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Can corporatization improve the performance of state-owned enterprises even without privatization?

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Abstract

This paper examines an important reform program in China concerning State Owned Enterprises (SOEs), namely, corporatization without privatization. It finds that corporatization has had a significantly positive impact on SOE performance. It further shows that the sources of efficiency engendered by corporatization can be traced to the reform of the internal governance structure of these firms. The results indicate that, even without privatization, corporate governance reform is potentially an effective way of improving the performance of SOEs; such reforms represent a policy alternative for countries seeking to restructure SOEs without massive privatization. The results also suggest that it may be optimal for governments to carry out corporatization of SOEs before eventual privatization.

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1. Introduction

During the past two decades the pace of privatization of State Owned Enterprises (SOEs) around the world has increased greatly. Privatization of SOEs has generated large revenues for many governments and, more importantly, it has provided a potential solution to the problem of inadequate SOE performance. Despite the growing popularity of privatization schemes, important questions remain for both researchers and policy makers, such as, “Are there policy alternatives to privatization?” “Should governments restructure SOEs prior to privatization?” “Should they privatize rapidly or slowly?” These issues are closely related. As [Megginson and Netter \(2001\)](#) point out in their survey of empirical research on privatization:

One of the more complex issues in this area involves the interrelated questions of when to privatize, whether to privatize rapidly or slowly, what order to follow in privatizing firms (sequencing), whether to sell a SOE at once or in stages (staging), whether to restructure a SOE prior to sale (or to just restructure the SOE), . . . , the complexity of the issue has limited the empirical work in this area. (p. 341)

The objective of the present study is to expand our limited empirical knowledge of these issues by examining an important SOE restructuring program in China, namely, the restructuring of SOEs under Corporate Law. China has implemented major economic reforms with minimal privatization through the use of incentive contracts and through the restructuring of the governance system of SOEs. Most studies of Chinese SOE reforms have focused on the effect of incentive contracts on the performance of SOEs or on the mechanism of privatization via share issuance. But, no previous study has empirically evaluated another important aspect of the SOE reform program: The corporatization of SOEs without privatization.

The gradual reform of Chinese SOEs began nearly 20 years ago, in the mid-1980s. Initially, the reforms introduced incentive contract schemes for managers and workers. Then, in 1993, a system of Corporate Law was introduced and the internal governance system of SOEs was restructured along the pattern of a modern corporation. The Corporate Law required that SOEs set up a governance structure that included shareholders and a board of directors. Furthermore, two statutory positions were introduced: those of a chief executive officer (CEO) and a chair of the board of directors. While the corporatization of SOEs was modelled after western-style public corporations, an important feature in China was that the state remained the sole owner of SOEs.

The corporatization of Chinese SOEs represents an important social experiment, as it provides a potential policy alternative for improving the performance of SOEs. Whether or not privatization is necessary for improving SOE efficiency is still debated. Some argue that privatization is necessary for any significant improvement in the performance of SOEs (e.g., [Boycko et al., 1996](#); [Nellis, 1994](#); [Shleifer, 1998](#)), while others point out that less radical methods such as deregulation and increased competition, or more routine steps such as the use of management performance contracts, can effectively substitute for outright privatization; that privatization is not the only effective solution for SOE restructuring (e.g., [Yarrow, 1986](#), [Vickers and Yarrow, 1991](#), [Allen and Gale, 1999](#)). This debate is part of the broader one pertaining to the relationship between property rights and

ownership structure. Alchian (1977), a seminal paper in this area, argues that behavior under public ownership is different from that under private ownership “not because the objectives sought by organizations under each form are different, but, instead, because even with the same explicit organization goals, the costs–rewards system impinging on the employees and the ‘owners’ of the organization are different.” (p. 136). He proposes the following theorem, “Under public ownership the costs of any decision or choice are less fully thrust upon the selector than under private property.” (p. 146). This line of argument predicts that state-owned enterprises will perform less efficiently than privately owned ones. Earlier empirical studies support this argument.¹ However, recent empirical evidence has challenged this view. Kole and Mulherin (1997) study a sample of U.S. corporations in which the federal government held 35% to 100% of the outstanding common stock for between 1 and 23 years during and following World War II. They find that the performance of the government-owned companies was not significantly different from that of private-sector firms in the same industry; they argue that the availability and implementation of monitoring devices can favorably affect the performance of any form of enterprise, public or private.² Gupta (in press) examines the impact of partial privatization of Indian state-owned enterprises where the state remained the controlling owner after privatization; Gupta finds that partial privatization had a positive impact on profitability, productivity, and investment, arguing that the stock market can perform an important role in monitoring and rewarding managerial performance even when the state remains the controlling owner.

The corporatization of SOEs in China entailed restructuring the internal governance system of these firms while preserving state ownership. Such an unusual social experiment allows us to address the question whether private ownership is the only solution to agency problems in the governance system, or whether a restructured governance system can favourably affect the performance of these enterprises, even if they remain under public ownership.

Examining the impact of SOE corporatization helps not only address the question of whether governments should restructure SOEs or privatize them, but it also helps determine, if eventual privatization is warranted, the optimal pace of privatization. The Chinese SOE privatization scheme has relied mainly on share issue privatization (SIP) where some, but not all, of the government’s stake in these firms is sold to investors through a public share offering. Most of the firms that were privatized were corporatized before going into SIP. If corporatization could improve the performance and value of SOEs, then such restructuring would also enable the government to generate larger revenues from eventual SOE privatization.

In this study, we provide a comprehensive study of the Chinese SOE corporatization program. We find that corporatization significantly improved the performance of SOEs. We also analyze the potential sources of the efficiency gains of corporatization. Our results suggest that organizational restructuring through corporatization resulted in more effective

¹ See, for example, De Alessi (1980) and MacAvoy and McIsaac (1989).

² Kole and Mulherin (1997) write, “Because the government-owned firms in our case are subject to monitoring mechanisms that are comparable to their counterparts in the private sector, we predict no significant difference in performance between the sample firms and control groups from the same industry.” (p. 3).

information and incentive constraints on managers. The paper is organized as follows: Section 2 provides a brief historical background of Chinese SOE reforms and reviews the extant empirical literature on the impact of such reforms. Section 3 describes the data. Section 4 analyzes the impact of corporatization on SOE performance and identifies the potential benefits from corporatization. Section 5 provides a summary and a conclusion.

2. Historical background and literature review

The evolution of the Chinese SOE internal governance system can be divided into three major periods. The first, from 1950 to 1984, is the traditional planned economy period (before the reforms), during which state ownership was the only legal form of ownership. SOE executives were appointed and dismissed by the government and usually treated as government officials. The second period, lasting from 1984 to 1993, is the first stage of the reform period of SOEs. During this period the government gave SOEs responsibility for dealing with their own gains and losses in the market. Furthermore, the use of incentive contracts to govern the relationship between the State and SOE managers was very popular during this period. Although the reform of traditional SOEs in this period significantly reduced the role of governmental intervention in the management of SOEs, the rights and responsibilities of SOE stakeholders and management were ill-defined.

The third period started in 1993 and is ongoing; it is characterized by the conversion of SOE governance into that of a modern corporate governance structure. In order to provide a more sophisticated corporate governance and property rights structure, the Chinese government adopted a system of Corporate Law in 1993 in its quest to convert SOEs into modern corporations. This system of corporate law divided SOEs into two categories: that of closely held corporations, including wholly state-owned corporations and foreign-invested corporations, and publicly held corporations, including listed and non-listed corporations. There are four organizational forms in the second category: limited liability companies, limited liability stock companies, employee shareholding cooperatives, and private enterprises. For wholly state-owned corporations, only two corporate bodies are required: the board of directors, and the chief executive officer (CEO). In this case, a shareholder meeting is not required since the state is the owner. For the other types of corporations, the law requires that they form the following four governing bodies: (1) shareholders, acting as a body at the general meeting; (2) a board of directors; (3) a board of supervisors; and (4) a CEO.

The Chinese SOE reform experience has attracted great attention. One reason for the significant attention given to the Chinese SOE reform program is the increasing importance of China in the global economy. China is expected to become one of the dominant economies in the world. Another reason, which may be more important, is that China adopted a gradual approach to SOE reforms and was successful in increasing economic growth and productivity. In contrast, the benefits of mass privatization schemes used in other transition economies, such as Lithuania, the Czech Republic, and Russia, have been small. As a result, there has been great interest among academic

researchers and policy makers in the causes underlying the success, thus far, of Chinese SOE reforms.

Many studies have examined the earlier Chinese SOE reforms, especially the incentive contract system introduced in the 1980s. Groves et al. (1994) showed that Chinese SOE productivity improved significantly after 1978 as a result of the introduction of some basic incentives schemes. These schemes gave firms more autonomy and allowed them to retain more of their profits; also, the incentives of SOE workers were strengthened via bonus payments and differing work contracts. These changes helped raise workers' incomes and firms' investments. In a subsequent paper, Groves et al. (1995) analyzed how incentives increased in the Chinese managerial labour market by linking managerial turnover to their performance, and managerial pay to SOE profits. They argued that the reform in incentive schemes in the labour market improved managerial resource allocation and in turn led to improvements in SOE management productivity. Another story, Li (1997), documented a significant increase in the marginal and total factor productivities of 272 Chinese SOEs between 1980 and 1989. Also, it showed that over 87% of the growth in productivity was due to improved incentives, greater product market competition, and better factor allocation.

Despite the above evidence of a positive impact of incentive contracts on SOE performance, there are several shortcomings with the incentive contract system. These consist of difficulties in implementing contracting mechanisms, e.g., difficulties in identifying a minimum level of profits or an inability to make payments when SOEs sustain losses; other shortcomings are lack of incentives for innovation and long-run investment, and opportunistic expropriation by insiders. In fact, a study by Shirley and Xu (1998) came to the conclusion that incentive contracts had a negative impact on SOE performance. They analysed incentive contracts in 12 SOEs and found that such contracts had no effect on profitability and labour productivity but instead had adverse effects on growth in total factor productivity.

More recent studies have examined the impact of Chinese SOE privatization initiatives via share issue privatization (SIP) programs. Wei et al. (2003) examined the impact of SIP on the financial and operating performance of 208 firms in China during the period 1990–1997. They documented significant growth in real output, real assets and sales efficiency after privatization. Sun and Tong (2003) have also found improvements in the earnings, sales, and workers' productivity for 634 SOEs that were privatized through SIP during the period 1994–1998. Furthermore, they demonstrate that state ownership was in fact associated with poor SOE performance, providing support to a policy of further reduction of state ownership in these firms.

While extant studies have investigated several important aspects of Chinese SOE reforms, an evaluation of one critical component of SOE reforms is missing from the literature: the corporatization of Chinese SOEs without privatization. This is a major omission given the importance of corporatization to the SOE reform process. The corporatization program was launched by the Chinese government in response to the unsatisfactory results of the incentive contract system. If it is effective in increasing SOE efficiency, it could serve as an alternative way of restructuring these firms without changing state ownership. Alternatively, corporatization without privatization could provide an efficient transition stage smoothing the impact of subsequent privatization.

Also, if corporatization does increase the value of SOEs, the government could generate larger revenues from eventual share issue privatization. Thus, an examination of the Chinese corporatization program not only helps to assess the merits of an alternative way of restructuring SOEs, but also to determine the optimal strategy for sequencing SOE privatization.

3. Data

We carry out a comprehensive study of the impact of Chinese SOE corporatization by employing a unique database compiled from two enterprise surveys conducted by the Chinese Academy of Social Sciences (CASS) in 1995 and 2000; the survey provides the annual data on 442 SOEs from 1990 to 1999. 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 including, Groves et al. (1994, 1995), Li (1997) and Cull and Xu (2003). The questionnaire in these surveys was divided into two parts; one part directed at the factory manager includes qualitative questions about the firm's incentive and governance system. The other part is directed at the enterprise accountant and includes quantitative questions asking for details of the firm's real and financial accounts. The sample of enterprises represents 34 manufacturing industries located in the four provinces (Jiangsu, Jilin, Shanxi and Sichuan). All these SOEs are central government-owned national public firms.

Among the 442 SOEs, 13 firms experienced restructuring before 1993. Since the Corporate Law system was implemented in 1993 and instituted in the first year in which SOEs could be restructured under its guidelines, these 13 firms are excluded from our sample.³ Table 1 reports the number of SOEs restructured in each sample year over the period 1993 to 1998, and shows that 1994 had the largest number of SOE restructurings. As of 1998, 308 firms (about 72% in our sample) had been corporatized and 121 firms remained non-restructured.

To assess the impact of corporatization on the performance of the SOEs, we examine three aspects of enterprise performance: *profitability, efficiency and investment*.⁴ We use two indices to measure profitability: return on assets, which is defined as total profits divided by total fixed assets, and return on sales, which is defined as total profits divided by total sales. We also use two measures for efficiency. One is real output per employee (output efficiency), and is defined as output in 1990 constant prices divided by the total number of employees. An alternative measure is real sales per employee (sales efficiency),

³ Spontaneous corporatization of SOEs began in the late 1980s, but not under the guidance of Corporate Law. These restructurings may not have met the requirements of Corporate Law and to some extent could not be classified as corporatizations.

⁴ Similar performance measurements have been used in Boubakri et al. (2005) and D'souza et al. (2005). The SOE survey reports both output and real output (in 1990 constant prices), but not net income. Thus we use real output divided by the total number of employees as the measure of output efficiency.

Table 1
Number of corporatized SOEs

Year	1993	1994	1995	1996	1997	1998	1993–1998
No. of firms	11	103	74	77	35	8	308
Percentage in total firms	2.56%	24.01%	17.25%	17.95%	8.16%	1.86%	71.79%

This table reports the number of SOEs that are corporatized in the sample period, 1993 to 1998.

which is defined as real sales in 1990 constant prices divided by the total number of employees.⁵ These two attributes are probably the most important indicators of SOE performance since improvements in the profitability and efficiency of the SOEs were the main goals advanced by the government in launching the corporatization program.

We also assess the impact of corporatization on SOE investment using the following two measures: investment to assets, and investment to sales. Over the reform period, the investments of SOEs have been supported by the government through heavily subsidized bank loans. This so-called “soft budget constraint” problem is well documented and analyzed in the literature (e.g., Qian and Roland, 1996; Brandt and Zhu, 2000; Cull and Xu, 2003). Under corporatization, improvements in firm profitability and efficiency may have emerged from two possible channels: one is the efficiency gain resulting from improvements in an SOE’s internal governance mechanism, while the other is growth in investment due to government-subsidized credit. Investment growth does not reflect true efficiency gains if it is mainly due to government actions designed to make corporatized firms look “successful” by providing them with better credit support. It is therefore important to establish whether SOE investment activity is affected by corporatization.

Table 2 provides summary statistics of performance measures and other basic characteristics of SOEs. Firm size is measured by the logarithm of the total number of employees; the capital-to-labour ratio is defined as total fixed assets divided by the total number of employees. Since the survey selected firms operating in more than 30 different industries, there are large variations in the capital-to-labour ratio and performance measurements. The average firm age was 35 years, which indicates that the sampled SOEs were well established ones with long histories. The average number of employees in these firms was 1540 with a relatively small variation in firm size, suggesting that the sample of firms in this survey were relatively large SOEs.

4. Empirical results

4.1. Determinants of SOE corporatization

Selection bias is the most salient methodological problem encountered in estimating the impact of the reforms on enterprise performance. The main selection bias problem in our study is that arising from the government’s selection of SOEs to corporatize. For example, if the Chinese government tends to select firms with better past-performance records for

⁵ We use the Consumer Price Index (CPI) to deflate nominal sales into real sales (in 1990 constant prices). The Information on CPI is compiled from *China Statistical Yearbook* (State Statistical Bureau, 2000).

Table 2
Summary statistics of the sample SOEs

	Observations	Mean	S.D.	25%	50%	75%
Age	4290	35.89	13.74	27.00	35.00	41.00
Capital to labour ratio	4290	24.60	105.29	2.19	7.84	26.74
Size	4290	7.34	0.84	6.82	7.22	7.78
Profitability						
Return on assets	4272	0.08	0.26	-0.03	0.03	0.13
Return on sales	4272	0.03	0.17	-0.02	0.01	0.08
Efficiency						
Real output per employer	4290	34.42	57.02	3.17	11.09	43.08
Real sales per employer	4286	30.45	44.64	3.73	15.15	38.90
Investment						
Investment to assets	4275	0.14	0.18	0.05	0.09	0.16
Investment to sales	4275	0.11	0.17	0.03	0.06	0.12

This table presents summary statistics for the sample SOEs.

restructuring, and these firms have better potential for increased performance, the empirical results may over-estimate the effects of corporatization. Therefore, before testing the impact of corporatization on SOE performance, we must analyze government preferences in the decision of which SOEs to corporatize. Moreover, the characteristics of importance to the government in its selection of SOEs to corporatize are interesting in their own right.

To test for the determinants of corporatization, the Weibull hazard rate model is employed to estimate the probability of SOE restructuring, conditional on each firm's characteristics and on the firm not having been restructured. The sample for the hazard rate model is 1394 firm-year observations of 429 state enterprises. The explanatory variables include several important firm characteristics, such as firm age, firm size, and various measures of firm profitability and efficiency. The lagged values of the independent variables are used in the model as the predetermined characteristics of SOEs before the choice of corporatization.

Results of the determinants of SOE corporatization are reported in Table 3. Columns 2 to 5 report the hazard ratios for the model, using different measures of enterprise performance: return on assets, return on sales, real output per employee and real sales per employee. The results are quite consistent. The most important result that emerges from Table 3 is that the government does not purposively choose to corporatize enterprises with certain (favourable or unfavourable) performance characteristics. The program of corporatization is expected to improve SOE efficiency. Other firm characteristics, such as age, size and capital/labour ratio appear to significantly affect government decisions in selecting which SOEs to restructure. The larger is the firm, the higher is its hazard rate of corporatization. This is consistent with the Chinese government's policy, the so-called "zhuodafangxiao" (taking a firm grip on the large, and letting go of the small), in reforming SOEs in the 1990s.⁶ The age and capital intensity of a firm have significant and

⁶ At the 15th Central Committee meeting, the Chinese Communist Party issued its policy edict, A Decision on State Owned Enterprises Reform, which called for the setting up of "a modern enterprise system in the majority of large and medium-sized State Owned Enterprises".

Table 3
The determinants of SOE corporatization in China

Weibull regression	Profitability		Efficiency	
	Return to assets	Return to sales	Output per employee	Sales per employee
Age	0.989** (-2.03)	0.989** (-2.04)	0.990* (-1.92)	0.989** (-2.08)
Size	1.196** (2.11)	1.203** (2.20)	1.191** (2.04)	1.201** (2.17)
Enterprise performance	1.090 (0.30)	1.955* (1.82)	0.0999 (-0.39)	1.001 (0.72)
Capital to labour ratio	0.990** (-1.96)	0.990** (-1.98)	0.991* (-1.52)	0.989** (-2.11)
Shape parameter	1.448*** (19.84)	1.449*** (20.13)	1.457*** (20.81)	1.442*** (19.49)
Year dummies	Yes			
Province dummies	Yes			
Number of firms	429			
Time at “risk” (year)	6			

This table presents the determinants of SOE corporatization in China. The Weibull hazard rate model is employed to estimate the probability of SOE restructuring, conditional on the firm’s characteristics and on its not already having been restructured. Columns 2, 3, 4 and 5 report the hazard ratios using different measurements of enterprise performance: Return on assets, Return on sales, Real output per employee, Real sales per employee, respectively. *z*-statistics are provided in parenthesis. The symbols *, **, ***, indicate 10%, 5% and 1% statistical significance levels, respectively.

negative effects on the probability of corporatization, while younger and more labor-intensive enterprises are more likely to be corporatized. The shape parameters in the Weibull models are 6 and are significantly larger than 1, implying that the longer a firm operates without restructuring the more likely it is to be restructured under Corporate Law.

4.2. The impact of corporatization on SOE performance

Past performance does not seem to have been a primary consideration for the government in selecting which SOEs to corporatize. The question we address next is, did corporatization without privatization improve the performance of SOEs? To test the impact of restructuring on SOE performance, we employ fixed effect and random effect regressions.⁷ The specification is the following:

$$Y_{it} = \alpha + \beta X_{it} + \gamma' Z_i + \lambda_t + \mu_i + \varepsilon_{it} \quad (1)$$

where the dependent variable Y_{it} is the performance measure for firm i at time t . X_{it} is the treatment variable and is equal to 1 if date t is after corporatization of firm i , and 0 otherwise. α is a constant, and the Z_i 's are dummy variables of firm i 's fixed characteristics including sector, location and government supervisory level.⁸ These constant firm characteristics are omitted in the fixed effect model since they are captured by the fixed effect term. λ_t is a set of time dummy variables controlling for possible variation in the

⁷ As a preliminary check, we performed the Lagrangian Multiplier (LM) test (Breusch and Pagan, 1980) to a specification of a pooling regression, and again a fixed effect regression (not reported here). The null hypothesis is that the variance of the individual effect, $\text{Var}(\mu_i)$, is 0. The chi-square statistics reject the null hypothesis at the 1% significance level for all measures of performance. The results suggest that the individual firm effect is not homogenous and that the pooling regression is not suitable in this case.

⁸ There are four supervisory levels: central ministry, provincial government, city government, county and below.

macroeconomic environment over time. μ_i is the firm's individual characteristics and is included to control for the unobservable individual effect of firm i that could be correlated with firm performance. $\varepsilon_{t,i}$ is the error term.

Table 4 reports the results from the fixed effect and the random effect models. To identify which empirical methodology is most suitable, we conduct the Hausman specification test (Hausman, 1978) to compare the fixed effect and the random effect models. If the model is correctly specified, and if individual effects are uncorrelated with the independent variables, the fixed effect and random effect estimators should not be statistically different. In most of the cases, the Hausman test does not reject the null hypothesis, even though the results are similar in the fixed effect and the random effect models.

The result of most interest to us is the coefficient β , which measures the post-restructuring performance shift. It turns out that the estimated β s are significantly positive for different measures of profitability and efficiency. For example, in the random effect model, the estimated impacts of corporatization on profitability are 0.039 and 0.019 on return on assets and return on sales, respectively. Both are significant at the 1% level. Since the sample average return on assets and return on sales are 0.08 and 0.03, respectively, these profitability gains are nontrivial and indicate that the impact of corporatization is statistically significant as well as economically important. The results on the impact of corporatization on SOE efficiency also indicate that corporatization has a significantly positive effect on SOE operations. The coefficients of the effect of corporatization on real output per employee and real sales per employee are 6.3390 and 3.954, respectively. Both are significant at better than the 1% level. Thus, the results provide considerable credence to the proposition that corporatization without privatization could significantly improve the profitability and efficiency of SOEs.⁹

As mentioned earlier, the improvements in SOE performance could be due to "artificial" growth as a result of heavy credit subsidies to corporatized firms. To see if this is the case, we test the impact of corporatization on firm investment and the results are reported in the last four columns of Table 4. For both measures of investment, none of the coefficients of the corporatization dummy is significantly different from zero in both the random effect and the fixed effect models. These results show that corporatization had no impact on firm investment levels, and that improvements in SOE profitability and efficiency are unlikely to have been generated by the increase in investments. We show the potential sources of SOE performance improvements in a later section.

Specification (1) assumes that the post-restructuring effect is homogeneous across different periods. To test the robustness of our results and to identify the impact of corporatization on the SOEs' profitability and efficiency across different post-restructuring years, we relax this assumption by introducing seven dummy variables into a regression that represents the post-restructuring years, namely, 1st year, 2nd year, 3rd year, 4th year, 5th year and 6th year, respectively. The specification is as follows:

$$Y_{it} = \alpha + \sum_{s=0}^6 \beta_s X_{it}^s + \gamma' Z_i + \lambda_t + \mu_i + \varepsilon_{it} \quad (2)$$

⁹ Including other firm characteristics such as firm age and firm size yields similar results.

Table 4
The impact of corporatization on the performance of SOEs

	Profitability				Efficiency				Investment			
	Return on assets		Return on sales		Real output per employee		Real sales per employee		Investment to sales		Investment to assets	
	F.E.	R.E.	F.E.	R.E.	F.E.	R.E.	F.E.	R.E.	F.E.	R.E.	F.E.	R.E.
β	0.035*** (3.18)	0.039*** (3.77)	0.015** (2.15)	0.019*** (2.80)	5.596*** (2.71)	6.653*** (3.40)	3.610** (2.39)	4.345*** (2.98)	0.007 (-0.86)	-0.006 (-0.76)	-0.004 (-0.48)	-0.002 (-0.25)
Constant	NA	0.099** (2.16)	NA	0.051* (1.64)	NA	15.142* (1.79)	NA	13.587*** (1.83)	NA	0.212*** (6.34)	NA	0.186*** (5.90)
Year dummies	NA	Yes	NA	Yes	NA	Yes	NA	Yes	NA	Yes	NA	Yes
Provincial dummies	NA	Yes	NA	Yes	NA	Yes	NA	Yes	NA	Yes	NA	Yes
Sector dummies	NA	Yes	NA	Yes	NA	Yes	NA	Yes	NA	Yes	NA	Yes
Hausman	1.80		3.20		2.65		3.40		0.22		0.64	
Obs. #	4272	4272	4272	4272	4290	4290	4286	4286	4275	4275	4271	4271
R-square	0.09	0.11	0.08	0.07	0.31	0.35	0.27	0.32	0.01	0.05	0.05	0.09

This table reports the test of the impact of corporatization on the performance of SOEs using a fixed-effect regression (F. E.) and a random-effect regression (R.E.) The specification is defined in Eq. (1). *t*-statistics are in parentheses. The symbols *, **, *** indicate 10%, 5% and 1% statistical significance levels, respectively.

where $X_{it}^s=1$ if date t is s years after firm i was restructured. Other variables are the same as in specification (1).

The results using specification (2) are reported in Table 5. For the models using different performance measures, the coefficients of the post-restructuring year dummies are generally significant and positive. Thus, the results show not only that corporatization has a positive effect on SOE performance, but also that this positive effect tends to persist. The results suggest that, even without changing the ownership of the SOEs, restructuring SOEs according to a modern corporate governance system had a significantly positive impact on their performance.

4.3. Why was SOE corporatization effective?

We have shown that corporatization was effective in improving the profitability and efficiency of SOEs, and that this improvement in performance was not simply due to an increase in investment. A natural question is: Why was corporatization effective? By structuring the internal governance system of SOEs according to that of a modern corporation, corporatization may enhance efficiency through better monitoring of managers, improvements in information-sharing channels, and a reduction in governmental political intervention. It may also affect the incentives and objectives of managers by tightly linking enterprise performance with the evaluation and remuneration of managers. It may also impact, positively or negatively, on the “soft budget constraint” faced by SOEs. On the one hand, the government may want to force corporatized firms to face greater competition and to increase the efficiency of credit allocation to SOEs. On the other hand, the government has strong incentives to provide financial support to such firms and to prevent their bankruptcy because of the heavy political and social costs that would be engendered.

Since there are numerous channels through which corporatization could potentially affect the performance of SOEs, it is extremely difficult to separate the effect of each channel and to examine all of these potentialities. However, our survey data provide helpful information and allow us to go further in addressing the potential sources from the efficiency gains from corporatization. In the qualitative part of the survey in 1999, managers were asked various questions on internal governance systems, managerial incentives and credit sources. Based on the responses of managers to these questions, we are able to compare differences between corporatized and noncorporatized SOEs in terms of four major features: institutional structure, managerial appointments, managerial incentives, and credit sources.

Table 6 presents the results on differences between 308 corporatized SOEs and 121 noncorporatized SOEs in our sample. Panel A shows the differences in institutional structure between these two groups of firms. The basic difference is that each corporatized SOE set up a board of directors, and a CEO as part of its requirements under Corporate Law. We focus on those institutional structural changes that are not required by Corporate Law. An inspection of Panel A reveals that a higher proportion of corporatized, as compared to noncorporatized, firms established institutions such as a supervisory board, legal, financial, marketing, and research and development departments, and a labour disputes mediation committee. There are statistically significant differences between

Table 5
The impact of corporatization on SOE profitability and efficiency across different post-corporatization years

	Profitability				Efficiency			
	Return on assets		Return on sales		Real output per employee		Real sales per employee	
	F.E.	R.E.	F.E.	R.E.	F.E.	R.E.	F.E.	R.E.
β_0	0.028** (2.05)	0.030** (2.26)	0.010 (1.08)	0.012 (1.34)	5.541** (2.13)	6.390** (2.50)	3.379* (1.78)	3.954** (2.11)
β_1	0.027* (1.88)	0.030** (2.09)	0.014 (1.51)	0.017* (1.79)	6.132** (2.22)	7.166** (2.66)	3.813* (1.89)	4.514** (2.28)
β_2	0.037** (2.42)	0.040*** (2.67)	0.014 (1.42)	0.017* (1.73)	5.250* (1.77)	6.464** (2.25)	3.265 (1.50)	4.098** (1.96)
β_3	0.056*** (3.24)	0.059*** (3.53)	0.027** (2.36)	0.030*** (2.72)	5.844* (1.77)	7.035** (2.22)	5.128** (2.13)	5.944** (2.53)
β_4	0.073*** (3.56)	0.076*** (3.85)	0.052*** (3.87)	0.056*** (4.31)	4.289 (1.10)	5.893 (1.57)	2.755 (0.97)	3.834 (1.38)
β_5	0.125*** (4.89)	0.129*** (5.20)	0.063*** (3.80)	0.069*** (4.28)	5.293 (1.09)	7.178 (1.52)	4.569 (1.28)	5.763* (1.66)
β_6	0.093 (1.44)	0.102 (1.60)	0.093** (2.22)	0.102** (2.45)	21.013* (1.71)	23.488* (1.94)	17.050** (1.970)	18.548** (2.09)
Constant	NA	0.102** (2.22)	NA	0.053* (1.72)	NA	15.229* (1.80)	NA	13.703* (1.84)
Hausman	1.24		6.03		18.55**		3.15	
Observation (groups)	4272 (429)	4272 (429)	4272 (429)	4272 (429)	4290 (429)	4290 (429)	4286 (429)	4286 (429)
R-square	0.09	0.11	0.05	0.07	0.31	0.35	0.27	0.33

This table tests the impact of corporatization on the performance of SOEs using a fixed effect regression (F.E.) and a random effect regression (R.E.). The specification is defined in Eq. (2). The *t*-statistics are in parentheses. The symbols *, **, *** indicate 10%, 5% and 1% statistical significance levels, respectively.

Table 6
A comparison of corporatized and noncorporatized SOEs

Panel A: Institutional structure			
Proportion difference test	Corporatized firms (P_C)	Noncorporatized firms (P_N)	Difference $P_C - P_N$
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)
Labour disputes mediation committee	34.09%	26.45%	0.0764* (1.527)
Panel B: Appointment of manager			
Proportion difference test	P_C	P_N	$P_C - P_N$
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)
Worker's congress	0.33%	1.67%	-0.0134* (-1.490)
Communist Party personnel department	25.08%	35.83%	-0.1075** (-2.229)
Panel C: Managerial incentives			
Mean difference test	M_C	M_N	$M_C - M_N$
For how long has your annual salary been higher than that of an ordinary middle level manager?	1.62%	1.71%	-0.0008 (-0.631)
If the company's profit from sales increased 10% this year, would your personal income increase?	10.46%	11.47%	-0.0101 (-0.645)
If the company's profit from sales increased 50% this year, would your personal income increase?	28.84%	30.56%	-0.0172 (-0.724)
If the company's profit from sales increased 100% this year, would your personal income increase?	55.08%	55.32%	-0.0025 (-0.045)
Panel D: The sources of credit			
Proportion difference test	P_C	P_N	$P_C - P_N$
Which factors are extremely important in the borrowing decision?			
Determined by superiors	73.05%	72.73%	0.0032 (0.067)
Located in the same city	73.70%	67.77%	0.0593 (1.231)
Attractive interest rates	0.32%	0	0.0032 (0.623)
Which is the most desirable source of credit?			
Four major state-owned banks	86.69%	79.34%	0.0735** (1.899)
Joint-venture banks	27.92%	34.71%	-0.0679* (-1.383)
Non-bank financial institution	21.10%	33.06%	-0.1196** (-2.593)
A supplier company	16.23%	28.10%	-0.1187** (-2.788)

corporatized and noncorporatized firms in the formation of supervisory boards and of finance departments with independent budgets. 11.4% of the corporatized firms set up supervisory boards and 2.85% of the corporatized firms appointed individual supervisors to monitor production decisions and manager behavior. In contrast, none of the noncorporatized firms had a board of supervisors. Moreover, 25.65% of corporatized firms set up independent finance departments with their own budgets. This proportion is significantly higher than 18.18% for noncorporatized firms. The evidence from the differences between corporatized and noncorporatized firms in such institutional structures suggests that corporatization did indeed change the governance methods of SOEs. However, there is not enough information for evaluating how well these institutions have functioned.

The mechanism of manager selection is a crucial component of a corporate governance system. Panel B presents tests of differences in manager selection between corporatized and noncorporatized firms. We first look at the level of influence of the Communist Party personnel departments in the hiring and firing of senior managers. It appears that the Communist Party has a significant role in the placement of senior managers for both corporatized and noncorporatized firms. However, the influence of the Communist Party is significantly weaker in corporatized than in noncorporatized firms. 38.96% of corporatized firms were highly influenced by the Communist Party personnel departments in their placement of senior managers while 50.41% of noncorporatized firms were highly influenced. Moreover, 35.83% of noncorporatized firms reported that the Communist Party personnel department issued the formal appointment letters, and that this proportion is significantly higher than the 25.08% reported for corporatized firms. Second, it appears that the greatest decision-authority in manager selection is still vested in government authorities outside the enterprises: more than 60% of firms, either corporatized or noncorporatized, reported that government authorities issued the formal appointment letters to the managers. Third, part of this decision power is transferred to the board of directors in corporatized firms. The board of directors in 10% of corporatized firms issued the formal appointment letters to the managers. This could have a positive effect on monitoring poorly performing managers. In fact, a recent paper by Aivazian et al. (*in press*), which focused on the effect of corporatization on the linkage between manager turnover and enterprise performance, found that the demotion of managers is significantly related to firm performance of corporatized firms, while this linkage is insignificant for noncorporatized firms.

We examine the differences between corporatized and noncorporatized firms in managerial incentives, and this is presented in Panel C. As can be seen, incentive contracts are widely used in order to link manager payment to enterprise performance. However, there are no significant differences in the incentives of managers in corporatized firm and

Notes to Table 6:

This table compares the differences between corporatized and noncorporatized firms in terms of their institutional structure, manager appointment, managerial incentives and credit resources. P_C and P_N represent the proportion of corporatized firms and noncorporatized firms, respectively. M_C and M_N represent the means of corporatized and noncorporatized firms, respectively. For the proportion difference test, z statistics are reported in parentheses. For the mean difference test, t statistics are reported in parentheses. The symbols *, **, *** indicate 10%, 5% and 1% statistical significance levels, respectively.

noncorporatized firms. These results reflect the fact that incentive contracts have been a common practice among Chinese SOEs since the reforms of the 1980s.

Panel D compares differences in credit sources between corporatized and noncorporatized SOEs. It shows that corporatization did not address the problem of a soft budget constraint. More than 70% of corporatized SOEs reported that their superiors' (government authorities) decision is the most important factor in borrowing decisions, and almost none reported that the interest on loans is extremely important. Furthermore there is no significant difference between corporatized and noncorporatized firms concerning factors that are extremely important in their borrowing decisions. However, there are some differences between corporatized and noncorporatized firms' desired sources of credit. Compared with noncorporatized firms, corporatized firms have a greater preference for credit from the four major state banks than from other sources of credit. Since the four major state banks are the main sources of government subsidized loans, the high dependence on these banks instead of on other market-oriented financial institutions indicates that the soft budget constraint may not be alleviated.

The above results imply that the sources of efficiency engendered by corporatization can be traced to the internal governance structure of SOEs. The results show that corporatization is not merely "old wine in new bottles" as claimed by some researchers (see, among others, *Xu and Wang, 1997*), but that it does indeed change the internal governance system of SOEs in fundamental ways. Aside from instituting a board of directors and a CEO as required by the Corporate Law, each corporatized firm is more likely to set up a board of supervisors, an independent finance department with its own budget, and a labour disputes mediation committee. Furthermore, through corporatization, some decision powers of government authorities shift to an internal governance system, such as the firm's board of directors, and government political intervention through the Communist Party personnel department is significantly reduced. These results suggest that the restructuring of the internal governance system of SOEs could be the source of improved performance. However, our results also suggest that some problems still persist after corporatization, such as that of soft budget constraints and of government intervention, and that further restructuring of SOEs may be necessary. An important related issue is the extent to which privatization could solve these problems and improve SOE performance. The effectiveness of SOE restructuring, whether via corporatization or privatization, may hinge on such additional factors as changes in the structure of markets, the legal system, and even in culture. But, the central result of this study indicates that the SOE corporatization program has been fairly successful in improving the effectiveness of the governance system of SOEs and their performance.¹⁰

¹⁰ Another type of public firm is the Township-Village Enterprise (TVE). While State Owned Enterprises are (central government-owned) national public firms, TVEs are rural (community government-owned) local public firms controlled by community (township or village) governments. Some theories assert that community government ownership of TVEs can be a more effective instrument than private ownership in achieving the government's objective (see, for example, *Che and Qian, 1998*). Since our sample includes only the State Owned Enterprises, differences in local government versus central government ownership play no role in our arguments.

5. Conclusion

This paper examined an important SOE reform program in China, namely, the corporatization of SOEs without privatization. It found that corporatization has had a significantly positive impact on SOE performance. Our results suggest that, even without full privatization, corporate governance reform of SOEs can effectively improve performance. They suggest an alternative policy prescription for countries looking for a way of restructuring their SOEs without massive privatization. Our results also showed that corporatization had no impact on SOE investment levels; that the potential source of the efficiency delivered by corporatization could be from the change in the internal governance system of these enterprises. Our results are not inconsistent with Alchian's (1977) property rights theory. In fact, Alchian draws the following implication from his theorem (quoted in Section 1) that the cost of public agents are less fully thrust upon them, "From this theorem one would expect that public agencies would, in order to offset or counterbalance this reduced cost bearing, impose special extra costs or constraints on public employees or agents." (p. 146). We conjecture that the corporatization of SOEs imposes additional constraints on managers and results in more effective information and incentive mechanisms which improve the performance of these enterprises. However, one should not interpret our results as indicating that ownership restructuring of SOEs, such as privatization, is unnecessary. On the contrary, we showed that corporatization can leave unsolved problem.¹¹ To what extent can these problems be solved via privatization is a question for future research. Our results also have implications for government revenue generation strategies. Corporatization could increase the value of the SOEs, thus enabling governments to generate larger revenues from eventual SOE privatization.

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¹¹ As Alchian recognizes, in some instances it is not easy or possible to impose extra corrective constraints as offsets on public agents (p. 147).

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