

How Does Government Ownership Affect Firm Performance? Evidence from China's Privatization Experience

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1. INTRODUCTION

Privatization shifts ownership and control of public assets to private investors. Many governments use it as an important means to invigorate their state-owned enterprises (SOEs). However, it is not clear how changes in government ownership affect firm performance. Some economists argue that, in competitive markets without significant externalities, government ownership is inferior to private ownership (see for example, Boycko, Shleifer and Vishny, 1996; and Dewenter and Malatesta, 2001). This is generally explained by the government's lack of transferable residual claims, government's choice of social and political policy goals over profit maximization, the government's employment of staff based on political connections rather than ability to perform, or the greater information asymmetries and higher transaction costs in the government.¹ Vining and Boardman (1992), Boardman et al. (1989) and Megginson, Nash and Van

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Randenborgh (1994), among others, provide empirical support for the proposition that government ownership is less efficient than private ownership.

In contrast, studies such as those of Caves and Christensen (1980), Kay and Thompson (1986), Wortzel and Wortzel (1989), Martin and Parker (1995) and Kole and Mulherin (1997) suggest that government ownership is not necessarily less efficient than private ownership. Dewenter and Malatesta (1998) report that the evidence on profitability improvement subsequent to privatization is mixed, although they find significant performance improvement *before* privatization.

This paper attempts to shed light on the issue using China's privatization experience. Specifically, it examines if government ownership affects the performance of China's SOEs in the privatization process. Other than the fact that China is now the largest and the most prominent centrally planned communist country after the dissolution of the former USSR, the Chinese privatization experience has important features that provide an excellent setting for examining the complexity of privatization in a centrally planned economy. Unlike countries in Eastern Europe, China has been pursuing the 'Western' approach to privatizing its SOEs through issuing shares in the SOEs on the stock markets. Also, unlike the 'Big Bang' approach adopted by countries in Eastern Europe, China still maintains a communist system. Its economic reform touches little on the political aspect of the system and pursues a 'dual-track' approach. That is, alongside implementing to a certain degree market mechanisms – the 'market track'; the planned economy has not been abolished – the 'plan track'.² As a result, the Chinese government has been very careful and has proceeded cautiously in the privatization process. In fact, the official term used in China is not 'privatization' but 'share ownership scheme'. The Chinese government try very hard to separate the two terms, as 'privatization' implicitly assumes capitalistic private ownership. According to the 'share ownership scheme', as long as the assets of an SOE do not fall into the hands of private investors, the SOE is still not privatized and hence still conforms with communism's public ownership principle.³ Such a distinction is more than just ideological, because for a large number of privatized enterprises, the Chinese government still retains a substantial portion of

ownership. Notice that there is not even a single SOE which has been *completely* privatized so far. Hence, this gradual and lengthy privatization process in China provides an opportunity to examine how the changing mix of public and private ownership affects the performance of the SOEs.

The surprising result is that government ownership and firm performance are actually *positively* related. This positive relationship holds for firms listed on the Shanghai Stock Exchange (SHSE) as well as those on the Shenzhen Stock Exchange (SZSE). It holds no matter whether government ownership is proxied by state share ownership or by legal person share ownership.⁴ Yet, we find that the relationship is nonlinear. When an SOE begins selling a small portion of shares to the public, the firm's performance improves. Beyond a certain level, increased selling of government shares to the public is correlated with poorer firm performance. Given the poor performance of SOEs in general in centrally planned economies such as China, it seems that the government actually plays some important and supportive roles for SOEs. These results are robust under different specifications in the fixed effect pooled regression model. We have also controlled for important influencing factors such as foreign ownership, firm size, and the firm's leverage, locations and industries.

However, it is important to emphasize that an improvement in firm performance does not necessarily imply an improvement in firm efficiency. Since the partially privatized SOEs in our sample maintain a lot of their monopoly power, they may still benefit from reaping monopoly rents while retaining substantial X-inefficiencies (Liebenstein, 1966).⁵ Even if improved performance may be related to efficiency, it is not clear exactly how privatization leads to greater efficiency, as pointed out by Barberis et al. (1996). This is a very important yet difficult issue that will not be addressed in this paper.

The remainder of this paper is organized as follows. Section 2 discusses the possible impacts of government ownership on SOEs' operational efficiencies. Section 3 provides some institutional background about China. Section 4 describes the data and methodology. Section 5 presents the empirical results. Section 6 concludes the paper.

2. GOVERNMENT OWNERSHIP AND PERFORMANCE

An extensive literature contrasts firm performance under government ownership and private ownership. There is relatively little study on the situation where the ownership is mixed, a typical situation in *partial privatization*. What role and what impacts might the government have in such a scenario? At least three possible impacts have been identified.

(i) The Signalling Effect

Literature on privatization through initial public offerings (PIPOs) suggests that the proportion of government ownership in a firm's total share ownership has an impact on investors' perceptions of firm value. A one-time sale of a large proportion or even the full amount of shares to the public indicates that the government is committed to privatization and no re-nationalization is likely. This view thus predicts a positive relation between the proportion of shares sold by the government and the initial excess return of PIPOs, as the market welcomes such commitment. Menyah and Paudyal (1996) examined 40 PIPOs in the UK and, except for seven, all had their shares sold in one offering. They argue that the British government's priority objective was signalling its intention of transferring control into private hands, which would reduce the possibility of re-nationalization. Paudyal, Saadouni and Briston (1998) looked at the underpricing of PIPOs in Malaysia. They found that the proportion of shares sold by the government was positively related to the initial excess return of the PIPO. This is consistent with the view that investors believe if a higher proportion of shares is sold, there may be less interference from the government after privatization.

However, a one-time sale of shares may also imply that the government is dumping a burden. As a result, selling a small portion may signal the government's confidence in the privatized firms. Notice that if the partially privatized firms were actually not performing well, the prices of their shares would eventually decline, making it very difficult to further privatize such firms. Hence, selling a small portion of shares at the beginning not only signals government's confidence, the government indeed has an incentive to see the partially privatized SOEs performing well so

that the government can eventually privatize the firms completely. This view thus predicts a *negative* relation between the proportion of shares sold by the government and the initial excess return of PIPOs, as the market perceives the government acting strategically.⁶ Menyah, Paudyal and Inyanngete (1995) found a significant negative relation between the proportion of shares sold and the underpricing of UK PIPOs, which is consistent with the view. In the China market, Mok and Hui (1998) also invoke such a view. They argue that high equity retention by the state lowers the *ex-ante* uncertainty of domestic investors (and IPO underpricing) because investors interpret high equity retention by the state as the government's confidence and a business guaranty.

All in all, government ownership can send different signals to investors. On the one hand, the government sale of a small portion of shares to the public can be a positive signal that the government is committed and credible. But, on the other hand, it can be a negative signal that the government will continue to intervene in the firm's operation and decision making. Using the terminology of Paudyal, Saadouni and Briston (1998), the benefit of 'investors' confidence' and the cost of 'risk of interference' are two competing impacts of retained government ownership on the underpricing of PIPOs.

(ii) The Monitoring Role

An agency problem (Jensen and Meckling, 1976) arises from a disparity in objectives between shareholders and management. Monitoring management is one way to reduce such agency conflict. In the privatization context, the agency problem can have different bases. One is the conflict between the government's objective of social welfare maximization and the firm's objective of profit maximization. Bös (1991) presents a model to analyze this type of agency conflict. There are two possible scenarios. In a perfectly competitive environment, the government would like to see that the firm maximizes profits, as the interests of both the private and public owners will coincide. In such a case, the government remains totally inactive, leaving the role of the principal to the private shareholders. Partial privatization is perceived simply as a transitory state. However, under an alternative scenario of a non-competitive environment,

the government has the incentive to monitor managers and to act as an 'internal regulator' to reach a compromise between the firm's objectives and the government's social welfare objectives.

As the focus of this study is on technological efficiency rather than allocative efficiency, we are concerned more with the other form of the agency problem. That is, as the major shareholder of the SOE, can the government monitor the management for the benefit of all shareholders? Asking this implicitly queries the effectiveness of private shareholders in monitoring the management if the government plays a passive role. Unlike in developed economies, this is quite a legitimate concern in developing economies such as China.

As Stiglitz (1997) points out, there are:

... special problems facing developing and transition economies, in which more markets are lacking, the markets that do exist may function less effectively, and information problems are more severe than in industrial countries simply because of the rapid change in the economic environment (p. 15).

Indeed, in China the managerial labor market is not well established, the product market does not function well and the takeover market for firms does not exist at all. In addition, managerial ownership is very low. There is no significant independent blockholder in China who can provide effective monitoring of management (Shleifer and Vishny, 1986). Furthermore, recent contracting theories emphasize the importance of reputation mechanisms and implicit contracts in governing economic relations. The effectiveness of these mechanisms depends on the long-term nature of the relationship. In developing countries, rapid transitions threaten the long-term viability of many such relationships. Therefore, an inactive government that gives the management the free hand may not ensure value maximization. Lin et al. (1998) even suggest that expanding the managerial autonomy of SOEs will worsen the agency problems. However, they argue that:

... it was impossible or prohibitively costly for the state to oversee the managers' actions directly (p. 424).

Hence, although theoretically the government can contribute to firm performance through active monitoring, the feasibility of this is a practical problem.

(iii) The Policy Role

SOE reform has been a top priority for China's government since the early 1990s. In fact, Premier Zhu Rongji has set a three-year time limit to solve the SOE problem. As the only significant blockholder of the privatized SOEs, the Chinese government has put forth a series of policies to revitalize the SOEs on the one hand, and to relieve their heavy debt burden on the other.⁷ These include reducing the tax burden, injecting capital to repay part of the debt, and the recent debt-for-equity swap measure.⁸ One successful example is the RMB30 billion debt-for-equity swap of thirteen large petrochemical SOEs. Their average debt ratio was brought down from 76.25% to 47.9% and many of them turned from making losses to gains after the swap.⁹ The government may thus provide necessary political backing to the SOEs. Furthermore, another form of government ownership in SOEs is legal person ownership. The legal persons are typically other SOEs, which can provide important business connections helpful to the SOE in question. Of course, conflicts of interest may exist that could harm the SOE as well.

All these reforms suggest that government ownership has complicated effects on the partially privatized SOEs in China. Sometimes the effect is positive and sometimes it is negative. A recent paper by Xu and Wang (1997) argues that, in China, state ownership gives rise to agency conflicts and thus has a negative impact on firm performance. With data from the Shanghai Stock Exchange (SHSE) and Shenzhen Stock Exchange (SZSE) from 1993 to 1995, they instead found a significant positive relationship between firm performance and legal person ownership. Interestingly, based on a sample of firms listed on the SZSE from 1992 to 1995, Chen (1998) found that firm performance is positively related to state ownership, not to legal person ownership. Such mixed results may simply reflect the complexity of the issue.

3. OWNERSHIP STRUCTURE IN CHINA'S STOCK MARKETS

A company in China may issue five different types of shares on either the Shanghai or Shenzhen Securities Exchanges: state shares, legal person shares, employee shares, A shares and B shares. In addition, they may issue shares in Hong Kong and on

Table 1

Shareholding Structure, Market Capitalization and Number of Listed Firms

| | <i>1994</i> | <i>1995</i> | <i>1996</i> | <i>1997</i> |
|--------------------------------------------------------------------|----------------|----------------|----------------|----------------|
| Panel A: Percentage Shareholding in Shanghai Stock Exchange | | | | |
| State shares | 33.5 (28.9) | 32.5 (30.3) | 33.9 (28.9) | 32.0 (26.8) |
| Legal person shares | 35.5 (31.9) | 37.8 (33.3) | 31.4 (29.4) | 29.6 (27.5) |
| A shares | 19.9 (20.3) | 19.4 (20.3) | 24.9 (18.1) | 28.8 (15.8) |
| B shares | 4.0 (11.2) | 3.7 (10.7) | 4.3 (11.8) | 4.2 (11.8) |
| Employee shares | 4.6 (8.5) | 4.3 (9.5) | 3.2 (7.4) | 2.8 (6.3) |
| H shares | 1.1 (6.0) | 0.9 (5.4) | 1.1 (6.0) | 1.1 (5.9) |
| Panel B: Percentage Shareholding in Shenzhen Stock Exchange | | | | |
| State shares | 28.1 (26.5) | 35.7 (46.4) | 34.5 (44.4) | 31.1 (26.4) |
| Legal person shares | 34.1 (26.0) | 38.1 (31.0) | 33.0 (26.7) | 30.8 (26.4) |
| A shares | 31.9 (14.1) | 17.4 (19.1) | 24.8 (16.8) | 29.6 (13.3) |
| B shares | 3.6 (8.1) | 2.9 (8.8) | 3.3 (8.7) | 3.7 (9.7) |
| Employee shares | 2.3 (5.0) | 7.6 (13.3) | 5.5 (9.9) | 4.0 (7.5) |
| H shares | 0.0 (0.0) | 0.2 (2.3) | 0.3 (3.3) | 0.5 (5.4) |
| Panel C: Market Capitalization (million RMB) | | | | |
| SHSE: A shares | 248354 | 243371 | 531400 | 892989 |
| B shares | 11659 | 9195 | 16200 | 18396 |
| SZSE: A shares | 103250 | 87687 | 413243 | 806891 |
| B shares | 5799 | 7176 | 23215 | 18378 |
| Panel D: Number of Listed Firms | | | | |
| SHSE: Firms with A shares only | 137 | 152 | 251 | 333 |
| Firms with B shares only | 2 | 4 | 6 | 11 |
| Firms with both A and B shares | 32 | 32 | 36 | 39 |
| SZSE: Firms with A shares only | 96 | 101 | 194 | 311 |
| Firms with B shares only | 2 | 8 | 10 | 14 |
| Firms with both A and B shares | 22 | 26 | 33 | 37 |
| Total for SHSE and SZSE | 289 | 323 | 530 | 745 |

Table 1 (Continued)

| | 1994 | 1995 | 1996 | 1997 |
|----------------------------------------------------|------|------|------|------|
| Panel E: Number of Listed Firms by Industry | | | | |
| Industrials | 162 | 199 | 331 | 414 |
| Commerce | 42 | 45 | 70 | 80 |
| Properties | 25 | 29 | 30 | 27 |
| Utilities | 24 | 31 | 44 | 48 |
| Conglomerate | 35 | 42 | 79 | 108 |
| Finance | 3 | 3 | 3 | 3 |
| Total | 291 | 349 | 557 | 680 |

Notes:

Panels A and B present the average ownership for five different types of investors across the listed companies on both the Shanghai and the Shenzhen Stock Exchanges. The cross-sectional standard deviations are presented in parentheses. Panel C shows the total market capitalization of A and B shares. Panel D presents the number of listed firms in the two stock exchanges and Panel E gives their industrial groupings.

Sources:

Data in this table were obtained from various issues of China listed company reports, the Shanghai Stock Exchange Statistics Annual and the Fact Book of Shenzhen Stock Exchange.

overseas exchanges. There is no cross-listing between the two Chinese exchanges.

State shares have been created in China to designate holdings in the SOEs by the central government, local governments, or solely government-owned enterprises.¹⁰ State shares are not tradable on the stock market, but transferable to domestic institutions upon approval of the China's Securities Regulatory Commission (CSRC). Table 1 shows that average state ownership ranged from 28 to 36 percent during the period 1994–1997.

Legal person shares are shares owned by domestic institutions which are themselves partially owned by the central or local government. Legal persons are typically business agencies or enterprises of local governments that helped in starting up the public company either by giving permission to operate or by allowing public resources to be used for the start up.¹¹ Therefore, it may not be appropriate to assume that legal persons would behave very differently from state shareholders. Like state shares, legal person shares may not be traded on the two exchanges, but are transferable to domestic institutions upon approval from the CSRC. Table 1 shows that the average legal person ownership ranges from 31 to 38% in the sample period.¹²

A-shares are similar to ordinary equity shares as generally accepted in other equity markets, except that they are exclusively available to Chinese citizens and domestic institutions. They are mostly held and traded by individuals. It is required that A-shares should account for no less than 25% of total outstanding shares when a company makes its initial public offering. Table 1 shows that A-share holdings range from 17 to 32%.¹³

For most listed companies, the top 10 shareholders are normally the state and legal persons. Even if some individual A-shareholders are among the top 10, their holdings are small relative to those of the state and legal persons. Given that individual A-share owners are typically small shareholders, they are not likely to monitor the managers.

B-shares are issued to attract foreign portfolio investors. Since the Chinese currency is not convertible on the capital account, B-shares are quoted and traded in either US dollars (on the SHSE) or Hong Kong dollars (on the SZSE). B-shares can only be subscribed for, owned by and traded amongst foreigners and people from Hong Kong, Macao and Taiwan. Only about one-eighth of the listed firms who can meet the more stringent requirements have issued B-shares. On average, B-shares account for less than 5% of the total shares of a company.

Employee shares are offered to workers and managers of a listed company, usually at a substantial discount. However, employee shares are limited in quantity. In addition, not all companies issue employee shares. After a holding period of 6 to 12 months, the company may file with the CSRC to allow its employees to sell their shares on the open market. Once sold on the market, they become A-shares. On average, employee shares account for less than 5% of the total shares.

H shares are shares of mainland Chinese enterprises listed on the Hong Kong Stock Exchange. The H shares represent a small percentage of the total shares of Chinese listed firms.

Table 1 also shows the market capitalization and the number of firms listed on the two Chinese exchanges over the period 1994–1997. Market capitalization was about RMB370 billion in 1994 and reached RMB1737 billion in 1997, an increase of 400% within four years. The number of listed companies increased from 291 in 1994 to 745 at the end of 1997. Panel E divides the companies by industrial sector. ‘Industrials’ is the predominant sector.

While in principle any enterprise going public can list on either the SHSE or SZSE, in fact this is strongly influenced by local securities authorities. The SHSE, located in the leading commercial and industrial hub in China, tends to attract mostly large industrial companies. In contrast, the listed companies in Shenzhen, which is next to Hong Kong, tend to be smaller than those in Shanghai and are generally export oriented.

4. DATA AND METHODOLOGY

Our sample consists of all companies listed on the SZSE and SHSE over the period 1994–1997. The study begins with 1994 because this is when China started to adopt a new accounting system that is closer to international standards and provides better information disclosure. Also, the study period excludes the early years of privatization when the Chinese stock markets were in their infancy. In addition, many more state-owned enterprises were partially privatized in 1996 and 1997 and the shares were listed for public trading.

All accounting and ownership data used in the study were collected or derived from China listed company reports, the Shanghai Stock Exchange Statistics Annual and the Fact Book of Shenzhen Stock Exchange. Stock prices and exchange rate data are obtained from Datastream.

Since the sample contains data both across firms and over time, the panel data method was employed in the empirical analysis. The basic regression model can be specified as follows:

$$\begin{aligned} \text{MBR}_{it} = & \alpha_{it} + \beta_1 \text{ST}_{it} + \beta_2 \text{LP}_{it} + \beta_3 \text{SALE}_{it} + \beta_4 \text{LEVE}_{it} \\ & + \beta_5 \text{DUMB}_i + \beta_6 \text{DUML}_i + \beta_7 \text{DUMR}_i + \varepsilon_{it}. \end{aligned} \quad (1)$$

The dependent variable is firm performance as measured by the market-to-book ratio (MBR) of equity, a proxy for Tobin's q .¹⁴ We measure MBR as the market value of equity divided by the book value of net assets. ST and LP indicate, respectively, the fractions of state shares and the legal person shares among total shares outstanding. As argued earlier, support from and monitoring by the government might have a positive effect on firm performance. We hypothesize that there is a positive relationship between government ownership and firm performance and hence expect a

positive coefficient associated with ST. Other than the monitoring role, legal persons, being themselves SOEs, may provide more direct political backing and business connections than the state shareholder can. However, it is also possible that legal persons may collaborate with the managers of the listed firm to their own benefit at the expense of the listed firm. Hence, although it can be argued that LP is positively related to firm performance, the actual impact is less certain.

Several variables were included to control factors of potential importance. SALE is the natural logarithm of annual sales revenue, a proxy for firm size. Large SOEs typically encounter more government bureaucracy, more redundancy and bigger agency problems. We expect this variable to be negatively related to firm performance.

LEVE is the total debt ratio (i.e., the ratio of total debt to the book value of assets), which controls for any possible leverage effect. The debt problem of SOEs is a big issue in China and has plagued SOE reform all along. From 1980 to 1994, the average debt ratio of SOEs jumped from 18.7 to 79%. In 1994, 27.6% of the SOEs had total debts higher than their total asset values. Another 21.5% of the SOEs had total losses equal to total equity. As a result, 50% of the bank loans to SOEs were bad loans, which amounted to 45–50% of the banks' total assets.¹⁵ This constitutes part of the so-called 'triangular debt' problem. The triangular debt problem refers to the fact that a great number of SOEs are in debt to one another. Both their accounts receivable and accounts payable are very high. The domino effect of default occurs when some companies cannot repay their debts. This was particularly serious during the period 1990–1995. The Chinese government realized the seriousness of the problem and introduced a series of measures, ranging from allowing SOEs to withhold a certain amount of profit tax to the more recent equity-for-debt policy. However, there has been only limited success so far. A detailed treatment on this issue is beyond the scope of the present study.¹⁶ It is enough to note here that investors must be concerned about SOEs with high debt ratios. The government is trying very hard to ease the debt burden of the SOEs to make them profitable again.

Three dummy variables are used. DUMB takes the value of 1 for firms with B-share issues and zero otherwise. Firms issuing B

shares attract foreign investors' interest, which supposedly helps the share price. In fact, B shares are generally priced at a big discount compared with A shares (Bailey, 1994; and Sun and Tong, 2000). Hence, it is not clear how a B-share issue affects a firm's MBR ratio.

DUML takes the value of 1 for firms located in the coastal cities and zero otherwise. It is included to control for any possible location effect, because China's open-door policy started in the coastal region in 1997 and then expanded to the inland regions over time (Sun, Tong and Yu, 2001). As a result, we expect SOEs in large coastal cities like Guangdong and Shanghai to perform better than those in the inland provinces.

DUMR takes the value of 1 for firms involved in regulated industries and zero for those involved in non-regulated industries. Regulated industries are typically natural monopolies like utilities. Bös (1991) suggests that governments have an incentive to monitor such firms actively under asymmetric information to ensure that management decisions are made in accordance with social welfare objectives. Perotti (1995) has a model showing that governments tend to privatize a smaller proportion of such firms. In China, regulated industries are utilities and the financial industry. Since the Chinese government realizes the importance of the financial industry, it has great incentives to monitor it closely. Hence, we expect DUMR to bear a positive coefficient. The summary statistics are provided in Table 2.

A major advantage of using the panel data method, as argued by Hsiao (1986), is to resolve or reduce the magnitude of a key econometric problem that often arises in empirical studies, namely, omitted (mis-measured, not observed) variables that are correlated with explanatory variables. By using panel data analysis, one is better able to control for the effects of missing or unobserved variables. Specifically, under the fixed-effect model, the intercepts are allowed to be different cross-sectionally and hence the effects of the omitted variables can be captured.

The effects of omitted variables are driven by either individual time-invariant variables or period individual-invariant variables. The individual time-invariant variables are variables that are the same for a given cross-sectional unit over time but vary across cross-sectional units. Examples of these are attributes of

Table 2
Summary Statistics of Regression Variables

| <i>Variable</i> | <i>Mean</i> | <i>Median</i> | <i>Minimum</i> | <i>Maximum</i> | <i>Std. Dev.</i> |
|------------------------------------------------------------------------------------------------------|-------------|---------------|----------------|----------------|------------------|
| Panel A: 286 Firms Listed on the SHSE and SZSE with Data Available in 1994 | | | | | |
| MBR | 3.02 | 2.53 | 0.230 | 19.20 | 2.05 |
| ST | 0.32 | 0.35 | 0 | 0.89 | 0.27 |
| LP | 0.31 | 0.24 | 0 | 0.91 | 0.27 |
| SALE | 0.34 | 0.26 | 0.002 | 2.39 | 0.36 |
| LEVE | 0.44 | 0.45 | 0.007 | 0.89 | 0.17 |
| Panel B: 308 Firms Listed on the SHSE and SZSE with Data Available in 1995 | | | | | |
| MBR | 2.17 | 1.90 | 0.22 | 10.12 | 1.77 |
| ST | 0.32 | 0.34 | 0 | 0.89 | 0.26 |
| LP | 0.29 | 0.23 | 0 | 0.91 | 0.26 |
| SALE | 0.25 | 0.23 | 0.03 | 4.65 | 0.17 |
| LEVE | 0.50 | 0.45 | 0.06 | 0.90 | 0.16 |
| Panel C: 511 Firms Listed on the SHSE and SZSE with Data Available in 1996 | | | | | |
| MBR | 4.07 | 3.70 | −118.29# | 129.71 | 8.31 |
| ST | 0.31 | 0.32 | 0 | 0.89 | 0.26 |
| LP | 0.31 | 0.24 | 0 | 0.91 | 0.26 |
| SALE | 0.27 | 0.18 | 0.01 | 5.89 | 0.37 |
| LEVE | 0.44 | 0.45 | 0.05 | 0.93 | 0.16 |
| Panel D: 680 Firms Listed on the SHSE and SZSE with Data Available in 1997 | | | | | |
| MBR | 4.34 | 3.82 | 0.01 | 19.66 | 2.34 |
| ST | 0.32 | 0.33 | 0 | 0.89 | 0.27 |
| LP | 0.30 | 0.23 | 0 | 0.96 | 0.27 |
| SALE | 0.36 | 0.15 | 0.01 | 6.01 | 1.37 |
| LEVE | 0.42 | 0.42 | 0.03 | 0.91 | 0.17 |
| Panel E: 1785 Annual Observations for Firms Listed on the SHSE and SZSE Between 1994 and 1997 | | | | | |
| MBR | 3.65 | 3.21 | −118.29# | 129.71 | 4.83 |
| ST | 0.32 | 0.33 | 0 | 0.89 | 0.30 |
| LP | 0.30 | 0.24 | 0 | 0.96 | 0.27 |
| SALE | 0.21 | 0.07 | 0.01 | 6.01 | 0.87 |
| LEVE | 0.39 | 0.41 | 0.01 | 0.92 | 0.20 |

Notes:

This table presents the summary statistics of the regression variables. MBR is the market value of equity divided by the book value of net assets. ST and LP are the shares (in fractions) of equity owned by the state and legal persons respectively. SALE is the operating sales in billion RMB. LEVE is the book value of debt divided by the book value of total assets.

There were three firms in 1996 with negative net assets, which led to negative MBRs. These observations were dropped in the later analysis.

individual firm management, the company culture, a unique location, etc. The period individual-invariant variables are variables that are the same for all cross-sectional units at a given point in time but vary over time. Examples of these are changes in macroeconomic policy, widespread optimism or pessimism, etc. All these omitted variables may correlate with the independent variables.

In their pooled regression, Xu and Wang (1997) use year dummies to control for the period individual-invariant variables. Here, we run two fixed-effect models. One is the year-specific fixed-effect model, which is in the spirit of Xu and Wang (1997). The other is the firm-specific fixed-effect model with yearly dummies. This model controls for *both* year-variant but firm-invariant omitted variables as well as firm-variant but time-invariant omitted variables. Notice that once individual (or firm-specific) time-invariant variables are controlled, the possible industry and location effects are also controlled.

Since there are many firms in the sample, allowing different firms different intercepts gives messy regression output. To avoid this, all except dummy variables were transformed into their deviation form to 'sweep out' the intercept term (see, for example, Bekaert and Harvey, 1997; and Domowitz, Glen and Madhavan, 1998). For the year-specific fixed-effect regression, the cross-firm mean of a variable was subtracted from all observations of that variable in a particular year. For the firm-specific fixed-effect regression, the deviation comes from subtracting the time-series mean from all time series observations for a particular firm. Given the fact that Xu and Wang (1997) have results different from Chen (1998) due to differences in firm samples, the sample was further separated into Shanghai-listed firms and Shenzhen-listed firms to see if there is any systematic difference in the ownership-performance relationship between the two groups of firms.

Firm-specific characteristics may also give rise to cross-sectional heteroskedasticity. To cater for this, the White test (White, 1980) was used to check for the existence of heteroskedasticity. Unlike the Breusch-Pagan test, the White test does not assume normal distribution of the error term. The White statistic follows a chi-square distribution. If heteroskedasticity is found, White's correction was used to adjust the standard errors.

5. RESULTS

Regression results are presented in Table 3. The left-hand panel shows the results using the year-specific regression and the right-hand panel gives the results using the firm-specific regression. Each panel contains the results from the full sample as well as the Shanghai sample and Shenzhen sample in separate columns.

The first specification for the year-specific regressions (Specification 1) combines ST and LP together. This is a preliminary check on whether government ownership on the whole affects firm performance. The coefficient is 2.16 with a t -value of 7.04, which is significant at any reasonable statistical level.¹⁷ The result does confirm that government ownership has a significant, positive impact on firm performance.

SALE has a negative and significant impact on firm performance, which supports the assertion that the larger the firm is, the more serious the bureaucracy and agency problems are. Surprisingly, although LEVE has a negative coefficient, it is not statistically significant. This point will be discussed further below. DUMB is negative but also insignificant, indicating that foreign ownership does not have any significant impact on firm performance. The location dummy DURL and the regulated industry dummy DUMR, on the other hand, are both positive and very significant. Firms in coastal areas perform much better than do the firms in inland and remote areas. Firms in the regulated industries perform better than those in the non-regulated sectors.

As discussed earlier, previous studies seem to suggest different impacts of state ownership and legal person ownership on firm performance. To look into this possibility, another specification (Specification 2) treats ST and LP as separate independent variables. The result shows that ST and LP are individually positive and significant. ST has a coefficient of 1.59 with a t -value of 5.05. LP has a coefficient of 1.83 with a t -value of 6.04. This means that ST and LP have the same positive effect on firm performance, which is consistent with the view that as both are government owned shares, they should perform similar roles.

Regression results on the SZSE and SHSE sub-samples are qualitatively the same as the results with the full sample. Specifically, the combined ST and LP variables in Specification

Table 3

Pooled Regression Analysis of the Impact of Government Ownership on Firm Performance

| | <i>Fixed-Effects (Control for Year-Specific Omitted Variables)</i> | | | | | | <i>Fixed-Effects (Control for both Year- and Firm-Specific Omitted Variables)</i> | | | | | |
|-------------------------|--------------------------------------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------------------------------------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | <i>Full</i> | | <i>SHSE</i> | | <i>SZSE</i> | | <i>Full</i> | | <i>SHSE</i> | | <i>SZSE</i> | |
| | <i>Spec 1</i> | <i>Spec 2</i> | <i>Spec 1</i> | <i>Spec 2</i> | <i>Spec 1</i> | <i>Spec 2</i> | <i>Spec 1</i> | <i>Spec 2</i> | <i>Spec 1</i> | <i>Spec 2</i> | <i>Spec 1</i> | <i>Spec 2</i> |
| ST+LP | 2.1598 (7.040)** | | 2.5930 (6.042)** | | 0.56315 (2.301)** | | 0.9815 (5.798)** | | 0.8361 (3.464)** | | 0.8293 (5.090)** | |
| ST | | 1.5916 (5.051)** | | 1.2553 (2.818)** | | 0.5392 (2.147)** | | 0.7636 (4.409)** | | 1.3882 (3.436)** | | 0.7790 (5.019)** |
| LP | | 1.8310 (6.045)** | | 2.0278 (4.992)** | | 0.6008 (2.080)** | | 1.049 (5.244)** | | 0.6736 (2.175)** | | 1.0441 (5.047)** |
| DUMB | −0.2225 (−1.502) | −0.2228 (−1.483) | −0.0681 (−0.342) | −0.0256 (−0.124) | −0.1053 (−0.687) | −0.1049 (−0.681) | 0.0416 (1.164) | 0.0479 (1.347) | 0.0636 (1.609) | 0.0285 (0.680) | 0.0461 (0.927) | 0.0445 (0.898) |
| SALE | −0.1882 (−3.796)** | −0.1799 (−3.591)** | −0.3914 (−4.944)** | −0.3506 (−4.340)** | −0.0989 (−2.152)** | −0.0989 (−2.142)** | −0.1198 (−7.301)** | −0.1181 (−7.077)** | −0.1052 (−4.555)** | −0.1047 (−4.556)** | −0.0521 (−2.542)** | −0.0432 (−2.138)** |
| LEVE | −0.1883 (−0.625) | −0.1523 (−0.498) | −0.0607 (−0.138) | 0.1785 (0.387) | 0.0782 (0.265) | 0.0814 (0.275) | −1.3750 (−8.868)** | −1.363 (−8.398)** | −3.628 (−15.46)** | −3.4026 (−13.72)** | 1.4449 (6.823)** | 1.3539 (6.303)** |
| DUML | 0.5174 (6.869)** | 0.5490 (7.005)** | 0.5999 (6.135)** | 0.6674 (6.307)** | 0.1506 (1.809)* | 0.1481 (1.765)* | | | | | | |
| DUMREG | 0.6065 (3.466)** | 0.6317 (3.585)** | 1.0738 (4.020)** | 1.2037 (4.424)** | 0.2868 (1.770)* | 0.2863 (1.760)* | | | | | | |
| Adjusted R ² | 0.0529 | 0.0451 | 0.0963 | 0.0853 | 0.0187 | 0.0133 | 0.5700 | 0.5676 | 0.6452 | 0.4596 | 0.6665 | 0.6520 |
| FStatistic | 20.28** | 15.58** | 21.78** | 16.78** | 9.67** | 8.27** | 392.71** | 333.01** | 299.85** | 203.45** | 263.47** | 211.93** |
| D-W Statistic | 1.7496 | 1.7379 | 1.7578 | 1.7320 | 1.8747 | 1.8739 | 2.2064 | 2.2055 | 1.9777 | 1.9792 | 2.3936 | 2.2942 |
| White Statistic | 69.53** | 67.87** | 59.56** | 56.21** | 53.65** | 51.65** | 48.53** | 46.46** | 44.32** | 43.43** | 43.21** | 42.63** |
| N | 1774 | 1774 | 987 | 987 | 789 | 789 | 1727 | 1727 | 953 | 953 | 774 | 774 |

Notes:

The dependent variable is MBR, the market value of equity divided by the book value of net assets. ST and LP equal the share of equity owned by the state and legal persons respectively. DUMB is a dummy variable that equals one if there is B shareholding in the firm and zero otherwise. SALE is the natural logarithm of operating sales in billion RMB. LEVE is the value of debt divided by the book value of total assets. DUML is a dummy variable that equals one if the firm is located in the coastal cities and zero otherwise. DUMREG is a dummy variable that equals one if the firm is in a regulated industry (utility or finance). All variables except the dummy variables are in deviation form, i.e., deviation from their corresponding cross-sectional mean for a particular year. The full sample consists of listed firms on both the Shanghai Stock Exchange (SHSE) and the Shenzhen Stock Exchange (SZSE) for 1994–1997. White Statistic is the White test on heteroskedasticity which follows a chi-square distribution. *T*-values based on White's (1980) corrected standard errors are in parenthesis. ** and * denote two-tailed significance at the 5% and 10% level, respectively.

1 have a coefficient of 2.59 (t -value of 6.04) for Shanghai firms and a coefficient of 0.56 (t -value of 2.30) for Shenzhen firms. After separating the government ownership into two (Specification 2), ST has a coefficient of 1.25 (t -value of 2.81) and LP has a coefficient of 2.02 (t -value of 4.99) for the Shanghai firms. For Shenzhen firms, ST has a coefficient of 0.54 (t -value of 2.14) and LP has a coefficient of 0.60 (t -value of 2.08). All of these coefficients are statistically significant at the 5% level. The adjusted R^2 is generally low for all regressions. This is no surprise, because all intercepts in the regressions have been excluded by using the deviation form of all variables. However, the F -statistics are uniformly significant at the 5% level or better, indicating that all coefficients are jointly significant in the various regressions. Notice also that the adjusted R^2 for Shanghai firms is much higher than that of Shenzhen firms.

The right-hand panel of Table 3 presents the results of panel data analysis controlling for both firm-specific and year-specific omitted variables. Notice that DUML and DUMR are not included in the regression because they are firm-specific time-invariant variables for which the firm-specific specification has already controlled.

Again, the results are basically the same as those using the year-specific model. Specifically, ST+LP has a coefficient of 0.98 and a t -value of 5.80 for the full sample, a coefficient of 1.38 and a t -value of 3.43 for the SHSE subsample, and a coefficient of 0.83 and a t -value of 5.09 for the SZSE subsample. When separating the government ownership into ST and LP, both variables invariably have significantly positive coefficients for the full sample as well as the two subsamples. The results confirm that government ownership has a positive impact on firm performance.

One major difference in the results under the year-specific model is that LEVE now becomes unambiguously negative and significant across all samples. This means that debt has a significant and negative impact on a firm's performance. This is consistent with the bad image resulting from China's triangular or circular debt problem, which has plagued the SOEs and the whole banking system for years. Notice also that the adjusted R^2 is higher for all regressions in the firm-specific model than that in the year-specific model, suggesting that the pooled regressions

controlling for both firm-specific and year-specific omitted variables have better goodness of fit than the ones controlling for year-specific omitted variables.

On the whole, the above results strongly suggest that government ownership has a positive and significant impact on firm performance. Furthermore, ST and LP both contribute to the positive impact. This casts some doubt on Xu and Wang's (1997) hypothesis that legal persons are the only effective monitors in Chinese listed firms.

An immediate question to ask is why the Chinese government would allow SOEs to go public if government ownership is positively related to firm performance. A plausible hypothesis is that the relationship is non-linear. It may have an inverted U-shape. That is, 100% government ownership is not good, but no government ownership is not good either. The optimal government ownership may be somewhere in between. In fact, for US firms, studies typically find such an inverted U-shape relationship between managerial ownership and firm performance (Morck, Shleifer and Vishny, 1988; McConnell and Servaes, 1990; and Holderness, Kroszner and Sheehan, 1999; among others). To look into such a possibility, $(ST+LP)^2$ and $(ST+LP)^3$ were added into equation (1). The two variables effectively give higher weightings to higher percentages of government shareholding. If the ownership-performance relationship is indeed an inverted U shape, either $(ST+LP)^3$ or both $(ST+LP)^2$ and $(ST+LP)^3$ should be negative, depending on the location of the 'optimal' ownership mix. Similar power terms of ST and LP were added when they were run as separate regressors. The regression results are presented in Table 4.

For the year-specific model with combined government ownership, the results generally support the inverted U-shape hypothesis. Both $(ST+LP)$ and $(ST+LP)^2$ have positive coefficients for the full sample as well as for the sub-samples, whereas $(ST+LP)^3$ has negative coefficients. For instance, for the full sample, the coefficient of $(ST+LP)^3$ is -1.22 with a t -value of -6.79 . For the Shanghai stocks, it is -7.44 and the t -value is -1.47 . For the Shenzhen stocks, the coefficient is -0.74 and the t -value is -2.99 . Although the coefficient for the Shanghai sample is not statistically significant, it tends to be negative. This suggests that too much government ownership is bad for the firm.

Table 4

Pooled Regression Analysis of the Impact of Government Ownership on Firm Performance

| | <i>Fixed-Effects (Control for Year-Specific Omitted Variables)</i> | | | | | | <i>Fixed-Effects (Control for both Year- and Firm-Specific Omitted Variables)</i> | | | | | |
|----------------------|--------------------------------------------------------------------|-----------------------|---------------------|------------------------|-----------------------|------------------------|-----------------------------------------------------------------------------------|-----------------------|----------------------|-----------------------|-----------------------|-----------------------|
| | <i>Full</i> | | <i>SHSE</i> | | <i>SZSE</i> | | <i>Full</i> | | <i>SHSE</i> | | <i>SZSE</i> | |
| | <i>Spec 1</i> | <i>Spec 2</i> | <i>Spec 1</i> | <i>Spec 2</i> | <i>Spec 1</i> | <i>Spec 2</i> | <i>Spec 1</i> | <i>Spec 2</i> | <i>Spec 1</i> | <i>Spec 2</i> | <i>Spec 1</i> | <i>Spec 2</i> |
| ST+LP | 4.1541 (9.893)** | | 4.4015 (7.343)** | | 1.8445 (3.563)** | | 2.5729 (11.54)** | | 4.1538 (11.12)** | | 1.9147 (10.45)** | |
| (ST+LP) ² | 6.4264 (6.682)* | | 1.5642 (0.519) | | 4.0212 (2.980)** | | -0.5161 (-8.749)** | | 4.2273 (4.799)** | | -0.3653 (-7.370)** | |
| (ST+LP) ³ | -1.2236 (-6.797)* | | -7.4470 (-1.472) | | -0.7403 (-2.998)** | | -0.2697 (-8.932)** | | -39.11 (-9.234)** | | -0.1893 (-7.663)** | |
| ST | | 1.4431 (4.421)** | | 3.4061 (4.076)** | | 0.6731 (1.950)* | | 2.4899 (8.578)** | | 4.2300 (8.465)** | | 1.8597 (10.91)** |
| ST ² | | 2.2411 (2.369)** | | 2.9352 (2.234)** | | 2.9811 (2.850)** | | 0.4934 (6.374)** | | 1.5009 (0.776) | | -0.3537 (-7.466)** |
| ST ³ | | -0.3939 (-2.458)** | | -17.4305 (-3.211)** | | 0-0.4966 (-2.867)** | | -0.2581 (-6.552)** | | -45.583 (-6.089)** | | -0.1825 (-7.905)** |
| LP | | 0.4310 (0.721) | | 0.7998 (0.958) | | 0.5542 (0.891) | | 1.8741 (6.743)** | | 0.9763 (2.170)** | | 3.1064 (14.63)** |
| LP ² | | 2.2994 (2.385)** | | 1.2863 (1.000) | | 2.6078 (2.497)** | | 0.4239 (0.543) | | 0.8545 (0.572) | | -2.0999 (-2.345)** |

| | | | | | | | | | | | | |
|-----------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| LP ^a | | 9.4030 (2.643)** | | 8.6545 (1.823)* | | 1.0108 (0.235) | | 2.1368 (0.853) | | -9.4218 (-1.691)* | | -12.50 (-5.582)** |
| DUMB | -0.0593 (-0.401) | -0.2324 (-1.580) | 0.1269 (0.631) | -0.1066 (-0.519) | -0.1016 (-0.633) | -0.1797 (-1.208) | 0.0112 (0.610) | 0.0059 (0.162) | -0.0254 (-0.627) | 0.0122 (0.290) | 0.0022 (0.516) | 0.0327 (0.666) |
| SALE | -0.1771 (-3.630)** | -0.1722 (-3.519)** | -0.3597 (-4.578)** | -0.3233 (-4.064)** | -0.1069 (-2.230)** | -0.0932 (-2.091)** | -0.1384 (-8.377)** | -0.0130 (-7.868)** | -0.0796 (-3.582)** | -0.0905 (-4.060)** | -0.0497 (-3.235)** | -0.0533 (-3.016)** |
| LEVE | -0.2397 (-0.809) | -0.1209 (-0.404) | -0.1477 (-0.340) | 0.3231 (0.714) | -0.0159 (-0.052) | 0.0759 (0.264) | -2.4325 (-30.10)** | -2.5082 (-14.490)** | -4.2511 (-22.59)** | -3.723 (-14.20)** | 0.6848 (-3.282)** | 0.2823 (1.896)* |
| DUML | 0.3653 (4.700)** | 0.14013 (1.391) | 0.4743 (4.168)** | 0.2498 (1.763)* | 0.1149 (1.295) | 0.2193 (2.119)** | | | | | | |
| DUMREG | 0.5541 (3.218)** | 0.5409 (3.124)** | 1.0256 (3.773)** | 1.1650 (4.380)** | 0.2961 (1.751)* | 0.1847 (1.162) | | | | | | |
| Adjusted R^2 | 0.0777 | 0.0724 | 0.1142 | 0.1190 | 0.0196 | 0.0422 | 0.9889 | 0.8865 | 0.9384 | 0.4969 | 0.9169 | 0.7494 |
| F-Statistic | 21.81** | 14.47** | 18.40** | 15.19** | 9.38** | 7.79** | 212.09** | 1259.99** | 1880.76** | 967.53** | 1088.03** | 706.54** |
| D-W Statistic | 1.7663 | 1.7538 | 1.7708 | 1.7709 | 1.8740 | 1.9101 | 2.2177 | 2.1861 | 2.0192 | 2.0026 | 2.3530 | 2.3881 |
| White Statistic | 39.98** | 30.82** | 35.07** | 28.44** | 34.56** | 27.01** | 9.91 | 15.98* | 6.03 | 8.98 | 6.21 | 6.89 |
| N | 1774 | 1774 | 987 | 987 | 789 | 789 | 1727 | 1727 | 953 | 953 | 774 | 774 |

Notes:

The dependent variable is MBR, the market value of equity divided by the book value of net assets. ST and LP equal the share of equity owned by the state and legal persons respectively. DUMB is a dummy variable that equals one if there is B shareholding in the firm and zero otherwise. SALE is the natural logarithm of operating sales in billion RMB. LEVE is the value of debt divided by the book value of total assets. DUML is a dummy variable that equals one if the firm is located in the coastal cities and zero otherwise. DUMREG is a dummy variable that equals one if the firm is in a regulated industry (utility or finance). All variables except the dummy variables are in deviation form, i.e., deviation from their corresponding cross-sectional mean for a particular year. The full sample consists of listed firms in both the Shanghai Stock Exchange (SHSE) and the Shenzhen Stock Exchange (SZSE) for 1994–1997. White Statistic is the White test on heteroskedasticity which follows a chi-square distribution. *T*-values based on White's (1980) corrected standard errors are in parenthesis. ** and * denote two-tailed significance at the 5% and 10% level, respectively.

When splitting the government ownership into state ownership, ST, and legal-person ownership, LP, the results seem to be a bit different under the year-specific model. Although ST³ still bears significantly negative coefficients across the various samples, LP³ bears positive coefficients. However, this model does not control for firm-specific omitted variables. Once these are controlled for, as shown in the right-hand panel, the results confirm that LP³ bears significantly negative coefficients for the two sub-samples. The coefficient is -9.42 (t -value of -1.69) for the Shanghai sample and is -12.50 (t -value of -5.58) for the Shenzhen sample. It is true, however, that the coefficient is not significant for the full sample. In any event, the results are generally supportive of the nonlinear relationship between government ownership and firm performance.

As another robust check, the approach of Xu and Wang (1997) was followed to run regressions with MBR replaced by ROA and ROE separately. The estimates for ST, LP and ST+LP are unambiguously positive and significant, indicating the positive impact of government ownership is robust across different firm performance proxies. Following McConnell and Servaes (1995), the hypothesis that the allocation of equity ownership matters more in firms with fewer growth opportunities was also tested by dividing the sample into high- and low-growth firms and repeating the above regressions. However, the results did not support the hypothesis.¹⁸

4. CONCLUDING REMARKS

To invigorate its state-owned enterprises, the Chinese government has gradually privatized many of them. How does the existence of continuing government ownership affect the performance of these partially privatized firms? Pooled regression on data from 1994 to 1997 was used in an attempt to answer this question. Contrary to the common belief, the results suggest that partial government ownership has a positive impact on SOE performance. This is true no matter whether the government ownership is in the form of state ownership or legal-person ownership.

However, this does not mean that the government should not privatize the SOEs at all. Further investigation shows that the

relationship between government ownership and firm performance follows an inverted U-shape pattern. A certain level of government ownership seems 'optimal'. This need not be surprising, given the fact that so many SOEs are not performing well and are heavily in debt. Too much government holding of SOE shares means too much control and interference in the economic operations of SOEs. Too little government holding means too little support from the government to pull the SOEs out from their difficulties.

Other than political and financial support, we suggest that the government may have other impacts on SOE performance such as positive signalling, effective monitoring and providing business connections. However, these data did not allow the delineation of these impacts, which has to be left for future research.

NOTES

- 1 See Alchian (1977), Sappington and Stiglitz (1987), Shapiro and Willig (1990), Laffont and Tirole (1991), Boycko et al. (1996), Schmidt (1996) and Hart et al. (1997).
- 2 A recent paper by Lau, Qian and Roland (2000) presents a formal economic analysis of China's dual-track policy.
- 3 According to a newspaper article, Chinese Prime Minister Zhu Rongji described to a luncheon of Chinese businessmen in Germany a discussion he had with former US President Bush. Zhu tried to explain to Bush that what China has been implementing is not privatization but a share ownership scheme. After the explanation, Bush congratulated Zhu for China's success in privatization. Zhu is quoted as saying, 'Mr. Bush didn't understand what I am talking about. I hope you understand!' (*Hong Kong Economic Journal*, July 10, 2000).
- 4 As explained in Section 3 below, the share ownership scheme in China categorizes SOE shares into different types. 'Publicly owned' shares are state shares and legal-person shares. The latter type is best viewed as shares held by institutional investors, which are typically other SOEs.
- 5 We thank the referee for pointing out this to us.
- 6 For a formal analysis, see Branco and Mello (1991) and Perotti (1995). Perotti and Guney (1993) examine the UK, France, Spain, Chile, Nigeria, Turkey, Malaysia, Poland, Hungary and the Czech Republic. They found that privatizations were predominantly partial. A recent paper by Ranko and Briston (1999) confirms the findings in the case of partial privatization in Hungary. However, they find that companies from competitive industries are more likely to be 100% sold than those from other industries.
- 7 See Section 3 for a brief discussion of the seriousness of the SOEs' debt problems.

- 8 To relieve the debt burden of SOEs, the Chinese government has established state-owned asset management companies (AMC). The debt-for-equity swap is a swap of the SOE debts owed to state banks for AMC equity shares. As a result, these companies have control over SOE management (*China Securities*, January 13, 2000).
- 9 *People's Daily* (April 6, 2000).
- 10 To preserve the economy's socialist structure, most of the companies permitted to go public have to issue shares to the government, in addition to various categories of shares representing claims from different entities.
- 11 See Chen (1998).
- 12 There may be several legal person shareholders in a listed firm.
- 13 Although the company ordinance stipulates that public offers should not be less than 25% of total equities, this regulation was not followed in early periods (see endnote 9 of Mok, 1995).
- 14 Tobin's q is a popular proxy for firm performance (Morck et. al., 1988; McConnell and Servaes, 1990 and 1995, and others). Our proxy is similar to that used in Chung and Pruitt (1994), Perfect and Wiles (1994), Agrawal and Knoeber (1996), Kang and Stulz (1996), Clarkson, Satterly and Richwhite (1997) and others.
- 15 *Chinese Financial Times* (October 7, 1995).
- 16 Lin has a newspaper article about the implication of equity-for-debt policy on SOE reform published in the *Hong Kong Economic Daily* (March 24, 2000).
- 17 Notice that the White test statistics shown at the bottom of the table show the existence of heteroskedasticity in most of the regressions. This justifies the use of White's adjustment mentioned in Section 4.
- 18 The results for these regressions are not reported here but are available on request from the authors.

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