholding, i.e., SHARE = 25th percentile. In addition, we investigate two intermediate cases. First, we consider firms with private individuals and private firms as the ultimate controller, i.e., PRIVATE = 1, but with weak incentives for the largest shareholder to monitor the CEO, i.e., SHARE = 25th percentile. Second, we take firms with the state as the ultimate controller, i.e., PRIVATE = 0, but with strong incentives for the largest shareholder to monitor the CEO, i.e., SHARE = 75th percentile. All other firm characteristics are assigned their median or mode values.

To measure the differential impact of performance on turnover, we consider an improvement in stock return from the 25th percentile in the industry to the 75th percentile for all four scenarios. As expected, the case of a privately owned firm with strong incentives for the largest shareholder to monitor the CEO displays the largest reduction in the probability of CEO turnover from 37 to 24% In contrast, the opposite case of a state-controlled firm with weak shows little reduction in the probability of CEO turnover. Concerning the two intermediate cases, our estimates suggest a considerably greater reduction in the CEO turnover rate from 32 to 24% for privately owned firms with weak incentives than for state-controlled firms with a high state ownership stake from 19 to 17%. The last result suggests that increasing the stake of the largest shareholder may not lead to any substantial improvement in CEO turnover-performance sensitivities if that stakeholder is the state. This result confirms the importance of privatization in China, at least if stock return is a good measure of performance.

To test Hypothesis 2 and evaluate the effectiveness of introducing independent directors for improving corporate governance, we augment Eq. (2) by adding two variables, namely INDEPENDENT, which is the proportion of independent directors, and an interaction term denoted PERFORMANCE ∗ INDEPENDENT. As shown in columns (6) through (10) of Table 3, the

[41] This opinion is expressed by Guangyuan Wang, "Problems of the listed firms caused by defects in the listing system," *China Economic Times* (Zhongguo Jingji Shibao), March 13, 2002 edition.

[42] A similar result is obtained for Italy by Volpin (2002).

estimated coefficient on this interaction term is negative and statistically significant at the five percent level if stock return is used as a performance measure and at the 10 percent level if the accounting measure denoted MARGIN is used. For the other three accounting measures, the estimated coefficients have the expected sign but they are not quite statistically significant at the 10 percent level. Overall, this evidence is consistent with Hypothesis 2 in that having independent directors is conducive to strengthening the CEO turnover-performance link.[43] In addition, the coefficients on PRIVATE and SHARE are not affected much by the inclusion of these additional variables indicating the robustness of their effects.

To illustrate the substantial magnitude of the impact of having independent directors, we focus on a typical Chinese listed firm in which the controlling shareholder is the state with a 37.4% stake, i.e., the median value of SHARE. We use our logit estimates and continue to consider the impact of a performance improvement from the 25th percentile to the 75th percentile of the industry-adjusted rate of stock return. We find that, for a firm having no independent directors on the board, i.e., INDEPENDENT = 0, the change in firm performance leads to little change in the predicted probability of CEO turnover. However, if independent directors make up one-third of the board, the predicted turnover rate decreases considerably from 19 to 8%. To exploit the panel nature of our data, we re-estimate the fully augmented model using random effects but do not report the results due to space limitation. Reassuringly, we find no discernible differences between the coefficients presented here and the coefficients estimated with random effects.

To study another aspect of insider control, we test Hypothesis 3 concerning CEOs who hold positions in both the controlling shareholder company and the listed firm simultaneously. Because the information required to identify insider CEOs is available only after 2000, the sample size decreases substantially. As a result, we revert to the most parsimonious specification, i.e., the benchmark model, of Eq. (1), augmented by a variable denoted INSIDER CEO, which equals 1 if the CEO also works for the controlling shareholder and 0 otherwise, and an interaction term denoted PERFORMANCE ∗ INSIDER CEO.

The maximum likelihood estimates are presented in columns 1 through 5 of Table 4. In column (1), we find a positive and statistically significant (at the 10 percent level) coefficient on the interaction term using stock return as a measure of performance, which provides support for the hypothesis. In other words, the turnover-performance link is weaker if CEOs also work for the largest shareholder. The results using accounting measures of performance are mixed although the only significant effect of the interaction term is also positive (for MARGIN) and consistent with the hypothesis. To gauge the magnitude of the impact of having an insider CEO, we assign median or mode values to the other variables. Following an improvement in stock performance from the 25th percentile to the 75th percentile, a substantial reduction in the predicted CEO turnover rate, i.e., from 24 percent to 18 percent, is obtained only in the absence of an insider CEO. If the firm has an insider CEOs, we find no such discernible decrease in the predicted CEO turnover.

Finally, we test Hypothesis 4 by estimating the impact of ST-designation on turnover-performance sensitivities. To avoid selectivity bias caused by unobserved heterogeneity between ST-designated firms and other firms, we use the sub-sample of firms that have been designated as ST-firms at some time during the sample period. Due to the substantially smaller sample size, we

[43] Since the percentage of independent directors increases over time, the observed significant effect of independent directors may merely reflect the improvement in corporate governance over time. To take into account this possibility, we estimated the model with interaction terms involving PERFORMANCE and year dummies. Reassuringly, we obtain very similar results.

Table 4
Insider CEO, ST-designation, and turnover-performance sensitivities: logit estimation

	Using economic performance measure	Using accounting performance measures				Using economic performance measure	Using accounting performance measures			
	PERFORMANCE =									
	RETURN (1)	ROA (2)	MAR (3)	ΔROA (4)	ΔMAR (5)	RETURN (6)	ROA (7)	MAR (8)	ΔROA (9)	ΔMAR (10)
PERFORMANCE	−1.483	−2.104	−0.106	−0.458	−0.064	0.620	0.880	0.017	0.950	0.023
	(0.545)**	(1.463)	(0.053)*	(1.310)	(0.078)	(0.308)*	(0.758)	(0.070)	(0.785)	(0.071)
INSIDER CEO	0.231	0.236	0.281	0.239	0.278					
	(0.192)	(0.189)	(0.184)	(0.185)	(0.183)					
PERFORMANCE ∗ INSIDER CEO	1.557	−1.499	0.115	−3.582	0.074					
	(0.909)+	(2.429)	(0.053)*	(2.400)	(0.078)					
ST						−1.061	−1.235	−1.146	−1.287	−1.161
						(0.349)**	(0.381)**	(0.364)**	(0.364)**	(0.361)**
PERFORMANCE ∗ ST						−1.811	−0.272	−0.001	−0.555	0.002
						(0.646)**	(1.073)	(0.071)	(0.890)	(0.070)
Observations	1020	1035	1020	1035	1042	276	276	276	276	276

Notes. (1) For specifications (1) through (5), we are able to use only observations after 2000 because information about the insider status of CEOs is available only since 2000. For specifications (6) through (10), we exclude all firms that did not receive ST-designation during the time period from 1999 to 2002.

(2) All value variables are measured in RMB and adjusted for inflation using the CPI with 1995 as the base year.

(3) All models include various dummy variables to capture the possible influences on CEO turnover of the CEO's age, gender, tenure as CEO, job title (general manager or dual position) in addition to firm size measured by the logarithm of the firm's market value and time effects.

(4) Robust standard errors, which are presented in brackets, control for correlation and clustering at firm level.

Sources: Data on CEOs as well as accounting and financial data are from the China Stock Market and Accounting Research Database (CSMAR) developed by Shenzhen GTA Information Technology Company. Data on ownership structure and corporate governance are from the database developed by SinoFin Information Services.

+ Statistical significance at the 10%.

* Idem, 5%.

** Idem, 1%.

estimate the benchmark model of Eq. (1) augmented with a variable denoted ST, which equals 1 if the firm has obtained ST-designation by the beginning of the current year and 0 otherwise, and an interaction term denoted PERFORMANCE ∗ ST. Hence, the sign and significance of the estimated coefficients on PERFORMANCE ∗ ST indicate whether turnover-performance sensitivities change significantly after ST-designation.

Columns (6) through (10) of Table 4 present the logit estimates. If we use economic performance measured by stock return, the estimated coefficient of the interaction term is negative and statistically significant at the one percent level. Hence, ST-designation leads to stronger turnover-stock performance sensitivity. In contrast, we find no such impact of ST-designation on turnover-performance sensitivities if accounting measures of performance are used.[44] The magnitude of the impact of ST-designation on turnover-performance sensitivities is economically important; an improvement of industry-adjusted stock return from the 25th percentile to the 75th percentile results in a substantial drop in the predicted CEO turnover rate from 24 to 19%.

5. Conclusion

In this paper, we investigate the link between firm performance and CEO turnover using both financial market and accounting data, augmented by data on ownership structure and the board of directors for China's listed firms from 1998 to 2002. Several conclusions regarding the quality of corporate governance in China can be drawn from our analysis. First, we find substantial variation among Chinese listed firms regarding the link between turnover of their CEOs and firm performance. Second, the evidence suggests that a broad program, including more comprehensive investor protection, is needed to improve corporate governance in China and that privatization may be an important part of such a program. Specifically, even if a firm is listed in China's burgeoning stock markets, CEO turnover-performance sensitivities, although statistically significant, are still not economically important in general. However, consistent with the argument made in the transitional economy literature, privatization is found to raise turnover-stock performance sensitivities and, thus, improve corporate governance. Third, the presence of a large controlling shareholder also enhances turnover-performance sensitivities and, hence, the quality of corporate governance. This finding is consistent with the law and finance approach to corporate governance, which attributes inferior corporate governance to weak investor protection. From these results, we conclude that turnover-performance sensitivities are strongest if a private firm or a private individual becomes a large controlling shareholder, at least when stock market return is considered to be the appropriate measure of firm performance.[45]

[44] We also tried less parsimonious specifications by adding SHARE, PRIVATE, and INDEPENDENT and their interaction terms with PERFORMANCE. We find that the results on INSIDER CEO and ST remain largely intact while, as expected, many of the estimated coefficients on SHARE, PRIVATE AND INDEPENDENT and their interaction terms are no longer significant.

[45] While revising the paper, we became aware of a recent unpublished manuscript by Chang and Wong (2004) in which the authors study similar issues and report findings that are mostly consistent with our own with one exception. These authors do not find statistically significant sensitivities of CEO turnover to stock return for China's listed firms. We think the discrepancy between their results and ours is due to the fact that our study covers more recent years, i.e., 1998 to 2002, while theirs covers 1995 to 2000. We expect that a substantially higher proportion of observations in our data come from private firms because of the increased number of private firms in recent years. The significant linkage of CEO turnover to stock return that we find is due mainly to private firms. Hence, since Chang and Wong (2004) use data from an earlier time period with fewer private firms, they are less likely to find any significant association between CEO turnover and stock return.

In terms of the reform efforts to improve corporate governance in China, the introduction of independent directors and the use of ST designation are found to increase the link between stock return and CEO turnover and, hence, enhance the disciplinary functions of the stock market. However, we find little evidence of any favorable effect of these reform measures on the link between CEO turnover and accounting measures of performance. Finally, throughout the paper, we have assumed that CEO turnover is an important measure for the quality of corporate governance of China's listed firms. To this end, we are reassured by a recent study by Xu et al. (2005) that provides evidence for executive turnover serving as an effective mechanism in reversing a company's poor performance in China.

Acknowledgments

This research was funded by grants from the Asian Development Bank Institute and the Asian Studies program of Colgate University, as well as by a Picker Research Fellowship from the Research Council of Colgate University. The current version of the paper was completed while both authors were visiting Stanford University, Long as a National Fellow at the Hoover Institution and Kato as a Visiting Professor of Economics. The authors are grateful for the support and hospitality of these institutions. Kevin J. Murphy, Runtian Jing, and Jan Svejnar provided us with advice and encouragement on our research program on managerial incentives in China. The paper also benefited from comments and suggestions at the Inaugural Asia-Pacific Corporate Governance Conference in Hong Kong, at the Department of Agricultural and Resource Economics Seminar at UC-Davis, and at the Bank of Finland Institute for Economies in Transition Seminar. The data used in the paper are provided by Shenzhen GuoTaiAn IT Co. and SinoFin Inc.

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