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State ownership and listed firm performance: a universally negative governance relationship?

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Abstract Our analysis of more than 1,000 Chinese listed firms, 2003–2005, reveals a *positive* association between state ownership (SO) and firm performance. Arguably, if SO "causes" performance, it must be through the channel of agency cost. Therefore, our paper checks the robustness of this positive SO/performance finding by analyzing the role of agency cost as a mediator. It emerges that SO in the Chinese context may represent a strategic asset rather than an agency burden. However, it is not clear whether this is an outcome driven by efficiency or power.

Keywords Agency theory · China · Economic transition · Mediation · Performance · State ownership

1 Introduction

In recent years, transitional economies in Eastern Europe, China, and elsewhere have engaged in governance reform in the shape of market liberalisation, moving toward market-based systems. Consequently, ownership structures and firm performance have been changing with transition (Djankov and Murrell 2002), and researchers have been encouraged to embrace the unique institutional contexts of emerging markets when applying theories derived from developed countries (Hoskisson et al. 2000; Wright et al. 2005).

To assess the impact of reforms in transitional economies, researchers have generally employed agency theory to study the relationship between ownership structures and firm performance. From a traditional agency perspective, SO has been associated with the imposition of political objectives on firms and the exploitation of the firm's assets through what has been called the "grabbing hand"

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of the state (Shleifer and Vishny 1998). Indeed, a large body of global evidence reports a negative impact of SO on firm performance (see surveys by Djankov and Murrell 2002; Megginson and Netter 2001).

Besides these costs, however, high SO must always bring *some* benefits at least, and it is this balance of costs and benefits in different institutional circumstances that concerns us here. Certainly, studies from China have raised the possibility of the state providing a "helping hand" (Shleifer and Vishny 1998), or net "beneficial effects" (Tian and Estrin 2005).

Arguably, China is different from other transitional nations in two main respects. First, China has transformed its economy without political change, and the Chinese state still dominates the majority of privatised firms (Buck et al. 2008; Green and Liu 2005). Second, *guanxi*, i.e. the use by senior managers of personal networks, including links with the state, to facilitate resource allocations as an alternative to market sourcing, may help to overcome some of the weaknesses of Chinese corporate governance mechanisms (Chow 1997; Park and Luo 2001).

Unfortunately, however, any assessment of the state's influence on listed firms in China is always extremely difficult. In the Methodology section below, it is explained that measures of SO are taken from a database that relies on the published accounts of enterprises, but SO of course merely reflects past direct investments in the firm by the central state, and by provincial authorities, where it is impossible to distinguish between the two. Other important channels of state influence and control are also missing from SO as a measure of state control. For example, listed firms must have supervisory and executive boards, and local Communist Party secretaries are often represented on each board. In addition, boards are subject to influence from "administrative superiors" in the state ministries to which their firm is allocated (Lin 2004). Finally, transactions with "related parties" may conceal state influence (Sami and Zhou 2008). For example, a bank (or any supplier) may provide resources only if the firm's strategies conform with the state's priorities for the industry, or with a political need for job preservation.

In this context of the Chinese economy, where the state maintains high levels of SO in listed firms, we report a *positive* SO/performance association, 2003–2005, so we delve deeper behind this relationship to check its robustness. Most governance research is essentially *ownership* research, and ownership in no way "causes" firm performance by itself. Therefore, we attempt to determine the extent to which agency costs may provide the "missing link" in any association between Chinese SO and firm performance, and whether agency costs in Chinese firms are consistent with a positive SO/performance association.

We claim three theoretical contributions. First, we propose causal relations between SO, agency costs and firm performance, hypothesising that agency costs mediate the relationship between SO and firm performance. Second, complementing agency theory, we propose a strategic asset perspective to explain a possible positive role of SO in China in its relationship with firm performance. Specifically, our findings suggest that managers of Chinese listed firms may leverage a firm's high level of SO in their relationship with the government in order to improve firm performance (Peng and Luo 2000; Park and Luo 2001), providing a partial remedy for the weaknesses in the institutional governance mechanisms in emerging

economies identified by Dharwadkar et al. (2000). Consequently, agency cost is reduced and (as a result) firm performance is enhanced. Third, we initially utilise two established empirical measures of agency cost in testing the association between SO and firm performance: expense and asset utilisation ratios.

The next section of our paper presents the institutional context of Chinese SO and firm performance. In the light of these institutions, theory and hypotheses are presented, and a fourth section sets out our research methodology. Our results are explained in a fifth section. A final section, Discussion and Conclusions, derives implications from our study, while acknowledging its limitations and suggesting avenues for future research.

2 Institutional background

Various descriptive and analytical studies have established that private and privatised firms are generally more efficient than wholly state-owned enterprises (SOEs), particularly through corporate governance, quality-related innovation (Shleifer 1998), cost reduction and competition (Shirley and Walsh 2000). Therefore, privatisation has arguably been used by various governments in attempts to improve productivity, efficiency and the competitiveness of SOEs in transition economies (Megginson and Netter 2001; Shirley and Walsh 2000). However, the privatisation process can bring costs for some stakeholders. For instance, redundancies are an obvious concern of politicians, because they threaten political survival (Boycko et al. 1996).

In China's case, the privatisation of SOEs has indeed been associated with increased total factor productivity (Li 1997), improved incentives for decision-makers (Groves et al. 1994) and decentralised economic decision making (Lau et al. 2000). Enterprises totally owned by the state accounted for 37.9% of large and medium-sized enterprises in 2001, sharply down from 67.9% in 1994 (Green and Liu 2005).

Privatisation involved the establishment of two stock exchanges, Shanghai in 1990 and Shenzhen in 1991, each with separate A and B-share listings, of which more later. Listed companies on the two exchanges increased from only 10 in 1990 to 1,160 in 2001 (Wei et al. 2005), and, after a non-tradable shares reform in 2005, the number of listed companies increased to 1,430 by the end of February 2007. The ownership structure of listed firms has also changed through reforms favouring a less concentrated ownership structure: the percentage of firms in which the largest shareholder (usually the state) owned less than 35% increased by ten percent (from 42 to 52%), and the percentage of firms in which the largest shareholder owned more than 50% reduced from 33% in 2005 to 19% in 2007 (Jingu 2007).

Despite such reforms, however, the state is still usually the largest shareholder in privatised firms, holding a stable, dominant proportion of shares. For example, SO averaged 31% for the period 1991–2001 (Wei et al. 2005), and 34% for 1993–2003 (Jia et al. 2005). In our sample, the average for 2003–2005 is 35%, almost unchanged over the 3 years, and Liu and Sun (2005) estimate that such levels give the state effective control of over 80% of all listed firms. In this context of 35%

average SO after privatisation, which usually understates the degree of state control, the concepts of privatised firm and SOE are blurred and take on very specific Chinese meanings. In this paper, SOE simply refers to a firm that has not been through the privatisation process, and a privatised firm is one that is listed on a stock market, regardless of its level of SO.

It would appear that continuing high levels of SO after privatisation, and certainly effective state control through share ownership and other channels of influence, may have to be accepted as a stable feature of corporate governance in the Chinese context. Indeed, corporate governance is not a static structure but a process (Clarke 2007) determined by many political and institutional factors (Shleifer and Vishny 1997), and the state is inevitably involved in the corporate governance process. Thus, researchers may need to keep an open mind on its actual role in this process, rather than asserting a static, universal relation between SO and firm performance.

3 Theory and hypotheses

In this Chinese environment for firms, where state domination continues, most agency-based studies have generally argued for a negative SO/firm performance association, though some mixed evidence has recently appeared (e.g. Wei et al. 2005). Consistent with an open mind in relation to the role of the Chinese state, we contrast this usual agency approach with an alternative, strategic perspective on the association between SO and firm performance.

3.1 State ownership and agency problems

Chinese listed firms have often been the focus of studies of the association between SO and firm performance, probably because they are considered to be more market-oriented and freer from state interference than the SOEs that spawned them (Green and Liu 2005). Most of these studies assume a negative association, based on an agency perspective, where the smaller the fraction of the firm that a manager owns, the higher agency costs may be. Namely, managers may have an increased incentive to shirk, and this may have implications for ineffective cost containment and revenue generation.

Indeed, the senior managers of privatised SOEs in China typically acquire little or no stock ownership, but have significant controlling powers assigned by the dominant (state) shareholder (Zhang 2006). With the support/compliance of the managers, the "grabbing hand" of the state may divert resources away from the firm and its unmotivated managers (Shleifer and Vishny 1998; Zhang 2006), or force the firm to adopt decisions that are politically convenient, e.g. retaining employees at the expense of private shareholders (Green and Liu 2005). For example, firms with high SO may be pressed to over-invest, to retain surplus employees or to obtain inputs from other than least-cost suppliers (The Economist 2007) under the cloak of undisclosed "related party" transactions (Sami and Zhou 2008), leading to weak firm performance.

In addition, such "traditional" agency problems may be supplemented by the expropriation or "tunnelling" (Sami and Zhou 2008) of enterprise assets in principal-principal conflict, as firms in emerging markets suffer from weak external institutional control and ineffective internal corporate governance. Managers, aligned with the state as a majority shareholder, may aid the expropriation of assets from minority shareholders (Dharwadkar et al. 2000; Young et al. 2008).

Many empirical studies have produced results consistent with this agency approach. For example, SO is found to be *negatively* related to firm performance (ROA, see below; Xu and Wang 1999). This conclusion is then supported by Jia et al. (2005) in their study of firms cross-listed on the Hong Kong market. In addition, other researchers report that returns on subscribed equity are negatively related to SO (Xu and Wang 1999; Qi et al. 2000). Therefore, for theoretical and empirical reasons, we propose:

Hypothesis 1a: SO has a *negative* association with firm performance, i.e. lower SO through privatisation is associated with enhanced firm performance.

3.2 State ownership: a strategic asset?

However, an alternative theoretical perspective may produce hypotheses directly opposed to agency-based ones such as H1a. In theory, there is a good reason why SO may produce a net *positive*, not negative, association with firm performance, i.e. the state may provide a "helping hand" (Shleifer and Vishny 1998). Moreover, it has been suggested that this "helping hand" is likely to be prevalent in Chinese privatised firms (Li 1998), and SO has been found to have a positive association with firm accounting returns (Chen et al. 2006; Tian and Estrin 2005). The state's "helping hand" may explain these results, based on notions of either efficiency or state power.

In efficiency terms it is well-known that widely dispersed share ownership may generate free-rider and control problems as a result of the divorce of ownership and control. This implies that the state, in theory at least, may potentially act as a strategic block holder, protecting its investments by monitoring managers. Indeed, *if* the state is concerned with extracting tax revenues, based on a proportion of profit, or maximising the value of its stake for subsequent asset sales, it may press managers, just like a private blockholder, to make efficient decisions that raise firm value (Buck et al. 2008). In these circumstances, managers may even be recruited by the state for their ability to improve firm performance, rather than to fulfil social welfare responsibilities (Barberis et al. 1996). In China, managers are supposed to be removed from firms under government control if the firms suffer from losses over three consecutive years (Tian and Estrin 2005).

In power terms, the state may reinforce its strategic influence with its power and the provision of financial and political resources (e.g. subsidies) that may enhance reported firm performance (Shleifer and Vishny 1998). This strategic influence is well documented in Chinese SOEs and privatised firms (Gordon and Li 2003; Nolan 2001). Enterprise managers are found to exploit the strategic asset represented by

their relationships with the government in order to improve competitive advantage and firm performance (Peng and Luo 2000; Park and Luo 2001).

Thus, although Dharwadkar et al. (2000) identify the weaknesses of both internal and external governance mechanisms as a significant source of agency problems in emerging countries, studies suggest that *guanxi* networks help Chinese firms with high SO overcome the governance problems created by a weak institutional environment (Chow 1997; Park and Luo 2001; Allen et al. 2005).

In this context, Sun and Tong (2003) study 634 listed firms on the two stock exchanges 1994–1998 and find that SO has *no* statistically significant relationship with firm performance. In addition, Sun et al. (2002) find that SO is *positively* associated with firm performance 1994–1997, but the relationship has an inverted U-shape. With this theoretical and empirical possibility of SO constituting a strategic asset, in China at least, we therefore propose a hypothesis that competes with H1a:

> *Hypothesis 1**b**:* SO has a *positive* association with firm performance, i.e. higher SO retained after privatisation is associated with enhanced firm performance.

Thus, it remains to be determined empirically which of these competing negative (H1a) and positive (H1b) influences of SO dominates firm performance. Our study addresses these competing hypotheses.

However, we maintain that SO cannot itself "cause" firm performance, so we diverge from previous studies that assume a direct association between SO and firm performance. If the agency cost explanation of the relationship lying behind H1a is correct, then agency costs should increase and damage performance. Similarly, if H1b is correct, SO should be associated with lower agency costs and improved performance. From this perspective, a study of agency costs provides a check on the robustness of observed SO/performance relations.

3.3 Agency costs as mediator of the state ownership/performance relationship

Agency problems arise from the tendency for managers to have both the discretion and incentives to pursue strategies and practices that benefit themselves (and other employees) at the expense of shareholder value (Jensen and Meckling 1976). These agency problems may be manifested in the free cash flow under the discretion of managers, i.e. resources in excess of those required to finance all positive net-present-value projects (Lehn and Poulsen 1989) and its negative impact on performance. This managerial misuse of free cash flow, may involve choosing safe but unprofitable projects, making poor investment decisions, or exerting insufficient efforts including the shirking of responsibilities (Ang, Cole and Lin 2000; Jensen 1993). The costs also result from managers' seeking personal benefits at the expense of shareholders, i.e. excessive compensation packages and lavish perquisites, especially when managerial ownership is low (Ang et al. 2000).

The impact of such agency costs has already been studied in many different contexts, e.g. firm financial and portfolio restructuring (Gibbs 1993), management misuse of free cash flow (Mann and Sicherman 1991), takeovers (Jensen 1986), parent firms and their international joint venture strategies (Reuer and Miller 1997), stockholders' gains in going-private transactions (Lehn and Poulsen 1989), and firm

value in relation to announcement effects (Min and Prather 2001). So far, however, agency costs have not been applied to the SO/performance context.

The accounting and finance literatures have generated measures of agency cost initially developed by Ang et al. (2000). From these alternatives, two accounting measures—expense ratio (operating expenses to sales) and utilisation ratio (value of sales to assets)—have dominated measures of agency costs (e.g. Singh and Davidson 2003; Chen and Yur-Austin 2007; McKnight and Weir 2009), validated by subsequent studies. For example, Chen and Yur-Austin (2007) find that block ownership in general, and outside concentrated ownership in particular, reduces agency costs because they have a negative association with the expense ratio and a negative association with the utilisation ratio. In addition, Singh and Davidson (2003), use each of the two agency cost measures, supporting agency theory in that managerial ownership significantly mitigates principal-agent problems.

However, the measurement of agency costs does not always adequately reflect all sources of agency problem (Ang et al. 2000). This will be discussed further under Methodology, but the conceptual problem here involves the problem that measures of agency cost may themselves be measures of firm performance, or may be tautologically related to rate of return-based measures of firm performance. In general, we favour cost-based measures, since weak cost containment does not define firm performance. Indeed, weak return-based measures of firm performance may be attributable to insufficient (not excessive) spending by the firm on R&D or sales promotion, etc.

Therefore, as the first study attempting to apply agency cost measures to the SO/performance association, we employ each of the two measures developed by Ang et al. (2000). However, we favour the expense ratio, since the utilisation (sales/assets) ratio comes closest to being a return-based performance measure. However, we still check the robustness of our findings with the utilisation ratio measure (Ang et al. 2000).

This paper therefore examines agency cost as a variable in its own right, and tests the value of this distinction. It hypothesises and empirically tests the associations between SO and agency costs, between agency costs and firm performance, and examines the possibility of a mediating relationship between the three variables.

If there is such a relationship, it must meet the requirements for a mediation effect model (Baron and Kenny 1986). Our second pair of hypotheses therefore elaborates on the first pair (H1a, H1b). If the agency relationship (H1a) is correct:

*Hypothesis 2**a**:* Agency costs mediate the (negative) relationship between SO and firm performance, i.e. SO is positively associated with agency costs, and an increase in agency costs is associated with a decline in firm performance.

On the other hand, if a strategic perspective on the positive role of SO is correct, agency costs will again be found to mediate a positive (H1b) relationship between SO and firm performance:

*Hypothesis 2**b**:* Agency costs mediate the (positive) relationship between SO and firm performance, i.e. SO is negatively associated with agency costs, and lower agency costs are associated with an improvement in firm performance.

4 Methodology

4.1 Sample characteristics

We test our two pairs of hypotheses using a large database of companies traded on both of China's two stock exchanges for three consecutive years, 2003, 2004 and 2005. Information is obtained from the China Stock Market and Accounting Research (CSMAR) database developed by the Shenzhen GTA Information Technology Company Ltd, see http://www.gtadata.com. This sample does not include financial firms, and firms with less than 6 months of trading. Consequently, the hypotheses of the paper are tested with 1,154 firms from the financial year 2003, 1,247 firms from 2004, and 1,255 firms from 2005, with information originally obtained from published enterprise annual reports produced according to Chinese Generally Accepted Accounting Practices (GAAP).

We recognise the potential problems of using such Chinese secondary data. Chinese GAAP accounting has gradually converged on IFRS standards issued by the IASB, but important differences remain, certainly over the period covered by our study, 2003–2005. Some indication of the importance of these differences for accounting measures of firms' financial performance may be gleaned from the fact that shares are listed on three markets: (1) an A-market denominated in renminbi for PRC residents, where firms were required to submit Chinese GAAP-based accounts, and (2) a B-market in Shanghai denominated in US dollars for registered foreign investors, and (3) an H-market in Shenzhen denominated in Hong Kong dollars. On B and H-markets, firms had to submit IFRS-based accounts. After 2001, PRC residents were given access to B-markets and from 2003 registered foreign investors could access A-markets (Lin and Swanson 2008).

While A and B-markets were separated, many firms were listed on both A and B-markets, and were thus required to submit both GAAP and IFRS-based accounts. Thus, accounting researchers were able to compare earnings valuations under GAAP and IFRS standards. It was found that reported GAAP-based earnings 1994–1997 were on average 20–30% higher compared with IFRS accounts (Chen et al. 2002). Between 1999 and 2002, this earnings gap narrowed only slightly (Peng et al. 2008). After 2006 (i.e. after the period of our study) all listed firms were required to publish accounts in English that conformed with IFRS.

Besides the impact of different standards, however, as may generally be the case with regulations in transition economies, the degree of compliance with accounting standards may be more important than the standards themselves (Peng et al. 2008). The under-statement of earnings may be particularly prevalent where, as in China, annual reports are the basis for tax assessment (Norton 2008). In addition, however, institutional inertia could mean that accounting practices have been reformed only slowly after decades as a centrally planned economy, where the attainment of production quotas was the dominant measure of firm performance, and other accounting elements such as debt, depreciation and profit were considered to be bourgeois concepts (The Economist 2007).

Nevertheless, the degree of compliance with international standards such as IFRS has undoubtedly improved over time in terms of certain accounting dimensions

(Peng et al. 2008). However, it is quite impossible to estimate comprehensively the overall degree of compliance. For example, IASB requires the disclosure of the terms of "related party" transactions, but Chinese firms with high levels of SO continue to refuse to recognise state-controlled entities as related parties simply because they are state controlled (Deloitte 2006).

Non-compliance may be encouraged by state regulations that threaten firms with delisting if they report losses, and firm performance may be "massaged", particularly in firms with high SO (Lin 2004). Therefore, we remain healthily sceptical about the quality of Chinese accounting and capital market data in the face of differing accounting standards and non-compliance. Although we recognise the high quality of our chosen database (see Lau et al. 2007, p. 435), but it is founded on the published accounts of firms. Therefore, we look for dimensionally sensible results that may reflect favourably on the data, using agency cost as a mediating variable to check the robustness of our ownership/performance results.

4.2 Dependent variable

4.2.1 Firm performance (ROA and ROS)

ROA (the ratio of earnings before interest and tax to total assets, with profits and asset valuations taken from firm's annual accounts) is adopted here as a measure of firm performance. In addition, ROS (the ratio of earnings before interest and tax to total sales) was used as a second measure to test the robustness of our results.

It was decided to rely on Chinese accounting data on ROA and ROS because market-based performance measures may be flawed as alternative dependent variables in a number of ways:

- Although the period studied in this paper (2003–2005) represented a vibrant, thriving period for Chinese firms, it was a period of generally collapsing share prices. Between 2000 and 2004, real GDP increased by 53%, but the Shanghai and Shenzhen indexes fell by one-third each, down by almost 50% from their 2001 high (Lin 2004), reaching an 8-year low by June 2005. This may be partially explained by weak governance: concentrated State ownership and associated anti-minority shareholder devices, management-friendly boards, and an inactive takeover mechanism (Wang et al. 2004). Above all, collapsing share prices were achieved by threatened sell-offs of state shares but with continued majority state ownership in privatised firms (Wan and Yuce 2007). The Shanghai composite index fell from 2245 points in mid-2001 to 998 in mid-2005 (Wan and Yuce 2007).
- Chinese stock markets are thin because at least two-thirds of shares are non-traded, either because they are held by the state or by "legal persons", who are usually local government agencies arranging initial public offerings (IPOs) of shares (Wan and Yuce 2007).
- Shareholders cannot value firms accurately because valuation depends crucially on *guanxi* networks that are by definition unobservable and incapable of valuation (Park and Luo 2001).

- Despite a one-party system, firms' valuations are influenced by high political uncertainty and "…their survival depends on the unreliable market rules and policies set by the government." (Park et al. 2006, p. 134).
- The state imposes tight trading restrictions and there are fears that they may become tighter (Fernald and Rogers 2002, p. 419). For example, the state imposes limits on the extent of share price variations (Lin and Swanson 2008), and the state segments the markets into A, B and H markets, with controls that obstruct arbitrage (Lin and Swanson 2008). In addition, B-market firms are virtually all joint ventures set up for tax avoidance reasons rather than to raise firm value directly (Fernald and Rogers 2002, 419). Specific restrictions are placed by the state on IPOs of shares. For example, foreign investors must be "qualified institutional investors" and granted quotas of new issues (Lin and Swanson 2008). Quotas of share issues for firms are established after a complex interchange between the State Planning Committee (and other central bodies), ministries and the provinces (Wan and Yuce 2007). Each local securities body then feeds back its applications from specific chosen firms for central state approval. This process is subject to bribery and corruption (Wan and Yuce 2007). Issue prices are calculated according to a mechanical formula covering after-tax profits per share and price-earnings ratios (Wan and Yuce 2007). An IPO firm would be penalised if its realised earnings were 10% higher or lower than forecasted (Wan and Yuce 2007).
- There are few large private institutional investors in China capable of being strategic investors (Fernald and Rogers 2002, 419). For individual investors, there is a lack of alternatives to bank deposits and A-shares as investments (Fernald and Rogers 2002, 416) and this produces "…a high proportion of uninformed individual investors" (Wan and Yuce 2007, 370). Thus, it is argued that Chinese share prices respond to general market sentiment rather than to firms' fundamentals (Lin and Swanson 2008).

Despite all these reasons for doubting Chinese stock market values, various transformations of market-based rates of return (e.g. Tobin's Q) were used in (unreported) performance/governance regressions, but these produced insignificant and unstable results compared with accounting performance data, repeating the experience of other studies (e.g. Kato and Long 2006). Most China performance studies use ROA and ROS as performance measures (e.g. Park et al. 2006) and it is argued that the instability and arbitrary nature of share prices in China makes them unreliable measures.

4.3 Independent variables

4.3.1 State ownership (state)

After privatisation, state is defined as the percentage of shares owned by the state at a national and provincial level, where it is not possible to distinguish between the two. However, this measurement of SO may seriously *under-estimate* actual SO, and certainly state control, as a result of the influence of quasi-state institutions, dual

classes of shares, control pyramids, etc (Green and Liu 2005). Without precise estimates of these phenomena, however, researchers can only use the crude definition of SO proposed above. As measured, SO in our sample ranges from 0% (i.e. the SOE is fully privatised) to 85%, with an average of 36.5, 35.2, and 34% for 2003, 2004 and 2005 respectively. Thus, the reported levels of SO of around one-third in Chinese post-privatised firms still permits the state to dominate important decisions (Green and Liu 2005). Different categories of private owner (involving private blockholders, employees and individual private shareholders) could be expected to modify this conclusion. However, they showed no significant associations with our dependent variables. We therefore feel justified in focusing, initially at least, on the association between SO, agency cost and firm performance.

4.3.2 Agency costs

We use the expense ratio, i.e. operating expenses divided by total sales, to represent agency costs (Ang et al. 2000). As previously discussed, the ratio measures how effectively the firm's management contains operating costs, including excessive perquisite consumption and other direct agency costs. A supplementary measure, asset utilisation, is also used to complement the first measure. In contrast with the expense ratio, agency costs are determined to be high (low) if the utilisation ratio is low (high) (Ang et al. 2000; Singh and Davidson 2003).

4.4 Control variables

We control for firm size as the logarithm of total employees (logempl) to capture the potential economies of scale and scope accruing to large firms (Ang et al. 2000; Wei et al. 2005). We also control for the debt-to-equity ratio (LEV) because debt is considered to be associated with agency problems in emerging markets (Dharwadkar et al. 2000), and particularly with levels of SO in Chinese firms (Lu et al. 2005). In addition, we control for industry with dummies variables to capture the possible variations in the level of agency costs and state support across industries (Ang et al. 2000; Nee et al. 2007). There are 13 industries classified according to the guideline of the China Securities Regulatory Commission (see http://csrc.gov.cn). Therefore, excluding industry 9 (Finance and Insurance), there remain 12 industry dummies in our analysis (see Appendix presenting the industries according to their levels of SO).

4.5 Mediation

We test for H1a and H1b together with the hypothesised mediating effects H2a and H2b using the mediated regression technique (Baron and Kenny 1986). This paper has been described as a seminal contribution to methodology (Bontis et al. 2007) and their technique of testing for meditating effects has been widely applied (e.g. Sheng et al. 2005; Chen and Li 2005; Chen 2008).

Specifically, their recommended three-step process is as follows (see Fig. 1):

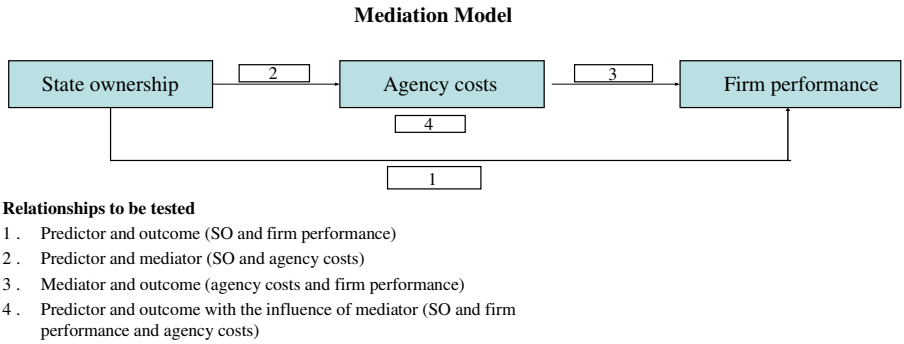

Fig. 1 Mediation model

1. Regress the outcome variable (firm performance) on the predictor variable (SO).
2. Regress the mediator variable (agency cost) on the predictor variable.
3. Regress the outcome variable simultaneously on the predictor and mediator variable.

Baron and Kenny (1986) propose that mediation is demonstrated when the following conditions are met:

1. There is a significant relationship between the predictor and the outcome variable at step 1.
2. There is a significant relationship between the mediator and the predictor variable at step 2.
3. The mediator is significantly related to the outcome variable at step 3.
4. The effect of the predictor on the outcome variable is less in step 3 than in step 1.

Full mediation occurs when the relationship between the predictor (state) and the outcome (ROA and/or ROS) becomes insignificant when the effect of the mediator is controlled for. Partial mediation occurs when the predictor effect is reduced, but is still significant when the mediator is controlled for.

4.6 Endogeneity

Endogeneity problems abound in governance-performance research, where the direction of causation may not be established, e.g. ownership may respond to performance (Chang 2003), and the relationship between ownership and performance may be spurious because of the existence of possible unmeasured variable(s). Specifically, if our model of the association between SO and firm performance (ROA) fails to include variable(s) that influence both the dependent variable (i.e. ROA) and the potential endogenous variable (SO) then the endogenous variable (i.e. SO) will be correlated with the error term and hence the traditional regression method will suffer from omitted variable bias. Accordingly, we choose the two-stage least square (2SLS) method for the instrumental variable (IV) to address

potential endogeneity. First, we choose individual share ownership as an IV for SO. Then, we perform 2SLS regression using the instrument.

We regress SO on the IV (individual ownership, including all other exogenous variables of the model: LEV, firm size and industry dummies) to estimate the reduced form for SO (Wooldridge 2003). This regression also provides us with its reduced residual, and indirectly helps us test the relevance of the instrument (Bascle 2008). Results show that individual ownership is negatively associated with SO, unsurprising since privatisation usually involves the transfer of SO to the private sector. More importantly, it shows that individual ownership may be a relevant instrument for SO (Bascle 2008). Following Wooldridge (2003), we regress firm performance (ROA) on the reduced residual to check whether the coefficient (δ) of the reduced residual is significantly different from zero. Results show that the null of $\delta = 0$ is rejected at the 10% level. Therefore, the results confirm that SO is endogenous but the endogeneity problem may not be serious, at least for our model.

Indeed, when we perform 2SLS with individual ownership as an instrument for SO, the estimates produced by 2SLS are not much different from those provided by OLS. More importantly, the standard error of the 2SLS estimate (for IV) is much larger than that of the OLS, and the 95% confidence interval range for the IV estimate is found to be very wide. This is the cost of using an IV estimate (Wooldridge 2003) when we consider SO as an endogenous variable. Considering this cost of using an IV estimate, we decided to report the OLS estimates because they are similar to those of 2SLS. However, we suggest that future research may utilise different methods to address endogeneity problems in the context of ownership after Chinese privatisation.

5 Results

As Table 1 shows, no high correlation among independent, control variables is found. In addition, the Variance Inflation Factor for the control variables is under

Table 1 Descriptive statistics and correlations

Variable	1	2	3	4	5	6	7
Mean	0.02	0.02	0.47	3.18	0.36	0.55	0.06
SD	0.06	0.39	0.19	0.56	0.26	0.37	0.05
Firm performance ROA	1.00						
Firm performance ROS	0.65***	1.00					
Debt-equity ratio (LEV)	−0.38***	−0.33***	1.00				
Firm size (logempl)	0.11***	0.06**	0.06**	1.00			
SO (state)	0.12***	0.11***	−0.10***	0.19***	1.00		
Agency cost (Utilisation ratio)	0.22***	0.08***	0.08**	0.26***	0.08***	1.00	
Agency cost (Expense ratio)	−0.15***	−0.20***	0.05	0.01	−0.12***	−0.07**	1.00

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

$N = 1{,}154$ (2003)

1.50, much smaller than the maximum limit of 10 specified by Neter et al. (1996) Consequently, multicollinearity does not appear to be a problem.

Table 2 shows the results of the hierarchical regression that we use to test the association between firm performance (ROA) and SO (state), with and without the mediating agency costs (Expense ratio). The controls (LEV, logempl and industry dummies) are also included. Regressions are carried out for each of the 3 years of our analysis.

Models 1, 4 and 7 show a significant association ($p < 0.01$) between LEV and logempl and firm performance (ROA), indicating that firm size is positively related to firm performance. However, leverage shows a negative association with firm performance, and these results are consistent for each of the 3 years 2003, 2004 and 2005. Three industry dummies (Mining, Transportation and Real Estate) show a significant (positive) association with firm performance in each of the 3 years. As with endogeneity, future research may usefully explore these results.

The variable state is added to Model 2 (2003), Model 5 (2004) and Model 8 (2005). In refutation of H1a in relation to the SO/firm performance association, the three models all show that state is positively related to ROA ($p < 0.05$) for the 3 years. Therefore, with ROA measuring firm performance, H1b is supported. The first condition for the mediating relationship is consequently satisfied. To check for possible discontinuities in the relation between SO and firm performance, we also consider the association between quartile levels of SO on firm performance. Thus, Fig. 2 shows an increase in mean values of ROA over the four ranges of SO.

In addition, Table 3 shows a significant relationship for each year between the predictor state and the mediator (expense ratio). SO (state) is found to be negatively related to agency costs (Expense ratio). Therefore, the second requirement of a significant association between the predictor state and the mediator (agency cost) is unambiguously satisfied. More importantly, consistent with a positive association between SO (state) and firm performance (ROA), SO is found to be negatively related to agency cost.

The second stage of the proposed mediating relationship is between agency cost (mediator) and performance (outcome). The measure of agency costs (expense ratio) is added to Models 3, 6 and 9, see Table 2. The three models show that expense ratio is negative and significantly ($p < 0.01$) associated with ROA for each of the 3 years, i.e. agency cost is negatively associated with firm performance. The third requirement for a mediating effect is therefore satisfied. More importantly, after expense ratio is added, state in the three models turns to be insignificant. This indicates a *full mediating effect* for agency costs on the association between SO and firm performance (*ROA*). Therefore, H2b is strongly supported: SO is found to have a positive association with firm performance (ROA) through its negative association with agency cost.

To check this finding, the second measure of agency cost (utilisation ratio), is substituted in the regressions, of course with the expected signs on the coefficients reversed. The results again confirm the mediating effect of agency costs on the relationship. In addition, similar techniques applied to ROS (not reported) as an alternative measure of firm performance produced the same results for the mediating role of agency costs on the association between SO and firm performance, thus

Table 2 Results of regression analysis for firm performance (ROA)

	2003			2004			2005		
Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Intercept	0.03***	0.03***	0.04***	0.04**	0.03**	0.05***	0.03**	0.03**	0.04***
Debt-equity ratio (LEV)	−0.11***	−0.11***	−0.11***	−0.14***	−0.14***	−0.14***	−0.22***	−0.22***	−0.22***
Firm size (logempl)	0.02***	0.01***	0.01**	0.02***	0.02***	0.02***	0.03***	0.02***	0.02***
Agriculture (ind1)	−0.02	−0.02	−0.02	−0.02	−0.02	−0.01	−0.03*	−0.03*	−0.03*
Mining (ind2)	0.10*	0.10*	0.10*	0.04***	0.04***	0.04***	0.05***	0.05***	0.05**
Manufacturing (ind3)	0.02	0.02	0.03	0.03	0.03	0.03	0.01	0.01	0.01
Utilities (ind4)	0.10*	0.10*	0.10*	0.01	0.01	0.01*	0.01	0.01	0.03
Construction (ind5)	0.02	0.02	0.02	0.02	0.02	0.02	0.04**	0.04**	0.04**
Transportation (ind6)	0.03*	0.03*	0.03*	0.02**	0.02*	0.02*	0.03*	0.03*	0.02*
Information technology (ind7)	0.01	0.01	0.01	0.00	0.00	0.00	−0.03*	−0.03*	−0.03**
Wholesale and retail (ind8)	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02*
Real estate (ind10)	0.03**	0.03**	0.03**	0.03***	0.03***	0.03***	0.06***	0.06***	0.05***
Social services (ind11)	0.02	0.02	0.02	0.02	0.02	0.02*	0.01	0.01	0.01
Media (ind12)	0.01	0.01	0.01	0.00	0.00	0.00	0.04	0.04	0.04
Conglomerates (ind13)	0.01	0.01	0.01	0.01	0.01	0.01	0.02*	0.02*	0.02*
SO (state)		0.01**	0.01		0.02**	0.01		0.02**	0.01
Agency cost (Expense ratio)			−0.13***			−0.13***			−0.15***
ΔR^2		0.01**	0.02***		0.01**	0.01***		0.01**	0.01*
F-value for ΔR^2		2.99**	21.02***		3.80**	17.85***		3.13*	16.69***
R^2	0.17	0.18	0.19	0.23	0.24	0.25	0.33	0.33	0.34
Adjusted R^2	0.16	0.17	0.18	0.22	0.23	0.24	0.32	0.32	0.33
N	1,154			1,247			1,255		

* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

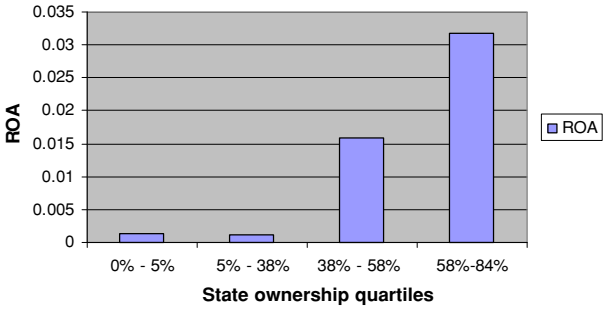

Fig. 2 Firm performance by SO quartiles for the sample of 3 years

Table 3 Results of regression analysis on agency cost (expense ratio)

	2003		2004		2005	
Variable	Model 10	Model 11	Model 12	Model 13	Model 14	Model 15
Intercept	0.06***	0.06***	0.08***	0.09***	0.09***	0.10***
Debt-equity ratio (LEV)	0.02	0.01	−0.01	−0.01	−0.01	−0.01
Firm size (logempl)	−0.00	0.00	−0.01	−0.01	−0.01**	−0.01**
Agriculture (ind1)	0.02	0.02	0.01	0.01	0.02	0.02
Mining (ind2)	−0.01	−0.01	−0.02	−0.01	−0.02	−0.02
Manufacturing (ind3)	0.00	0.01	0.01	0.01	0.01	0.01
Utilities (ind4)	−0.03**	−0.03**	−0.05***	−0.05***	−0.05***	−0.05***
Construction (ind5)	−0.03***	−0.03***	−0.04***	−0.04***	−0.05***	−0.05***
Transportation (ind6)	−0.02***	−0.02***	−0.04***	−0.04***	−0.04***	−0.04***
Information technology (ind7)	0.01	0.01	0.01	0.01	0.01	0.01
Wholesale and retail (ind8)	0.01	0.01	0.01	0.01	0.01	0.01
Real estate (ind10)	−0.01	−0.01	−0.01	−0.01	−0.02	−0.02
Social services (ind11)	0.01	0.01	0.00	0.00	0.01	0.01
Media (ind12)	0.01	0.01	0.01	0.01	0.01	0.01
Conglomerates (ind13)	0.01	0.01	−0.01	−0.01	−0.00	−0.00
SO (state)		−0.02***		−0.03***		−0.02**
ΔR^2		0.01***		0.01***		0.01**
F-value for ΔR^2		10.82***		16.62***		9.02**
R^2	0.10	0.11	0.07	0.08	0.10	0.10
Adjusted R^2	0.10	0.10	0.06	0.07	0.10	0.10
N	1,154		1,252		1,255	

* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

confirming the robustness of our methods across different measures of key variables.

Therefore, it can be seen that SO in China is significantly and positively associated with firm performance, with a strong mediating effect for agency cost in the association. In other words, SO has a positive impact on firm performance

because it has a negative association with agency cost. Therefore, a strategic (rather than an agency) perspective (H2b) of the role of SO is supported, in the context of Chinese listed firms.

6 Discussion and conclusions

In the context of high and relatively stable Chinese levels of SO, we find SO to be positively associated with the performance of privatised firms, and an analysis of a mediating role for agency cost supports this finding. The study shows that SO may be exogenously determined by the Chinese government as a means to strategically support privatised firms, and exploited internally by managers as a firm resource. In other words, the finding is consistent with a perspective on dynamic corporate governance, i.e. corporate governance as a process influenced by political and institutional factors (Shleifer and Vishny 1997), and the net impact of SO therefore depends both on the external institutional environment and the other internal governance mechanisms deployed within the firm (Rediker and Seth 1995; Zajac and Westphal 1994). In other words, this result may have possible efficiency and power interpretations.

In terms of *power*, the state may use its authority through the manipulation of administrative instruments such as market entry regulations, taxation and loans decisions, to support firms' operations. The state's actions may thus raise firms' revenues, reduce costs and apparently improve performance (Lu 2000). Higher SO may even facilitate the manipulation of reported accounting information, through "earnings management" (Lin 2004). Privatised firms with high levels of SO may have easier access to favourable lending from state banks and important networks for obtaining bank loans (Gordon and Li 2003; Lu et al. 2005).

However, there are three set of circumstances in which the state may also be an *efficient* (as well as a powerful) strategic blockholder. First, in addition to the positive impact of the government's direct support for firm performance, firms may be administratively "pushed" by the state to be profitable, to demonstrate the efficiency of the state's economic reforms and to enable the state to sell firms' shares at higher prices (Green and Liu 2005). It may be pertinent to remember that most of China's most effective global competitors (e.g. Lenovo) were born out of state-owned institutions.

Second, managers of Chinese listed firms are becoming more competitive under economic reforms (White 2000). By 2005, Chinese listed firms had already had long experience of quite competitive product and capital markets. Consequently, even the managers of Chinese state-dominated firms are likely to have accumulated commercial knowledge and skills to improve firm performance on their own.

Third, studies have recently suggested that the threat of further reductions in SO in firms may also improve their performance (Price 2007). Firms with high levels of SO enjoying benefits from their relationship with government may fear reductions in SO more than other firms. Consequently, firms with high levels of SO may strive to reduce agency costs and improve their performance in order to discourage the state from selling off its shares.

Our findings also suggest a number of fruitful avenues for future international corporate governance research. Certainly, longitudinal studies in China will show whether the positive association between SO and firm performance is more than a transitory phenomenon, and should establish whether continuing improvements in accounting practices leave our results unaffected. Similarly, it will be interesting to see whether our results survive the unwinding of cross-shareholdings between different national and provincial state agencies and state-controlled and listed firms (Green and Liu 2005).

In addition, studies in other countries will test the universality of our mediating role for agency costs in other transitional economies where governments still retain high levels of SO and their administrative influence over privatised firms (e.g. India, Vietnam, and many transitioning African countries, see Birdsall and Nellis 2005). In particular, Vietnam, a transitional economy like China, reformed economically but not politically (Wright and Nguyen 2000) could provide a laboratory for replicating our study. More widely, the study emphasises the universal importance of the net balance of the costs and benefits of SO, and the extent to which this balance depends upon national institutional circumstances.

In relation to China as a single country, our findings suggest that SO is not necessarily damaging to firm performance in net terms. However, this outcome may conceivably be attributed to, either, efficient state influence, state power, and/or the distortion of performance outcomes. It seems vital to the Chinese reform process to identify the relative contributions of power and efficiency to this observation. However, research of the most sensitive kind is needed, with firms unlikely to disclose the real source and impact of state influence. Recent survey-based research on human resource management (e.g. Yu and Egri 2005) and management accounting practices (e.g. Xiong et al. 2008) has produced candid responses from enterprise managers, but Chinese accounting reports are taxation-oriented (Norton 2008) and candour seems unlikely at the time of writing. Indeed, the future willingness of Chinese senior managers to openly discuss continuing state influence and the value of accounting conventions, together with the degree to which they are observed, would itself be convincing evidence of the deep impact of economic and political reforms.

Finally, our study has interesting *theoretical* implications. It suggests that agency-based studies made unrealistic assumptions of a universally negative relation between SO and firm performance but, ironically, they made a correct, though risky, assumption that SO may be used as a convenient proxy for agency cost. This mediating role for agency cost was confirmed for China in the context of positive SO/performance relation not previously anticipated by agency theorists. Firmer and more general conclusions must of course await mediation tests elsewhere.

Appendix

See Table 4.

Table 4 Industries by level of state ownership

Industry	2003			2004			2005		
	N	State ownership	SD	*N*	State ownership	SD	*N*	State ownership	SD
Agriculture	26	0.4075	0.2671	29	0.3741	0.2653	29	0.3576	0.2620
Mining	22	0.5290	0.2547	24	0.5349	0.2457	23	0.4662	0.2487
Manufacturing	678	0.3746	0.2613	749	0.3575	0.2618	756	0.3485	0.2559
Utilities	52	0.4512	0.2648	58	0.4742	0.2378	60	0.4519	0.2450
Construction	22	0.4847	0.2347	25	0.4394	0.2656	26	0.4314	0.2524
Transportation	52	0.4957	0.2397	55	0.4539	0.2686	56	0.4398	0.2636
Information technology	70	0.2425	0.2629	72	0.2319	0.2594	72	0.2338	0.2600
Wholesale and retail	82	0.3608	0.1977	81	0.3461	0.2045	78	0.3271	0.2077
Real estate	41	0.2672	0.2448	43	0.2778	0.2457	42	0.2500	0.2416
Social services	35	0.3959	0.2549	37	0.3843	0.2564	38	0.3695	0.2392
Media	8	0.1077	0.2326	8	0.1369	0.2512	9	0.1858	0.2830
Conglomerates	65	0.1965	0.2356	66	0.1986	0.2346	65	0.1761	0.2246
Total	1,154	0.3649	0.2631	1,247	0.3529	0.2630	1,255	0.3409	0.2578

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