Partial privatization, firm performance and employment:

Political and economic objectives of government

Zhaohua Li and Takeshi Yamada*

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JEL Classification: G32, G38, P34

Keywords: Partial privatization; Political objectives; State ownership; Employment; Chinese economy

*Li, Faculty of Commerce, Lincoln University (liz2b@lincoln.ac.nz); Yamada, University of Adelaide; (takeshi.yamada@adelaide.edu.au). This paper, including earlier versions with a different title, was presented at the 3rd All China Economics International Conference (Hong Kong), Asian Financial Association Annual onference (Macau), 9th Convention of the East Asian Economic Association, AFAANZ Annual Conference, Nagoya University, Xiamen University, and National University of Singapore. The authors would like to thank participants for their comments at these presentations. We also thank Kam Chan, Sudipto Dasgupta, Joseph Fan, Li Jin, Hideaki Kato, Inmoo Lee, He Qing, Srinivasan Sankaraguruswamy, Michael Shih, Qian Sun, and Gary Tian for their invaluable comments.

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"For all its successes, state capitalism has fatal flaws"

The Visible Hand. *The Economist*, January 21, 2012

1. Introduction

The popularity of privatization programs in the past three decades has attracted great interest and generated a large literature concerning the effects of privatization. An extensive survey by Megginson and Netter (2001) documented that the post-privatization performance of most firms was better than pre-privatization, i.e., private firms performed better than government owned ones, which suggested that private ownership was superior to state ownership.[1] The inefficiency of State Owned Enterprises (SOEs) can be attributed to the fact that government officials direct the firms' resources to pursue political and social objectives, which constitute political costs to the SOEs (Shleifer and Vishny, 1994; Boycko et al., 1996). The inefficiency of SOEs can also be attributed to the lack of effective monitoring by shareholders and to the lack of a disciplining mechanism by the stock market.

However, in most privatization processes, governments usually do not sell the entire SOE in the initial Share Issue Privatization (SIP) and retain a controlling stake in the firm, i.e., most SOEs are partially privatized. Jones et al. (1999) document that governments maintained a controlling stake in a majority of the SIP in a sample of 630 cases from 59 countries, during 1977-1999. They found that only 11.5% of the initial SIP involved the sale

[1]For example, Boardman and Vining (1989) and Dewenter and Malatesta (2001) find that privately owned firms perform better than government owned ones for the largest firms across different countries. Claessens and Djankov (2002) compare sales and labor productivity for pre- and post-privatization periods during the large privatization program that took place in Eastern Europe. Their study also found that private ownership improved a firm's performance. There are few studies that found the opposite result. Among the few, Kole and Mulherin (1997) find no significant difference between the two groups of firms in the US around and during World War II when the federal government had interim custodianship of the firms.

of the entire SOE. Bortolotti and Faccio (2009) find that the state remained the largest ultimate owner of about one-third of 141 privatized firms in developed economies during 1996-2000. Since their shares are traded on the stock market and are being monitored by shareholders, Gupta (2005) finds that partially privatized SOEs are more efficiently managed than pre-privatized SOEs. However, partially privatized SOEs might still be subject to the political costs of government interference because governments often control privatized firms by means of special arrangements, such as golden shares, that leverage their voting powers for privatized SOEs (Bortolotti and Faccio, 2009). Boubakri et al. (2009) examine a sample of major strategic industries located in 39 countries and report that governments not only continued to remain as shareholders but also appointed politicians to key positions in the firms. Deng et al. (2010) find that the Chinese government appointed the CEO or chairman to 86% of the SOEs that went public between 1997 and 2000.[2]

In this study, we investigate the government's involvement in the SIP process. As various incentives from the government determine the privatization process, if the government can keep control of the firms it is ideal for pursuing these motives. To this end, we examine the government's incentives to retain major control of partially privatized firms. Very few studies have examined why the government maintained control of privatized firms. Chernykh (2011) finds that the government preferred to control firms in strategically important sectors using a sample of Russian renationalization during 2004-2008. Bortolotti and Faccio (2009) find that governments in developed economies tend to maintain ownership of worse performing

[2] Bortolotti and Faccio (2009) report that governments often controlled privatized firms by means of special arrangements, such as golden shares, that leverage their voting powers for privatized SOEs.

companies and that political and institutional factors explained the governments' decision to control privatized firms.[3] Our study is the first that directly examines the importance of employment in a government's decision to control partially privatized SOEs, along with other government objectives including firm performance.

When various incentives of the government determine the privatization process, the decisions of the government may introduce a selection bias in the sample, which affects the observed outcomes (Megginson and Netter, 2001). In this paper, we use firm performance and employment as outcome variables. Particularly, we compare firm performance and employment of partially privatized firms with major government control vis-à-vis those with less or no government control. (For brevity, hereafter, we refer to the former group of firms as SOEs and the latter as private firms.) Thus, part of the difference in firm performance and employment between SOEs and private firms can be attributed to the decision of the government to strategically retain control of certain firms or industries. To appropriately address the outcomes of the privatization programs, it is pertinent to correct for the selection bias introduced by the government. Studies by Claessens and Djankov (2002) and Knyazeva et al. (2006) are among the few studies that address the self-selection bias. Using a sample of privatization in Central and East European countries, the former study finds that any difference in productivity between SOEs and private firms cannot be attributed to the self-selection bias introduced in the privatization programs. The latter used a sample that

[3]Bortolotti and Faccio (2009) focus on the impact of cross country differences in political and legal systems on government control of privatized firms. Among other factors, they find that electoral rules and centralization of political authority were important factors that determined government influence on privatized firms in OECD countries.

consists of over 50 countries and found self-selection bias in their results. Frydman et al. (1999) correct for various kinds of selection biases, using instrumental variables techniques, for a sample of privatized firms in East European countries. To model the government's selection decision and its impact on economic outcomes, we use the structural self-selection model of Lee (1978) that not only addresses the selection bias caused by the government's decision but also recovers the government's objectives in making the decision.[4] Based on this model, we estimate the ex-ante outcomes for both SOEs and private firms, assuming there was no government intervention. The difference in the ex-ante outcomes between SOEs and private firms, which is the treatment effect of government control, measures the impact of government control on outcomes that is free from selection bias. By using Lee's model, we are able to further examine how the differences in ex-ante outcomes, namely firm performance and employment, affect the government's decisions to control partially privatized SOEs.

There are a few theories of government behavior that provide the basis for analyzing government's decision to control partially privatized SOEs. Our main interest is to investigate if a government pursues a political objective and sacrifices firm efficiency. Shleifer and Vishny (1994) and Boycko et al. (1996) provide a theory of government that uses employment as the key form of the manifestation of political power and shows how politicians gain control over privatized firms to maintain employment. Their study suggests that government imposes costs on firms to pursue political objectives (i.e., employment) and

[4]See Li and Prabhala (2007) for details of structural self-selection models. Alternatively, Lee's model is known as endogenous switching model.

create labor redundancy in SOEs, which limits the efficiency of government controlled firms.[5] Thus, their theory predicts a tradeoff between efficiency and political objectives. On the other hand, Bai et al. (2006) suggest that the co-existence of SOEs and non-SOEs helps to maintain social stability and protects the business environment of all firms at the same time. According to their theory, although the government faces a tradeoff between efficiency and social stability (i.e., privatizing SOEs increases unemployment), they show that it is the second-best strategy for the government to pursue both objectives simultaneously by managing the co-existence of SOEs and private firms.[6]

A government might aim at improving the efficiency of the country's listed firm sector by managing good performing SOEs or fully privatizing the firms. However, the government might not be able to improve the overall efficiency of the listed firm sector by managing privatized SOEs if the government controlled firms perform fundamentally worse than fully privatized firms. To examine this issue, we compare the efficiency levels (i.e., firm performances) of SOEs and fully privatized firms by controlling for the self-selection bias using our estimated model. Similarly, we compare the employment levels of SOEs and fully privatized firms. Thus, our paper examines the economic impact of government control in the SIP program, which has not been fully addressed by previous studies. We also provide policy

[5]Perotti (1995) presents a model in which the government has an incentive to retain ownership in a firm to signal its commitment that it would not interfere with the privatized firms. His model implies that state ownership does not necessarily point to less efficiency.

[6]In a duopoly market, where one firm is a private firm that maximizes profit and the other one is jointly owned by government and private sectors, Matsumura (1998) theoretically shows that partial privatization is optimal under moderate conditions.

implications of government intervention in the SIP program by comparing the economic outcomes of partially privatized firms and fully privatized ones.

We use a sample of privatized firms that were listed in China during 1998-2007, when over 75% of the firms were effectively controlled by the government. Privatization in China provides a natural experiment to examine partially privatized SOEs because China's privatization was mostly developed through SIP, where the government still retains 30-40% of state shares in the initial SIP (Tenev et al., 2001). In the early 1980s, one of every four Chinese SOEs was losing money; their total annual losses exceeded 4 billion Yuan. Therefore, reducing the political costs became a major concern. One solution to the problem was to increase the autonomy of SOEs by introducing various incentives. Groves et al. (1994) report that the productivity of Chinese state owned firms improved significantly due to some elementary incentives that were introduced as a response to the increased autonomy of SOEs. Li (1997) confirms the effectiveness of China's incremental industrial reform and attributes the improvements in total factor productivity (TFP) growth to improved incentives, intensified product market competition and improved factor allocation. However, the Chinese government is reluctant to relinquish control over firms completely because the state sector serves as a social safety net for workers. An employee of an SOE can be laid-off but still gets the minimum pay to make a living. Given that the workers' social security system outside the SOEs is weak in China, the government has to maintain social stability through SOEs but simultaneously gradually privatize the SOEs to improve their efficiency. For example, Deng et al. (2010) show evidence that the Chinese government considered employment as one of

the important factors when restructuring the country's SOEs. Thus, existing views on partial privatization of Chinese SOEs seem to suggest that the political objectives, particularly manifested in employment, might constrain the economic objective to make the SOEs more efficient. In view of the above, China's privatization process provides an ideal opportunity to study both the political costs and economic efficiency by explicitly addressing the government's incentives in partial privatization.

The remainder of the article is organized as follows. Section 2 discusses the model and variables used in this study and Section 3 presents the data and summary statistics. Section 4 presents our empirical results followed by Section 5, which presents a cost-benefit analysis of government control in the SIP program. We discuss the robustness of our results in Section 6. Finally, Section 7 summarizes and concludes the paper.

2. Model specification, estimation, and variables

2.1. The empirical model

The decision of a government to take a controlling stake in SOEs is defined as a binary choice where the alternative choice is to relinquish control and let private owners take control. In this paper, the economic outcome represents the firm valuation (Tobin's q), and labor intensity (*Labor*). From a government perspective, it is interested in the difference in the outcome of the chosen strategy versus the counterfactual, which is called the "treatment effect." In other words, we examine if the government not only considers the economic outcomes of its controlling decision but also compares them with the outcomes if the

government decided not to control (i.e., privatize) the firms. However, for each firm, we observe only one of these two outcomes, which raises the question of how to estimate the treatment effect. In fact, the government might choose to hold SOEs for some strategic reasons; such unobservable factors would affect the outcome. Consequently, when choice and outcomes jointly depend on factors that are unobserved by the researcher, any estimation method that does not account for this relationship is likely to yield biased estimates of the treatment effect. Unless the government made decisions randomly, ordinary least squares estimates are inconsistent because of the sample selection bias. To overcome this problem, we use the standard two-stage estimation of Heckman (1979) and Lee (1979) to correct for the sample selection bias.

By augmenting the two-stage estimation, Lee (1978) introduced a three-stage estimation method to estimate the impact of the average treatment effect on a binary decision. Suppose the government choice is a function of three factors: (1) the expected net differences in outcomes: Tobin's q (Q) and labor intensity (L) arising from the government choice; (2) a vector of factors Z_i that affects government choice but does not directly affect the outcomes, and (3) an unobservable random variable. Then we have:

$$I_i^* = \gamma_1 + \gamma_2(\hat{Q}_{soe,i} - \hat{Q}_{p,i}) + \gamma_3(\hat{L}_{soe,i} - \hat{L}_{p,i}) + \alpha' Z_i + \varepsilon_i, \quad (1)$$

where I^*_i is the latent variable: I^*_i= 1 if firm i is a SOE, I^*_i=0 if firm i is a private firm. Subscript p indicates private firms; that for an SOE is self explanatory. The parameter γ_2 measures the net effect of choice on economic outcome $\left(\hat{Q}_{soe,i} - \hat{Q}_{p,i}\right)$, which is the predicted

difference (or treatment effect) in Tobin's q between SOEs and private firms; the parameter γ_3 measures the net effect of choice on political factor $\left(\hat{L}_{soe,i} - \hat{L}_{p,i}\right)$, which is the predicted difference in labor intensity. The coefficients of the differences of Tobin's q and labor intensity shed light on the predictions of political objectives and economic objectives. If the government is concerned with economic factors, we should see a significant coefficient of γ_2. Conversely, if the government is concerned with employment, we should see a significant coefficient of γ_3. If γ_2>0 and γ_3>0, this suggests that the government is more likely to retain control of firms that have higher ex-ante firm performance and greater ex-ante labor intensity, thus pursuing both economic and political objectives simultaneously. If γ_2 <(>)0 and γ_3>(<)0, this suggests that the government is more likely to retain control of firms that have lower (higher) ex-ante firm performance and greater (lower) ex-ante labor intensity, thus pursing one objective and sacrificing the other.

To estimate equation (1), we first estimate $\left(\hat{Q}_{soe,i} - \hat{Q}_{p,i}\right)$ and $\left(\hat{L}_{soe,i} - \hat{L}_{p,i}\right)$ by adjusting for selection bias. Under the assumption that $\varepsilon_{soe,i}, \varepsilon_{p,i}$ and ε_i are jointly and normally distributed, Heckman (1979) and Lee (1979) show that a model can be estimated by adjusting for the selection bias as follows. For the economic performance variable $Q_{soe,i}$ and $Q_{p,i}$, we estimate,

$$Q_{soe,i} = \beta_{soe}^{Q\prime} X_i^Q + \sigma_{soe}^Q IMR_{soe,i} + \varepsilon_{soe,i}^Q \quad (2)$$

$$Q_{p,i} = \beta_p^{Q\prime} X_i^Q + \sigma_p^Q IMR_{p,i} + \varepsilon_{p,i}^Q . \quad (3)$$

We conduct a similar estimation for the political objective variable (labor intensity) $L_{soe,i}$ and $L_{p,i}$;

$$L_{soe,i} = \beta_{soe}^{L\prime} X_i^L + \sigma_{soe}^L IMR_{soe,i} + \varepsilon_{soe,i}^L \quad (4)$$

$$L_{p,i} = \beta_p^{L\prime} X_i^L + \sigma_p^L IMR_{p,i} + \varepsilon_{p,i}^L . \quad (5)$$

where X^Q and X^L are matrices of variables that determine Tobin'q and labor intensity, respectively; while β^Q and β^L are vectors of the coefficients. The Inverse Mills Ratio (IMR) reflects the unobservable factors that arise from the government's choice set and proxies for the self-selection bias, where σ_{SOE}^o and σ_p^o $(o = Q, L)$ are coefficients on *IMR*. IMR_{soe} is defined as $\frac{\phi(\hat{\psi}_i)}{\Phi(\hat{\psi}_i)}$, and IMR_p is defined as $\frac{\phi(\hat{\psi}_i)}{1-\Phi(\hat{\psi}_i)}$ where ϕ is the density function, and Φ is the distribution function of the standard normal variable ψ_i that is estimated from the residual of the reduced-form probit equation as follows:

$$I_i^* = \kappa' X_i + \alpha' Z_i + e_i , \quad (6)$$

where $X_i = X_i^Q \cup X_i^L$. The right-hand side variables in equation (6) include the vector of explanatory variables X_i that determine $\left(\hat{Q}_{soe,i} - \hat{Q}_{p,i}\right)$ or $\left(\hat{L}_{soe,i} - \hat{L}_{p,i}\right)$, and the vector of instrumental variables Z_i that affect only government choice. To estimate the full model, we estimate the equations backwards from equation (6) to (1). In the first-stage, we estimate the reduced form of the model of government choice (equation (6)) and calculate the IMRs. In the second-stage, we use the IMR obtained from equation (6) and estimate equations (2) to (5). This is estimated separately for the samples of SOEs and private firms. After obtaining

consistent estimates, we compute the predicted values $\hat{Q}_{soe,i}$ and $\hat{Q}_{p,i}$ from equations (2) and (3) without the IMR, using the entire set of firms. Similarly, we obtain $\hat{L}_{soe,i}$ and $\hat{L}_{p,i}$ from equations (4) and (5). In the final stage, for equation (1), we include the predicted differences in Tobin's q and labor intensity between SOEs and private firms using the entire set of firms.

One can use a continuous variable, the ratio of state ownership, instead of our binary variable of government control and estimate a simultaneous equation system that consists of state ownership ratio, firm performance, and/or labor intensity. For examples, Wei et al. (2005) and Tian and Estrin (2008) use a 2SLS method to examine the relationship between firm performance and government ownership for Chinese listed firms where the ownership is treated as one of the endogenous variables. However, in such models, firms in the sample are assumed to have the same slope coefficients, regardless of SOEs or private firms, with respect to various control variables that explain firm performance and/or labor intensity. We do not consider this assumption realistic for our sample because we find that the behavior of private firms is quite different from that of SOEs (see Section 4). Such a method is more appropriate when one is estimating a simultaneous model of ownership and outcome variables for a sample of relatively homogenous firms.[7]

2.2. Variable descriptions

We compute Tobin's q *(Q)* as the sum of the market value of tradable A and B shares, the book value of non-tradable shares, long term liability, and short term liability, which is

[7]One could interact explanatory variables with a dummy variable, which equals unity if SOE and zero otherwise, to estimate the difference in slope coefficients between SOEs and private firms. Yet, this method suffers from endogeneity bias as the dummy variable is a choice variable of the government.

divided by the book value of total assets. Although there are various other ways to measure a firm's performance, we still use a market based measure because it is free from serious problems associated with accounting based measures that often arise from manipulation of accounting numbers (Dewenter and Malatesta, 2001). Our labor intensity variable (L) is defined as the number of employees in an enterprise divided by its assets, then scaled by 1,000,000. Although employment may be only one of the important objectives of the government, it has been particularly emphasized by the Chinese government for reasons of social stability (see Deng et al., 2010). Dewenter and Malatesta (2001) document that, in other countries, government controlled firms are associated with higher labor intensity than private firms.

To identify the model, the variables that uniquely explain the government's choice (Z) are included in equation (1), but are excluded from the outcome equations for Tobin's q or labor intensity. If the instruments in vector Z have sufficient explanatory power, they should help identify the selection equation from the outcome equations. We use the coastal regional dummy and distance from Beijing for unique government choice variables. The cities in Chinese coastal areas have been given preferential treatment by the government as strategic cities for market development. Also, we expect the distance from Beijing to the location of a firm's headquarters to capture the incentive of the government to maintain more control on firms located closer to Beijing. In addition, we consider industry dummies as important variables that capture the government's strategic decisions, since the government targets certain industries for national security and development (Chernykh, 2011; Tian and Estrin,

2008; Wei et al., 2005). However, as we also include industry dummies in the equations of Tobin's q (equations (2) and (3)) and labor intensity (equations (4) and (5)), it is an empirical question if the coefficients of industrial dummies are statistically significant in equation (1). If they are, the industry dummy variables allow the identification of the government choice equation from the performance and labor intensity equations. The IMR, in the performance and labor intensity equations also allows identification of the system due to the ratio's non-linearity.[8]

For the specification of Tobin's q equation, we use similar variables to those used by Himmelberg et al. (1999). The explanatory variables include the following variables:[9]

$$X_{i,t}^{Q} : Size_{i,t}, \ln(K/S)_{i,t}, \ln(K/S)_{i,t}^{2}, (Y/S)_{i,t}, Leverage_{i,t}, SD_{i,t}, industry\ dummies_{i,t}$$

The first variable, *Size*, is the natural log of total assets. The motivation for the inclusion of size is twofold. Large firms might have higher market share and/or greater market power, which might positively impact firm performance. However, at the same time, large firms might experience a greater degree of government bureaucracy or other organizational inefficiencies that are detrimental to firm performance (Sun and Tong, 2003). Thus, it is an empirical question whether the impact of *Size* on Tobin's q is positive or negative. Variable ln(*K/S)* is the natural log of the ratio of tangible, long-term assets to sales. It is used to measure the alleviation of agency problems because tangible assets are easier to monitor and are considered good collateral. The squared term $[\ln(K/S)]^2$ allows us to examine the

[8]See Li and Prabhala (2007) for the identification issue in self-selection models.
[9]Alternatively, we included the Herfindhal Index in the regression. However, we did not include this in the final results because the index has high correlation with industry dummies.

possibility of nonlinearities between firm's performance and the variable. *Y/S* is measured as the operating income divided by sales, which proxies the firm's free cash flow. Although free cash flow is unobservable, it is presumably correlated with operating income. As suggested by Jensen (1986), the higher a firm's cash flow is, the more likely is the rent seeking behavior of managers, which is expected to impact firm value negatively. Almost all liabilities of listed Chinese firms are loans that are provided mostly by state controlled banks. Therefore, the impact of *Leverage* (i.e., total liability over total assets) on Tobin's q is also an empirical question since over-borrowing from state controlled banks might have a negative impact on firm's performance, though the disciplining role of debt on management could improve its performance. Standard deviation (SD) is total risk measured by equity returns. We expect SD to have a positive impact on Tobin's q as the value of equity is like that of an option where a greater level of volatility leads to a higher valuation that reflects firm's future investment opportunities. Finally, in addition to the industry dummy variables, we also include year dummy variables (not reported) to control for the annual fixed effects in all equations.

For the labor intensity equation, we use the following explanatory variables:

$$X_{it}^{L}: Size_{i,t}, Leverage_{i,t}, Wage_{i,t}, industry\ dummies_{i,t}$$

Wage is the average annual wage in a corresponding province, scaled by 10,000. It is used as a proxy for the average market wage. We intend to capture how changes in the market wage cause changes in labor intensity. One possibility is that an increase in the market wage may cause workers in firms to leave if they find that outside wage options are more attractive. For this reason, we expect a negative relation between *Wage* and labor intensity. An alternative

explanation is that when the market wage increases, firms may increase their wages accordingly. However, to maintain labor costs, a wage rise at the firm level will lead to labor force cuts, which reduces labor intensity. Therefore, both explanations could account for the negative relation. *Leverage* examines the effect of financial conditions on employment. As the disciplinary role of debt would limit agency costs, managers concerned with bankruptcy or an increase in borrowing costs might freeze recruitment, or even cut back on workers, which would lead to a negative relationship between *Leverage* and labor intensity. Ogawa (2003), Nickell and Nicolistas (1999) and Lang et al. (1996) find a negative relation in Japan, UK, and US, respectively. On the other hand, since most loans of listed Chinese firms are from state controlled banks, the banks, using their political power, might influence firms to hire more workers. For example, Carvalho (2010) found a positive relation between state owned bank loans and employment in Brazilian manufacturing firms. Thus, the sign of the coefficient of leverage is an empirical question. Finally, the industry dummy variables and year dummy variables (not reported) are included in all equations.

3. Data and descriptive statistics

The sample includes 1566 Chinese listed companies for the period 1998-2007. The accounting variables were downloaded from the *CSMAR Financial* database. Some variables, to compute Tobin's q and the number of employees for each company, were downloaded from Tinysoft.[10] Ownership structure and shareholder information were obtained from

[10]Tinysoft provides comprehensive information on trading data, financial data, fund data, corporate governance

Genius[11]. The industry classification was downloaded from the Shanghai Stock Exchange. Finally, the market wage data were obtained from the China Statistical Yearbooks for 1998-2007.

3.1. Classification of privatized SOEs with major government control

We are primarily concerned about the criteria for the classification of SOEs. Our definition of government control is based on the largest shareholder. Thus, our definition is based on control rights and not on cash flow rights. By collecting information about the largest shareholder we include indirect control by the government through the shareholdings of a government-owned group or government agency. We have classified a firm as an SOE if: (1) the government is the largest shareholder, or (2) a nominal agent controlled by the government is the largest shareholder. As Chinese SOEs sell newly-issued shares rather than sell government owned shares in the secondary market during privatization (Naughton, 2007), the government's ownership portion reduces if more shares are issued. However, as new shares are mostly purchased by diverse individual investors in Chinese SIP programs, a lower government ownership due to new share issues might not necessarily mean weaker control by the government. Therefore, in identifying effective government control for Chinese firms, the identity of the largest shareholder is important and might be more so than the proportion of government ownership. Accordingly, we have classified a firm as private if the largest shareholder is not the government or government controlled agency but is another private firm or private agent. To maintain consistency, we have included only private firms that

data, mergers, acquisitions, etc. Employee data are available only from1999.

[11]Genius is a commercial database that provides annual reports and detailed information on the top shareholders.

started as SOEs and have excluded those that started as new private businesses. Specifically, we have determined the largest shareholder from the company's annual reports downloaded from Genius. We examined the background of the largest shareholder under the section "Shareholder's information and change of shareholders." Most companies disclose information on the background of the largest shareholder or the background of the ultimate controller of the largest shareholder. For example, Zhong Jin Nonferrous Metal Ltd reports the National Nonferrous Metal Bureau as the largest shareholder. Such direct ownership by a state bureau is rare since most national bureaus, which Chinese central government used to regulate and administer the industry, have been restructured into national industrial companies, which are classified as legal persons. As legal persons often play the dual roles of regulators and block holders (Allen et al., 2005), they effectively share a common interest with the central government (Sun and Tong, 2003). For example, the China Petroleum & Chemical Corporation (Sinopec Corp.) was restructured from the National Bureau of Petroleum. Broadman (2001) comments on such restructuring that "in virtually all cases, these entities (the national industrial companies) retain governmental as well as business ownership functions. In fact, many of the underlying SOEs see little difference between the old sector line bureaus and the new structures—other than a name change." Thus, we treat national industrial companies as government shareholders. For some companies, if the information disclosed in the annual reports is insufficient to identify the nature of the shareholder, we looked for the information on the company's webpage. If there is insufficient evidence to identify the background of the largest shareholder, we exclude the company.

State owned and legal person shares were non-tradable shares until the Chinese government initiated a "split shares structure reform" that aimed at converting all non-tradable shares into tradable shares after April 2005 (see Li et al., 2011). Although the reform might have affected the incentives for the Chinese government to control shares in privatized SOEs, we expect this does not affect our results because our sample only overlaps with the first few years of the reform's transition period. Our selection procedure yields an 11780 sample of firm-year observations from 1998 to 2007. According to the disclosed information on the largest shareholders of each firm, we classified the sample into 9071 SOEs and 2709 private firms.[12]

3.2. Descriptive statistics

In three panels, Table 1 presents the descriptive information of our sample. Panel A provides the means, standard deviations, maximum values and minimum values for the key variables in our sample. Panel B shows the differences of the means between SOEs and private firms for the key variables. The significance tests for the difference are conducted using the t-statistic and the Wilcoxon rank sum z-statistic. Panel C provides the industry distribution of sample firms and the Herfindahl-Hirschman Index (*HHI*) for each industry.

The Tobin's q has a mean of 1.556 for the overall sample. Wei et al. (2005) find that the Tobin's q for Chinese listed firms averaged 2.92 from 1991 to 2001. Our estimates are lower than those of Wei et al. (2005) because we used only the market valuation for tradable shares and the book value for non-tradable shares. In contrast, Wei et al. (2005) used the market value for all shares. We find that the average ownership of the largest shareholder accounts

[12]Approximately 400 firm-year observations or 3.3% of the observations were dropped due to incomplete information regarding ownership.

for nearly 40% of the total shares. In Chinese listed firms, the largest shareholder tends to hold substantially larger proportion of shares than other shareholders (see Tian and Estrin, 2008).

We find that SOEs have a statistically significant lower Tobin's q of 1.657 compared with 1.793 for private firms before controlling for selection bias and any factors that determine Tobin's q.[13] The average number of workers in the sample is 3542. On average, SOEs employ 4050 workers and employ 1947 more workers than private firms. When we scale the number of employees by the firm's total assets, we find that SOEs also have a statistically significant higher labor intensity of 1.596 compared with 1.452 for private firms. We find statistically significant differences in other firm characteristics for the two groups: SOEs are, on average, larger than private firms, the largest shareholding of SOEs is higher than that of private firms by 12.2%, and SOEs have higher tangible assets to sales (*K/S*) than private firms.

According to our classification, approximately 78% of the sample firms fall into the SOE category (Panel C). There are greater proportions of SOEs in industries that might be essential for government's strategic policies. These industries include mining, utilities, transportation & warehousing, and social services; the SOEs comprise over 95% of mining

[13] Sun and Tong (2003) find that government ownership had a negative impact on the firm value of partially privatized Chinese firms. Wei et al. (2005) and Tian and Estrin (2008) show that the relationship between corporate value and government ownership is U-shaped, which implies that a firm's value decreases as government ownership increases up to a certain threshold but firm value increases beyond the threshold. Thus, previous studies showed mixed results regarding the impact of government ownership on firm performance in partially privatized firms.

and utilities industries and over 90% of the transportation & warehousing and social services industries.

3.3. Subsample analysis of firms that changed status from SOE to private firm

In our sample, we have firms that remained as an SOE during our observation period (7592 firm-year observations), that changed status from SOE to private firm (2689 observations), and that had already become private firms before our sample period (1499 observations). In this section we examine the subsample of SOEs that changed status to private firms during our observation period. Particularly, we analyze the causal impact of the change in control from government to private that might have effect on Tobin's q and labor intensity. We have 295 firms in the subsample that changed status from SOEs, where 1479 firm-year observations are recorded as SOEs and 1210 firm-year observation as private firms. Table 2 Panel A reports the same set of variables as in Table 1 for the subset of firms that switched from SOE to private firm. Most importantly, we find that the average Tobin's q increases and the average labor intensity decreases significantly after SOEs switched to private firms, which is consistent with the result for the entire sample (Table 1).

Although Tobin's q may increase and labor intensity may decrease after SOEs become private firms, such fluctuations may not only arise due to changes in control but also arise from other economic conditions that affect all firms. We therefore examined the differences in Tobin's q and labor intensity relative to those of a control sample of SOEs that did not change status during our observation period. We then compared these differences before and after the SOEs in our subsample changed status to private firms. Thus, using a combined

sample of firms that switch from SOE to private firms and a control sample of SOEs, we used the following difference-in-differences specification,

$$Y_i = c + \beta I_i(private) + YearFE + FirmFE + e_i, \quad (7)$$

where Y is either Tobin's q or labor intensity, and e is the error term. Dummy variable I (*private*) is unity for years when a firm operates as private firm, and zero otherwise. Coefficient β measures the difference, before and after the change in control, in differences of Y from the control sample. We estimate both equations with fixed year effects (*YearFE*) and fixed firm effects (*FirmFE*). Our estimates of coefficient β in Table 2 Panel B show that Tobin's q of the SOEs that switched to private firms increases significantly after the change relative to the control sample. We also find that the labor intensity of SOEs that switch to private firms decreases significantly after becoming private firms compared with the control sample. These results are consistent with our univariate results in Panel A of Table 2, which also shows that private firms have higher Tobin's q and lower labor intensity than SOEs. Our result is also consistent with those of previous studies that found SOE performance improved and labor intensity deceased after privatization (e.g., see Dewenter and Malatesta, 2001).

4. Empirical results

4.1. Reduced form government choice model

Table 3 provides the estimates of the first-stage probit model in reduced form, which provides the net effects for the various factors in the government decision. Our results show that firms with greater total assets, less tangible assets, lower total stock return risk, lower regional wages and lower leverage are more likely to be controlled by the government. We

later reconcile these results with those from the structural model in Section 4.3. Among other variables that affect government choice, we find that the coefficient of the kilometer distance from Beijing to the location of a firm's headquarters is negative and significant, which indicates that the government has more incentive to maintain a greater stake in firms that are closer to the capital. The coefficient of the coastal region dummy is not statistically significant. We measured industry dummies relative to the manufacturing industry. We find that the government is far more likely to control firms in industries such as mining, utilities, transportation, and social services, than firms in the manufacturing industry, which is consistent with the stated policy that the Chinese government controls firms that produce natural resources and public goods.

4.2. Firm valuation and labor intensity

Table 4 presents the estimates for Tobin's q and labor intensity. We find that there are noticeable differences between the behavior of SOEs and private firms. We examined the results for the Tobin's q equations in Panel A of Table 4. Our results suggest that SEOs use tangible capital less efficiently than private firms, have free cash flow problems, over-borrow from state controlled banks, and have less value in future investment opportunities than private firms. These results might reflect the fact that the management of SOEs are subject to political constraints, such as having government appointed CEOs (Fan et al., 2007) or having organizational structures that enable the government to expropriate resources from listed SOEs (Deng et al., 2010).

First, *Size* has a negative effect on Tobin's q for both SOEs and private firms. As mentioned earlier, the impact of *Size* is an empirical question. According to our results, large firms might be subject to more bureaucracy and organizational inefficiency, which lowers the firms' valuation. However, the negative impact of *Size* on Tobin's q is smaller for SOEs than for private firms, which implies that the greater market power and business influence of large SOEs might partially offset the negative impact of size on firm performance. Tangible asset ratio ln*(K/S)* has a significant negative effect on Tobin's q for SOEs, which counters our prediction that tangible capital alleviates the agency problem. Instead, our results might reflect the inefficient use of tangible assets by SOEs, resulting in poor firm performance. However, a positive coefficient for the quadratic term $[\ln(K/S)]^2$ for SOEs suggests that the negative linear impact of ln(*K/S*) is offset for some SOEs that hold large tangible assets. For private firms, although we find that the coefficient of the linear term ln*(K/S)* is not significantly different from zero, we find a large, positive and statistically significant coefficient for the quadratic term, which suggests that tangible assets are utilized more efficiently by private firms than by SOEs. Our result is consistent with the findings of Dollar and Wei (2007) who found SOEs utilize capital inefficiently because SOEs have lower returns to capital than private firms. *Y/S* has a negative effect on SOEs, which might suggest the existence of a free cash flow problem, but it is not a problem for private firms because the coefficient of *Y/S* is not significantly different from zero. The coefficients of *SD* are positive, suggesting that risky firms have higher firm valuation for both SOEs and private firms. However, such an effect is greater for private firms, which might reflect the greater option

value of future investment opportunities for private firms than for SOEs. We also find that the impact of leverage on Tobin's q is negative for SOEs, but positive for private firms. As it might be easier for SOEs to receive credit from state controlled banks, possibly due to strong political connections, the negative coefficient might reflect the impact of inefficient allocation of credit (or over-borrowing) from state controlled banks on SOEs. Also, we can consider state controlled bank loans as a subsidy from the government that might be used to pursue political objectives (Shleifer and Vishny, 1994). Although we cannot single out loans from state owned banks in our data, we can reasonably assume that listed Chinese companies borrow mostly from state owned banks and other large banks whose loan decisions are influenced by the government or government agencies.[14] On the other hand, the disciplinary role of debt might be more effective for private firms than for SOEs since creditors have greater incentives to tightly screen and monitor private firms, resulting in a positive impact of leverage on private firm performance. Of the 11 industry dummy variables, eight are significant for SOEs and only one is significant for private firms, which might reflect the government's policies for different industries that are directed at SOEs.

We examined the impact of the government's selection bias on firm performance because it is important to understand the magnitude of such biases when comparing the economic outcomes of SOEs versus private firms. The net selection bias is defined as:

[14] The big four state owned banks held 52.5% of total banking assets in China in 2005. The rest of the banks are joint-stock commercial banks, city commercial banks and other banks that include various credit cooperatives as well as state owned policy banks, holding 15.5%, 5.4% and 26.6% of total banking assets, respectively. Both central and local governments influence the management of these banks through various channels, although the government might not directly own these banks (Naughton, 2007).

$$\left[E(Q_{soe,i} \mid I_i^* = 1) - E(Q_{p,i} \mid I_i^* = 0)\right] - \left[E(Q_{soe,i}) - E(Q_{p,i})\right] = \sigma_{soe}^{Q} IMR_{soe,i} - \sigma_{p}^{Q} IMR_{p,i} \qquad (8)$$

where $E(Q_{soe,i} \mid I_i^* = 1) = E(Q_{soe,i}) + \sigma_{soe}^{Q} IMR_{soe,i}$, $E(Q_{p,i} \mid I_i^* = 0) = E(Q_{p,i}) + \sigma_{p}^{Q} IMR_{p,i}$, $E(Q_{soe,i}) = \beta_{soe}^{Q'} X_i^{Q}$, and $E(Q_{p,i}) = \beta_{p}^{Q'} X_i^{Q}$ from equations (2) and (3) (see Maddala, 1983). The first term on the left-hand-side of equation (8) is the expected difference in Tobin's q between SOEs and private firms conditional on the government's selection, the second term is the expected difference if government selected firms randomly, and the difference between the two terms defines the net selection bias. A significant positive coefficient of IMR for SOEs in Table 4 ($\sigma_{soe}^{Q} = 0.660$) suggests that the government selects relatively better performing firms, which positively biases the observed sample mean. As the coefficient of IMR for private firms is not significantly differently from zero ($\sigma_{p}^{Q} \approx 0$), we find a positive net selection bias in firm's performance: $\sigma_{soe}^{Q} IMR_{soe,i} - \sigma_{p}^{Q} IMR_{p,i} \approx \sigma_{soe}^{Q} IMR_{soe,i} = 0.256$. From Table 1 Panel B, we find that the observed difference (conditional on government selection) in the mean Tobin's q between SOEs and private firms is statistically significant ($[\overline{Q}_{soe} \mid I_i^* = 1] - [\overline{Q}_{p} \mid I_i^* = 0] = -0.260$). Using equation (8), our calculation in Table 5 shows that the estimated difference in the unconditional mean of Tobin's q between SOEs and private firms is $\overline{Q}_{soe,i} - \overline{Q}_{p,i} = -0.516$, which shows that, if the government selected firms randomly, private firms inherently perform much better than SOEs.[15] Our result suggest that the transfer of ownership from state to private should improve firm efficiency, which is generally in line with the results reported by previous literature (e.g., Chen et al., 2008; Megginson and Netter, 2001)

[15]We also directly compute $\hat{Q}_{soe,i} - \hat{Q}_{p,i}$ using the estimated regression model and find similar results.

However, our analysis further shows that there is a significant selection bias in the observed firm performance introduced by the government in favor of better performing SOEs.

In the labor intensity equation (Table 4 Panel B), the coefficient of size is negative, which suggests that large firms have lower labor intensity for both SOEs and private firms.[16] However, the negative impact of size on labor intensity is smaller for SOEs than for private firms, which implies that larger SOEs would hire marginally more workers than private firms with similar characteristics. *Leverage* has a significant positive impact on labor intensity for both SOEs and private firms, which is similar to the findings of Carvalho (2010) for an emerging market. However, we find that the positive impact of leverage on employment is greater for SOEs than for private firms, which implies that SOEs hire more workers than private firms by borrowing, most likely from state controlled banks. Together with our findings in Panel A that greater leverage decreases firm performance for SOEs, our result in Panel B shows that SOEs hire more workers by borrowing from state controlled banks, despite deteriorating firm performance. Thus, our result suggests that SOEs might bear the political cost of hiring more (or excessive) workers by receiving subsidies in the form of state bank loans (Shleifer and Vishny, 1994). We find that *Wage* is negatively related to labor intensity for SOEs, but not for private firms. As *Wage* is an average for the region, its variation might reflect the wage difference for the SOE sector since SOE wages might be lower and might not vary compared with private firms. As higher average wages in the region

[16]We estimate the labor intensity equations for a sample that covers 1999-2007, because data for the number of workers are not available for 1998. For estimating the structural probit equation (1) for 1998-2007, we compute the difference in labor intensities using the estimated model for 1999-2007.

might attract workers to the private sector, we find a negative coefficient on this variable for SOEs but not for private firms. The industry dummies are significant for most industries, for both SOEs and private firms, which might either reflect the nature of the industry structure or the government's policy for different industries.

The coefficients on IMR are significant in both equations, which suggests that the government's selection bias impacts the observed labor intensity for both SOEs and private firms. The net selection bias is:

$$\left[E(L_{soe,i} \mid I_i^* = 1) - E(L_{p,i} \mid I_i^* = 0)\right] - \left[E(L_{soe,i}) - E(L_{p,i})\right] = \sigma_{soe}^L IMR_{soe,i} - \sigma_p^L IMR_{p,i} \qquad (9)$$

where $E(L_{soe,i} \mid I_i^* = 1) = E(L_{soe,i}) + \sigma_{soe}^L IMR_{soe,i}$, $E(L_{p,i} \mid I_i^* = 0) = E(L_{p,i}) + \sigma_p^L IMR_{p,i}$, $E(L_{soe,i}) = \beta_{soe}^{L'} X_i^L$, and $E(L_{p,i}) = \beta_p^{L'} X_i^L$ from equations (4) and (5). The first term on the left-hand-side of equation (9) is the expected difference in labor intensity between SOEs and private firms conditional on the government's selection, the second term is the expected difference if government selected firms randomly. Using our estimates, we find a net selection bias ($\sigma_{soe}^L IMR_{soe,i} - \sigma_p^L IMR_{p,i}$) of -2.108, which implies that the observed difference in labor intensity is smaller than the ex-ante difference between SOEs and private firms. Careful inspection of our results shows that the negative bias mainly arises from the government's preference to privatize (i.e., not to control) firms that have significantly higher labor intensity than (ex-ante) average private firms, which is shown by the positive selection bias for private firms, $E(L_{p,i} \mid I_i^* = 0) - E(L_{p,i}) = \sigma_p^L IMR_{p,i}$=1.631 (see Table 4)[17]. Our result shows that the

[17]We find a negative selection bias for SOEs $E(L_{SOE,i} \mid I_i^* = 0) - E(L_{SOE,i}) = \sigma_{SOE}^L IMR_{SOE,i} = -0.478$, which implies

government's decision is biased towards relinquishing control of firms that could employ relatively more workers when they were fully privatized. Thus, our result might reflect the government's political influence to emphasize employment even when the government selects firms for full privatization. As the observed difference in the mean labor intensity between SOEs and private firms is $[\overline{L}_{soe} \mid I_i^* = 1] - [\overline{L}_p \mid I_i^* = 0] = 0.144$, Table 5 shows that the estimated difference in the unconditional mean of labor intensity is $\overline{L}_{soe,i} - \overline{L}_{p,i} = 2.252$, which confirms the general observation that SOEs have inherently more capacity to hire workers than private firms.

4.3. Structural equation of government choice

In column (1) of Table 6 Panel A, our result shows that the coefficients for the differences in both Tobin's q and labor intensity are positive and significant, which indicates that government is more likely to retain control of SOEs having better valuations and greater employment vis-à-vis private firms with comparable firm characteristics. Although our result suggests that the government might pursue economic efficiency and political objectives simultaneously (Bai et al., 2006), we also cannot refute the political view that government pursues only political objectives as in Shleifer and Vishny (1994). A politically inclined government might prefer to control better performing firms since it might be less costly to convince such firms to hire more workers. Providing subsidies to do so through state controlled bank loans can be costly since it can potentially hurt firm performance (see Table

government selects SOEs that have lower labor intensities than (ex-ante) average SOEs. However, our result shows that the magnitude of government's selection bias for private firms is greater than that for SOEs, which produces a negative net selection bias.

4). Also, when Chinese SOEs issue new shares to the public, almost all proceeds go to the listing firms or to their immediate parents, and not to the national treasury (Naughton, 2007). Such an arrangement ensures that privatized SOEs directly enjoy the benefit of better share valuations, which also helps the firm to hire more workers.

In Table 6 columns (2) and (3), we separately include the differences in Tobin's q and the differences in labor intensity, respectively. The results in columns (2) and (3) are consistent with those in column (1), which implies that the relatively low correlation between the two variables (0.213) does not affect the results. The identification between $\left(\hat{Q}_{soe,i} - \hat{Q}_{p,i}\right)$ and $\left(\hat{L}_{soe,i} - \hat{L}_{p,i}\right)$ is not only achieved by the exclusion of variables between the two differences but also by different impacts of the industry dummy variables and year fixed effects.

In Table 6 Panel B, we report the results for alternative specifications. Government could consider not only the predicted differences in outcomes (i.e., Tobin's q or labor intensity) but also the same variables that determine the outcomes in making its decision. To examine this, we add *Size*, ln(*K/S*), *Y/S*, *Leverage*, *SD*, and *Wage* independently in the regression in addition to the existing variables. We find that coefficients for leverage and wage are significant, which implies that the government's decision is affected by these variables in addition to those already included in Table 6 Panel A. Our result shows that the government is more likely to control SOEs that have lower leverage and lower regional wages, in addition to the effects of the existing variables. However, our basic result remains unchanged.

We reconciled the results of our structural equation in Table 6 with the reduced form results in Table 3. For example, the negative coefficient of l*n*(*K/S)* in the reduced form estimation is consistent with the negative impact of ln(*K/S)* on $\left(\hat{Q}_{soe,i} - \hat{Q}_{p,i}\right)$ since Tobin's q for SOEs responds negatively to ln(*K/S)* whereas that for private firms does not respond significantly (see Table 4 Panel A). We can explain the negative coefficient of $[\ln(K/S)]^2$ in the reduced form by the positive but smaller impact of the variable on Tobin's q for SOEs than for private firms. We can also explain the negative coefficient of SD in the reduced form in a similar manner. The negative coefficient of leverage in the reduced form equation can be explained by the negative impact of leverage on $\left(\hat{Q}_{soe,i} - \hat{Q}_{p,i}\right)$ since our result in Table 4 Panel A shows that Tobin's q for SOEs reduces as the level of leverage increases but that for private firms increases.[18] The negative coefficient for wages in the reduced form reflects the negative impact of wages on labor intensity for SOEs since that for private firms is not statistically different from zero. Finally, a positive coefficient for size in the reduced form equation is consistent with the positive impact of size on both $\left(\hat{Q}_{soe,i} - \hat{Q}_{p,i}\right)$ and $\left(\hat{L}_{soe,i} - \hat{L}_{p,i}\right)$. Although both Tobin's q and labor intensity decrease in size, both variables are less sensitive to size for SOEs than for private firms (see Table 4 Panels A and B), which results in both $\left(\hat{Q}_{soe,i} - \hat{Q}_{p,i}\right)$ and $\left(\hat{L}_{soe,i} - \hat{L}_{p,i}\right)$ increasing in size.

Our results also show that the government has a greater probability of maintaining control of firms closer to the capital. In the structural equation, the coefficient for coastal dummy is

[18]Our result in Table 4 Panel B implies that an increase in leverage has a positive impact on $\left(\hat{L}_{soe,i} - \hat{L}_{p,i}\right)$. However, the negative coefficient of leverage in the reduced form equation reflects the negative impact on the difference in Tobin's q more than the positive impact on $\left(\hat{L}_{soe,i} - \hat{L}_{p,i}\right)$.

negative and statistically significant. This result implies that the government is more likely to relinquish control of privatized firms in coastal regions, which is consistent with China's existing policies. The coefficients for most industry dummy variables are statistically significant, which implies that the government strategically maintains control of firms in certain industries[19].

The government's objective might lean towards political objectives when there is greater uncertainty in the economy. As China's output volatility declined significantly from 2002, we examined if there has been any shift in the government objectives[20]. We expect that the Chinese government emphasizes the political objective (i.e., employment) more than the economic objective when there is greater uncertainty in economic growth. Also, as China's market economy increasingly expanded in the 2000s, the government's incentives might have shifted towards economic efficiency. To investigate any shift in government objectives, we created a dummy variable that takes the value of unity from 2002 to 2007, and zero otherwise. We interacted the dummy variable with the predicted differences in Tobin's q and employment in the government choice model and examined if the sensitivity to the predicted differences shifted after 2002 (see Table 7). The sensitivity of the government's decision to the difference in Tobin's q increases significantly, whereas that to the difference in employment decreases significantly during 2002-2007 compared with 1998-2001. Although we found that there has been a shift in the Chinese government's choice towards the

[19] Some of the signs for the coefficients for industry dummies changed from the reduced form model. This is most likely due to the significant industry effects in the labor intensity variable.
[20]See Gan et al. (2011) for the structural shift in GDP growth volatility.

economic objective and away from political objective for the 2002-2007 period, our results remain qualitatively unaffected in both subperiods.

5. The evaluation of government control in the SIP program

We evaluate the cost and benefit of government control by examining if the partial privatization strategy of the government improves economic efficiency and/or employment compared with the case of full privatization. To this end, we examined the expected outcome of government controlled firms and compared with that of the same firms if they were fully privatized. Under the normality assumption, the expected differences for firm performance and labor intensity are expressed as follows:

$$E(Q_{soe,i} \mid I_i^* = 1) - E(Q_{p,i} \mid I_i^* = 1) = E(Q_{soe,i}) - E(Q_{p,i}) + (\sigma_{soe}^{Q} - \sigma_{p}^{Q}) IMR_{soe,i} \quad (10)$$

$$E(L_{soe,i} \mid I_i^* = 1) - E(L_{p,i} \mid I_i^* = 1) = E(L_{soe,i}) - E(L_{p,i}) + (\sigma_{soe}^{L} - \sigma_{p}^{L}) IMR_{soe,i}, \quad (11)$$

(see Maddala, 1983). The first term on the left hand side, $E(O_{soe,i} \mid I^* = 1)$ $(O = Q, L)$, is the expected outcome of SOEs that government selected to control, and the term $E(O_{p,i} \mid I^* = 1)$ $(O = Q, L)$ is the expected outcome of the same choice of firms if the firms operated as private firms. Using our results from Section 4, the estimated differences are -0.260 and 1.300 for equations (10) and (11), respectively[21]. The negative difference for equation (10) shows that, compared with full privatization, the government's strategy of

[21] For computation, we use $\overline{Q}_{soe,i} - \overline{Q}_{p,i} = -0.516$ and $\overline{L}_{soe,i} - \overline{L}_{p,i} = 2.252$ from Table 4. We used the average IMR computed from equation (6) and used the coefficients on IMR from the outcome equations in Table 4 to compute the differences.

selecting and controlling firms does not improve economic efficiency, whereas the positive difference for equation (11) shows it improves employment. Although there is a positive bias from the government's selection on firm performance, $(\sigma_{soe}^{Q} - \sigma_{p}^{Q})IMR_{soe,i} = 0.256$, it is not large enough to offset the ex-ante difference in firm performance where private firms can achieve higher performance than SOEs. The positive difference on employment implies that the government selects and controls SOEs that would otherwise hire fewer workers if they were fully privatized, which implies that government is preserving employment in the SOE sector.[22] Our result is not only consistent with the theoretical predictions of Shleifer and Vishny (1994), where the government's political motives create labor redundancy in SOEs, but is also consistent with the empirical findings of Dong and Putterman (2003) that show strong evidence of excess employment in Chinese SOEs. In sum, our result shows that, although the government might select and control relatively better performing firms, the selected firms do not necessarily achieve better efficiency than if they were fully privatized, while SOEs might employ more workers. Thus, our result shows that the government strategy that simultaneously pursues firm performance and employment by controlling partially privatized SOEs might have its limits.

[22]We found a negative impact of self-selection on labor intensity $(\sigma_{soe}^{L} - \sigma_{p}^{L})IMR_{soe,i} = -0.953$. However, the magnitude is small and does not offset the positive difference in ex-ante mean labor intensities between SOEs and private firms.

6. Robustness checks

As we estimate the IMR using the residual of the reduced form government choice equation, it is crucial to have a robust specification of the equation. We examined a few variations of the model, using different sets of explanatory variables to check the robustness of our result. In our basic model, we infer the government's decisions by using differences in contemporaneous expected outcomes between SOEs and private firms. However, as the government's decision might have a delayed response, we used one year lagged variables and lagged differences in expected outcomes to estimate the model. Our unreported results show that they are not qualitatively different from our reported results. Second, we found that two variables $[\ln(K/S)]^2$ and $\ln(K/S)$ are most highly correlated among the explanatory variables with a correlation coefficient of 0.583. We excluded the squared term and re-estimated the entire model and find that the result is not qualitatively different from our reported results. We also note that various implications of the model, which is derived from the estimated IMRs and their coefficients, produce similar results for the different specifications mentioned in this section.

7. Conclusions

Few privatization studies have examined the incentives of government control on partially privatized firms and its implications for economic outcomes. Our study asks if both economic and political objectives matter in privatization. We have provided evidence that the Chinese government makes its partial privatization decisions based on firm performance and

employment. More specifically, we found that the government is more likely to control privatized SOEs that not only have relatively higher levels of employment but also greater firm values than comparable private firms. Previous studies have generally argued that the government requires SOEs to undertake a social function, ignoring efficiency. We have provided evidence that appears to contradict this argument.

However, our study offers further evidence that there are limits to improving efficiency as long as the government maintained control on partially privatized SOEs. Although partial privatization might have positive benefits because the stock market can play a disciplining role on the firm's management (Gupta, 2005), our findings confirm that government controlled firms are not as efficient as fully privatized firms, which might be due to political costs, agency problems, or governance issues associated with government control. Our results also show that the government tends to select and control partially privatized firms that maintain greater employment, potentially constraining the efficiency of the listed sector. Thus, our study suggests that government involvement in the SIP program is likely to impose political costs on firms and limit their efficiency, supporting the political view that the government emphasizes employment. Allen et al. (2005) report that listed firms in China did not grow as fast as non-listed private firms. Our paper suggests that government involvement in Chinese listed firms might explain some of their deficiencies.

According to the political view of the government, subsidies to firms are one important means to achieve political goals. Our results suggest that the government can prop up employment by either controlling better performing firms or by providing loans from state

controlled banks as subsidies. However, we find that state controlled bank loans have a negative impact on the performance of SOEs. Although we treat state controlled bank loans as an exogenous variable in this study, they are most likely to be influenced by government decisions. Thus, the next step in this research is to examine the role of state controlled banks and their impacts on privatization.

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Table 1. Descriptive data of the data set of Chinese SOEs and private firms

This data set comprises 11780 Chinese listed firm observations from 1998 to 2007 (the sample period for Labor and Worker is from 1999). Tobin's q is calculated as the summary of the market value of tradable A and B shares, the book value of non-tradable shares, long term liability, and short term liability, which is then divided by the book value of total assets. Following Dewenter and Malatesta (2001), we use the measure for labor intensity, which is defined by the number of employees in enterprises divided by assets. Size is the natural log of the book value of total assets. Variable ln(K/S) is the natural log form of the ratio of tangible, long-term assets to sales and $[\ln(K/S)]^2$ is the square of ln(K/S). Y/S is measured as operating income divided by sales. Leverage is defined as total debt divided by total assets. Worker is the number of employees in firms. Wage is the average annual wage in collectively owned enterprise in a corresponding province, scaled by 10,000. SD is the standard deviation of the monthly stock returns per year. Largest share is the fraction of shares that are held by the largest shareholder. HHI, the Herfindahl-Index, is calculated as the sum of the squares of the market shares of each individual firm in the market per year. Panel A provides the means, standard deviations (S.D.) , maximum values, and minimum values for the key variables in our sample.

Panel A. Summary statistics

Variable	Obs	Mean	S.D.	Min	Max
Tobin's q	11780	1.556	1.121	0.093	58.044
Labor intensity	9885	1.561	1.532	0.002	30.272
Worker	9885	3542.131	12883	11.000	466502
Size	11780	21.096	1.020	14.937	27.625
Leverage	11780	0.501	0.401	0.008	17.650
Wage	11780	17477.74	8858.30	5384	49310
Largest share holding	11780	0.416	0.171	0.004	1.000
ln(K/S)	11752	-0.506	1.138	-6.994	5.293
$[\ln(K/S)]^2$	11752	1.552	3.107	0.000	48.921
Y/S	11759	0.005	1.899	-41.85	150.78
S.D.	11534	0.124	0.097	0.004	5.939

Panel B. Differences of the mean tests (whole sample)

Panel B shows the differences of the mean test between SOEs and private firms for the key variables. The significance tests are conducted using the two tailed t-statistic and the Wilcoxon rank sum z-statistic.

	SOEs(1)		Private(2)		SOEs-Private (1)-(2)	
Variables	Mean	S.D.	Mean	S.D.	t-statistic	Wilcoxon z-statistic
Tobin's q	1.496	0.900	1.756	1.643	-7.892**	-8.382**
Labor intensity	1.596	1.505	1.452	1.612	3.866**	6.794**
Worker	4050.50	14660.9	1947.88	3025.54	11.662**	20.615**
Size	21.205	1.017	20.732	0.944	22.513**	20.584**
Leverage	0.475	0.260	0.586	0.681	-8.305**	-11.007**
Wage	16851.79	8858.58	19573.72	8530.82	-14.443**	-17.904**
Largest Share	0.444	0.170	0.322	0.137	38.476**	33.489**
ln(K/S)	-0.487	1.106	-0.571	1.239	3.1522**	4.598**
$[\ln(K/S)]^2$	1.460	2.966	1.860	3.524	-5.358**	-6.376**
Y/S	0.045	0.837	-0.130	3.652	2.47**	-0.079
SD	0.119	0.088	0.140	0.120	-8.499**	-13.448**

** and * indicate significance at the 0.01 and 0.05 levels, respectively.

Panel C. Industry distribution and HHI

	Whole sample (1)		SOEs (2)	Private (3)
	Obs.	HHI	Obs(%)	Obs(%)
(1) Mining	189	0.666	96.3%	3.70%
(2) Mass communication	109	0.180	63.3%	36.70%
(3) Utilities	515	0.081	95.1%	4.90%
(4) Real estate	581	0.055	71.7%	28.30%
(5) Construction	212	0.159	75%	25.00%
(6) Transportation & warehousing	479	0.127	90.8%	9.20%
(7) Agriculture, forestry, fishing & hunting	292	0.071	68.4%	31.60%
(8) Wholesale & retail trade	869	0.049	83.08%	16.92%
(9) Social services	342	0.070	90.9%	9.10%
(10) Information technology & telecommunication	728	0.113	63.5%	36.50%
(11) Manufacturing	6782	0.009	76.8%	23.20%
(12) Conglomerate	682	0.037	60.8%	39.20%
Total	11780	0.048	77.97%	22.03%

Table 2. Subsample analysis of Chinese SOEs that changed status to private firms

Panel A. Differences of the mean tests (subsample)

Panel A. shows the differences of the mean test between SOEs and private firms for the key variables for a subsample of firms that switched classification from SOE to private firms during the observation period. SOEs have 1479 and private firms have 1210 firm-year observations. The significance tests are conducted using the two tailed t-statistic and the Wilcoxon rank sum z-statistic.

	SOE(1)		Private(2)		SOEs-Private (1)-(2)	
Variables	Mean	S.D.	Mean	S.D.	t-statistic	Wilcoxon z-statistic
Tobin's q	1.657	1.671	1.793	1.744	-2.06*	3.764**
Labor intensity	2.007	2.093	1.445	1.885	6.606**	9.828**
Worker	1975.80	2198.61	1693.63	2306.58	2.934**	5.762**
Size	20.594	0.796	20.729	1.004	-3.814**	-4.624**
Leverage	0.510	0.374	0.684	0.907	-6.270**	-10.714**
Wage	13517.27	6574.48	19339.35	8424.72	-19.639**	-20.942**
Largest share	0.387	0.168	0.301	0.126	15.197**	13.638**
ln(K/S)	-0.295	1.122	-0.533	1.342	4.916**	5.331**
$[\ln(K/S)]^2$	1.347	2.976	2.084	4.116	-5.207**	-6.132**
Y/S	-0.057	1.205	-0.072	4.781	0.106	0.494
SD	0.121	0.168	0.154	0.158	-5.201**	-10.633**

** and * indicate significance at the 0.01 and 0.05 levels, respectively.

Panel B. Difference-in-differences analysis

Coefficient β is the estimated difference of dependent variables, relatively to those of the control sample, before and after SOEs change status to private firms. SOEs in the control sample do not change status during the observation period.

	Tobin's Q	Labor intensity
β	0.250**	-0.352**
	(5.99)	(7.42)
Constant	1.952**	1.435**
	(91.99)	(56.02)
Year fixed effects	Yes	Yes
Firm fixed effects	Yes	Yes
R^2	0.11	0.02
N	10,067	8,440

** and * indicate significance at the 0.01 and 0.05 levels, respectively.

Table 3. Reduced form of the government choice model

This table presents estimates of the factors in the government's decision to hold shares of SOEs. Size is the natural log of the book value of total assets. Variable ln(K/S) is the natural log form of the ratio of tangible, long-term assets to sales and $[\ln(K/S)]^2$ is the square of ln(K/S). Y/S is measured as operating income divided by sales. Leverage is defined as total debt divided by total assets. Wage is the average annual wage in collectively owned enterprise in a corresponding province, scaled by 10,000. SD is the standard deviation of the monthly stock returns per year. Industry dummies take the value of one for corresponding industry and zero otherwise. The industry dummy effects are measured relatively to the manufacturing industry. Coastal Dummy is a dummy variable that equals to 1 if the headquarter of listed company is located in coastal provinces. Distance to BJ is kilometer distance measured from the headquarter location of a listed company to Capital Beijing. The figure in the parentheses shows the z-statistic.

	Estimates
Variables	(1)
ln(K/S)	-0.087**
	(5.254)
$[\ln(K/S)]^2$	-0.019**
	(3.314)
Y/S	-0.013
	(1.277)
Size	0.293**
	(18.592)
SD	-0.324**
	(2.578)
Leverage	-0.307**
	(6.680)
Wage	-0.286**
	(16.007)
Mining	0.804**
	(4.253)
Mass communication, arts, and education	-0.214
	(1.639)
Utilities	0.852**
	(8.304)
Real estate	-0.073
	(1.143)
Construction	-0.077
	(0.754)
Transportation	0.670**
	(7.318)
Agriculture, forestry, and fishing and hunting	-0.215**

	(2.624)
Wholesale and retail trade	0.285**
	(5.053)
Social services	0.889**
	(8.081)
Information	-0.283**
	(5.188)
Conglomerate	-0.324**
	(5.983)
Coastal dummy	-0.040
	(1.221)
Distance to BJ	-0.297**
	(12.768)
Constant	-4.381**
	(13.319)
Observations	11508
Log likelihood	-5453.870
PseudoR^2	0.115

** and * indicate significance at the 0.01 and 0.05 levels, respectively.

Table 4. Determinants of Chinese firm performance and labor intensity

The table reports the results using Heckman's two-stage regression using data from 1998 to 2007.Tobin's q is calculated as the summary of the market value of tradable A and B shares, the book value of non-tradable shares, long term liability, and short term liability, which is then divided by the book value of total assets. Following Dewenter and Malatesta (2001), we use the measure for labor intensity, Labor, which is defined by the number of employees in enterprises divided by assets. Size is the natural log of the book value of total assets. Variable ln(K/S) is the log form of the ratio of tangible, long-term assets to sales. Y/S is measured as operating income divided by sales. Leverage is defined as total debt divided by total assets. SD is the standard deviation of monthly stock return per year. Wage is the average annual wage in collectively owned enterprises in a corresponding province, scaled by 10,000. Industry dummies take the value of one for corresponding industry and zero otherwise. The industry dummy effects are measured relatively to the manufacturing industry. Coastal Dummy is a dummy variable that equals to 1 if the headquarter of listed company is located in coastal provinces. Distance to BJ is kilometer distance measured from the headquarter location of a listed company to Capital Beijing. IMR is the inverse Mills' ratio. The absolute value of the z-statistic is in parentheses.

Panel A. Determinants of firm performance

Variables	SOEs	Private
Size	-0.189**	-0.461**
	(15.574)	(11.040)
ln(K/S)	-0.052**	0.006
	(4.397)	(0.227)
$[\ln(K/S)]^2$	0.023**	0.044**
	(5.544)	(4.559)
Y/S	-0.029**	-0.008
	(2.723)	(1.002)
SD	0.957**	1.404**
	(8.561)	(5.580)
Leverage	-0.145**	0.622**
	(3.679)	(13.953)
Mills' Lambda	0.660**	-0.052
	(8.640)	(0.364)
Mining	0.473**	0.388
	(6.665)	(0.670)
Mass communication, arts, and education	0.278**	-0.776**
	(2.700)	(3.464)
Utilities	0.196**	0.138
	(4.173)	(0.473)
Real estate	-0.219**	0.111
	(4.810)	(0.929)
Construction	-0.160*	-0.358

	(2.303)	(1.806)
Transportation	0.245**	0.174
	(5.072)	(0.715)
Agriculture, forestry, fishing and hunting	-0.144*	-0.214
	(2.320)	(1.410)
Wholesale and retail trade	-0.059	-0.084
	(1.658)	(0.673)
Social services	0.204**	-0.192
	(3.725)	(0.714)
Information	-0.046	0.002
	(1.057)	(0.017)
Conglomerate	-0.036	-0.082
	(0.785)	(0.819)
Constant	5.448**	11.553**
	(20.178)	(14.879)
Year dummies	Yes	Yes
Observations	8897	2611
Adjusted R^2	0.222	0.310

Panel B. Determinants of labor intensity

Variables	SOEs	Private
Size	-0.524**	-0.635**
	(18.895)	(10.875)
Leverage	0.878**	0.792**
	(11.828)	(11.832)
Wage	-0.111**	-0.069
	(3.815)	(1.161)
Mills': Lambda	-1.179**	1.171**
	(6.864)	(5.453)
Mining	1.440**	-0.722
	(11.161)	(1.172)
Mass communication, arts, and education	-0.613**	-0.729*
	(3.123)	(2.197)
Utilities	-0.949**	-1.569**
	(10.954)	(4.748)
Real Estate	-1.205**	-1.268**
	(14.470)	(8.936)
Construction	-0.603**	-0.135
	(4.690)	(0.556)
Transportation	-0.931**	-1.331**
	(10.715)	(4.743)
Agriculture, forestry, fishing and hunting	0.034	-0.736**
	(0.295)	(3.761)
Wholesale and retail trade	-0.534**	-0.902**
	(7.807)	(6.285)
Social services	-0.332**	-1.414**
	(3.110)	(4.563)
Information	-0.676**	-0.698**
	(8.486)	(5.693)
Conglomerate	-0.582**	-0.596**
	(6.498)	(4.478)
Constant	13.299**	13.460**
	(21.945)	(13.534)
Year dummies	Yes	Yes
Observations	7360	2299
Adjusted R^2	0.226	0.219

** and * indicate significance at the 0.01 and 0.05 levels, respectively.

Table 5. Summary of observed and estimated Tobin's q, labor intensity, and selection biases

This table summarizes the Tobin's q and labor intensity for the observed means, estimated selection biases from the outcome equations in Table 4, and ex-ante differences in Tobin's q and labor intensity.

Tobin's q		Labor intensity	
$\left[E(Q_{soe,i} \mid I_i^* = 1) - E(Q_{p,i} \mid I_i^* = 0)\right] - \left[E(Q_{soe,i}) - E(Q_{p,i})\right]$ $= \sigma_{soe}^{Q} IMR_{soe,i} - \sigma_{p}^{Q} IMR_{p,i}$		$\left[E(L_{soe,i} \mid I_i^* = 1) - E(L_{p,i} \mid I_i^* = 0)\right] - \left[E(L_{soe,i}) - E(L_{p,i})\right]$ $= \sigma_{soe}^{L} IMR_{soe,i} - \sigma_{p}^{L} IMR_{p,i}$	
(observed)		(observed)	
$[\bar{Q}_{soe} \mid I_i^* = 1]$	1.496	$[\bar{L}_{soe} \mid I_i^* = 1]$	1.596
$[\bar{Q}_{p} \mid I_i^* = 0]$	1.756	$[\bar{L}_{p} \mid I_i^* = 0]$	1.452
(ex-post difference)		(ex-post difference)	
$[\bar{Q}_{soe} \mid I_i^* = 1] - [\bar{Q}_{p} \mid I_i^* = 0]$	-0.260	$[\bar{L}_{soe} \mid I_i^* = 1] - [\bar{L}_{p} \mid I_i^* = 0]$	0.144
(selection bias)		(selection bias)	
$\sigma_{soe}^{Q} IMR_{soe,i}$	0.256	$\sigma_{soe}^{L} IMR_{soe,i}$	-0.478
$\sigma_{p}^{Q} IMR_{p,i}$	≈ 0	$\sigma_{p}^{L} IMR_{p,i}$	1.631
(net selection bias)		(net selection bias)	
$\sigma_{soe}^{Q} IMR_{soe,i} - \sigma_{p}^{Q} IMR_{p,i}$	0.256	$\sigma_{soe}^{L} IMR_{soe,i} - \sigma_{p}^{L} IMR_{p,i}$	-2.109
(ex-ante difference)		(ex-ante difference)	
$\bar{Q}_{soe,i} - \bar{Q}_{p,i}$	-0.516	$\bar{L}_{soe,i} - \bar{L}_{p,i}$	2.252

Table 6. Structural form of government choice

This table presents the structural probit estimates of the government's decision to control partially privatized SOEs. $\hat{Q}_{soe} - \hat{Q}_p$ and $\hat{L}_{soe} - \hat{L}_p$ are the predicted differences in Tobin's q and labor intensity for SOEs and private firms, respectively, computed using the estimated parameters in Table 4. Size is the natural log of the book value of total assets. Variable ln(K/S) is the natural log form of the ratio of tangible, long-term assets to sales. Y/S is measured as operating income divided by sales. Leverage is defined as total debt divided by total assets. Wage is the average annual wage in collectively owned enterprise in a corresponding province, scaled by 10,000. SD is the standard deviation of the monthly stock returns per year. Industry dummies take the value of one for corresponding industry and zero otherwise. The industry dummy effects are measured relatively to the manufacturing industry. Coastal Dummy is a dummy variable that equals to 1 if the headquarter of listed company is located in coastal provinces. Distance to BJ is kilometer distance measured from the headquarter location of a listed company to Capital Beijing. The last column shows the z-statistic.

Panel A. Basic regressions

Variables	(1)	(2)	(3)
$\hat{Q}_{soe} - \hat{Q}_p$	0.302**	0.416**	
	(10.447)	(13.90)	
$\hat{L}_{soe} - \hat{L}_p$	1.775**		1.916**
	(18.670)		(20.71)
Mining	-3.096**	0.775**	-3.318**
	(11.166)	(4.24)	(12.14)
Mass communication, arts, and education	-0.848**	-0.818**	-0.605**
	(6.445)	(6.20)	(4.75)
Utilities	-0.286*	0.857**	-0.318**
	(2.433)	(8.67)	(2.72)
Real estate	-0.124*	0.067	-0.250**
	(1.997)	(1.10)	(4.11)
Construction	0.680**	-0.103	0.811**
	(6.236)	(1.03)	(7.55)
Transportation	-0.117	0.646**	-0.112
	(1.196)	(7.33)	(1.15)
Agriculture, forestry, fishing and hunting	-1.612**	-0.245**	-1.709**
	(14.682)	(3.02)	(15.81)
Wholesale and retail trade	-0.397**	0.267**	-0.476**
	(6.065)	(4.91)	(7.40)
Social services	-1.265**	0.529**	-1.317**
	(8.813)	(5.10)	(9.30)
Information	-0.314**	-0.306**	-0.356**
	(5.893)	(5.82)	(6.76)
Conglomerate	-0.368**	-0.323**	-0.394**
	(6.868)	(6.08)	(7.38)

Coastal dummy	-0.168**	-0.179**	-0.151**
	(5.611)	(6.06)	(5.05)
Distance to BJ	-0.301**	-0.302**	-0.312**
	(12.970)	(13.20)	(13.55)
Constant	-2.539**	1.358**	-2.966**
	(12.034)	(33.78)	(14.57)
Observations	11,508	11,508	11,508
Log Likelihood	-5522.6	-5702.5	-5584.4
PseudoR^2	0.104	0.0746	0.0938

** and * indicate significance at the 0.01 and 0.05 levels, respectively.

Panel B. Alternative specifications

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$\hat{Q}_{soe} - \hat{Q}_p$	0.306**	0.295**	0.299**	0.131**	0.286**	0.337**	0.201**
	(8.43)	(10.14)	(10.32)	(3.50)	(9.58)	(11.20)	(5.23)
$\hat{L}_{soe} - \hat{L}_p$	1.789**	1.783**	1.778**	1.998**	1.758**	1.504**	1.713**
	(15.01)	(18.73)	(18.69)	(20.00)	(18.42)	(15.10)	(16.14)
Size	-0.004						
	(0.18)						
Ln(K/S)		-0.025					
		(1.93)					
Y/S			0.009				
			(1.52)				
Leverage				-0.399**			-0.311**
				(7.60)			(5.79)
SD					-0.242		
					(1.86)		
Wage						-0.161**	-0.138**
						(9.35)	(7.82)
Mining	-3.124**	-3.101**	-3.100**	-3.560**	-3.055**	-2.480**	-2.924**
	(9.88)	(11.19)	(11.18)	(12.50)	(10.99)	(8.65)	(9.84)
Mass Communication,	-0.855**	-0.835**	-0.838**	-0.704**	-0.829**	-0.820**	-0.714**
arts, and education	(6.27)	(6.33)	(6.34)	(5.23)	(6.28)	(6.24)	(5.33)
Utilities	-0.294*	-0.267*	-0.289*	-0.430**	-0.275*	-0.120	-0.254*
	(2.36)	(2.26)	(2.45)	(3.60)	(2.34)	(1.00)	(2.08)
Real estate	-0.124*	-0.147*	-0.125*	-0.187**	-0.129*	-0.072	-0.127*

	(1.98)	(2.31)	(2.01)	(2.96)	(2.07)	(1.15)	(1.99)
Construction	0.686**	0.665**	0.681**	0.866**	0.674**	0.585**	0.742**
	(5.99)	(6.08)	(6.25)	(7.75)	(6.18)	(5.34)	(6.57)
Transportation	-0.121	-0.088	-0.119	-0.216*	-0.110	-0.006	-0.097
	(1.20)	(0.89)	(1.22)	(2.19)	(1.13)	(0.06)	(0.98)
Agriculture, forestry,	-1.623**	-1.613**	-1.611**	-1.775**	-1.599**	-1.417**	-1.570**
fishing, and hunting	(13.09)	(14.69)	(14.67)	(15.80)	(14.54)	(12.67)	(13.62)
Wholesale	-0.402**	-0.415**	-0.398**	-0.451**	-0.393**	-0.289**	-0.345**
and retail trade	(5.68)	(6.27)	(6.07)	(6.80)	(6.00)	(4.33)	(5.09)
Social services	-1.281**	-1.249**	-1.268**	-1.473**	-1.242**	-0.947**	-1.151**
	(7.62)	(8.68)	(8.83)	(10.06)	(8.62)	(6.39)	(7.55)
Information	-0.314**	-0.331**	-0.313**	-0.331**	-0.316**	-0.297**	-0.312**
	(5.89)	(6.13)	(5.88)	(6.19)	(5.93)	(5.57)	(5.84)
Conglomerate	-0.369**	-0.372**	-0.367**	-0.359**	-0.368**	-0.383**	-0.374**
	(6.87)	(6.93)	(6.85)	(6.68)	(6.87)	(7.14)	(6.95)
Coastal dummy	-0.168**	-0.174**	-0.168**	-0.160**	-0.168**	-0.061	-0.070*
	(5.53)	(5.77)	(5.59)	(5.32)	(5.58)	(1.88)	(2.14)
Distance to BJ	-0.301**	-0.300**	-0.301**	-0.299**	-0.302**	-0.307**	-0.305**
	(12.97)	(12.93)	(12.95)	(12.86)	(12.99)	(13.19)	(13.07)
Constant	-2.477**	-2.567**	-2.546**	-2.899**	-2.477**	-1.715**	-2.105**
	(6.20)	(12.14)	(12.07)	(13.33)	(11.61)	(7.48)	(8.77)
Observations	11,508	11,508	11,508	11,508	11,508	11,508	11,508
Log Likelihood	-5522.6	-5520.8	-5521.6	-5492.1	-5520.9	-5479.2	-5462.0
PseudoR^2	0.1038	0.1041	0.1040	0.1088	0.1041	0.1108	0.1137

** and * indicate significance at the 0.01 and 0.05 levels, respectively.

Table 7. Government choice and shift in the objectives

This table presents the structural probit estimates of the government's decision to control partially privatized SOEs. $\hat{Q}_{soe} - \hat{Q}_p$ and $\hat{L}_{soe} - \hat{L}_p$ are the predicted differences in Tobin's q and labor intensity for SOEs and private firms, respectively, computed using the estimated parameters in Table 4. $D_{2002\text{-}07}$ is a dummy variable that equals 1 for years 2002 to 2007, and 0 otherwise. Industry dummies take the value of one for corresponding industry and zero otherwise. The industry dummy effects are measured relatively to the manufacturing industry.Coastal Dummy is a dummy variable that equals to 1 if the headquarter of listed company is located in coastal provinces. Distance to BJ is kilometer distance measured from the headquarter location of a listed company to Capital Beijing. The last column shows the z-statistic.

Variables	
$\hat{Q}_{soe} - \hat{Q}_p$	0.221**
	(3.19)
$\hat{L}_{soe} - \hat{L}_p$	1.493**
	(15.24)
$D_{2002-07} \times (\hat{Q}_{soe} - \hat{Q}_p)$	0.305**
	(4.14)
$D_{2002-07} \times (\hat{L}_{soe} - \hat{L}_p)$	-0.181**
	(7.77)
Mining	-2.133**
	(7.28)
Mass communication, arts, and education	-0.980**
	(7.25)
Utilities	-0.025
	(0.20)
Real estate	-0.078
	(1.22)
Construction	0.478**
	(4.32)
Transportation	0.048
	(0.48)
Agriculture, forestry, fishing and hunting	-1.312**
	(11.60)
Wholesale and retail trade	-0.257**
	(3.78)
Social services	-0.881**
	(5.92)
Information	-0.335**
	(6.21)
Conglomerate	-0.413**
	(7.61)
Coastal dummy	-0.188**

	(6.17)
Distance to BJ	-0.312**
	(13.26)
Constant	-1.575**
	(6.97)
Observations	11,508
Log likelihood	-5357.251
PseudoR^2	0.1307

** and * indicate significance at the 0.01 and 0.05 levels, respectively.