Can Two Wrongs Make a Right? State Ownership and Debt in a Transition Economy

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ABSTRACT Existing literature suggests that both state ownership and debt have detrimental performance consequences in transition economies. Paradoxically, however, we contend that the confluence of these two conditions may not be harmful. By considering the interactions between the governance properties of state ownership and debt, interpreted in light of the institutional context of China (i.e. the interplay between local governments, managers, and central banks), we argue that state ownership and debt can potentially offset each other’s detrimental effects. We test our hypotheses with a sample of over 1300 Chinese firms that were listed on the Shanghai and Shenzhen Stock exchanges between 2003 and 2005. Results of the tests confirm that while debt and state ownership each have a negative impact on firm performance when used in isolation, their interaction has a positive impact on firm performance.

INTRODUCTION
Considerable work in management research has examined the governance and performance implications of a firm’s ownership structure (e.g. Brush et al., 2000; Chaganti and Damanpour, 1991; David et al., 2006; Douma et al., 2006; Estrin et al., 2009; Gedicke and Shapiro, 1998; Kor and Mahoney, 2005; Thomsen and Pedersen, 2000). However, most of the extant research has implicitly assumed a modern, developed economy. In contrast, transition economies are more typically characterized by much weaker property rights regimes, poor protection for minority shareholders, more corruption, and relatively inefficient external governance mechanisms (Lubatkin et al., 2005; Peng, 2003; Young et al., 2008). While agency theory still applies to such contexts, it is important to account for how contextual factors in the institutional environment can alter the governance implications of key agency theoretical considerations such as ownership structure (Dharwadkar et al., 2000).

One particularly distinctive characteristic of many transition economies is that the state has privatized state-owned enterprises (SOEs), but has retained an ownership

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stake in some firms (Djankov and Murrell, 2002). While partial state ownership may enhance the investment opportunities available to the firm (Park and Luo, 2001; Peng and Luo, 2000), empirical evidence suggests that it generally exacerbates agency problems and impairs firm performance (Boardman and Vining, 1989; Djankov and Murrell, 2002; Megginson and Netter, 2001). However, the net impact of governance mechanisms depends not just on the external institutional environment, but also on the other governance structures deployed within the firm (Rediker and Seth, 1995; Zajac and Westphal, 1994). Accordingly, we propose that the relationship between state ownership and firm performance will be critically moderated by the firm’s capital structure.

Firms around the world make extensive use of debt for funding strategic investments (Mayer, 1988). However, debt is much more than just a source of funds, as it has profound managerial and governance implications (Williamson, 1988). Indeed, selecting a firm’s capital structure is one of the most important, and under-appreciated, strategic decisions that managers must make (Mizruchi and Stearns, 1994). In a developed economy, debt has both costs and benefits which vary in accordance to the firm’s strategy (Balakrishnan and Fox, 1993; David et al., 2008; Kochhar, 1996; O’Brien, 2003; Simerly and Li, 2000; Vincente-Lorente, 2001). In contrast, the inefficient capital markets and weak property rights regimes in transitional economies will likely erode most of the potential benefits of debt, thereby causing debt to generally be detrimental to firm performance (Dharwadkar et al., 2000). Thus, the existing management literature suggests that both state ownership and debt should impair the performance of firms in a transition economy. We extend the management literature on both state ownership and debt by, somewhat paradoxically, arguing that the negative impact of each of these two factors is reduced when both conditions are present. In particular, by examining the institutional context of a specific transitional economy (i.e. China) and considering how the governance properties of state ownership and debt impact the incentives of both managers and external stakeholders, we argue that state ownership and debt can potentially offset each others detrimental effects.

Our analysis of a large panel sample of publicly traded Chinese firms confirms that while debt and state ownership each have a negative impact on firm performance when used in isolation, the confluence of the two can potentially fully offset the negative consequences of each individual factor. Hence, our theory and results make several important contributions to the management literature. First, while considerable work in management has examined the performance implications of ownership structure (e.g. Brush et al., 2000; Chaganti and Damanpour, 1991; David et al., 2006; Douma et al., 2006; Gedajlovic and Shapiro, 1998; Kor and Mahoney, 2005; Thomsen and Pedersen, 2000), virtually none has considered how the firm’s capital structure might moderate the relationship between ownership structure and performance. Second, we also advance the growing management literature that has examined the governance implications of debt (Balakrishnan and Fox, 1993; David et al., 2008; Kochhar, 1996; O’Brien, 2003; O’Brien and David, 2010; Simerly and Li, 2000; Vincente-Lorente, 2001). Our work offers some novel insights on how some of the potentially negative consequences of debt can be offset by the firm’s ownership structure. Finally, our paper has responded to recent calls in the management literature to further develop agency theory by exploring...
how it applies to contexts with relatively nascent institutions of capitalism (Hoskisson et al., 2000; Wright et al., 2005; Young et al., 2008).

THEORY AND HYPOTHESES

The Performance Implications of State Ownership

Although many transition economies have been moving towards market-based systems by privatizing SOEs (Djankov and Murrell, 2002), the state often retains a significant ownership stake in the privatized firm. The governance implications of state ownership in privatized firms have garnered significant attention in recent years, with most studies emphasizing the agency costs associated with state ownership. High levels of state ownership in transition economies may lead to increased moral hazard problems because it is associated with lower pay but greater power for managers (Buck et al., 2008), potentially inducing those managers to exert less than full effort in creating value for shareholders. Additionally, state ownership in transition economies may also accentuate problems of adverse selection. When state ownership is high, managers are often appointed by the government and may work more as bureaucrats fulfilling social responsibilities rather than as managers attempting to maximize shareholder value (Barberis et al., 1996). Furthermore, the ‘grabbing hand’ of the state may divert resources away from the firm and its compliant managers (Shleifer and Vishny, 1997), or induce managers to adopt decisions that are politically desirable but financially imprudent (Chang and Wong, 2004). Thus, when state ownership is high, firms are subject not only to principal–agent disputes, but also to the expropriation of enterprise assets in principal–principal disputes (Young et al., 2008). This problem is exacerbated by both the considerable power differential between the state and other shareholders and by the fact that transition economies generally have weak institutional and legal regimes for protecting minority shareholders (Dharwadkar et al., 2000). Hence, state ownership may present an extreme form of the principal–principal problem, whereby powerful owners expropriate minority shareholders (La Porta et al., 2000; Walsh and Seward, 1990).

While state ownership in transition economies may generally lead to accentuated agency costs because of inefficient resource allocation decisions, there may also be some concomitant benefits to state ownership. State ownership may help managers cultivate stronger ties to government officials, which may help managers obtain land or information and may also help in securing licenses for specific projects (Luo, 2003; Luo and Chen, 1997; Nolan, 2001; Tian and Estrin, 2007). Furthermore, because others recognize these potential benefits, state ownership may give firms a competitive advantage over rivals in attracting the best partners for joint ventures (Hitt et al., 2000; Luo, 1997). Thus, despite the agency costs, state owners may be able to offer a ‘helping hand’ to firms (Shleifer and Vishny, 1997), thereby yielding some performance benefits (Park and Luo, 2001; Peng and Luo, 2000).

The relative magnitude of the costs and benefits of state ownership likely vary across national contexts in accordance with the relative strength of property rights and shareholder protections, and with the extent of political corruption and cronyism. While the preponderance of the evidence suggests that the costs of state ownership generally
outweigh the benefits (Boardman and Vining, 1989; Djankov and Murrell, 2002; Megginson and Netter, 2001), there have been some mixed results (for a review, see Estrin et al., 2008). As we explain later, one reason for the mixed results may be that past research has not considered that the relative costs and benefits of state ownership may be critically influenced by the firm’s capital structure.

The Critical Role of Capital Structure

In developed economies, debt serves as a double-edged sword for firms. On the down-side, debt contracts limit the amount of cash available for discretionary investments by obligating the firm to make periodic interest and principal payments. Furthermore, although debt is generally the most commonly tapped external source of funds for making strategic investments (Mayer, 1988), highly leveraged firms may not be able to get additional debt and hence may have to forego valuable investment opportunities that unexpectedly arise (O’Brien, 2003). On the positive side, however, debt also imposes powerful incentives on managers to avoid wasteful investments because failure to make scheduled payments or to conform to the liquidity covenants of the debt contract could trigger bankruptcy, thereby eroding the reputation and prestige of the managers (Sutton and Callahan, 1987) and possibly inducing executive turnover (Gilson, 1989). Hence, while the lack of liquidity associated with high debt levels can constrain a firm’s ability to make critical strategic investments, the constraints and high-powered incentives of debt may help curtail agency costs in firms with few profitable growth opportunities (Jensen, 1986).

One shortcoming of the traditional agency perspective of debt is that it may not generalize to transition economies. Transition economies lack efficient legal frameworks for debt collections and bankruptcy. In fact, even where bankruptcy laws exist, bankruptcy may have little impact on the firm and its managers (Dharwadkar et al., 2000). Naturally, there is considerable heterogeneity across countries, as ascension countries to the European Union often rapidly develop a very western legal regime. However, such is not the case in most transition economies, and hence debt may generally fail to serve as an effective governance mechanism for limiting agency costs. However, debt is still likely to constrain the ability of managers to fund strategic investments, perhaps even more so because potential lenders are more reluctant due to the poorly developed capital markets and weak institutional protections. Thus, instead of being a double-edged sword with both costs and benefits, debt may be more of a double-whammy in transition economies, and generally impair firm performance (Dharwadkar et al., 2000).

State Ownership and Debt in China

Thus far, our treatment of state ownership and debt has focused on their general properties in transition economies. However, as previously noted, the institutional factors within a specific national context will determine the relative magnitude of each of the costs and benefits. By considering institutional features such as the structure of the banking industry and the relationships between central and local governments, we argue that China presents an intriguing setting for studying the effects of state ownership and
debt on performance because, paradoxically, while both state ownership and debt may be detrimental to firms when used in isolation, such may not be the case when the two are used in tandem.

In 1990, China began privatizing some SOEs by selling shares in the firms on the Shanghai and Shenzhen Stock Exchanges. By 2001, over 1100 firms had been at least partially privatized and listed on the exchanges (Wei et al., 2005). Examination of our data (described later) suggests that in the period 2003–05, the state had retained some ownership in 88 per cent of listed firms, with the average firm having approximately 35 per cent of shares held by the state. However, significant variation exists, as more than 10 per cent of firms had no state ownership. State ownership may enhance some investment opportunities for the firm, but it may also present acute agency costs. While managers of Chinese listed firms do face fewer social pressures (Green and Liu, 2005) and are generally more competitive (White, 2000) than managers of non-listed pure SOEs, performance incentives for these managers are generally quite weak relative to developed economies, and pressure from state officials to make decisions that benefit the local region can still be intense (Tenev et al., 2002). Furthermore, the empirical evidence suggests that in China these agency costs generally outweigh the potential benefits of state ownership, and hence state ownership negatively affects performance (Wei et al., 2005). Thus, we predict a negative relationship between state ownership and performance. Similarly, in transition economies, debt may generally impair a firm’s ability to capitalize on investment opportunities while offering few concomitant governance benefits. Hence, we would expect that debt will be negatively related to performance.

Hypothesis 1a: For firms with low debt, state ownership will be negatively related to firm financial performance.

Hypothesis 1b: For firms with low state ownership, debt will be negatively related to firm financial performance.

As outlined above, existing theory would suggest that both debt and state ownership are detrimental to firms in transition economies. We extend the theory on this topic by arguing that two are highly interrelated factors, with the performance consequences of each being dependent on the other. Firstly, it should be recognized that leverage and state ownership are not independent phenomena. Although loans can be hard to come by for companies in transition economies, listed firms generally enjoy superior access to lenders, potentially allowing them to become highly leveraged. More importantly, however, we argue below that the negative consequences of both state ownership and debt are contingent upon the firm employing them in isolation, and may not hold when both are employed. Hence, we advance the theory by illustrating that factors that have generally been regarded to be detrimental can, at least sometimes, actually be beneficial (Davis, 1971).

On the surface, it might seem that the confluence of high debt levels and state ownership might have little consequence. After all, the banking sector in China is almost all state owned (Berger et al., 2009; Firth et al., 2008), making ‘the government’ both the lender and borrower, and possibly leaving government officials indifferent. However,
some research might suggest that the confluence of state ownership and leverage could be associated with poor performance. When state ownership is high, the government tends to act as an implicit guarantor of the firm’s debt (Lu et al., 2005), and will often act to rescue financially distressed firms (Deng and Wang, 2006). State officials often pressure banks to make loans for reasons other than fiscal soundness (Yao et al., 2008), and thus that rescue may often come in the form of additional bank loans that help the firm to continue to operate despite ongoing losses (Firth et al., 2008). This phenomenon has been termed as a ‘soft budget constraint’ by Kornai who studied the transition of the Hungarian economy towards market based systems in the late 1970s (Kornai, 1990; Kornai et al., 2003). Hence, when state ownership is high, leverage may have even weaker incentive effects than it does for private firms.

One shortcoming of our previous discussion is that we, like much of the pre-existing literature, have been rather vague in our use of the term ‘state ownership’. It is important to recognize that it is local governments that generally own (and control) SOEs in China. This may be especially true for listed firms, as it was local governments that generally decided which firms got to be listed, and those local governments had a strong preference for listing firms that they had control over (Tenev et al., 2002). In contrast, most banks are national (Tenev et al., 2002), and it is the central government which generally foots the bill if the bank fails (Berger et al., 2009). As tensions between local and central governments in China can sometimes be palpable (Tenev et al., 2002), we cannot assume that their objectives will be aligned. Indeed, while local officials are often successful in pressuring bank officials operating in their region, China has moved to curtail the influence of local governments on credit decisions (Berger et al., 2009). In particular, China’s ‘big four’ banks, which alone account for 57 per cent of all commercial loans, have enacted additional policies to reduce intervention by local government officials (Yao et al., 2008). Additionally, it should be noted that unlike Eastern European transition economies, the economic reform of China economy has been characterized by a much more economically decentralized and politically unchanged process (Boisot and Child, 1996; Buck et al., 2000; Qian and Roland, 1998). As a result of decentralization policies, listed firms are largely under control of local governments (Kornai et al., 2003; Qian and Roland, 1998), and local governments are assumed to manage local firms in a more entrepreneurial style (Nee et al., 2007). Consequently, the soft budget constraint issue in China is not as acute as it is in the transition economies originally observed by Kornai. Hence, as we explain below, the managers of Chinese listed firms with high levels of both state ownership and debt could be expected to have stronger incentives to care about firm performance than do their counterparts in the SOEs of other transition countries.

Due to weak bankruptcy laws, banks have little direct influence over their clients and play a minor direct role in corporate governance in China. Managers do not fear bankruptcy and realize that local governments will generally bail them out (Tenev et al., 2002). However, debt can still be quite consequential. Even if a borrower is state owned (typically locally), the loans from state owned banks (generally national) are not a free resource, but rather represent real obligations which must be accounted for (Firth et al., 2008). Local governments do face relatively hard budget constraints, and although they do it, dislike using their limited funds to bailout struggling SOEs (Tenev et al., 2002).
Hence, while bankers lack direct influence over managers, when state ownership is high local government officials are well positioned to use their influence to pressure managers to avoid financial distress and the necessity of a bailout.

Our arguments are summarized in Table I. When both debt and state ownership are low, neither the banks nor the state will have much influence and performance will depend on other governance factors. If debt is low, then as state ownership increases performance will deteriorate (see Hypothesis 1a) because managers may be induced to act in the best interests of the state rather than in the best interests of the firm. Furthermore, managerial incentives are weak because bank loans can fill the gap when performance shortfalls occur. For firms with low state ownership, increasing debt levels will erode performance (see Hypothesis 1b) because managerial incentives are still weak due to anaemic bankruptcy laws, and furthermore the financially constrained firm may be unable to exploit valuable opportunities that do arise.

In contrast, when both state ownership and debt are high, managerial incentives may be particularly strong. While the state is capable of acting as a powerful monitor that can curtail agency costs (Buck et al., 2008), it is only likely to do so when high debt levels make the consequences of performance shortfalls salient to the state owners. Although they acquiesce, local governments detest bailing out defaulting firms, and managers should be loathe to raise the ire of local officials because performance shortfalls may adversely influence their political careers and ambitions (Tenev et al., 2002; Zhang, 2006). Furthermore, concern over default may induce local government officials to curtail political demands and prioritize profits instead by helping the firm to secure the

Table I. Summary of theoretical relationships
choicest of investment opportunities. Consequently, the weakening of incentives that occurs when state ownership is high (i.e. Hypothesis 1a) should be offset as debt rises. Furthermore, listed firms with high state ownership may be favoured clients of Chinese banks due to the implicit guarantees provided by local governments (Cull and Xu, 2003; Gordon and Li, 2003; Lu et al., 2005). Thus, the loss of investment flexibility that occurs as debt levels rise (i.e. Hypothesis 1b) may not be nearly as severe when state ownership is high. Hence, unlike when state ownership or leverage occur in isolation, when both are high, managers have moderately strong performance incentives, can still capitalize on valuable investment opportunities that arise, and may face attenuated political demands.

For firms with high levels of debt, state ownership can serve as a complementary governance mechanism that offsets the negative aspects of debt. Similarly, debt abates the negative consequences of state ownership. Using conventional wisdom, whereby state ownership and debt are both considered to impair performance, shareholders or managers of firm with high levels of both state ownership and debt may think they can improve performance by reducing just one of these two factors. However, our theory predicts that reducing just one of these factors while leaving the other high would erode performance. In order to sustain (but not necessarily improve) performance, the firm would have to reduce both state ownership and debt in tandem.

**Hypothesis 2**: There will be a positive interaction between state ownership and debt with respect to their impact on firm financial performance.

**METHODS**

**Data Sources and Sample**

There are three stock exchanges in China: the Shanghai Stock Exchange; the Shenzhen Stock Exchange; and the Hong Kong Stock Exchange. The Hong Kong exchange, which dates back to the 19th century, lists primarily Hong Kong based firms which operate under different regulations than the rest of China. Hence, the Shanghai and Shenzhen Stock Exchanges are generally regarded as the two Chinese stock exchanges (Tian and Estrin, 2007). These two exchanges were founded in 1990 and 1991, respectively, and operate under nearly identical regulations. Originally introduced by the government as a vehicle for raising capital by selling partial interest in SOEs, these exchanges have experienced rapid growth: from a combined total of just 53 companies in 1992 to over 1500 companies in 2008. Today, these exchanges even encompass some fully private firms, although the majority of listed firms continue to be at least partially state owned. The median firm in our sample had approximately 38 per cent state ownership.

We drew our sample from the China Stock Market and Accounting Research Database (CSMAR), developed by the Shenzhen GTA Information Technology Company Ltd. This database encompasses all firms listed on the Shanghai and Shenzhen stock exchanges. Our sample included all observations available, which should encompass all listed firms, for the years 2003–05. Our full sample included 1244 firms for 2003, 1338 for 2004, and 1340 for 2005, for a total of 3922 firm/year observations. As new firms
became listed over our sample window, our sample is not fully balanced. However, this does not create a problem given the statistical methods we employ (described later). We should note that data on unlisted Chinese firms is very limited, and thus it is not possible to say how our sample of listed firms would compare with the full population of all Chinese firms. Indeed, our theory suggests that listed firms may differ from unlisted firms in many regards. Hence, the pertinent population that our theory and results apply to is strictly listed Chinese firms, and not all Chinese firms in general.

**Variables**

We use the firm’s return on equity (ROE), which is considered the primary performance metric by Chinese practitioners and officials (Peng, 2004), as our proxy for firm performance. ROE is calculated as the ratio of earnings before interest and tax to total equity. In general, the literature shows that the three commonly used financial measures – return on equity (ROE), return on assets (ROA), and return on sales (ROS) – have almost the same empirical quality for evaluating performance (Markides, 1995). In particular, ROA and ROS have also been extensively used in Chinese studies (e.g. Luo and Chen, 1997; Sun and Tong, 2003; Xu and Wang, 1999). While ROA has been considered to complement ROE because the accounting data on assets is sometimes more stable than share value, ROS is also considered to be a useful strategic measure since it correlates with market share (Peng and Luo, 2000). Therefore, using three measures may help check the robust of our results. The results are similar if we proxy for performance with ROS or ROA. Furthermore, as the distribution of performance had some extreme outliers and was highly skewed, we winsorized it at the top and bottom 0.25th percentiles. Results are similar, however, if we simply exclude the 18 outliers that were winsorized.

We assess total firm leverage with the ratio of total debt divided by total assets. State ownership is the percentage of shares owned by the state at both national and provincial levels, including shares owned by governmental institutions. In our sample, state ownership ranges from 0 to 85 per cent. We also include a number of control variables which may be associated with firm performance. Assets and employees control for firm size with the natural log of total firm assets and employees, respectively, while expenses controls for efficiency with the ratio of total operating expenses to sales. We also controlled for how much of the firm’s equity was held by foreigners, executives of the firm, other employees of the firm, and individuals with the variables foreign ownership, executive ownership, employee ownership, and individual ownership (respectively). Results are similar, however, even if we exclude these other ownership measures. Finally, we also included two controls for industry conditions. Industry performance is measured as the performance of the median firm in the focal firm’s industry, while industry volatility is the standard deviation of stock returns for the median firm in the focal firm’s industry. Firms were classified into 13 industries following the guidelines of the China Securities Regulatory Commission (see Table II). To further control for industry influences, we also included 12 industry dummy variables, with industry 1 (Agriculture, Fishing, Hunting, Forestry and Related Services) serving as the default industry.
Our sample raised several critical methodological considerations. The first is the fact that our sample constitutes panel data, which we addressed by employing firm random effects in our models. The most common alternative, fixed effects, captures all factors that are constant within a firm over time, and hence cannot produce accurate estimates for variables that are either invariant or display little change within a firm over time (Allison, 1994). As our sample encompasses a relatively short time period (i.e. 3 years) and ownership tended to be quite stable over such a short window, random effects were deemed preferable. Furthermore, a Hausman test comparing random and fixed effects models indicated no systematic difference between the two models, hence indicating that random effects are appropriate. Moreover, as we report, our results are robust to using fixed effects.

The second methodological concern is the potential endogeneity of both state ownership and leverage, as our theory suggests that the two variables may be inter-related. Indeed, almost every variable of interest to management research is ‘endogenous’ in the sense that it is a function of other variables or constructs. Yet, as Wooldridge (2003, ch. 15) explains, theoretical endogeneity need not constitute a statistical problem (and hence a threat to the validity of our models) because endogeneity is really just an omitted variables problem. If our models fail to include other factors that influence both the endogenous variables (i.e. state ownership and leverage) and the dependent variable (i.e. performance), then the endogenous variables will be correlated with the error term and hence traditional OLS methods will suffer from omitted variables bias. While techniques such as two-stage instrumental variables (IV) regression methods can be employed to eliminate the omitted variables bias and yield improved estimates of the effect of an endogenous variable on a dependent variable, these methods come at a cost as they are less efficient in that they produce much larger standard errors than OLS (Wooldridge,
Thus, a variable need only be modelled as endogenous if statistical tests indicate that endogeneity is a problem (i.e. that omitted variables bias is present). Accordingly, we test to see if any of our critical variables create an endogeneity problem.

To test for endogeneity problems, we first must find valid instruments for the potentially endogenous variables. Two critical requirements for good instruments are that they be strong predictors of the endogenous variable (i.e. the first stage regressions) but weak predictors of the ultimate dependent variable (which is modelled in the second stage regression). Exploratory regressions revealed that the standard deviation of the firm’s stock returns over the previous year was a valid instrument for leverage and the industry median level of state ownership was a valid instrument for state ownership. Furthermore, an instrument for the interaction was created by interacting the instruments. Additionally, the log of the number of employees was used as a fourth instrument so that we could conduct a test of overidentifying restrictions, which verified that the instruments were indeed uncorrelated with the error term (i.e. exogenous) and correctly excluded from the second stage equation.

After finding valid instruments for state ownership and leverage, we then performed a two-stage least squares (2SLS) IV regression using those instruments. The results of the 2SLS-IV regression, which are similar to our main model, are reported in Table IV. However, post-hoc Davidson–MacKinnon tests of exogeneity revealed that neither state ownership nor leverage created an endogeneity problem. Thus, while we present the 2SLS regression for a comparison, our primary analysis is conducted with a standard cross-sectional time-series GLS regression with firm random effects.

A third critical methodological consideration pertains to the potential for reverse causality between leverage and performance. Indeed, the two variables do likely have a dynamic reciprocal relationship (O’Brien 2003). However, the 2SLS-IV model we report should be less susceptible to the problem of reverse causality because it excludes the observed values of leverage and instead only includes predicted values for leverage, and these predicted values are produced using instruments that have been verified to be exogenous. Furthermore, we conduct two additional tests in order to more explicitly rule out reverse causality. First, we present a dynamic model that includes the lag of the dependent variable (i.e. ROE) as a predictor variable in order to explicitly control for a potentially causal influence of past profitability on both current leverage and current profitability. Second, we also include a model that employs a different lag structure. Specifically, we report a model in which all firm level variables are lagged one year relative to the dependent variable. Hence, performance one year is modelled as a function of leverage the previous year. An unreported model verified that current performance was indeed a statistically insignificant predictor of the previous year’s leverage. Intuitively, this model helps rule out reverse causality because future events (e.g. ROE in 2005) cannot cause current conditions (e.g. leverage in 2004). As we report in the results section, our findings are robust to these two additional checks for reverse causality.

Finally, it should also be noted that analysis of variance inflation factors revealed that multicollinearity was not a problem in our data, even when we added the interaction term, which can be highly correlated with its constituent terms. Furthermore, analysis of Cook’s D statistics revealed that no outliers had an inordinate influence on the reported
models. Finally, all models included year fixed effects (which, for brevity, are not reported).

RESULTS

Descriptive statistics of our sample are provided in Table III. It is interesting to note that state ownership and leverage are generally negatively correlated. Thus, although state ownership can help firms attain loans on good terms when they want, and perhaps regardless of creditworthiness, local state officials would appear to be wary of allowing firms to take on excessive debt. This would suggest that perhaps local state government officials are very concerned about the consequences of default, as our theory suggests. It is also interesting to note that state ownership is significantly \( p < 0.05 \) positively correlated with performance. However, as most firms use a surprisingly high amount of debt (average leverage is about 0.49), this is not necessarily inconsistent with Hypothesis 1a, which predicted that state ownership would have negative performance consequences when firms eschew debt. It is also worth noting that no correlations in Table III are high enough to raise concerns of multicollinearity.

The results of our statistical analyses are given in Table IV. Model 1 serves as a baseline model and reveals that leverage has a significant negative main effect on performance \( (p < 0.01) \). Interestingly, but consistent with our descriptive statistics, state ownership has a positive effect on performance, although the relationship fails to reach statistical significance. However, this does not mean that state ownership is unimportant, as it could just indicate that the impact of state ownership is very different at high versus low levels of leverage, as predicted by Hypothesis 2. Model 2 adds in the hypothesized interaction and is used to infer support for our hypotheses. The addition of the interaction term significantly improves R-squared \( (F = 6.8, p < 0.01) \). The significant negative main effect for state ownership in Model 2 \( (p < 0.01) \) tells us that when firms use no debt (and hence the main effect for debt and the interaction term both equal zero, effectively dropping them from the equation), state ownership has a negative influence on performance, thereby supporting Hypothesis 1a. Likewise, the significant negative main effect for leverage \( (p < 0.01) \) reveals that leverage has a strong negative influence on performance for firms that have no state ownership, supporting Hypothesis 1b. The significant positive interaction \( (p < 0.01) \) between leverage and state ownership supports Hypothesis 2 by revealing that state ownership and leverage are less detrimental to firm performance when they coincide.

Model 3 in Table IV illustrates that similar results are obtained if we use firm fixed effects instead of random effects. Model 4, which uses 2SLS-IV regression to account for the potential endogeneity of state ownership and leverage, also produces similar (albeit potentially even stronger) results. Model 5 presents the dynamic model that controls for past performance, which may impact current leverage and current performance. Specifically, we employ the least squared dummy variable-corrected (LSDVC) approach suggested by Bruno (2005). Once again, it produces qualitatively similar results. Finally, Model 6 more explicitly controls for potential reverse causality by lagging all firm level independent variables one year. Although this reduces sample size and produces
Table III. Descriptive statistics

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<th>Variable</th>
<th>Mean</th>
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<td>(1) Performance</td>
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<td>(2) Assets</td>
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<td>0.42</td>
<td>0.13</td>
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<td>(3) Employees</td>
<td>7.304</td>
<td>1.32</td>
<td>0.10</td>
<td>0.52</td>
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<td>(4) Leverage</td>
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<td>-0.29</td>
<td>0.17</td>
<td>0.07</td>
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<td>(5) Expenses</td>
<td>0.068</td>
<td>0.33</td>
<td>-0.04</td>
<td>-0.05</td>
<td>-0.04</td>
<td>0.02</td>
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<tr>
<td>(6) State ownership</td>
<td>0.350</td>
<td>0.26</td>
<td>0.08</td>
<td>0.19</td>
<td>0.17</td>
<td>-0.08</td>
<td>-0.06</td>
<td></td>
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<tr>
<td>(7) Foreign ownership</td>
<td>0.040</td>
<td>0.11</td>
<td>0.20</td>
<td>0.11</td>
<td>0.00</td>
<td>0.00</td>
<td>-0.07</td>
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<td></td>
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<tr>
<td>(8) Executive ownership</td>
<td>0.000</td>
<td>0.01</td>
<td>0.01</td>
<td>0.05</td>
<td>0.04</td>
<td>-0.02</td>
<td>0.00</td>
<td>0.00</td>
<td>-0.01</td>
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<tr>
<td>(9) Employee ownership</td>
<td>0.002</td>
<td>0.02</td>
<td>0.00</td>
<td>-0.01</td>
<td>-0.01</td>
<td>-0.03</td>
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<td>-0.01</td>
<td>-0.03</td>
<td>-0.04</td>
<td>0.05</td>
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<tr>
<td>(10) Individual ownership</td>
<td>0.385</td>
<td>0.15</td>
<td>-0.03</td>
<td>-0.12</td>
<td>-0.07</td>
<td>0.04</td>
<td>0.02</td>
<td>-0.37</td>
<td>-0.42</td>
<td>-0.04</td>
<td>-0.01</td>
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<tr>
<td>(11) Industry performance</td>
<td>0.054</td>
<td>0.02</td>
<td>0.08</td>
<td>0.13</td>
<td>0.15</td>
<td>-0.11</td>
<td>-0.04</td>
<td>0.17</td>
<td>0.02</td>
<td>0.00</td>
<td>0.02</td>
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<tr>
<td>(12) Industry volatility</td>
<td>0.096</td>
<td>0.02</td>
<td>-0.06</td>
<td>-0.01</td>
<td>0.00</td>
<td>0.08</td>
<td>0.03</td>
<td>-0.10</td>
<td>0.00</td>
<td>0.01</td>
<td>-0.05</td>
<td>0.11</td>
<td>-0.31</td>
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*Note:* All correlations with an absolute value greater than 0.03 are significant at \( p < 0.05 \).
generally lower significance levels and lower model fit, the main findings of our study are once again upheld.

In order to assess the economic significance of our results, we use Model 2 of Table IV to produce predicted values for firm performance at various levels of debt and state ownership, then plot these values in Figure 1. As the line labelled ‘Low Leverage’ illustrates, we observe the traditional negative relationship between state ownership and performance when firms employ little debt. Interestingly, however, firms that have ‘Mean Leverage’ (e.g. the average firm) would appear to experience a weakly positive relationship between state ownership and performance. Moreover, as demonstrated by the line labelled ‘High Leverage’, highly indebted firms perform better as state ownership increases. Similarly, it is interesting to note that while leverage is generally bad for the

<table>
<thead>
<tr>
<th>Method:</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
<th>Model 6</th>
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<tr>
<td>Lag-ROE</td>
<td>0.34**</td>
<td>0.33**</td>
<td>2.71**</td>
<td>0.32**</td>
<td>2.12**</td>
<td>0.10*</td>
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<td>Assets</td>
<td>0.02</td>
<td>0.01</td>
<td>-0.04</td>
<td>-0.02</td>
<td>-0.02</td>
<td>0.04*</td>
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<tr>
<td>Leverage</td>
<td>-1.34**</td>
<td>-2.04**</td>
<td>-3.92**</td>
<td>-3.95**</td>
<td>-4.01**</td>
<td>-0.82**</td>
</tr>
<tr>
<td>Expenses</td>
<td>-0.02</td>
<td>-0.01</td>
<td>0.05+</td>
<td>0.00</td>
<td>-1.46**</td>
<td>-0.08</td>
</tr>
<tr>
<td>State ownership</td>
<td>0.02</td>
<td>-0.98**</td>
<td>-0.57*</td>
<td>-4.90*</td>
<td>-0.73*</td>
<td>-0.27+</td>
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<td>Foreign ownership</td>
<td>-0.21+</td>
<td>-0.25+</td>
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<td>-0.69</td>
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<td>-0.20</td>
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<td>Executive ownership</td>
<td>-0.41</td>
<td>-0.36</td>
<td>-0.22</td>
<td>-0.39</td>
<td>0.82</td>
<td>0.22</td>
</tr>
<tr>
<td>Employee ownership</td>
<td>-0.04</td>
<td>-0.26</td>
<td>0.68</td>
<td>-1.31</td>
<td>-0.15</td>
<td>-1.63+</td>
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<td>Individual ownership</td>
<td>0.00</td>
<td>0.00</td>
<td>-0.16</td>
<td>-0.43</td>
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<td>-0.22</td>
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<td>Industry performance</td>
<td>2.82*</td>
<td>2.28+</td>
<td>0.79</td>
<td>0.00</td>
<td>-0.82</td>
<td>2.04</td>
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<td>Industry volatility</td>
<td>-1.48</td>
<td>-1.59</td>
<td>-0.38</td>
<td>-2.68</td>
<td>-0.48</td>
<td>3.73</td>
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<tr>
<td>Mining</td>
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<td>-0.14</td>
<td>-0.40</td>
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<td>Manufacturing</td>
<td>0.04</td>
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<td>0.13</td>
<td>-0.08</td>
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<td>0.08</td>
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<td>Utilities</td>
<td>-0.08</td>
<td>-0.02</td>
<td>0.24</td>
<td>-0.11</td>
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<tr>
<td>Construction</td>
<td>0.10</td>
<td>0.09</td>
<td>0.04</td>
<td>-0.28+</td>
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<td></td>
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<tr>
<td>Transportation</td>
<td>-0.17</td>
<td>-0.08</td>
<td>0.32</td>
<td>-0.17</td>
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<td>0.17</td>
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<tr>
<td>Computers</td>
<td>0.07</td>
<td>0.08</td>
<td>0.06</td>
<td>-0.02</td>
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<td>0.02</td>
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<tr>
<td>Distribution</td>
<td>0.13</td>
<td>0.15+</td>
<td>-0.20</td>
<td>-0.13</td>
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<td>Finance</td>
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<td>-0.02</td>
<td>0.16</td>
<td>-0.52</td>
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<td>Real estate</td>
<td>0.09</td>
<td>0.13</td>
<td>0.20</td>
<td>-0.31*</td>
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<tr>
<td>Hospitality</td>
<td>0.02</td>
<td>0.03</td>
<td>0.12</td>
<td>-0.16</td>
<td></td>
<td>0.16</td>
</tr>
<tr>
<td>Media</td>
<td>-0.29</td>
<td>-0.28</td>
<td>-0.35</td>
<td>-0.09</td>
<td></td>
<td></td>
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<tr>
<td>Conglomerates</td>
<td>0.23*</td>
<td>0.27***</td>
<td>0.33+</td>
<td>-0.22*</td>
<td></td>
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</tr>
<tr>
<td>Leverage × state ownership</td>
<td>2.10**</td>
<td>1.34**</td>
<td>9.18**</td>
<td>1.38*</td>
<td>0.84**</td>
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<tr>
<td>Observations</td>
<td>3,792</td>
<td>3,792</td>
<td>3,792</td>
<td>3,788</td>
<td>2,453</td>
<td>2,461</td>
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<td>Wald $\chi^2$</td>
<td>568.3**</td>
<td>668.4**</td>
<td>100.4**</td>
<td>100.8**</td>
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<tr>
<td>R-squared</td>
<td>0.173</td>
<td>0.174</td>
<td>0.261</td>
<td>0.485</td>
<td>0.086</td>
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<tr>
<td>F-statistic</td>
<td>61.57**</td>
<td></td>
<td></td>
<td>76.47**</td>
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</table>

Notes: All models also included year fixed effects (not reported).
+ p < 0.10; * p < 0.05; ** p < 0.01.
firms in our sample, very high levels of state ownership largely cancel out the negative effects of debt. Thus, consistent with our theory, both state ownership and leverage have economically significant detrimental effects on firm performance when used in isolation, but can help offset each other’s detrimental effects when used in tandem.

**DISCUSSION**

Our theory and results help to enhance our understanding of the managerial implications of both state ownership and debt. Our paper also contributes to the broader corporate governance literature by responding to the call to explore how agency theory applies across varying institutional contexts (Hoskisson et al., 2000; Wright et al., 2005). It is worth noting that our analysis may help shed some light on some other studies which have found a curvilinear relationship between state ownership and firm performance (e.g. Tian and Estrin, 2007; Wei et al., 2005). In unreported models (available upon request from the authors), we were able to find a marginally significant curvilinear effect for state ownership, but only when ROA was used as the dependent variable. Moreover, we could only find this effect if we excluded leverage from the model. Both of the previously mentioned studies that reported a curvilinear effect of state ownership on performance failed to control for leverage, although Tian and Estrin (2007) did use leverage as an instrument for state ownership. As our results show that debt generally has a strong negative impact on performance, and firms with high degrees of state ownership...
tend to use less debt (as suggested by Table II), the upturn in the U-shaped relationship between state ownership and performance that occurs at high levels of state ownership might be driven by decreasing levels of leverage. Hence, our results are not really inconsistent with this prior work, but they do suggest that more research exploring this topic is needed.

Our study also has several limitations that warrant consideration. First, our measure of state ownership does not fully account for how pyramids and cross-holdings, which are common in China (Delios et al., 2006), can alter how much control the state actually has over the firm. In a possible extreme case which cannot be sorted out, the state may own very few shares of firms but impose great power on listed firms because it may have ownership in the parent firms of the listed firms. Thus, while state ownership is a reasonable proxy for how much control the state has over the firm, it is imperfect as the state could have effective control over some firms that it, superficially, would appear to have little ownership in. However, this limitation also offers numerous opportunities to extend our work. Future research using more elaborate measures of state control might be able to further clarify our results. For example, research on network effects in ownership structure, as well as qualitative research on how exactly government officials exert their influence, could significantly further enlighten our understanding of the institutional nuances and consequences of state control.

Also in terms of state ownership, the distinction between local and central control warrants more attention in future studies. We have drawn inferences on the general properties of state ownership by building on the fact that Chinese listed firms are dominantly controlled by local governments. However, a minority of firms are controlled by the central government, and this may have divergent governance implications. Although our industry controls should help to at least partially account for the tendency of the central government to control firms in certain strategic industries (Nee et al., 2007), more research that disambiguates the level of state ownership may help extend the results of our paper.

Two other significant limitations of our study relate to the empirical context. First, while we built upon the literature that relates to transition economies in general, our theoretical development also drew extensively on research that was specific to the Chinese context. As Bruton and Lau (2008) point out, applying existing theory to specific contexts can help to refine that theory, which in turn allows the nuanced theory to be generalized to other contexts with similar features. Hence, while future research may be needed to clarify the extent of the generalizability of our results, we would speculate that our findings should generalize to other transition economies in similar institutional circumstances: the state owns significant stakes in at least some ‘private’ enterprises; the government acts as an implicit guarantor of the debts of those firms; and the governmental authority that oversees the firm would have motive to view a bailout as aversive. While transition economies such as India, Vietnam, and some in Africa may feature similar institutional arrangements (Birdsall and Nellis, 2005), Vietnam could serve as a particularly useful context for replication of this study because it has reformed its economy without changing the political system (Peng, 2000; Wright and Nguyen, 2000). Indeed, given our criteria, our main result (i.e. Hypothesis 2) might even apply to developed economies like the USA and the UK which are currently raising state
ownership in private firms because of government bailouts. However, any replication of this study to other transition economies needs to take into consideration whether the particular characteristics of state ownership in China (i.e. partial privatization and the highly decentralized economic reform) apply to the context under study. Moreover, given the size and growing global importance of the Chinese economy, our results would retain weighty implications even if they ultimately proved to be specific to China.

Another limitation of our study, and the second one that relates to the empirical context, is that our tests (like most of the empirical research on Chinese firms) only encompass firms that are listed on the two major Chinese stock exchanges. As many (if not most) unlisted firms are at least partially state owned, and can and do make use of debt, we would once again speculate that our findings should generalize to these firms. However, because listed firms may receive different treatment from the state (Gordon and Li 2003), the extent to which our findings can be generalized to non-listed firms does remain an open question also in need of future research. Despite this limitation, our results are still quite pertinent because listed firms in China do hold a special status in that society (Tenev et al., 2002). Moreover, as the highest visibility firms in China, they are the ones most likely to be investment targets or business partners for outsiders.

Finally, our results also have weighty practical significance for managers and investors in transition economies. If they can do so, firms are likely best off if they can reduce both debt and state ownership. However, for firms that are either forced to employ large amounts of debt (due to a lack of availability of alternative financing) or choose to do so because they reap strong interest and tax benefits, state ownership can be a critical complement that assists the firm in developing a competitive advantage. Similarly, our finding that two negatives can cancel each other out is useful for institutional investors seeking investment targets in transition economies. Indeed, given the ever increasingly global business environment, our results are also quite pertinent to managers in western firms who either have operations in China or are considering entering the market. For example, based on the prescriptive advice of past research, a western manager might be inclined to reject a potential Chinese joint-venture partner if that firm had two strikes against it: both high levels of debt and high levels of state ownership. However, that firm would indeed be preferable to one with just strike: high leverage but little state ownership.

CONCLUSION

In conclusion, by responding to the call to examine agency theory within institutional contexts of transition economies (Hoskisson et al., 2000; Wright et al., 2005; Young et al., 2008), we have shown how state ownership in transition economies can be something much more than simply a potential source of agency costs. Indeed, for some firms, state ownership can essentially serve as a strategic resource that can be exploited by managers. While state ownership may be detrimental to firms that employ little debt, it is beneficial to firms that employ moderate to high levels of debt. Given the extensive use of debt by Chinese firms, state ownership may even be moderately beneficial for the median firm in China. Hence, our theory may help explain the mixed findings of previous studies on the association between state ownership and firm performance.
(Estrin et al., 2008), as previous studies have not considered that leverage may be a critical moderator. More research on this topic could help further enlighten the strategic consequences of both state ownership and debt.

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REFERENCES


