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Corporate governance and manager turnover: An unusual social experiment

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Abstract

This paper examines empirically the quality of the governance mechanisms of Chinese state-owned enterprises from 1994–1999, a period marked by substantial changes in policies affecting the governance structure of these firms. It shows that the restructuring of these enterprises according to corporate law improved the effectiveness of their governance system. Specifically, restructuring strengthened the links between manager turnover and firm performance. The results indicate that firm performance was significantly and negatively related to manager demotion for incorporated state-owned enterprises, while this relationship was insignificant for unincorporated enterprises. They also indicate that manager turnover was a viable incentive mechanism for improving future enterprise performance.

JEL classification: G30; N25; P31
Keywords: Corporate governance; Emerging markets; Privatization

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1. Introduction

The objective of a firm's governance system is to bring into conformity the interests of its managers with those of its other stakeholders in order to reduce the agency costs associated with the separation of ownership and control. Governance mechanisms strive to protect the interests of all stakeholders in the firm. The effectiveness of a firm's governance system is enhanced by such internal mechanisms as a board of directors coordinating shareholder actions in monitoring and policing managers' behavior, shareholder voting rights, a controlling bank monitoring manager behavior, and incentive contracts such as executive stock ownership to align manager interests with those of shareholders. It is also enhanced by external institutions such as a well-functioning capital market enabling the transfer of corporate control, a viable legal and regulatory system and a competitive managerial labor and output market. It is usually difficult to identify the relative effectiveness of different governance mechanisms since individual mechanisms tend to substitute for, or complement, one another. [1] Nevertheless, one can assess the effectiveness of a governance system by looking at overall outcomes.

An important outcome of the overall quality of a firm's governance system is manager turnover. If the governance system improves the stakeholders' abilities to monitor and control management, then this should, on average, result in the replacement of poorly performing managers with managers whose actions lead to better firm performance. Furthermore, manager turnover, and specifically the threat of dismissal may itself be an incentive scheme encouraging managers to pursue more efficient firm decisions. Thus, the relationship between manager turnover and firm performance is a good way of assessing the viability of a firm's governance system (see Kaplan, 1994a,b).

The evidence on the relationship between manager turnover and firm performance for firms in developed economies generally indicates that manager turnover is inversely related to firm performance (see, e.g. Kaplan, 1994a,b, 1997; Denis et al., 1997; Parrino, 1997; Kang and Shivdasani, 1995; Abe, 1997). There has also been increasing interest in recent years in the effectiveness of firm governance systems in emerging markets spurred partially by such events as the Asian financial crisis, the growing interest of institutional investors in emerging market securities, and privatization initiatives in emerging markets (see, e.g., Claessens et al., 1999; Lins, 2000; Khanna and Palepu, 1999). Gibson (2003) is the only study, however, that examines empirically the link between manager turnover and firm performance for emerging market firms. He finds that there are significant links between manager turnover and firm performance for over 1200 firms in eight emerging markets; his study does not include China, which is the focus of the present study.

The present paper contributes to the existing literature in several important ways. First, it examines the effectiveness of the governance system of a sample of firms con-

[1] For example, La Porta et al. (1998) show that concentrated firm ownership is more prevalent in countries with legal systems that provide poor protection to investor rights.

stituting a significant proportion of the production sector of the Chinese economy, the biggest emerging market. China has many of the typical characteristics of an emerging market economy: low legal protection of creditors and investors, an underdeveloped capital market, the absence of mechanisms for the transfer of firm control, a relatively inefficient banking system and significant involvement of political authorities in firm governance. Assessing the effectiveness of governance mechanisms for firms in China increases our understanding of the role of governance mechanisms in emerging markets in general.

Second, the paper evaluates the effects of an unusual social experiment in China concerning corporate governance. Specifically, it examines the impact of incorporation on the relationship between manager turnover and firm performance for state-owned enterprises (SOEs). The Chinese experiment is unusual in that in 1993 the government adopted a modern corporate governance structure, the Corporate Law of China, to govern SOEs while preserving state ownership of these enterprises. This law requires that SOEs establish corporate governance structures as "modern corporations". [2] Most important, SOEs that incorporated were required to establish two corporate bodies: a board of directors, and a chief executive officer (CEO). Other organizational arrangements, such as a supervisory board, were recommended, but not required. The adoption of corporate law signals the beginning of a period of transition of Chinese SOEs into modern corporations.

This paper's third contribution relates to the debate as to whether privatization is essential for improving the performance of SOEs. Note that a separation between ownership and control exists not only for private companies but also for SOEs, generating potentially inefficient decisions for such firms. SOEs have been criticized for the ineffectiveness of their governance system, and the issue concerning the most effective way to restructure them is still debated. Some authors argue that privatization is necessary for achieving a significant improvement in the performance of SOEs (Boycko et al., 1996; Nellis, 1994; Shleifer, 1998). Others argue that changes in internal and external governance structures without privatization can improve SOE performance, and that privatization is not the only solution to SOE governance problems (Yarrow, 1986; Vickers and Yarrow, 1991; Allen and Gale, 1999). There have been a number of empirical studies of the impact of privatization on the performance of SOEs, but the results are inconclusive (Megginson et al., 1994; La Porta and Lopez-de-Silanes, 1999). There are very few empirical studies of the impact of SOE governance changes, without privatization, on SOE performance. [3] Our study

[2] Before the reform, SOEs were not real business entities and no "corporate" arrangement existed in China. Executives of SOEs were government officials and were appointed and dismissed by the government.

[3] Groves et al. (1994) showed that Chinese SOE productivity significantly improved after the introduction of some basic incentive schemes such as bonus payments and contract work. Li (1997) found evidence that over 87% of the growth in productivity between 1980 and 1989 was due to improved incentives, intensified product market competition, and improved factor allocation. However, Shirley and Xu (1998) analyzed the effect of performance contracts between government and SOE managers on SOEs performance and found that incentive contracts had no significant effect on profitability or labor productivity.

differs from previous studies in that its focus is on whether restructuring through incorporation without privatization enhanced the effectiveness of the governance system of SOEs.

We employ a unique survey data set prepared by the Chinese Academy of Social Sciences providing detailed information on SOE governance and performance over the period 1994–1999. Our principal empirical results are the following: The restructuring of SOEs under corporate law significantly strengthened the link between the likelihood of manager turnover and firm performance; managers with poor performance were more likely to be demoted within the restructured firms. In addition, manager turnover had a significant and positive effect on ex post firm performance. The results indicate that the changes in internal governance structure increased the effectiveness of corporate governance, suggesting that incorporation without privatization could be one effective way of restructuring SOEs, at least during a transition period.

The rest of the paper is organized as follows: Section 2 describes the data used in this study and provides some summary statistics. Section 3 examines the impact of SOE incorporation on the relationship between manager turnover and firm performance. Section 4 examines firm performance subsequent to a manager turnover. Section 5 discusses potential sources of increased governance efficiency among corporatized SOEs. Section 6 concludes the paper.

2. Data

The data in this study is from the enterprise survey conducted by the Chinese Academy of Social Sciences (CASS) in 2000. [4] This survey includes annual information on 432 SOEs from 1994 to 1999. The sample period covers the transition period in which SOEs were incorporated under the new corporate law which came into effect in 1993. The enterprises in the sample represent 37 manufacturing industries and are located in four provinces: Jiangsu, Jilin, Shanxi, and Sichuan.

The survey includes a qualitative part and a quantitative part. The former consists of 103 questions directed to the managers of SOEs, and is divided into six sections with questions pertaining to the following areas: enterprise characteristics, ownership and legal structure; information on incorporation under the new corporate law; management structure of the enterprise; management incentive structure and compensation; external financial structure and relations with creditors; relations of the enterprise with customers and suppliers; characteristics of managers; and information about manager turnover. The quantitative part is directed to the enterprise

[4] This data set is the third part of a continuing survey of Chinese State-owned enterprises since 1980. The first survey was conducted in 1990 and covered the period from 1980 to 1989. The second survey was conducted in 1995 and covered the period from 1990 to 1994. These surveys have been used in various studies of the Chinese economy; see, for example, in Groves et al. (1994), Li (1997) and Cull and Xu (2000).

Table 1
Summary statistics of the data

Panel A: Incorporation year						
Before 1994	1994	1995	1996	1997	1998	Never incorporated
22	102	71	76	33	7	121

Panel B: Manager turnover						
	Firms without turnover	Firms with turnover	Promotion	Demotion	Retirement	Total sample
Number of firms	97	335	78	170	87	432
Share in total firms	22.5%	77.5%	18.0%	39.3%	20.1%	100%

	Mean	SD	25%	Median	75%	Observation
Panel C: Firm performance						
Labor productivity	63.53	67.80	24.49	42.07	75.69	2160
Sales revenue/fixed assets	3.48	3.94	1.43	2.34	4.05	2160
Growth of sale revenue	1.20	0.41	0.98	1.16	1.32	2160
Panel D: Other firm characteristics						
Size	2444.44	3885.89	915.00	1335.00	2417.00	2160
Capital to labor ratio	45.58	145.00	17.71	26.35	41.62	2160
Age	38.20	13.53	29.00	38.00	43.00	2160

This table provides summary statistics for the sample SOEs. The data in this study are from the enterprise survey conducted by the Chinese Academy of Social Sciences (CASS) in 2000.

accountant and covers 141 questions concerning the real and financial accounts of the enterprises.

Table 1 provides summary statistics for the sample firms. Panel A indicates the number of sample firms incorporated during the sample period. The information on enterprise incorporation is based on the following survey questions: ''Is your company organized under the Company Law?'' and ''What year was the company reorganized under the Company Law?'' Seventy-two percent of SOEs in the sample experienced reorganization under the Company Law, and most incorporation occurred during the years 1994–1996. Panel B presents information on manager turnover for the sample firms. This information pertains to the period 1994–1999. The definition of manager turnover is based on the survey question, ''Which year did you become manager?'' [5] Panel B shows that 77.2% of the sample of enterprises experienced manager turnovers, of which 17.8% were promotions, 39.7% were demotions, and 19.7% were retirements. Most manager turnovers occurred between 1996 and 1998.

[5] The data include information only on the most recent turnover; there is no information on multiple turnovers within a period. However, given the relatively short time period covered in our study, this bias may not be serious.

Panel C presents summary statistics of three measurements of performance for the sample of SOEs. The measure of enterprise performance is a key variable for our study, but the selection of an appropriate measure of performance is not an easy task. The main difficulty stems from a lack of accurate information on production costs. The product and input prices of SOEs tend be significantly distorted and, moreover, the government supports SOE investments through grants and subsidized bank loans. [6] Accounting information on production and sale costs may not reflect true values, and hence accounting profit may not be an appropriate indicator of enterprise performance.

We focus on the enterprise's capacity for physical production and revenue generation and employ three measures to assess SOE performance. [7] The first one is labor productivity, defined as output in 1990 constant prices divided by the total number of employees. This measure is used in Groves et al. (1995); its drawback is that it does not capture the output contribution of capital. To deal with this concern, we also construct a measure based on the ratio of sales revenues to fixed assets, which captures the revenue generation capacity of capital. The third index used is the annual growth of sales revenues. Since there is significant cross-industry heterogeneity in the levels of output, employment, and revenue, we use the industry-relative performance by deflating the measure of firm performance by the industry mean. [8]

Panel D summarizes other important firm characteristics. Average employment per firm is 2444 persons, and the average capital-to-labor ratio is 45.58. There are large variations in firm size and in the capital-to-labor ratio across the sample with standard deviations of 3885.89 and 145, respectively. Average firm age is 38 years, suggesting that the sample firms are well established SOEs with relatively long histories.

3. Incorporation, manager turnover and firm performance

3.1. Multinomial logit model

To examine the impact of incorporation on firm governance and manager behavior, we test for the determinants of manager turnover in SOEs. A multinomial Logit model is employed to model the manager turnover decision. Each year, a firm faces

[6] See Li (1997) and Cull and Xu (2000).

[7] Another approach to assessing SOE performance that is widely used in the literature is to estimate total factor productivity through production function estimation (see, for example, Groves et al., 1994; Jefferson et al., 1996; Li, 1997; Cull and Xu, 2000). This approach is often used to examine the impact of various reforms on SOE output controlling for labor, capital and materials. However, this approach may not be appropriate for our study since an explicit index of enterprise performance is required, and since there are distortions in input costs especially in the prices of capital and materials.

[8] Such industry adjustment is widely used in the literature and helps mitigate econometric problems (see, e.g., Huson et al., 2001). To ensure that each industry has at least 4 enterprises in our sample, we combine the industries: Ferrous Metals, Mining and Dressing, and Non-Ferrous Metals and Dressing into one industry.

the following four unordered choices concerning manager tenure: to keep, to promote, to demote, or to retire the current manager. [9] We denote the strategic choice of firm i as $Y_i = j$, where j is equal to 0, 1, 2 and 3, and indicates no turnover, promotion, demotion, and retirement, respectively. We assume that the return from choice j for firm i is

$$R_{ij} = \beta_j' X_i = \varepsilon_{ij}, \tag{1}$$

where X_i is a vector of firm characteristics which do not vary across the different choices; [10] β_j is the vector of corresponding coefficients. If choice j is made, it must be because the utility or return from choice j, R_{ij} is the largest among the available alternatives. Thus the statistical model is $\text{Prob}(R_{ij} > R_{ik})$ for all $k \neq j$. If the four disturbances (strategic choices) are independent and identically distributed following the Weibull distribution, $F(\varepsilon_{ij}) = e^{-\varepsilon_{ij}}$, then the probability of manager turnover can be modeled by the multinomial logit model; that is,

$$\Pr(Y_i = j) = \frac{e^{\beta_j' X}}{\sum_{j=0}^{3} e^{\beta_j' X}}. \tag{2}$$

In this model, we use the case of no manager turnover as the base category and normalize the corresponding coefficient $\beta_0 = 0$. Hence, the probability of no manager turnover is

$$\Pr(Y_i = 0) = \frac{1}{1 + \sum_{j=0}^{3} e^{\beta_j' X_i}} \tag{3}$$

and the probability of promotion, or demotion, or retirement is given by

$$\Pr(Y_i = j) = \frac{e^{\beta_j' X_i}}{1 + \sum_{j=1}^{3} e^{\beta_j' X_i}} \quad \text{for } j = 1, 2, \text{ and } 3. \tag{4}$$

The maximum likelihood method is applied to estimate this model. The exponential value of the estimated coefficient, β_j, for an independent variable should be interpreted as the change in the probability of choice j (promotion, demotion, or retirement) relative to the probability of no turnover, for one unit change in the independent variable. The vector of explanatory variables, X includes: (1) *PERFORMANCE*, which is the index of enterprise performance we discussed earlier; (2) *CAPITAL/LABOR*, which is industrial capital divided by the total

[9] This division is based on a survey question on the employment of the former manager. Promotion includes those promoted to managing a department or managing a large enterprise. Demotion includes the demotion to a lower position or transfer to another smaller enterprise. Retirement includes both natural retirement and forced retirement.

[10] Generally, the explanatory variables include two parts: in the first part are the attributes of the choices which vary across the choices and across the firm; in the second part are the characteristics of the firms which only vary across the firms (See Greene, 2000). In this model we are only interested in the impact of firm characteristics on manager turnover.

number of employees, and is used to control for industry capital intensity; (3) *SIZE*, refers to firm size as measured by the total number of employees; (4) *AGE* refers to firm age and is defined as the number of years that the firm has been in existence. Managers in large or older firms usually have a stronger connection to the government and thus may be entrenched and are less likely to be replaced; we include firm size and age to control for this possible effect; (5) *INDPERF*, refers to the one-year lagged industry average performance; this measure controls for industry effects since managers may, on average, have a lower turnover rate in better-performing industries. Finally, year, subordination and provincial dummies are included to control for year, subordination and regional effects. [11]

A potential problem in this estimation process is possible high correlations between the various regressors. For example, the total number of employees enters in three regressors: labor productivity, capital-to-labor ratio, and size. This may lead to serious multicollinearity among these three variables. To ascertain the degree of multicollinearity, we report in Table 2 the correlation matrix between all the regressors. As this table shows, the correlation among the regressors is generally not high. For example, the correlation between labor productivity and the capital-to-labor ratio is 0.356; the correlation between labor productivity and size is only −0.028; and the correlation between the capital-to-labor and size is 0.090. Thus multicollinearity is not a serious problem in our study.

Tables 3–5 report empirical tests of the determinants of manager turnover in China from 1994 to 1999 using three measurements of SOE performance, namely, labor productivity, the ratio of sales revenues to capital, and growth of sales revenues. Since the results are quite consistent across the three different measures of performance, we focus the following discussion on results based on labor productivity.

Columns 2–4 in Table 3 represent the determinants of manager turnover for all SOEs in the sample, including both incorporated and non-incorporated ones. The estimated coefficients on *PERFORMANCE* are negative and significant (at the 5% level) for demotion, and insignificant for retirement and promotion. These results indicate that there are significant inverse links between SOE performance and manager demotion. In contrast to the results of Groves et al. (1995), who find no link between manager turnover and firm performance for SOEs in the 1980s, our results indicate that the link between manager turnover and firm performance was significantly strengthened in the 1990s.

Since the question of interest to us is the impact of incorporation on the likelihood of manager turnover, we divide the sample of SOEs into two groups, incorporated enterprises and non-incorporated enterprises, and compare the difference in the relationship between firm performance and manager turnover for the two groups. Columns 5–7 and 8–10 in Table 3 report the determinants of

[11] SOEs are subordinated by the government authorities with different administrative levels: central ministry, province, municipality and county. Since we use industry adjusted variables, the industry dummies are not included in the regression.

Table 2
Correlation matrix

	Capital/labor	Size	Age	Industry average output per worker	Output per worker
Panel A: Output per worker					
Capital/labor	1.000				
Size	0.090	1.000			
Age	−0.074	0.070	1.000		
Industry average output per worker	0.008	−0.002	0.033	1.000	
Output per worker	0.356	−0.028	0.026	0.006	1.000
Panel B: The ratio of sales revenues to fixed assets					
				Industry average revenue/assets	Sales revenue/fixed assets
Capital/labor	1.000				
Size	0.090	1.000			
Age	−0.007	0.070	1.000		
Industry average revenue/assets	−0.008	−0.008	0.022	1.000	
Sales revenue/fixed assets	−0.245	−0.152	0.079	0.004	1.000
Panel C: Growth of sales revenues					
				Industry average revenue growth	Growth of sales revenue
Capital/labor	1.000				
Size	0.090	1.000			
Age	−0.075	0.070	1.000		
Industry average revenue growth	0.006	0.004	−0.027	1.000	
Growth of sales revenue	0.049	0.113	0.007	0.007	1.000

This table provides three correlation matrices of the independent variables in the regression equations using three different measures of performance of SOEs: Output Per Worker, the Ratio of Sales Revenues to Fixed Assets, and Growth of Sales Revenue.

manager turnover for incorporated and unincorporated enterprises, respectively. The results reveal that performance is negatively and significantly related to the probability of manager turnover for incorporated firms. For these enterprises, the coefficient on *PERFORMANCE* is −0.404 for manager demotion and is significant at the 5% level, suggesting that low performance significantly increases the risk of manager demotion for the incorporated firms. In contrast, the performance–manager demotion relationship is not significant for non-incorporated enterprises.

Finally, note that the results are quite consistent across the other measures of performance, as shown in Tables 4 and 5. Clearly, the results in Tables 3–5 indicate that incorporation strengthened the inverse relationship between manager turnover and firm performance, supporting the hypothesis that incorporation significantly improved the likelihood of replacement of poorly performing managers and, possibly, the efficiency of managerial resource allocation.

Table 3
The linkage between managerial turnover and labor productivity in China, 1994–1999

	Total sample			Incorporated firms			Non-incorporated firms		
	Promotion	Demotion	Retirement	Promotion	Demotion	Retirement	Promotion	Demotion	Retirement
PERFORMANCE	0.042	−0.292**	−0.355	0.293	−0.404**	−0.354	−0.777*	−0.091	−0.359
	(0.24)	(−1.96)	(−1.53)	(1.55)	(−2.11)	(−1.18)	(−1.66)	(−0.36)	(−0.95)
CAPITAL/LABOR	−0.061	0.073	−0.185	−0.130	0.006	−0.253	0.091	0.125	−0.079
	(−0.36)	(0.72)	(−0.89)	(−0.58)	(0.03)	(−0.90)	(0.37)	(1.01)	(−0.34)
SIZE	0.148**	−0.135	−0.361*	0.132*	−0.233	−0.360	−0.371	0.110	−0.319
	(2.18)	(−1.18)	(1.91)	(1.85)	(−1.54)	(−1.61)	(−0.89)	(0.51)	(−0.89)
AGE	−0.006	0.010	−0.013	−0.008	0.006	−0.018	0.002	0.015	−0.005
	(−0.60)	(1.58)	(−1.28)	(−0.65)	(0.74)	(−1.30)	(0.12)	(1.49)	(−0.35)
INDPERF	0.002	0.002	0.002	0.001	0.003	−0.001	0.008	−0.001	0.006
	(0.55)	(0.76)	(0.54)	(0.21)	(0.99)	(−0.21)	(1.31)	(−0.20)	(1.05)
CONSTANT	−3.827**	−3.731**	−3.418**	−3.084**	−4.018**	−2.508*	−23.928**	−3.883**	−39.675
	(−4.30)	(−5.72)	(−2.95)	(−2.84)	(−3.37)	(−1.84)	(−17.14)	(−3.96)	
Control for									
Province?		Yes			Yes			Yes	
Subordination?		Yes			Yes			Yes	
Year?		Yes			Yes			Yes	
Pseudo *R*-square		0.039			0.048			0.097	
Observations		2160			1392			768	

This table reports the determinants of managerial turnover for the Chinese SOEs. PERFORMANCE is measured as output per worker. CAPITAL/LABOR is the capital-to-labor ratio of the industry to which firm the belongs. SIZE is the total number of employees of the firm. AGE is the age of the firm. INDPERF is industrial average output per worker. The symbols * and ** represent significance at the 10% and the 5% level, respectively. *Z*-statistics are in parentheses.

Table 4
The link between managerial turnover and the ratio of sales revenue to fixed assets in China, 1994–1999

	Total sample			Incorporated firms			Non-incorporated firms		
	Promotion	Demotion	Retirement	Promotion	Demotion	Retirement	Promotion	Demotion	Retirement
PERFORMANCE	−0.128	−0.249*	−0.060	0.137	−0.415**	−0.147	−1.765**	−0.057	0.167
	(−0.70)	(−1.72)	(−0.34)	(0.80)	(−2.24)	(−0.63)	(−2.74)	(−0.22)	(0.47)
CAPITAL/LABOR	−0.078	−0.055	−0.330	−0.038	−0.291	−0.458	−0.516	0.103	−0.157
	(−0.47)	(−0.48)	(−1.52)	(−0.20)	(−1.51)	(−1.60)	(−1.08)	(0.83)	(−0.58)
SIZE	0.152**	−0.143	−0.338*	0.142**	−0.243	−0.351	−0.439	0.107	−0.245
	(2.22)	(−1.26)	(−1.81)	(2.06)	(−1.60)	(1.58)	(−1.08)	(0.49)	(−0.67)
AGE	−0.006	0.010*	−0.013	−0.009	0.007	−0.018	0.002	0.015	−0.009
	(−0.61)	(1.69)	(−1.31)	(−0.69)	(0.84)	(−1.30)	(0.11)	(1.49)	(−0.65)
INDPERF	−0.047	0.043	0.040	0.004	0.049	−0.001	−0.391	−0.008	0.196
	(−0.46)	(0.67)	(0.45)	(0.03)	(0.66)	(−0.01)	(−1.59)	(−0.05)	(1.32)
CONSTANT	−3.775**	−2.640**	−3.859**	−2.952**	−3.652**	−2.592*	−2.748	−2.196**	−19.688
	(−4.18)	(−4.44)	(−3.33)	(−2.49)	(2.92)	(−1.74)	(−1.48)	(−2.61)	
Control for									
Province?		Yes			Yes			Yes	
Subordination?		Yes			Yes			Yes	
Year?		Yes			Yes			Yes	
Pseudo *R*-square		0.037			0.046			0.105	
Observations		2160			1392			768	

This table reports the determinants of managerial turnover for the Chinese SOEs. PERFORMANCE is measured as sales revenue divided by fixed assets. CAPITAL/LABOR is the capital-to-labor ratio of the industry to which the firm belongs. SIZE is the total number of employees of the firm. AGE is the age of the firm. INDPERF is the industrial average output per worker. The symbols * and ** represent significance at the 10% and the 5% level, respectively. *Z*-statistics are in parentheses.

Table 5
The link between manager turnover and growth of sales revenues

	Total sample			Incorporated firms			Non-incorporated firms		
	Promotion	Demotion	Retirement	Promotion	Demotion	Retirement	Promotion	Demotion	Retirement
PERFORMANCE	−0.033	−0.895**	−1.125**	0.138	−0.853*	−0.959	−0.617	−1.076	−1.328
	(−0.10)	(−2.43)	(−2.00)	(0.41)	(−1.91)	(−1.35)	(−0.72)	(−1.61)	(−1.35)
CAPITAL/LABOR	−0.121	0.067	−0.229	−0.050	−0.121	−0.401	−0.327	0.247**	−0.027
	(0.65)	(−0.65)	(−1.11)	(−0.23)	(−0.70)	(−1.43)	(−0.68)	(1.96)	(−0.12)
SIZE	0.105	−0.091	−0.334	0.082	−0.195	−0.383	0.035	0.360	−0.095
	(1.17)	(−0.84)	(−1.63)	(0.88)	(−1.29)	(−1.53)	(0.09)	(1.41)	(−0.25)
AGE	−0.003	0.008	−0.020*	−0.008	0.006	−0.027*	0.003	0.012	−0.011
	(−0.35)	(1.23)	(−1.78)	(−0.62)	(0.66)	(−1.68)	(0.19)	(1.02)	(−0.76)
INDPERF	0.705	0.500	−0.381	0.897	0.931	−0.556	−0.064	−0.533	−0.156
	(0.74)	(0.70)	(−0.36)	(0.82)	(1.09)	(−0.44)	(−0.03)	(−0.39)	(−0.09)
CONSTANT	−3.881**	−1.829*	−1.117	−2.551	−3.001*	0.255	−21.143	−2.793	−20.309
	(−2.75)	(−1.69)	(−0.63)	(−1.44)	(−1.79)	(0.12)		(−1.44)	
Control for									
Province?		Yes			Yes			Yes	
Subordination?		Yes			Yes			Yes	
Year?		Yes			Yes			Yes	
Pseudo *R*-square		0.040			0.049			0.101	
Observations		1728			1197			531	

This table reports the determinants of managerial turnover for the Chinese SOEs. PERFORMANCE is measured as growth in sales revenues. CAPITAL/LABOR is the capital-to-labor ratio of the industry to which the firm belongs. SIZE is the total number of employees of the firm. AGE is the age of the firm. INDPERF is the industrial average output per worker. The symbols * and ** represent significance at the 10% and the 5% level, respectively. *Z*-statistics are in parentheses.

3.2. Sensitivity tests: Firm specific effects and selection bias

There are two potential biases in the above estimations. First, firm-specific effects are not controlled in the multinomial logit framework. If firm performance and other right-hand-side regressors are highly correlated with the individual firm effects, the analysis may be subject to an omitted variable bias. Second, the decision to incorporate is possibly affected by enterprise characteristics such as age, performance, capital-to-labor ratio, and size. Therefore, if incorporation is not an exogenous variable, a separated analysis of incorporated and non-incorporated firms may be subject to a selection bias.

To address these two potential biases in our estimations, we first apply the random and the conditional fixed-effect logit model to control for individual firm effects, and then we use a probit model with sample selection (Van de Ven and Van Praag, 1981) to correct for selection bias. We estimate the relationship between demotion and performance in these two models since we are most interested in the linkage between demotion and performance. [12]

Table 6 tests the relationship between manager demotion and firm performance using the random-effects logit model and the fixed-effects logit model. As can be seen, there are significantly negative relationships between demotion and performance across the different types of models and measurements of performance. The estimated coefficients of *PERFORMANCE* range from −0.961 to −0.318. These coefficients are generally significantly different from zero at the 5% significance level, except for the fixed effect model using labor productivity as the performance measure and the random effect model using the ratio of revenues to capital as the performance measure.

Table 7 provides further evidence on the difference in the performance–demotion relationship between incorporated and non-incorporated firms after controlling for selection bias. The model tested is the maximum-likelihood probit model with sample selection introduced by Van de Ven and Van Praag (1981). The explanatory variables in the selection equation include the variables in the manager turnover equations. We also include city dummy variables indicating the city in which the SOEs are located in the selection equation. The pace of SOE reform in China shows large variations across regions and local city governments play active and important roles in this reform; thus the probability of corporatization may be influenced by an SOE's location. These dummy variables are not included in the manager demotion equation. [13] The results from the selection equation show that better performance and larger size are significantly associated with incorporation. However, after controlling for selection bias, the negative relationship between performance and manager demotion remains significant for the incorporated SOEs, and this link is robust across different measures of performance.

[12] Note that, unlike the multinomial logit model, the random/fixed-effect logit and Heckman selection models cannot deal with multiple choices.

[13] A preliminary test shows that the city dummies are not significantly related to manager turnover but significantly related to the selection of corporatization.

Table 6
Determinants of manager demotion: random effect and conditional fixed-effect logit models

	Labor productivity		Sale revenue/fixed assets		Growth of sales revenue	
	Random effect	Fixed effect	Random effect	Fixed effect	Random effect	Fixed effect
PERFORMANCE	−0.318**	−0.437*	−0.170	−0.773**	−0.961**	−0.933**
	(−2.49)	(−1.67)	(−1.49)	(−2.39)	(−3.05)	(−2.93)
CAPITAL/LABOR	0.011	0.067	−0.123	−0.569	−0.001	0.424
	(0.12)	(0.10)	(−1.16)	(−0.76)	(−0.01)	(0.53)
SIZE	−0.212**	2.466	−0.208**	2.129	−0.157	0.490
	(−2.07)	(0.72)	(−2.07)	(0.62)	(−1.55)	(0.12)
AGE	0.003	−0.199**	0.004	−0.179	0.0003	−0.393**
	(0.64)	(−2.40)	(0.71)	(−1.63)	(0.05)	(−4.33)
INDPERF	0.002	0.004	0.046	0.018	0.189	0.248
	(0.87)	(0.77)	(0.87)	(0.167)	(0.31)	(0.43)
CONSTANT	−2.923**	–	−2.385**	–	−0.950	–
	(−5.22)		(−4.48)		(−1.02)	
Control for						
Province?	Yes	–	Yes	–	Yes	–
Subordination?	Yes	–	Yes	–	Yes	–
Year?	Yes	–	Yes	–	Yes	–
Observations	2160	1145	2160	1145	1728	772

This table reports the determinants of managerial demotion for the Chinese SOEs during the period 1994–1999 using the random effect and conditional fixed-effect logit models. PERFORMANCE is measured as output per worker, sales revenue/fixed assets, and growth of sales revenue. CAPITAL/LABOR is the capital-to-labor ratio of the industry to which the firm belongs. SIZE is the total number of employees of the firm. AGE is the age of the firm. INDPERF is the industrial average output per worker. The symbols * and ** represent significance at the 10% and the 5% level, respectively. *Z*-statistics are in parentheses.

Table 7
The impact of incorporation on determinants of manager demotion: Controlling for selection bias

	Labor productivity			Sales revenues/fixed asset			Growth of sales revenues		
	Incorporated	Non-incorporated	Selection equation	Incorporated	Non-incorporated	Selection equation	Incorporated	Non-incorporated	Selection equation
PERFORMANCE	−0.238**	−0.097	0.237**	−0.201**	−0.024	0.258**	−0.453**	−0.570**	−0.044
	(−2.80)	(−0.79)	(4.86)	(−2.40)	(−0.18)	(5.57)	(−2.32)	(−2.01)	(−0.39)
CAPITAL/LABOR	−0.027	0.028	−0.051	−0.190**	0.008	0.066**	−0.106	0.081	0.012
	(−0.35)	(0.43)	(−1.31)	(−2.27)	(0.12)	(1.74)	(−1.37)	(1.20)	(0.29)
SIZE	−0.167**	−0.038	0.244**	−0.165**	−0.014	0.249**	−0.178**	0.095	0.272**
	(−2.45)	(−0.34)	(5.59)	(−2.35)	(−0.12)	(5.71)	(−2.41)	(0.66)	(5.29)
AGE	0.001	0.004	−0.002	0.0005	0.004	−0.003	−0.0002	0.002	−0.004
	(0.14)	(0.99)	(−0.99)	(0.15)	(0.84)	(1.10)	(−0.06)	(0.34)	(−1.47)
INDPERF	0.001	0.001	−0.0004	0.006	0.038	0.068**	0.178	−0.174	0.155
	(0.65)	(0.29)	(−0.43)	(0.17)	(0.62)	(2.63)	(0.49)	(−0.29)	(0.58)
CONSTANT	−0.647**	−1.425**	−0.087	−0.576**	−1.567**	−2.341**	−0.398	−1.175	4.755
	(−0.90)	(−3.89)	(−0.24)	(−0.72)	(−3.79)	(−4.78)	(−0.53)	(−1.35)	(−0.20)
Control for									
Province?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Subordination?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
City?	No	No	Yes	No	No	Yes	No	No	Yes
Year?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations		2160			2160			1728	

This table reports the determinants of managerial demotion for incorporated and unincorporated SOEs during the period 1994–1999. The maximum-likelihood probit model with sample selection (Van de Ven and Van Praag, 1981) is used to control the selection bias. PERFORMANCE is measured by the following three variables: output per worker, sales revenue/fixed assets, and growth of sales revenue. CAPITAL/LABOR is the capital-to-labor ratio of the industry to which the firm belongs. SIZE is the total number of employees of the firm. AGE is the age of the firm. INDPERF is the industrial average output per worker. The symbols * and ** represent significance at the 10% and the 5% level, respectively. *Z*-statistics are in parentheses.

In summary, this section tested the sensitivity of the results from the multinomial logit model and showed that firm-specific effects and selection issues cannot explain away the result of improved efficiency from incorporation.

4. Post-turnover performance

If the demotion of a manager is designed to correct poor performance, then demotion may be followed by improvement in firm performance. Although ex post performance improvement may be due to a change in market conditions, or other extraneous factors, it indicates the existence of a potential for productivity improvement before the manager turnover. Furthermore, if the performance improvement is independent of the change of manager, demotion will not deliver more significant productivity improvements than promotion or retirement.

Accordingly, we test the difference in SOE performance between the periods before and after the demotion of the manager. Column 2 of Table 8 presents evidence on performance surrounding the year of manager demotion. For comparison purposes, the change in performance for promotion and retirement are reported in Columns 3 and 4. The results show that SOEs with manager demotion experienced significantly positive improvements in labor productivity. The difference in performance between year − 1 and year + 1 around the date of manager demotion is 0.086, and the mean test of the change is significant at the 5% level; this suggests that there was a significant and immediate improvement in firm performance over a one-year interval. In contrast, the productivity gains after manager promotion or retirement were not significant. The change in average performance from two years preceding a turnover (year − 2 to year − 1) to two years subsequent to a turnover (year + 1

Table 8
Annual firm performance during years surrounding manager turnover

	Demotion	Promotion	Retirement
Average performance: Year − 2 to year − 1	0.908	0.889	0.810
Average performance: Year − 1	0.995	1.167	0.915
Average performance: Year + 1	1.081	1.239	0.977
Average performance: Year + 1 to Year + 2	1.011	1.008	0.927
Difference in performance between year − 1 and year + 1	0.086**	0.072	0.062
	(1.99)	(1.00)	(0.93)
Difference in performance between	0.202**	0.119**	0.117*
year − 2 to year − 1 and year + 1 to year + 2	(2.17)	(2.80)	(1.85)

This table reports firm performance during years surrounding the date of manager turnover. Average performance in year − 2 and year − 1 is the average output per worker two years and one year before the manager turnover. Average performance in year − 1 is the average output per capita in the year before the manager turnover. The difference in the performance between year − 1 and year + 1 is the difference in output per worker between the year before and the year after manager turnover. The difference in performance between year − 2 to year − 1 and year + 1 to year + 2 represents the difference in the average output per worker in the two years before and after the manager turnover. The *t*-statistics (under the hypothesis that the difference is not different from 0) are reported in parentheses. The symbols * and ** represent significance at the 10% and the 5% level, respectively.

to year + 2) shows a significant improvement for any manager turnover event; firms with manager demotion enjoyed the greatest improvements in performance.

Differences among the cases of demotion, promotion, and retirement imply that the performance improvement was not simply due to changes in market conditions; overall, the results support the hypothesis that a change of managers, especially demotion, delivered significant improvements in firm performance. [14]

5. A closer look at the organizational benefits of incorporation

A variety of alternative governance mechanisms can ensure that managers of firms act in the best interests of owners. In general, the viability of any mechanism depends on the nature of the prevailing system of property rights and on the nature of the capital markets. For example, corporate control transactions within a well-functioning capital market may serve to discipline managers to act in owners' best interests. Alternatively, the issuance of debt with a commitment to interest payments serves to discipline managers and to increase their effort levels (Grossman and Hart, 1982), or to prevent managers from wasting firm resources (Jensen, 1986). However, such schemes presuppose well-developed capital markets and private ownership, and are not applicable to SOEs. We have shown that incorporation without private ownership was effective in enhancing the efficiency of the disciplinary mechanism of poorly performing SOE management in China. Thus, the interesting question is, how did incorporation short of privatization strengthen internal monitoring systems and bring increased business discipline to SOEs?

Our survey data provide some helpful information to enable us to better understand the sources of the efficiency gains from incorporation. In the quantitative part of the survey in 1999, managers were asked questions on the internal governance system of SOEs. Based on their responses, we are able to compare differences between incorporated and unincorporated SOEs concerning organizational structure and managerial tenure.

Table 9 presents results on differences in organizational structure and managerial tenure between 311 incorporated SOEs and 121 unincorporated SOEs in our sample. Panel A shows differences in aspects of organizational structure between these two groups of firms. As mentioned earlier, the basic difference in organizational structure is that incorporated SOEs have a board of directors and a CEO, under the requirements of Corporate Law. We focus on aspects of organizational structure not required under Corporate Law. An inspection of Panel A reveals that a higher proportion of incorporated as compared to unincorporated firms established organizational units such as a supervisory board, legal, finance, marketing, and research and development departments, and a labor disputes mediation committee. [15] There are statistically significant differences between

[14] This result is consistent with the finding of Xu (2000), who estimated the production functions of SOEs and showed that the presence of a new manager improved SOE productivity.

[15] While all incorporated firms are required to set up a board of directors and a CEO, setting up a board of supervisors is optional.

Table 9
A comparison of incorporated and non-incorporated SOEs

Proportion difference test	Incorporated firms (P_C)	Non-incorporated firms (P_N)	Difference $P_C - P_N$
Panel A: Organizational structure			
Supervisory board	11.36%	0	0.1136**
			(3.869)
Individual supervisors	2.85%	0	0.0285**
			(1.876)
Legal department	35.06%	29.75%	0.0531
			(1.048)
Independent marketing department with its own budget	33.12%	28.93%	0.0419
			(0.838)
Independent research and development unit with its own budget	32.47%	26.45%	0.0602
			(1.216)
Independent finance company with its own budget	25.65%	18.18%	0.0747**
			(1.643)
Labor disputes mediation committee	34.09%	26.45%	0.0764*
			(1.527)
Panel B: Appointment of manager			
When hiring and firing senior managers, what level of influence did the Communist Party Personnel Department have?			
High	38.96%	50.41%	−0.1145**
			(−2.061)
Who issued the formal appointment letter appointing you as manager?			
Board of Directors	10.10%	0	0.1010**
			(3.630)
Government Managing Authority	63.52%	60%	0.0352
			(0.678)
Workers' Congress	0.33%	1.67%	−0.0134*
			(−1.490)
Communist Party Personnel Department (CPPD)	25.08%	35.83%	−0.1075**
			(−2.229)

This table compares the differences between incorporated and non-incorporated SOEs in their organizational structure, and manager appointment. The sample is based on the quantitative part of the survey directed to the managers of SOEs in 1999. In this sample there are 308 incorporated firms and 121 non-incorporated firms. PC and PN represent the proportions of incorporated firms and non-incorporated firms, respectively. For the proportion difference test, z statistics are reported in parentheses. The symbol * indicates a 10% statistical significance level. The symbol ** indicates a 5% statistical significance level. The symbol *** indicates a 1% statistical significance level.

incorporated and unincorporated firms in the formation of a supervisory board and that of a finance department with an independent budget. Of the incorporated firms 11.4% set up supervisory boards and 2.85% appointed individual supervisors to monitor production decisions and manager behavior. In contrast, none of the unincorporated firms had a board of supervisors. Moreover,

25.65% of incorporated firms set up independent finance departments with their own budgets; this proportion is significantly higher than the percentage, 18.18%, for unincorporated firms. The evidence on differences between incorporated and unincorporated firms in internal organizational structures suggests that incorporation did indeed change the governance method of SOEs.

SOE reorganization under corporate law led to the establishment of a board of directors. Since the state is the sole owner of a SOE, directors are not independent of the government, and may even be considered a means of extending government supervisory authority. This raises the following questions: why does the monitoring of management by a board of directors lead to better performance than a system of direct supervision by government authorities outside the enterprises, and what ensures that the board members themselves have the correct incentives to monitor manager performance? There are at least two possible reasons why such reorganization schemes could improve the efficiency of SOE governance. First, the monitoring of management by a board of directors knowledgeable about the enterprise's activities enables a better filtering of information concerning good and bad performance of the firm. Adverse firm performance leads to manager demotion if it is determined that the firm performance was due to manager incompetence or opportunism, and, by the same token, favorable firm performance leads to manager promotion if it can be attributed to good management. Earlier SOE reforms, which relied mainly on performance contracts between the government and SOE managers, did not in general improve SOE performance, and even made it worse. Government authorities lacked accurate information to specify and enforce efficient contracts, and they failed to adequately monitor and evaluate manager behavior and prevent managers' self-dealing. [16] The restructuring of the SOE internal governance system and the introduction of the board of directors helped mitigate these information asymmetry problems. The viability of such an internal governance system depends not only on the level of knowledge possessed by board members about the operation of the firm, but also on the incentives of the board members themselves to properly monitor and police management. In theory, reputational and career concerns can provide appropriate incentives to board members to fulfill an efficient monitoring function within incorporated SOEs. A proper balance of inside and outside directors on a board would ensure that the board is knowledgeable about SOE business and has, at the same time, the correct incentives to accurately evaluate and police manager performance. Although we do not have information in the survey on board-of-director profiles, a relevant observation we can make is that the Chinese government did encourage, during the period of our study, the use of independent directors in SOEs boards, and also of independent supervisory boards to monitor the performance of boards of directors.

The mechanism of manager selection is a crucial component of a corporate governance system. Panel B of Table 9 presents tests of differences in manager selection between incorporated and non-incorporated firms. We first examine the level of

[16] For empirical evidence see Shirley and Xu (1998, 2001).

influence of Communist Party Personnel Departments (CPPD) on the hiring and firing of senior managers. This is based on the survey question, "When hiring and firing senior managers, what level of influence did the Communist Party Personnel Department have?" Note that the evaluation of an SOE manager's performance may include not only the enterprise's profitability, but also considerations of political loyalty. Communist Party Personnel Departments have in the past played a major role in steering managers towards government political objectives. The declining influence of CPPD in manager selection may reflect a shift in government focus away from political concerns. In our sample, it appears that the CPPD still has a significant role in the placement of senior managers for both incorporated and non-incorporated firms. However, it also appears that the influence of the Communist Party is significantly weaker in incorporated than in non-incorporated firms. Of the incorporated firms, only 38.96% were highly influenced by the CPPD in their placement of senior managers, while 50.41% of unincorporated firms were highly influenced.

Secondly, we compare the influence of differences in organizational structures of incorporated and unincorporated enterprises on manager selection based on the survey question, "Who issued the formal letter appointing you as a manager?" It appears that the decision power in manager selection still rests with government authorities outside the enterprises; more than 60% of firms, either incorporated or non-incorporated, reported that government authorities issued the formal appointment letters to the managers. Part of this decision power has been transferred to the board of directors of incorporated firms. In 10% of incorporated firms, the board of directors issued the formal appointment letters to the managers. Of unincorporated firms 35.83% reported that the CPPD issued the formal appointment letters, which is significantly higher than the 25.08% reported for incorporated firms. These results suggest that, although government authorities do play a major role in manager selection, incorporation transferred some decision power from the CPPD to the board of directors. This may be due to the declining importance of political concerns and increasing concerns with efficiency in selecting SOE managers.

In summary, incorporation did deliver organizational changes, most importantly via the establishment of boards of directors. It also led to a weakening of the influence of the Communist Party in manager selection. Such restructuring significantly increased the link between manager turnover and performance, which in turn reflected an improvement in the efficiency of SOE governance. One can attribute the improvement, at least partially, to the increasing information-filtering function of the board of directors, to career and reputational concerns of board directors and managers, and to an increasing emphasis placed by the government on the business performance of SOEs.

6. Conclusion

The evidence presented in this paper supports the hypothesis that the adoption of corporate law to govern SOEs in China was effective in improving the govern-

ance quality of these firms. The corporate governance structure helped improve SOE performance despite the fact that the reforms preserved state ownership. The evidence presented indicated that firm performance was significantly and negatively related to manager turnover for incorporated SOEs, while this relationship was insignificant for unincorporated SOEs. Finally, it was shown that manager turnover was a viable incentive mechanism for improving future SOE performance.

Our results shed light on the policy debate as to whether privatization is essential for improving the performance of SOEs; they suggest that restructuring through incorporation, but without privatization, could enhance the governance system of SOEs and their performance. Of course, privatization may be necessary for securing enhanced SOE performance in the long-run. However, if corporatization could increase the efficiency of internal governance systems and the values of SOEs, it may be prudent for governments to restructure SOEs before selling them to the public, thereby generating larger government revenues from SOE privatization.

It is probably true that in the long run changes in both internal governance and economy-wide institutional mechanisms, including privatization, are necessary for improving the performance of firms in emerging markets. Nevertheless, our results suggest that during a transition period, changes in internal governance based on the adoption of a corporate structure could be effective in disciplining poorly performing managers and improving firm performance. Our results support the general hypothesis that in emerging economies lacking external institutional mechanisms to discipline management, that changes in internal governance mechanisms can be effective in improving manager performance. However, one should not interpret our results as indicating that a restructuring of SOE ownership, such as privatization, is not necessary. We did find that incorporation without privatization still entailed problems that hampered efficiency; the extent to which these problems can be solved via privatization is an interesting direction for future research.

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