

## Managerial ownership and the role of privatization in transition economies: The case of China

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Published online: 8 May 2010  
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**Abstract** Within transition economies, a popular tactic for revitalizing large and inefficient stateowned enterprises (SOEs) is to privatize them. Unfortunately, the empirical evidence related to this issue is equivocal. This study, therefore, explores more deeply what the relationship may be between privatization efforts of SOEs and their financial performance in transition economies. Specifically, we seek to better understand whether privatization reforms per se, or other corporate governance mechanisms that complement or substitute for this effort, are most effective. Using a panel sample of Chinese state-owned public firms over an eight year period from 1999 to 2006, we find that managerial ownership has a more significant impact on firm performance than privatization does. This finding suggests that internal incentives to managers may be more effective than external market mechanisms in economies transitioning from centralized planning to market control. Our results are robust using a wide variety of performance measures and different model specifications.

**Keywords** Privatization · Managerial ownership · Agency perspective · Institutional environment · Economic transition · China

Standing at the core of their economies, state-owned enterprises (SOEs) have had an unsatisfactory performance spanning different country settings and time periods (Li, Ouyang, & Zhou, 2005). Extant literature has demonstrated both theoretically and empirically that ownership structure plays a crucial role in shaping firm strategy and performance, and considers ownership reform as a key element in economic

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An earlier version of this paper was presented at the Northeast regional meeting of the Academy of International Business in Portsmouth, NH, in 2007. We would like to thank three anonymous reviewers at the *Asia Pacific Journal of Management* and the Senior Editor, Michael Carney, for their constructive and thoughtful comments, which substantially improved the quality of this paper.

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transition (e.g., Grossman & Hart, 1986; Li et al., 2005; Park, Li, & Tse, 2006; Peng, Tan, & Tong, 2004; Tan, 2002). Due to factors such as bureaucratic interference, multiple conflicting objectives, and weak incentives, state ownership is frequently regarded as the root of SOE inefficiency, which not only inhibits a firm's ability to develop market-oriented capabilities but also diverts market resources away from efficient allocation (e.g., Boardman & Vining, 1989; Clarke, 2003; Megginson, Nash, & Van Randenborgh, 1994; Shleifer, 1998). Given the widespread assumption about the superiority of private ownership over government ownership, a large number of SOEs have been privatized during the past decades in many transition economies. Nevertheless, decades of ownership reforms have not seen clear performance improvements in the aftermath of privatization in those contexts (e.g., De Castro & Uhlenbruck, 1997; Djankov & Murrell, 2002; Megginson & Netter, 2001), and a growing body of research even suggests a positive view of state ownership (e.g., Peng et al., 2004; Sun, Tong, & Tong, 2002; Tan, 2002). Therefore, further research is needed to better understand why this is the case.

The failure of privatization research to demonstrate consistent findings has raised the question of whether privatization is an incomplete or contingent solution to the problem of SOE inefficiency within a transition context. The empirical inconclusiveness concerning the impact of privatization gives rise to the first motivation of this study. By addressing the effectiveness of privatization in a contingency framework (contingent on the institutional development of a country), this paper offers a possible reconciliation to the conflicting empirical findings that have been plaguing the literature. Thus, in an environment with limited investor protection, ineffective legal enforcement, and ill-functioning information infrastructure, the transfer of state ownership to private shareholders may not necessarily result in significant improvements in corporate governance and firm performance.

Apart from the concern of institutional frameworks, another prevailing challenge to privatization ineffectiveness is its failure to address all aspects of agency problems. In a context filled with unchecked opportunistic behavior, agency theory prescribes the use of incentive alignment, such as managerial ownership, for addressing the problem of moral hazard (e.g., Laffont & Martimort, 2002). In particular, it is argued that properly designed incentive systems may promote self-monitoring of the agents, and, hence, effectively mitigate agency costs. Despite this rather clear and strong theoretical argument, empirical evidence to date has been inconclusive in documenting the impact of managerial incentives on SOE performance. For example, while Shirley and Xu (2001) find that performance-based contracts for SOE managers are negatively related to SOE productivity for over 500 SOEs in China, their results are not applicable to a subset of firms with "well designed" incentive contracts. Therefore, we are also interested in exploring the true relationship between managerial incentives and SOE efficiency in an environment filled with rampant agency problems.

Our empirical investigation is conducted using a panel sample of Chinese state-owned public firms over an eight year period from 1999 to 2006. China has been chosen as the research focus of this study for three reasons. First, interest in understanding firm strategy and performance in China has risen commensurately with China's economic development and its increased integration with the world economy. As the largest and one of the most important transition economies in the

world, the Chinese context may also enable researchers to better understand the evolution of competitive dynamics in other emerging economies (Peng et al., 2004). Nevertheless, how to revitalize large, inefficient state enterprises in China is still an open and pressing question. Despite the worldwide privatization wave, many transition economies still retain substantial corporate shareholdings in their state coffers. According to Zou and Adams (2008), state ownership represents about one-third of total shares outstanding in China even after decades of ownership reforms. As such, the strategic dynamics of Chinese SOEs still merits our attention.

Second, robust management theories that are particularly applicable to Asia Pacific countries are best achieved by addressing the unique characteristics of these countries with globalization-related influences (Bhagat, McDevitt, & McDevitt, 2010). Unlike countries in Central and Eastern Europe, the Chinese government has proceeded cautiously in the privatization process to ensure that the control power of SOEs does not fall into the hands of private investors, at least in the short run. As a consequence, a large number of enterprises still retain a substantial portion of state ownership, even though they are officially “privatized.” Since the impact of ownership has to be grounded in a context whereby firms of different ownership types coexist and compete (Tan, 2002), the gradual privatization process and the transitional nature of Chinese firms (from state to private control) present a perfect environment to examine the impact of ownership structure and trace the effectiveness of privatization. Given that ownership structure changes over time, the study of privatization in a dynamic framework is needed, especially in transition economies.

Finally, as the original purpose of the Chinese stock market was to help state enterprises raise funds, the majority of publicly listed Chinese firms are either newly or partially privatized SOEs. This unique feature of Chinese publicly listed firms provides us with an ideal laboratory in investigating the impact of state versus managerial ownership using relatively standardized stock market archival data, where the issues of data comparability and reliability are of less serious concern.

The remainder of this paper proceeds as follows. The next section offers a brief discussion on the limitations of privatization in weak institutional environments and a conceptual analysis of how and to what extent well-designed internal managerial incentives can be utilized to substitute for outright privatization. We then provide a brief description of the sampling procedure and model specifications. Empirical results are reported followed by concluding remarks.

## Conceptual framework and hypotheses

### Limitations of privatization

Privatization clearly offers benefits to national and international economic reforms (e.g., Boubakri & Cosset, 1998; Dewenter & Malatesta, 2001; Megginson et al., 1994; Megginson & Netter, 2001). Nevertheless, decades of privatization initiatives of SOEs in such transition economies as China, Russia, Eastern Europe, and Vietnam have not seen clear or significant performance improvements (e.g., De Castro & Uhlenbruck, 1997; Djankov & Murrell, 2002; Megginson & Netter, 2001). Some researchers even document a positive relationship between government

ownership and firm performance (e.g., Peng et al., 2004; Sun et al., 2002; Tan, 2002). The failure of privatization research to demonstrate consistent findings has raised the question of whether privatization is an incomplete or contingent solution to the problem of SOE inefficiency within a transition context.

In this study, we argue that in such transition economies with relatively weak institutional frameworks, there might be some alternative policies (other than privatization) that can be taken to enhance SOE competitiveness. We base this suspicion on two interrelated literatures: the institutional and the agency perspectives.

First, the institutional framework in transition economies may be too weak to sustain effective privatization (e.g., Peng & Heath, 1996; Spicer, McDermott, & Kogut, 2000; Uhlenbruck, Meyer, & Hitt, 2003). Carney, Shapiro, and Tang (2009) characterize emerging markets as institutional voids with undefined or unenforceable property rights and underdeveloped soft market infrastructures.<sup>1</sup> In such an environment with limited investor protection, ineffective legal enforcement, and ill-functioning information infrastructure, the transfer of state ownership to private shareholders may not necessarily result in significant improvements in corporate governance and firm performance. A synthesis of previous studies documents a varying degree of privatization effectiveness across different institutional environments. Privatization is found to play a significant role in cultivating corporate efficiency in developed countries (e.g., Dewenter & Malatesta, 2001; Megginson et al., 1994); the impact is less clear in moderately-developed economies (e.g., Boubakri & Cosset, 1998; Claessens & Djankov, 1999; Frydman, Gray, Hessel, & Rapaczynski, 1999; Lizal, Singer, & Svejnar, 2001); the evidence is inconclusive at best, or even negative in former Soviet countries, such as Russia and China, where the institutional frameworks are extremely weak (e.g., Black, Kraakman, & Tarassova, 2000; Jefferson, 1998; Sun & Tong, 2003; Wang, Xu, & Zhu, 2004). In sum, the positive association between privatization effectiveness and institutional development implies that mass privatization will result in a less favorable outcome if the institutional framework is not mature enough to handle it.

In addition, La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998) point out that the extent to which a country's laws protect investor rights and the degree to which those laws are enforced play a crucial role in shaping the ways corporate governance evolves in a country. In their study, concentrated ownership is considered a reasonable response to a lack of investor protection in weak institutional environments. As such, state block shareholding may not necessarily be negative per se in a transition economy.

Moreover, the transfer of state ownership to private shareholders may not be an effective governance mechanism in addressing agency problems that emerge after privatization. Because of the distinct nature and severity of agency problems in transition economies (e.g., the specter of principal–principal conflicts), simply duplicating developed countries' privatization processes will not generate considerable success in transition contexts. In China, for example, researchers find exacerbated agency problems and deteriorating firm performance after progressive ownership reforms (e.g., Qian, 1996; Zhu, 1999).

<sup>1</sup> Soft market infrastructure is comprised of various organizations that facilitate market efficiency, such as technical standards committees, consumer watchdogs, and financial institutions (e.g., Carney et al., 2009).

Apart from conventional agency problems, the weak investor protection and ill-functioning legal systems in transition economies also create a “unique” agency problem in newly privatized firms whereby minority shareholders are not protected as well as majority owners (Dharwadkar, George, & Brandes, 2000). Although privatization can eliminate the plundering of state assets, it cannot prevent controlling shareholders and/or corporate managers from plundering private assets. This has been shown to be the case by the failure of the former Soviet Union’s privatization scheme: insiders stripped assets knowing that newly generated minority shareholders had neither information transparency nor enforcement capability to prevent such opportunistic behavior (Jefferson, 1998). Based on the above discussions, the following hypothesis is developed:

**Hypothesis 1** The transfer of state ownership to private shareholders (i.e., privatization) will be negatively related to firm performance in a transition economy such as China, where the institutional framework is too weak to ensure effective governance.

#### Moral hazard—the root of SOE inefficiency

In a world filled with agency relationships, where one party (the agent) is authorized to act on behalf of another (the principal), an agency problem presents itself whenever the divergence of interests between involved parties is coupled with information asymmetry. In general, there are two kinds of agency problems: *moral hazard* and *adverse selection*. Due to the divergence of interests, the agents may not put full effort into their delegated tasks under imperfect monitoring; they often pursue their private interests at the expense of the principal. This is the so-called “moral hazard” problem (Eisenhardt, 1989), which is the major agency problem facing China’s SOEs.

When reflecting on the specific characteristics of moral hazard facing China’s SOEs, it is important to understand the differences in managerial behaviors between Chinese SOEs and other modern organizations.<sup>2</sup> First, China’s SOEs suffer from more constrained compensation schemes as compared with organizations in other economies. Under central planning, Chinese SOEs were assigned certain quantities of capital and labor to meet a given output target. Because firm profitability is not included in the objective function of the management, there is little, if any, incentive for managers to operate SOEs as profit maximizing organizations. Even though profits have entered the managers’ objective function after a series of reforms, the incentives to maximize profits and economize the use of inputs remain weak if the weight assigned to managerial effort is insignificant (Chow, 2002). Notably, it has been documented that efficient wage payments are not widely utilized from a profit-maximization perspective in China (e.g., Coady & Wang, 2000; Fleisher, 2001), and that significant losses have been generated due to the use of poorly designed performance contracts with little or no incentive for managers to manage well (Shirley & Xu, 2001).

<sup>2</sup> Note that in the context of SOEs, the principal is the state or the public, while the workers, managers, and government officials all serve as agents.

Second, the extended information-transmission chain worsens moral hazard problems in SOEs, especially in transition economies. It is argued that information is more likely to be distorted as it moves up through an organization, especially in relatively weak institutional environments (Groves, Hong, McMillan, & Naughton, 1994). With a highly-layered organizational hierarchy, information in SOEs will inevitably become more distorted as it is transmitted from the production floor to managers, from managers to local or central governments, and from junior to senior government officials. The increased information asymmetry further exaggerates moral hazard in state enterprises. While privatization is effective in mitigating information distortion between SOEs and the government, it inevitably encounters another type of information asymmetry when communicating with newly generated minority shareholders after outright privatization.

Third, in a transition economy like China, both internal and external monitoring mechanisms are not well-developed to guard against agency problems (e.g., Carlin & Aghion, 1996; Khanna & Palepu, 1997). On the one hand, neither effective information collection nor monitoring can be sustained in the absence of independent accounting, auditing, and property evaluation institutions. On the other hand, the monitoring tasks of SOEs are often performed by government officials who themselves are agents in the principal-agent chain. As the compensation of government bureaucrats is not directly linked to the financial outcomes of the SOEs that they oversee, there is little, if any, incentive for government officials to monitor the operation of SOEs effectively (Cull & Xu, 2005; Sun & Tong, 2003). Instead, bribery and corruption are widespread, and local governments are often accused of collusion with SOE managers against the central authority in hiding profits and letting the revenues go untaxed (Qian, 1996). Additionally, there are often multiple principals involved with SOEs. As Shirley and Xu (2001) noted, sometimes the federal government has different interests than governments at the provincial and city levels. The divergence of interests by the principals at various government levels can create problems for agents within SOEs to pursue clear objectives.

With a highly-constrained compensation system, an extended information-transmission chain, limited monitoring, and multiple principals, moral hazard in Chinese SOEs tend to be more severe relative to corporations in other economies. As such, employees within SOEs can idle away the day after fulfilling some minimal quota (Groves et al., 1994), and managers can enjoy abnormally high non-pecuniary benefits that are rarely tied to efficiency goals (Gedajlovic & Shapiro, 1998). According to Qian (1996), the main benefits received by top managers in Chinese SOEs are not from salaries and/or bonuses, but from perks, such as larger apartments, private cars, as well as “corporate accounts” for business dinners, entertainment, and special gifts. In addition, an idiosyncratic agency problem facing China’s SOEs is the so-called state asset stripping (i.e., the transfer of state assets to non-state entities, such as individuals and collectives, at below fair market prices) (Qian, 1996). Although there is no precise figure on the magnitude of state asset stripping, it is estimated that about 30 to 100 billion RMB worth of state assets flow out of the state coffers per calendar year in China (*Guangming Daily*, 1993).

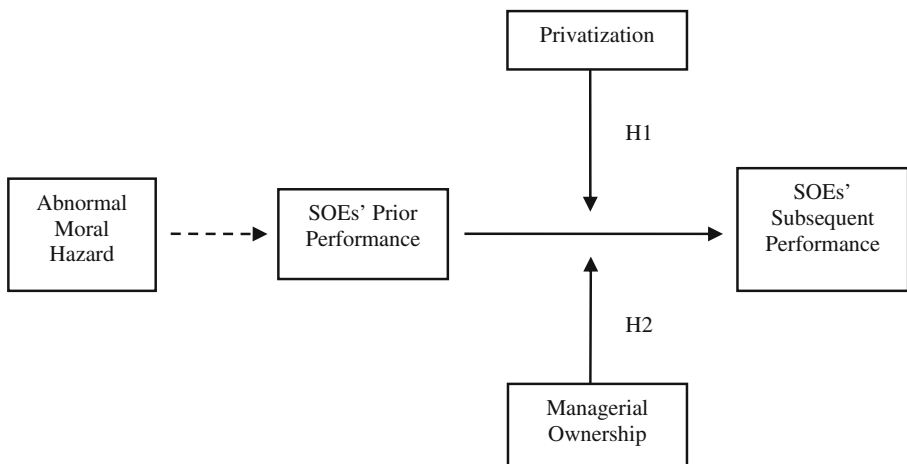
In a governance context filled with moral hazard, agency theory prescribes the use of incentives, such as performance-based compensation and managerial ownership (e.g., Laffont & Martimort, 2002). Empirically, a substantial body of research consistently

documents the power of managerial incentives. For instance, firm performance is found to improve significantly after management buyouts due to enhanced managerial incentives and corporate entrepreneurship (e.g., Kaplan, 1989; Singh, 1990; Wright, Hoskisson, Busenitz, & Dial, 2000; Zahra, 1995). Because the interests of corporate managers are more closely tied to firm profitability after incentive reforms, managers are encouraged to bear more risk, reduce non-pecuniary benefits, initiate necessary strategic changes, and, ultimately, enhance the company's ability to compete globally. In China, despite the fact that many enterprises are moving from a predominantly egalitarian compensation system to a more individualized one, contractual incentives are still far from utilized (e.g., Coady & Wang, 2000; Fleisher, 2001). Workers are universally paid flat wages and managers are paid specified salaries according to their bureaucratic rank rather than managerial effort (Mi & Wang, 2000). Therefore, an efficacious and explicit prescription in response to Chinese SOEs' inefficiency is to enhance the intensity of managerial incentives to meet its optimal level.

Because the overwhelming problem with respect to transition economy SOEs is their high agency costs resulting from highly obsolete management systems (e.g., Chow, 1997; Groves et al., 1994; Mi & Wang, 2000), and because the alignment of managerial incentives is an effective instrument on the subject of inducing desired action under moral hazard (e.g., Laffont & Martimort, 2002; Sappington, 1991), providing incentives to the management of publicly owned assets is the key to enable a higher level of firm performance (Chow, 1997). Based on the above discussions, the following hypothesis is derived:

**Hypothesis 2** The use of managerial ownership is more likely to lead to enhanced SOE performance in a transition economy than privatization initiatives, because incentive alignment more directly addresses underlying agency problems.

The theorized relationships are graphically depicted in Figure 1. As previously discussed, privatization is not a sufficient condition to overcome SOE inefficiency in



**Figure 1** Conceptual framework



transition economies with weak institutional frameworks and severe agency problems, whereas the use of internal incentives, such as managerial ownership, tends to be a more effective device in incentivizing SOE managers to pursue performance enhancements.

## Data and methodology

### Data description

Our empirical investigation is based on a panel sample of Chinese state-owned public firms over an eight year period from 1999 to 2006. We begin our analysis in 1999 for two reasons. First, Chinese public firms were required to formally release their corporate governance information starting in 1999. Second, managerial ownership in Chinese SOEs is documented to be at a negligible level of around 0.03% of total shares outstanding prior to 2000 (Zou & Adams, 2008). Therefore, the inclusion of pre-1999 data will add little, if any, insight into our analysis at the expense of data reliability.

This study uses panel data to control for potential survivorship bias and omitted-variables problems. As the purpose of this paper is to examine the impact of privatization versus managerial ownership on SOE performance, we first construct a sample of publicly listed state enterprises in accordance with their ownership structure in base-year 1999. In line with the literature, we use the percentage of common shares outstanding as the measure of ownership concentration and the percentage of shares owned by the state as a proxy for state ownership (e.g., Carney et al., 2009; Prowse, 1992). In this study, a firm is defined as an SOE if its state ownership exceeds 30%.<sup>3</sup> These (partially privatized) SOEs are then investigated in a closed panel over an eight year period from 1999 to 2006. In order to trace significant ownership changes over time, ownership structure is reevaluated annually.

In this study, both firm-level accounting data and stock market figures are compiled from the China Stock Market and Accounting Research Database (CSMAR). Using balanced panel data, we further require our sample firms to be continuously listed either on the Shanghai Stock Exchange (SSE) or the Shenzhen Stock Exchange (SZSE) during the entire sample period. In order to get a more robust analysis, firms with foreign ownership are excluded from the sample. After also eliminating firms with insufficient histories, firms with missing values on related accounting items, and those in financial industries, we are left with 357 purely domestic-listed non-financial SOEs, each of which has a continuous listing history over the entire sample period, from 1999 to 2006. To control for potential industry effects, we further classify the sampled firms into six broadly defined industry categories in line with the CSMAR industry code A.

Table 1 provides summary statistics of the sample, where Panel A focuses on the full sample and Panel B breaks down into two sub-groups (i.e., SOEs with and without managerial ownership). In order to address the impact of the Chinese stock

<sup>3</sup> To ensure that the empirical results are not driven by the threshold of how state enterprises are defined, alternative cutoff levels of 20% and 50% are also examined for robustness purpose. The results are statistically unaffected.



**Table 1** Summary statistics (1999–2006).

	Panel A: full sample (2499)	Panel B: by managerial ownership		Panel C: by time periods	
		MO>0 (324)	MO=0 (2175)	Before 2002 (1071)	After 2002 (1428)
SIZE	21.16 (0.95)	21.24 (1.10)	21.15 (0.92)	21.01 (0.86)	21.28 (1.00)
BM	2.826 (1.51)	2.801 (1.56)	2.830 (1.50)	2.847 (1.31)	2.811 (1.64)
LEV	1.591 (8.29)	1.893 (7.96)	1.546 (8.34)	1.660 (7.52)	1.539 (8.82)
SO	0.461 (0.19)	0.421 (0.19)	0.467 (0.19)	0.502 (0.17)	0.430 (0.20)
MO	0.0010 (0.02)	0.0074 (0.05)	0.0000 (0.00)	0.0009 (0.02)	0.0010 (0.02)
ROA	0.110 (0.08)	0.119 (0.08)	0.108 (0.07)	0.105 (0.07)	0.113 (0.08)
Q	0.755 (0.39)	0.758 (0.23)	0.755 (0.41)	0.705 (0.26)	0.793 (0.46)
RET	0.008 (0.51)	0.160 (0.65)	−0.015 (0.48)	0.012 (0.47)	0.004 (0.54)

Standard deviations are in parentheses.

market restructuring in 2001 and 2002, we further divide the sample into pre- and post-market-restructuring periods in Panel C. The variables are defined as follows: (1) *SIZE* is the size of the firm, calculated as the natural log of total assets; (2) *BM* is the book-to-market ratio, measured as the difference between total assets and total liabilities, divided by the stock market capitalization of the firm; (3) *LEV* is the leverage (debt-to-equity) ratio; (4) *SO* is state ownership, measured as the percentage of common shares owned by the state; (5) *MO* is managerial ownership, calculated as the percentage of common shares owned by top managers; (6) *ROA* is the return on assets, computed as earnings before extraordinary items and discontinued operations (EBXI) divided by total assets; (7) *Q* is the Tobin's Q ratio, calculated as the market value of equity minus the book value of equity plus the book value of assets, divided by the book value of assets (see, for example, McConnell & Servaes, 1990; Morck, Shleifer, & Vishny, 1988); and (8) *RET* is the annual holding period return on a firm's common stock (using continuously compounded return leads to consistent results).

As can be seen in Panel A, SOE managers generally own a relatively small portion of the company's common stock (about 0.1% of total shares outstanding) during the sample period. This result provides empirical support to previous studies that suggest a limited use of managerial incentives in Chinese SOEs (e.g., Coady & Wang, 2000; Fleisher, 2001; Mi & Wang, 2000). Upon closer comparison between SOEs with and without managerial ownership in Panel B, we find that, in general, SOEs with managerial ownership tend to be more leveraged (with a debt-to-equity

ratio of 1.89, as opposed to 1.55), more efficiently operated (with a ROA ratio of 11.9%, as opposed to 10.8%), and more likely to outperform the benchmark on the stock market (with an annualized holding period return of 16.0%, as opposed to -1.5%) than SOEs without managerial ownership. Moreover, Panel C indicates a reduced level of state ownership (from 50.2% to 43.0%) after the regulatory reforms of the Chinese stock market liberalization (i.e., the opening of the foreign B-share market to Chinese domestic investors on February 19, 2001, and the opening of the domestic A-share market to qualified foreign institutional investors (QFII) on November 5, 2002).

### Model specifications

To facilitate a more robust analysis, we investigate the impact of privatization versus managerial ownership on firm performance using stepwise regression models. To further ensure that the dependent variable, firm performance, is not sensitive to the way that it is measured, we consider three alternative proxies: return on assets, Tobin's Q ratio, and the firm's stock-market performance. Apart from the two variables of focus, that is, privatization (as measured by the change in state ownership) and managerial ownership, a number of widely-documented performance attributors are also included in the models as control variables. Such variables include firm size, book-to-market ratio, and leverage, where the book-to-market ratio and leverage ratio are included to control for growth opportunity and capital structure, respectively (e.g., Fama & French, 1992). These control variables are chosen based on previous studies, our data availability, and the nature of this study.<sup>4</sup> Additionally, the regressions are conducted with respect to each industry category to account for potential industry effects.

The inclusion of a number of control variables, however, may lead to the problem of multicollinearity. Therefore, we further conduct a correlation test for those variables to check for possible signs of collinearity (reported in Table 2). As can be seen in Table 2, even though there are a number of statistically significant relationships among explanatory variables, none of them exceeds  $r = 0.55$ . In addition to the correlation test, we also calculate the VIF statistics as a cross-check for this issue, where none of the statistics is greater than 2.0. Hence, the concern about multicollinearity does not appear to be warranted.

Apart from the issue of multicollinearity, endogeneity (or simultaneous bias) is another inevitable empirical challenge associated with studies that assess strategy performance. With the potential self-selection problem, observing a positive relationship between managerial ownership and firm performance does not necessarily lead to the conclusion that managerial ownership has a positive impact on firm performance. The positive link between the two variables may be attributable to the fact that more profitable firms are more likely to offer managerial

<sup>4</sup> To facilitate a more rigorous analysis, the regressions are also conducted with additional control variables. The results are not reported because these controls are never statistically significant across all model specifications and have no evident impact on our main results. Such control variables include industry concentration, sales growth, firm age, board size, and an exchange dummy (i.e., SSE listed or SZSE listed), where industry concentration and sales growth are used to control for demand conditions and product-cycle effects, and firm age and board size are used to account for firm-specific characteristics.

**Table 2** Correlation matrix (1999–2006).

	SIZE	BM	LEV	SO	MO	ROA	Q
SIZE	1.00						
BM	0.55 <sup>a</sup>	1.00					
LEV	−0.03	−0.08 <sup>a</sup>	1.00				
SO	0.12 <sup>a</sup>	0.11 <sup>a</sup>	−0.04 <sup>b</sup>	1.00			
MO	0.16 <sup>a</sup>	−0.02	−0.01	0.03	1.00		
ROA	0.09 <sup>a</sup>	0.17 <sup>a</sup>	−0.03	0.00	0.01	1.00	
Q	−0.29 <sup>a</sup>	−0.57 <sup>a</sup>	0.08 <sup>a</sup>	−0.14 <sup>a</sup>	−0.01	−0.13 <sup>a</sup>	1.00

<sup>a</sup> and <sup>b</sup> denote significance at 1% and 5% levels, respectively.

ownership. In the literature, a popular method to address this causality issue is to use instrumental variables. Given that both managerial and privatization practices remain largely unexplored in such a transition economy as China, the construction of instrumental variables seems to be very subjective. Hence, we use lagged independent variables in this study to control for potential endogeneity. In addition, the regressions are also conducted year-by-year on a rolling basis to control for potential macro-economic influences across different time periods, as noted by Short, Ketchen, Bennett, and du Toit (2006). Since the time-series effects are already taken into account, our empirical design is relatively immune to autocorrelation problems. In addressing potential industry effects, the regressions are conducted with respect to each industry group.<sup>5</sup> Specifically, the following models are estimated:

$$ROA_{i,t+1} = \lambda_0 + \lambda_1 MO_{it} + \lambda_2 \Delta SO_{it} + \lambda_3 (SO*MO)_{it} + \lambda_4 SIZE_{it} + \lambda_5 BM_{it} + \lambda_6 LEV_{it} + \varepsilon_{it} \quad (1)$$

$$Q_{i,t+1} = \alpha + \beta_1 MO_{it} + \beta_2 \Delta SO_{it} + \beta_3 (SO*MO)_{it} + \beta_4 SIZE_{it} + \beta_5 LEV_{it} + \varepsilon_{it} \quad (2)$$

The dependent variable in the regressions is either the ROA or the Tobin's Q ratio. The independent variables include firm size, *SIZE*; the book-to-market ratio, *BM*; the leverage ratio, *LEV*; privatization, or the change in state ownership,  $\Delta SO$ ; managerial ownership, *MO*; and an interaction term between state and managerial ownership, *SO\*MO*. As the purpose of this paper is to investigate the impact of privatization versus managerial ownership on firm performance, we focus mainly on the coefficient estimates of  $\Delta SO$  and *MO*. If privatization has a nontrivial positive impact on firm performance, then the coefficient estimate of  $\Delta SO$  should be negative and significant. If managerial ownership serves as an effective device in cultivating SOE efficiency, then the coefficient estimate of *MO* should be positive and significant.

Moreover, because the sample firms are all publicly listed, we are empowered to cross-check our results by investigating the impact of privatization versus

<sup>5</sup> As a robustness check, we also conduct the regressions using industry dummies. The results are statistically unchanged.

managerial ownership on the firms' stock market performance. In particular, the following models are estimated:

$$(R_{it} - R_t^F) = \alpha + \beta(R_t^M - R_t^F) + \varepsilon_{it} \quad (3)$$

$$AR_{it} = \beta_0 + \beta_1 DMO_{it} + \beta_2 DSO_{it} + \beta_3 (DSO * DMO)_{it} + \beta_4 SIZE_{it} + \beta_5 BM_{it} + \beta_6 LEV_{it} + \varepsilon_{it} \quad (4)$$

where  $AR_{it}$  is the risk-adjusted abnormal return of an individual firm at time  $t$ , or the *alphas* from the capital asset pricing model (CAPM);  $R_{it}$  is the annual holding period return on a firm's common stock at time  $t$ ;  $R_t^M$  is the corresponding market return at time  $t$ ;  $R_t^F$  is the risk-free rate (China's monthly yield of the three-month household deposit interest rate) at time  $t$ ;  $DSO$  is the state ownership dummy, which takes the value of 1 if share ownership exceeds 30% in a given year and 0 otherwise;  $DMO$  is the managerial ownership dummy, which takes the value of 1 for firms with managerial ownership and 0 otherwise; and  $DSO * DMO$  is the interaction term between state and managerial ownership. All the other variables are previously defined. Note that dummy variables of state and managerial ownership are utilized here so as to be consistent with previous studies in finance literature. Again, if privatization has a positive impact on sample firms' stock market performance, then the coefficient estimate of  $DSO$  should be negative and significant. If managerial ownership works as an effective countermeasure to SOE inefficiency, then the coefficient estimate of  $DMO$  should be positive and significant.

Note that in the above models, we assume a linear relationship between ownership and firm performance. Some researchers, however, suggest an inverted U-shaped relation between managerial ownership and firm value (e.g., McConnell & Servaes, 1990; Morck et al., 1988). The argument is that firm value increases as managerial incentives become better aligned with shareholder interests but, at some point, the marginal costs of managerial entrenchment will dominate the marginal benefits of alignment. In general, the entrenchment effects of managerial ownership start to dominate the alignment benefits when managerial ownership exceeds 5% (Morck et al., 1988). Given that Chinese SOE managers generally own a very small proportion of the company's common stock (about 0.1% of total shares outstanding) during our sample period, this nonlinearity concern does not appear to be warranted for our data. Moreover, some studies also document a nonlinear relationship between government ownership and firm performance (e.g., Dong, Putterman, & Unel, 2006; Sun et al., 2002). To address this concern, the cutoff levels of 20%, 30%, and 50% are utilized as cross-check measures in defining SOEs in this study, and the results are statistically unaffected. In addition, we also classify the sampled firms into the highest and lowest quartiles according to their state ownership and duplicate the regressions. Notably, the coefficient estimates on both the first and fourth quartile variables are highly consistent (results are not reported). These additional tests suggest that a linear specification may indeed correctly capture the relationship between state ownership and firm performance, as far as our sample is concerned.

## Empirical results

Table 3 reports the regression results concerning the impact of privatization versus managerial ownership on ROA. Here, lagged independent variables are utilized to control for potential endogeneity, and the regressions are conducted within each industry category to account for industry effects.

As Table 3 indicates, managerial ownership has a significant positive impact on SOE performance as measured by ROA ( $t = 1.80$  and  $1.92$  in Models 2 and 4, respectively), whereas privatization, or the change in state ownership, has an insignificant impact on SOE performance regardless of how the model is specified. Moreover, additional confidence is gained in documenting a positive and significant interaction term in Model 5 ( $t = 2.06$ ). This finding implies that the positive impact of managerial ownership on firm performance is not contingent upon the process of privatization. Overall, the results suggest that the use of internal incentives, in the form of managerial ownership, is a more effective remedy to SOE inefficiency as opposed to outright privatization (both Hypotheses 1 and 2 are supported).

These findings, however, may be influenced by measurement approaches. To ensure that the dependent variable, SOE performance, is not sensitive to the way that it is measured, we further consider the Tobin's Q ratio as an alternative measure of firm performance. Again, the regressions are conducted using lagged independent variables and with the control of industry fixed effects. The empirical results are reported in Table 4.

Consistent with the empirical findings in Table 3, regression results in Table 4 further confirm the positive relationship between managerial ownership and firm value ( $t = 6.38$  and  $6.26$  in Models 2 and 4, respectively) as well as the empirical

**Table 3** Impact of privatization vs. managerial ownership on firm performance.

	Model 1	Model 2	Model 3	Model 4	Model 5
$\alpha$ Estimate	0.059 (1.29)	0.043 (0.86)	0.073 (1.15)	0.067 (1.04)	0.045 (0.91)
MO		36.80 <sup>b</sup> (1.80)		37.84 <sup>b</sup> (1.92)	
$\Delta$ SO			-0.020 (-0.65)	-0.012 (-0.40)	
MO*SO					76.12 <sup>a</sup> (2.06)
SIZE	0.002 (0.86)	0.002 (0.94)	0.002 (0.47)	0.001 (0.40)	0.002 (0.95)
BM	0.001 (0.58)	0.002 (1.00)	0.001 (0.63)	0.002 (1.12)	0.002 (0.84)
LEV	0.004 (1.50)	0.005 <sup>b</sup> (1.92)	0.002 (0.84)	0.004 (1.68)	0.006 <sup>b</sup> (1.97)
R Squared	0.129	0.172	0.177	0.216	0.171

The  $t$ -values are in parentheses.

<sup>a</sup> and <sup>b</sup> denote significance at 5% and 10% levels, respectively.

**Table 4** Impact of privatization vs. managerial ownership on firm value.

	Model 1	Model 2	Model 3	Model 4	Model 5
$\alpha$ Estimate	2.922 <sup>a</sup> (5.38)	2.966 <sup>a</sup> (5.44)	2.909 <sup>a</sup> (5.43)	2.953 <sup>a</sup> (5.49)	2.966 <sup>a</sup> (5.44)
MO		0.670 <sup>a</sup> (6.38)		0.670 <sup>a</sup> (6.26)	
$\Delta$ SO			-0.053 (-1.62)	-0.051 (-1.58)	
MO*SO					1.194 <sup>a</sup> (6.48)
SIZE	-0.103 <sup>a</sup> (-4.24)	-0.105 <sup>a</sup> (-4.31)	-0.103 <sup>a</sup> (-4.26)	-0.105 <sup>a</sup> (-4.33)	-0.105 <sup>a</sup> (-4.31)
LEV	0.010 <sup>b</sup> (2.76)	0.010 <sup>b</sup> (2.76)	0.010 <sup>b</sup> (2.77)	0.010 <sup>b</sup> (2.77)	0.010 <sup>b</sup> (2.76)
R Squared	0.112	0.122	0.123	0.124	0.122

The *t*-values are in parentheses.

<sup>a</sup>, <sup>b</sup>, and <sup>c</sup> denote significance at 1%, 5%, and 10% levels, respectively.

insignificance of privatization. Moreover, the interaction term between state and managerial ownership in Model 5 is positive and statistically significant ( $t = 6.48$ ), indicating that the positive impact of managerial ownership on firm value is unconditional upon the process of privatization. In line with previous studies (e.g., Fama & French, 1992), firm size is found to have significant negative impact on firm value. In addition, leverage appears to have a nontrivial positive impact on firm value, suggesting that corporate creditors may serve as efficient external monitors guarding against inefficient operation.

To facilitate a more rigorous analysis, the firm's stock market performance is further investigated as an additional indicator of firm performance. The empirical results are reported in Table 5. In line with our previous findings, regression results in Table 5 indicate that firms with managerial ownership are more likely to generate higher-than-market risk-adjusted stock returns. The estimates of *DMO* are positive and statistically significant in both model specifications ( $t = 7.33$  and  $7.07$  in Models 2 and 4, respectively). While state ownership appears to have a significant negative impact on a firm's stock-market performance, the inclusion of *DSO* in the model has no evident influence on the statistic significance of managerial ownership. Additionally, the interaction term between state and managerial ownership is positive and significant ( $t = 4.89$ ). These results suggest that the impact of managerial ownership tends to dominate the impact of privatization in inducing better stock performance.

The empirical findings with respect to all three performance measures suggest a consistent story: the transfer of state ownership to private shareholders (i.e., privatization) has little, if any, statistically significant impact on firm performance, whereas the use of internal incentives, in the form of managerial ownership, serves as an effective and unconditional device in cultivating corporate efficiency as far as Chinese SOEs are concerned.

**Table 5** Impact of privatization vs. managerial ownership on stock performance.

	Model 1	Model 2	Model 3	Model 4	Model 5
$\alpha$ Estimate	-0.877 <sup>b</sup> (-2.19)	-0.800 <sup>b</sup> (-2.02)	-0.731 <sup>c</sup> (-1.83)	-0.671 <sup>c</sup> (-1.69)	-0.833 <sup>b</sup> (-2.09)
DMO		0.338 <sup>a</sup> (7.33)		0.326 <sup>a</sup> (7.07)	
DSO			-0.204 <sup>a</sup> (-4.56)	-0.183 <sup>a</sup> (-4.13)	
DMO*DSO					0.251 <sup>a</sup> (4.89)
SIZE	0.042 <sup>b</sup> (2.15)	0.036 <sup>c</sup> (1.86)	0.043 <sup>b</sup> (2.19)	0.037 <sup>c</sup> (1.91)	0.039 <sup>b</sup> (1.99)
BM	-0.022 <sup>c</sup> (-1.79)	-0.020 (-1.61)	-0.018 (-1.42)	-0.016 (-1.28)	-0.023 <sup>c</sup> (-1.81)
LEV	-0.001 (-0.76)	-0.002 (-0.87)	-0.002 (-0.78)	-0.002 (-0.88)	-0.002 (-0.83)
R Squared	0.002	0.023	0.011	0.030	0.012

The *t*-values are in parentheses.

<sup>a</sup>, <sup>b</sup>, and <sup>c</sup> denote significance at 1%, 5%, and 10% levels, respectively.

It is sometimes argued, however, that mere statistical significance of coefficient estimates is not enough to imply significant impact (Cohen, 1994). Therefore, the model fits of those stepwise regressions are further examined to ascertain the exact contribution of each independent variable. The analysis of model fits in all model specifications document a consistent pattern: there is a clear improvement in R-squared values when managerial and/or state ownership are included. As indicated in Table 3, the variance explained increases from 12.9% to 17.2% (17.7%) when managerial (state) ownership is added individually, and it rises to 21.6% when both managerial and state ownership are considered. In sum, the analysis of model fits provides additional support to our central argument.

## Concluding remarks

This paper challenges the prevailing belief in privatization as the first step in making SOEs more competitive in all contexts. Because privatization is not likely to work until the institutional framework is mature enough to handle it, it should not be the first reform taken in weak institutional environments. On the contrary, as indicated in this paper, the use of internal managerial incentives, such as managerial ownership, tends to be more effective in cultivating SOE efficiency in such contexts.

For the incentive system to transcend the weak institutional environment that causes the failure of privatization in transition economies, however, a series of principles has to be enforced along with managerial incentives. First, in an optimal incentive contract, all information must be utilized to reduce the aggregate error in



measuring performance. This is often referred to as the *informativeness principle*. Comparative performance evaluation is a typical example of this (Gibbons & Murphy, 1990). The idea is that, because the measured firm performance is always affected by some random factors beyond the agent's control, it is often beneficial to use some instrument to filter out a part of uncertainty from the agent's compensation. For the method of comparative performance evaluation to serve as an effective device in extracting information, however, it is important to ensure the comparability across business entities. In transition economies, owing to the legacies of pre-reform policies and the distortions in macroeconomic environments, SOEs often encounter a number of idiosyncratic burdens, which clearly put them in inferior positions in competing with non-state enterprises. In addition, because each SOE was established at a different time, the burden impact, such as redundant workers, on each SOE is also unique. Thus, for the incentive scheme to work, it is crucial to remove the policy burdens of SOEs and to "provide them with a level playing field first" (Lin, Cai, & Li, 1998).

Second, it is often possible for the principal to improve monitoring at some cost, and the monitoring intensity should be set in accordance with the level of managerial incentives, namely, the *monitoring intensity principle*. As transition economies have more uncertainty and fewer monitoring instruments than do developed economies, it is more crucial for the government to enhance SOE transparency as a part of incentive reforms. Specifically, it is important to shorten the hierarchy of the SOEs' controlling system to reduce information distortion, to spend more resources in establishing new monitoring instruments, such as independent accounting, auditing, and property evaluation institutions, to reduce replenishment and harden the budget constraints, and to allow bureaucrats to share in SOE profits so as to motivate their monitoring incentives.

Third, if a manager is expected to perform some activity for which performance cannot be easily measured, then incentive compensation cannot be applied to any other activities that the manager controls, namely, the *equal compensation principle*. This principle is important for transition economy state enterprises, since it is often the case that SOE managers in such contexts have to consider not only profit maximizing tasks, but also political missions, such as social welfare and unemployment (Qian, 1996). In this case, the principle implies that incentive pay cannot be applied to activities other than firm performance, such as the employment level.

Overall, this study contributes to the literature in at least three ways. First, despite strong theoretical supports for privatization (e.g., Grossman & Hart, 1986; Li et al., 2005; Park et al., 2006), empirical evidence is inconclusive in documenting the financial outcomes of this form of ownership change (e.g., De Castro & Uhlenbruck, 1997; Djankov & Murrell, 2002; Megginson & Netter, 2001). Recent studies point out that a major deficiency of comparative Asia-related studies is that they tend to unquestioningly adopt "established" Western paradigms and models without checking their underlying assumptions (e.g., Fang, 2010). This study challenges the rather simplistic argument made in the literature about the superiority of private versus public ownership in the absence of consideration for the institutional context of the firm in question. By analyzing the effectiveness of privatization in a contingency framework (contingent on the institutional development of a country),

this paper offers a possible reconciliation to the conflicting empirical findings that have been plaguing the literature. For instance, the potential conflict between the findings of our study and those of Boardman and Vining (1989) can be reconciled relatively easily within this contingency framework. While Boardman and Vining (1989) document a negative impact of both state and mixed ownership on firm performance in many developed countries, such as Italy, France, Canada, Germany, Britain, and Japan, their results are not applicable to a transition context, such as China, based on the contingency view discussed in this paper.

Second, recent studies of Chinese firms indicate that government ownership has a significant impact on the environment-strategy configuration (Tan, 2002), a firm's strategic group membership (Peng et al., 2004), the relationship between managerial ties and firm performance (Peng & Luo, 2000), and the business group effects on firm performance (Carney et al., 2009). Given the multiple roles played by government ownership in China, there is a growing and pressing interest in exploring the exact relationship between government ownership and firm performance. Because the impact of ownership structure may be better evaluated by examining firms that undergo a discrete change in ownership, such as privatization (Denis & McConnell, 2003), the empirical findings of this study also shed light on the contemporary government ownership literature.

Finally, while the use of managerial incentives has been subjected to extensive research in the agency literature, empirical evidence to date has been mixed in documenting the impact of managerial incentives on SOE performance in China, and their empirical validity has been challenged due to various methodology issues. For example, Shirley and Xu (2001) fail to explore a positive relationship between managerial incentives and SOE productivity. However, by defining a firm as being under a performance scheme when "a contract that the manager had signed with the government" exists, their research design induces an inevitable sampling bias, owing to the inclusion of non-incentive-based and/or poorly-designed performance contracts. Their results, therefore, cannot be considered as conclusive evidence against well-designed managerial incentives. This paper offers more robust analysis to this debate.

Despite these provocative findings, some caveats should be noted. First, this study examines Chinese SOEs within a certain time period (i.e., 1999 to 2006). As the institutional environment varies considerably across different transition economies, future research may benefit from exploring other institutional contingencies that vary across transition economies. It would also be interesting to consider a longer time frame to determine the generalizability of the results. Second, since there are many forms of incentive alignment apart from managerial ownership that could address agency issues (e.g., Gottschalg & Zollo, 2007), studies concerning different forms of incentives such as stock options, variable compensation schemes, and termination agreements merit further attention. Finally, there might be some additional explanatory factors which could refine our findings. For example, Peng and Luo (2000) find that ties with government officials are more important for explaining firm performance in China than ties to other managers. As such, it would be interesting to conduct additional research to ascertain the relative importance of managerial incentives versus social ties with the government in future research.

Nonetheless, the present study offers new and relatively robust insights into the strategic success of transition economy SOEs. It challenges the prevailing faith in privatization as the first step in addressing transition economy SOE inefficiency and extends our understanding of how unique institutional features can shape the effectiveness of a particular strategy. Moreover, it offers some practical ideas for managers and governors in transition economies to consider as they seek to join and remain competitive in the global marketplace. In particular, an efficacious and explicit prescription in response to SOE inefficiency is to enhance managerial incentives. For this to work, it is crucial to remove the policy burdens of SOEs, to simplify the hierarchy of the controlling systems, to harden the budget constraints, and to allow both managers and bureaucrats to share more directly in results of their efforts. All these can be done without outright privatization.

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