

What Makes Privatization Work? The Case of China¹

(preliminary)

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Abstract

Using a unique hand-collected nationwide survey, this paper studies China's privatization, by far the largest one in human history. We find that privatization in China has improved performance, but only for firms bought out by managers (MBOs). Consistent with improved performance, MBO firms are less likely to be influenced by the state in their daily operation and are more likely to take various restructuring measures. We also find that city governments with stronger fiscal disciplines and with less political burdens of disposing laid-off workers tend to use the MBO method to privatize. Our empirical design deals with the selection issues by applying a difference-in-difference approach and an IV approach.

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Introduction

Privatization of the state owned enterprises (SOEs) is the core issue of transforming centralized economies into market economies. Privatization in Central-Eastern economies (CEE) and in Russia has been studied intensively (Frydman et al., 1999; Barberis et al., 1996). Little, however is known about privatization in China, the large one in human history.²

Compared with Russia and CEE, China's privatization has some distinct features. In contrast to mass privatization, where privatization was pushed through by their central governments as a high priority at the beginning of the transition in the early 1990s, the Chinese government tried to avoid privatization as much as they can and privatization was delayed for more than a decade. Facing the political and ideological constraints, privatization in China was initiated by some city governments. Although the endorsement of the central government in the late 1990s is critically important for a nationwide privatization, in general it is city governments' decisions on whether privatize and how to privatization for SOEs (COEs) within their jurisdictions.

Large-scale privatization occurred in the late 1990s. An estimation based on our survey is that between 1998 and 2005, more than ninety thousand firms with more than 11 trillion RMB (1.4 trillion US\$) worth of assets were privatized, encompassing two-thirds of China's SOEs and state assets. This makes China's privatization the largest one in the world. Nevertheless, the process was so quiet that beyond a small number of China specialists it was not much noticed by the outside world and it is seriously under-researched. This is an

² Most of the studies of China's privatization is on share issue privatization, which, as we show later, is a tiny proportion (1%) of all privatization programs.

unfortunate omission. In addition to its sheer size, the great importance of China's privatization stems from its distinct differences from other privatization programs around the world and its far reaching impacts to the Chinese economy.

The main hurdle to studying China's privatization has been a lack of systematic data. To this end, we have conducted a nationwide survey of 3059 firms, based on stratified random sampling of industrial firms with sales above 5 million RMB. Our sample well represents the national population in ownership, industry, region, and size. It includes privatized firms, non-privatized SOEs and collectively-owned enterprises (COEs), *de novo* domestic private firms, and foreign firms, etc. The following are the major questions to be addressed in this paper.

1. Has China's privatization brought about improved operating efficiency?
2. What are the specific mechanisms, which make privatization effective in improving performance? Specifically,
 - a. Did privatization change corporate governance and allocation of control rights?
 - b. Has privatization strengthened incentives within the firms?
 - c. Has privatization brought about restructuring measures such as personnel changes and new business strategies?
3. What specific privatization method(s) are associated with deeper restructuring and thus better performance?
4. What factors affected city governments' decisions on how to privatize?

Our results suggest that in China certain privatization method and specifically management buyouts (MBOs), which account for close to half of all privatization

programs, are successful. We find that city government withdrew from corporate decisions in MBO firms; MBOs are more likely to changed members of core management team, to adopted international accounting standard and professional independent auditing, and to establish board of directors. As a result, MBO privatization in China has improved the performance. In contrast, non-MBO privatized firms did not take major restructuring measures and city government still intervene their operations. Not surprisingly, those privatization programs did not improve performance.

The success of MBOs in China is in contrast to the findings in the previous literature on Eastern Europe and Russia that insider privatization does not improve efficiency (Barberis et al., 1996). This is likely due to some key differences between the institutional environment at the time of mass privatization in other transitional economies and that in China. At the time of mass privatization, the countries in Eastern Europe had not established product markets, labor markets, or financial markets. Private ownership was an unfamiliar phenomenon. Under this situation, managers or private owners may not have had sustained interest in running their firms, nor do they have a clear exit strategy. In contrast, when the delayed privatization in China occurred, market institutions had been developed and, equally importantly, the private sector had already become a big part of the economy. Moreover, the capital market had developed enough to provide the new owners an exit strategy to fully capitalize fully on their efficiency gains.

There is a growing empirical literature that studies implementation and performance of China's privatization. To our knowledge, almost all the existing studies are not based on nationwide data except Su and Jefferson (2006). Li and Rozelle (2000) study 88 privatized township enterprises in Jiangsu and Zhejiang provinces. Song and

Yao (2004) and Garnault, Song and Yao (2005) use firm-level data covering 683 firms in 11 cities from 1995-2001. The study by Liu and Lu (2005) is based on survey data collected from 451 firms in five cities and four sectors during the 1994-1999. Yusuf et al. (2005) reported on a survey of 736 firms from five cities and seven sectors from 1996 to 2001. Based on the NBS census dataset of large-medium enterprises, Su and Jefferson (2006) studies the conversion of SOEs into shareholding. All of these papers find that privatization has improved profitability. Our paper differs from the existing literature in the following aspects: a) we examine the specific channels that lead to better performance; b) our data is based on a large-sample nationwide survey, stratified by region, industry, and size, which ensures the generality of our results.

The rest of this paper is organized as follows. Section 1 briefs institutional background of China's privatization. Section 2 describes the data and methodology. Section 3 analyzes impacts of privatization on performance controlled for non-privatized firms. Section 4 explores impacts of privatization on restructuring and corporate governance. Section 5 investigates factors which affect city governments' decisions on privatization. This analysis also serves as instruments for further resolving endogeneity problem associated with privatization selection. Finally, Section 6 concludes the paper by summarizing the major discoveries.

I. Privatization in China

More than twenty years of reforms in China are marked by the government's piecemeal and gradual approach. The reform of the state-owned enterprises is no exception. Instead of outright privatization, China concentrated first on productivity improvement by initiating enterprise governance structures that stressed autonomy and better incentives and then later by adopting long-term managerial contracts with pre-

specified financial targets (such as profits and taxes). Instead of introducing markets and liberalizing prices overnight, China first created markets at the margin, parallel to the planned economy, by introducing the “dual-track system” in the state industrial sector and by lowering bureaucratic barriers to entry to the once state-monopolized industries. Admittedly, the reforms brought about fundamental improvements in output and productivity. The marginal productivity of labor increased by 54 percent and the growth in total factor productivity (TFP) was 4.68-6 percent per year during 1980-89 (Li, 1997; Groves, Hong, McMillan, and Naughton, 1994).

However, despite significant output expansion and productivity gains, the profitability of the SOEs declined substantially and most of them were losing money in the early 1990s. As a result, many SOEs were deeply in debt and, by 1994, close to half of the SOEs had zero or negative equity. With SOEs relying on 70-80 percent of all bank credit, the banks were saddled with as much as US\$200 billion in uncollectible debt, which accounted for, by conservative estimates, a quarter of all outstanding bank loans (USA Today, Sept. 8, 1997).

Most Chinese state-owned firms were local SOEs, controlled by city governments (Xu, 2008). To deal with loss-making local SOEs and the large amount of local public debt built up by the state sector some Chinese some city governments initiated privatization since the early 1990s. A well documented city level privatization experiment was carried out in Zhucheng city, Shandong province. With more than two thirds of city SOEs making losses, the city government converted a large number of these SOEs into employee shareholding in 1992. Similarly, Shunde city of Guangdong

province privatized most of its state and collective firms in 1992 to deal with its serious debt problem caused by losses of those firms (Garnaut et al., 2005).

Under severe political and ideological constraints, to contain the risks of privatization, a prevailing privatization strategy chosen by most Chinese city governments is insider privatization, selling ownership of SOEs and COEs to their employees and managers. Employee ownership was particularly popular at earlier stages of privatization, whereas management buy-out dominates when privatization becomes large scale when the mandate of privatization was sanctioned by the central government. In addition to initiating privatization, city governments also acted as a (imperfect) substitute for legal institutions (Pistor and Xu, 2005). Since there was no constitutional protection for private property rights until April 2004, ad hoc government protection (promises) to private firms was crucial to firm development.

The local privatization experiment was sanctioned as a national policy by the central government through several steps. In 1993, the Third Plenum of the Fourteenth Chinese Communist Party Congress endorsed the creation of a modern enterprise system, which approved the development of diversified forms of ownership through privatization although much of the political constraints on privatization were still in the place. In 1995, the central government decided on the policy of “retain the large, release the small” (*zhuada fangxiao*). That is, the state was to keep the largest 300 SOEs in strategic industries and in principle would allow smaller firms to be privatized by their ‘owners,’ mostly city governments. Finally, a green light was given by the Chinese Communist Party’s 15th Congress (1997), which granted *de jure* ownership of local SOEs to Local governments, mostly city governments, who had the *de facto* ownership of those firms.

Large scale privatization began in the late 1990s. However, due to political and ideological constraints, privatization in China has been in a camouflaged form that the term “privatization” is officially disguised as “transforming the system” or “*gaizhi*” in Chinese. More precisely, *gaizhi* means changing ownership structures of SOEs. It includes partial privatization and full privatization, also ownership restructurings without involving privatization. Specifically, it covers *public offering*, *internal restructuring*, *bankruptcy and reorganization*, *joint ventures or merger*, *employee shareholding* (limited liability companies or cooperatives), *open sales* (to management, employees, outside private firms, or another SOE), and *leasing* (to management, employees, outside private firms, or other SOEs) (Garnaut et al., 2005).

Public offering involves partial privatization since by the Chinese law the state retains the majority of the shares after public offering. *Internal restructuring*, including incorporation, spinning off, introducing new investors, and debt–equity swaps, as well as bankruptcy/reorganization, often involves partial privatization but may also involves no privatization in the case that a structuring is among state-owned firms. The latter case is concentrated in super large scale SOEs owned by the central government and they enjoy monopolistic powers in markets, such as oil, electricity, telecommunication, etc. Similarly, *joint venture or merger* involve privatization in the cases where a SOE forms a joint venture with or merge with a private domestic or foreign firm. Indeed these cases occurred a lot.

One of the most important *gaizhi* measures deployed was *Employee shareholding*, which often involves full privatization or nearly full privatization. It was particularly popular at early stages of *gaizhi* due to the rule of the central government that each

privatization plan must be approved by employees before implementation. In addition, closely associated with privatization, to pave roads for restructuring (layoff) it is critical to remove employees' 'tenured' state-employee status. For this purpose, shares were often offered as part of the compensation schemes. At later stages of *gaizhi* when conditions were ready for managers to take over they bought majority shares from employees. This explains a large part of the MBOs in China. In recent years, as privatization proceeds, *open sale* becomes a popular approach. Under *open sale*, the firm is openly sold to insiders, mostly managers, or outsiders, such as other firms or outside managers, through auctions or negotiations between local government and potential buyers.

The last major category of privatization approaches is *Leasing*. Lessee can be outsiders, who are owners other firms, and insiders. In terms of use rights of the assets of a firm, leasing is very similar to those of MBO. Indeed some of the MBO owner-managers were lessees at early stages of privatization.

To our knowledge, besides officially registered ownership type, there is no official statistics on privatization. However, a very large number of former SOEs have registered different ownership type with or without privatization, the meaning of the officially registered ownership type is too ambiguous to infer statistics of privatization.³ Thus, we have to use our random sampling survey result to estimate the nationwide picture. In our surveyed sample, 62.8% of the SOEs and COEs were privatized by the end of 2004. Given our sample is constructed to match the population in ownership, size, location and industry (for further discussions, see next section) we infer that from 1998 to

³ Based on our survey sample, we will report statistical details on this issue in a later version of the paper.

the end of 2004, 92,493 initially state-owned firms (with sales above 5 million RMB) had been privatized with total assets of 11.4 trillion RMB.

II. The Sample and the Empirical Methods

II.A. The Nationwide Survey

The main data comes from our nationwide sampling survey of Chinese firms in the early 2006. Our sampling survey is based on the National Bureau of Statistics (NBS) census of all industrial firms with sales above 5 million RMB. Based on the 2004 population, we drew a random sample of 16,400 firms stratified by region, industry, size, and ownership type. Since only 20% in the 2004 population are SOEs and our intention is to study privatization, we on purposely over-sampled SOEs. Thus we drew an additional random sample of 5500 SOEs from the 1998 NBS database,⁴ again stratified based on region, industry, and size.

The questionnaires were designed through interactive processes. Several rounds of pilot surveys were carried out through on-site interviews and telephone interviews in nine cities, including Beijing, Laizhou (Shandong), Taizhou and Changxing (Zhejiang), Changchun and Jilin (Jilin Province), Shijiazhuang, Pingshan and Tangshan (Hebei), with 720 samples.

The large scale survey was conducted through telephone interviews. We hired a professional survey company that had a close relationship with the National Bureau of Statistics and had previously helped NBS to conduct its own surveys. We spent a week to

⁴ We drew the additional SOE sample from 1998 NBS database for two reasons. First, large scale privatization started in late 1990s. If we use 2004 population to identify SOEs, we would have missed many that have already been privatized. Second, 1998 is the first year that the NBS database is available and thus is the year with the best chance for us to identify SOEs potentially to be privatized.

train the staff of the survey company to understand each question. Throughout the survey, we worked closely with the staff and supervised the progress carefully.

Two sets of questionnaires are designed for privatized firms (Questionnaire A) and for other firms (Questionnaire B). The Questionnaires A and B are identical except questions related to privatization. This enables us to distinguish the effect of privatization. In the survey, every randomly selected firm was first asked about whether it was privatized and a corresponding questionnaire will be applied.

Our overall response rate was about 18%. The sample that we obtained includes 899 privatized firms, 475 non-privatized SOEs, and 1685 *de novo* private or non-state firms (*de novo* private firms hereafter). Our survey sample matches the distributions of the population in most dimensions reasonably well, except for SOE ownership and size because we deliberately over-sampled SOE firms. Moreover, we do not notice any systematic selection of firms that did not respond to our survey. Table 1 compares the distribution of our survey sample with that of the full population.

II.B. The Sample

Given the earliest financial data available to us is 1998, to ensure that all privatized firms have at least one-year of performance information prior to privatization, we drop 168 firms that were privatized prior to 1999. By further excluding firms without valid financial information, our final sample for empirical analysis included 717 privatized firms, 460 SOEs that have not been privatized and 1758 *de novo* private firms. Table 2 reports the summary statistics of the main variables used in our empirical analysis.

Panel A of Table 2 reports some basic facts of China's privatization. Starting from 2000 and up to 2005, the year prior to the survey, privatization steadily picked up. Management buy-outs are by far the most widely used method, accounting for about one half (47%) of all privatization programs. The next is selling to outsiders, which is used in 22% of privatization programs. The rest privatization methods include joint venture (2%), leasing (8%), and employee holding (10%).⁵

The ownership structure of most privatized firms is highly concentrated. The largest shareholders on average hold 60% of the shares and the second and third largest shareholders hold 26% of shares. Probably reflecting new owners being introduced, in MBOs and Selling to Outsiders, the largest shareholders have 37% and 64% ownership, respectively.

Concentrated ownership has both its advantages and disadvantages. On the one hand, concentrated ownership has the benefit of mitigating the free-rider problem in monitoring managers and, in the case of insider ownership, aligning managerial interests with those of shareholders. On the other hand, concentrated ownership comes with a well-known cost. That is, a large shareholder can expropriate the resources from outside minority shareholders. This expropriation problem is potentially strongest in countries with weak property rights protection, where much privatization occurs. As pointed out by Deng, Gan, and He (2008), expropriation by large shareholders is the root cause of the failure of share issue privatization in China. Thus it remains to be seen as to how the incentives of large shareholders play out in among non-SIP. Panel B is a summary of the financial variables of Chinese firms. We use two measures of operating performance: one

⁵ Finally, some of the largest SOEs were partial privatized through share issuing. It counted for about 3(?)% of all the privatized firms.

is operating profits (earnings before interest, tax, and depreciation, EBITDA) over assets; the other is operating profits over the number of employees. In the top part of Panel B, SOEs tend to be larger, more leveraged, and less profitable. Within SOEs, privatized firms are larger, but do not have any consistent pattern in terms of operating efficiency.

The bottom part of Panel B compares the performance changes for privatized firms. Worth reporting is that privatized firms tend to become less leveraged after privatization, probably reflecting a hardened budget constraint by average. For both measures of performance, there is a significant improvement in terms of median (1%) level. Among MBO firms, the performance gain is also significant and tends to be larger. Moreover, MBO firms are less profitable in both measures prior to privatization. We will analyze this issue later in Section VI.

II.C Empirical Methods

In the following sections we are going to address the following major issues: the consequences of privatization in restructuring and in improving performance; the effectiveness of different privatization methods; and the factors affecting local governments' decisions on privatization methods. Turns out, these issues are closely intertwined both in reality and in empirical investigation methodology.

For example, a common concern about performance comparison in the privatization literature is that privatization decision is not random. That is, unobserved firm characteristics may simultaneously drive privatization decision (which firm to privatize and what privatization method to use) and firm performance. In our setting, it may be possible that the better firms are privatized or be chosen by a particular method of

privatization. If so, the correlation between privatization and performance may imply a reversed causality.

In our empirical analysis, we simultaneously address the intertwined economic issues and the selection issue in three ways. First, we use a differences-in-differences approach to evaluate the effect of privatization in the panel data setting. In particular, we compare the difference in performance improvement between privatized firms and the control group, not privatized SOEs. Further, we control for firm fixed effects in our estimation of the differences-in-differences estimates. Thus any time-invariant firm characteristics that might be related to privatization decisions are completely controlled for.

Second and more importantly, we examine the mechanisms through which privatization improved performance. By revealing what had been done in restructuring and in change of corporate governance after privatization, reversed causality problem is further ruled out.

Finally, we study how local governments' incentives affect their decisions on privatization methods. In addition to its own value as a major discovery, this relationship is also served as an instrument to deal with the endogeneity problem of privatization decisions.

III. Differences-in-Differences Analysis of Privatization Outcome

To examine the performance improvement of privatized firms, we adopt the difference-in-difference approach and focus on performance improvement of privatized firms in comparison with non-privatized SOEs. For different firms, privatization occurred

in different years since the late 1990s but the NBS financial data is only available from 1998 to 2005. To fully utilize the information in the data, we examine the effect of privatization based on panel data regressions of the following form:⁶

$$Performance_{it} = \alpha_i + \beta_t + \gamma Post_{it} + \delta X_{it} + \varepsilon_{it}, \quad (1)$$

where $Performance_{it}$ is measured by both ROA and earnings per employee. $Post_{it}$ is a dummy variable indicating years after privatization (it is set to zero for those SOE that has never been privatized). X_{it} are firm control variables that might be related to profitability, including size (measured as log of assets), leverage (debt over assets), and lag of profitability to account for potential mean reversion in profits. α_i is a firm fixed effect, which controls for any time-invariant firm characteristics that may affect privatization decisions. β_t is a year fixed effect. Coefficient γ is the differences-in-differences estimate of the effect of privatization on firm performance.

III.A The Baseline Estimation

In Panel A of Table 3, we first present an overall picture of the operating performance of Chinese firms. The regressions include 46 industry dummies based on NBS industry classification, which is similar to 2-digit SIC codes, to control for industry influences such as technology and competition. Consistent with casual observations and popular reports, in columns (1) and (2) of Panel A, both privatized and non-privatized SOEs have significantly weaker performance than de novo private firms (at the 1%

⁶ The privatization literature sometimes compares performance three-years before and after privatization. This is not possible for many privatized firms since the financial data is only available for 1998-2005. Panel data analysis not only allows to fully utilize the information available but also accounts for unobserved heterogeneity, through firm fixed effects, that might affect privatization decisions.

levels). In columns (3) and (4) of Panel A, we add a dummy indicating Post-privatization years for privatized firms (*Post*). It is not significantly different from zero. Thus, after privatization, the firms become similar to those firms in the private sector, which suggests some efficiency gain.

In Panel B, we further examine the performance improvement of privatized firms by comparing the relative performance of privatized vs. non-privatized SOEs, which should be a better benchmark. In the first two columns, we report results without firm fixed effects. Indeed, for both performance measures, the *Post* dummy is positive, although only marginally significant at the 15% levels. It is worth noting that the coefficient on *Privatized Firms* in the regressions captures the performance prior to privatization for those privatized firms. It is not statistically different from zero, suggesting that, there is not systematic selection of privatized firms in terms of operating performance.

In columns (3) and (4), we report the estimation results with firm fixed effects. Strikingly, the coefficient on the *Post* dummy now becomes statistically insignificant. This highlights the importance of unobserved firm heterogeneity: privatization overall does not seem to have improved operating efficiency controlling for unobserved firm heterogeneity.

As we discussed earlier, China adopted a varieties of approaches to privatization, including both explicit ownership changes (such as MBOs or selling to outsiders), and other methods without explicit ownership changes (such as leasing, joint venture, and public listing). These different methods provide very different incentive and ability for

the new owners to improve efficiency. Thus it is important to examine the different methods separately, which is done in the next subsection.

III.B Privatization Methods and Performance Improvement

In this section, we investigate, among privatized firms, the effectiveness of different privatization methods. Given that previous work on Russia and Central European countries has found that insider privatization has failed to improve performance (e.g., Boycko, Shleifer, and Vishny, 1996; Frydman et al., 1999), we are particularly interested in those management-buy-out firms, where control rights are transferred to the hands of “insiders.” We obtain the differences-in-differences estimates from the following model, based on the sample of privatized SOEs:

$$Performance_{it} = \alpha_i + \beta_t + \gamma Post_{it} + \lambda MBO_i \times Post_{it} + \delta X_{it} + \varepsilon_{it}, \quad (2)$$

where $MBO_i \times Post_{it}$ is the interaction between MBOs and the *Post* dummy, which captures the differential performance improvement between MBOs and other methods of privatization. The other terms are defined in the same way as those in Equation (1),

In the first two columns of Table 4, we report results without firm fixed effects. The interaction between *MBO* and the *Post* dummy is significantly positive for both measures of performance (at the 5% and the 10% levels). The coefficient on the *Post* dummy itself is not significant, suggesting that privatization methods other than MBOs do not improve performance.

In columns (3) and (4) of Table 4, we add firm fixed effects. The point estimates of $MBO*Post$ becomes larger and more significant (at the 5% and 1% levels for the two performance measures respectively). The *Post* dummy itself is not significantly different from zero for ROA and significantly negative for profits over employment (at the 5% level), which again suggests that non-MBOs do not improve efficiency. This finding is broadly consistent with prior work examining share issue privatization.

In columns (5) and (6), we examine the effectiveness of the other type of explicit ownership change, that is, *Selling to Outsiders*. It turns out that the interaction between *Selling to Outsiders* and *Post* is not significantly different from zero. Thus in contrast to the findings in other transitional economies where outsider-controlled privatization improves performance, in China selling to outsiders is not sufficient to improve performance.

So far, we find that MBOs, which represents in close to half of the privatization programs, have significantly improved operating efficiency. Our differences-in-differences approach controls for systematic change in performance, as well as any time-invariant unobserved firm characteristics that simultaneously affect MBO decisions and performance. However, some concerns about selection remain. First, MBO firms may have deliberately suppressed their earnings prior to privatization so that managers could negotiate a better price from the government in the buy-outs. Second, managers may have private information about the future prospects of the company and thus choose to buy out the better ones.

The remaining of the paper is devoted to deal with these concerns. First we examine the mechanisms that drive the better performance of the MBO firms. Second, we

deals with the endogeneity of MBOs using instrumental variables related to the regional (city-level) government incentives.

IV. Understanding the Mechanism of Efficiency Gain

We now examine the mechanism through which MBOs improve operating efficiency. As outlined in Barberis, Boycko, Shleifer, and Tsukanova (1996), there are two potential channels through which privatization may improve efficiency. The first is an incentive theory (Holmstrom, 1979); that is, private owners have greater incentives than government appointees to improve profits since they bear the financial consequences of their decisions. The other is the human capital theory: privatization selects managers who are better at running the firms efficiently. While these two channels are not mutually exclusive, it is useful to understand to what extent each one leads to the success of China's privatization.

IV.A Allocation of Control Rights and Incentives: The State Influence

A common feature of privatization programs around the world is that they are partial privatization, i.e., the government retains significant ownership in privatized firms (Jones et al., 1999; Gupta, 2005). Since the state could have political goals that are different from profit-maximization, state control is likely to reduce the effectiveness of privatization. Thus the first question we ask in searching for the mechanism of improved efficiency is whether the state has retreated from the firms' daily operation.

We measure state control in two ways. The first is whether the state shares are above 20%, which is about the sample mean, as well as an ownership level that is likely

to allow government to exert influence on the firms.⁷ In our data, the distribution of government ownership is uneven, however, close to 80% of firms have zero government ownership.

Our second measure of state control is based on our survey question regarding state intervention in corporate decision making. We ask explicitly the allocation of control rights among government, party committees, CEOs, corporate boards, and shareholder meetings in making key corporate decisions. The corporate decisions include the appointment of top managers, employment/layoffs and wages/compensation, corporate financial issues, production, and operations. These control rights are rated with scores ranging from 0 to 5 in the order of greater importance.⁸ We calculate the average influence on the corporate decisions for each party. After the privatization, the government has almost completely retreated from daily operations of companies, with its control rights dropping from 1.9 to 0.4. The control rights of party committees are also substantially weakened, from 2.0 to 1.2. Since the government control of the firms can come both through direct government intervention and through its influence on firm-level party committees, we use the max of these two as the score for overall state influence. Despite that the overall state influence drops from 2.8 to 1.4 after privatization, state influence is still quite important in a significant proportion of firms, with 39% firms having a score above 2 (*Somewhat Important*) and 15% above 3 (*Moderately Important*). We define our second measure of state control as overall state influence above 2 and the results are robust to the alternative cutoff of 3.

⁷ The firms report two types of state ownership. One is direct government ownership; the other is (indirect) ownership through other SOEs. As discussed in detail in Deng, Gan, and He (2008), the latter is common in share issue privatization. In the survey sample, most state ownership is reported to be direct ownership.

⁸ 0 is zero influence, 1 is slightly important, 2 is somewhat important, 3 is moderately important, 4 is important, 5 is absolutely important.

It is important to note that MBO firms have significantly lower level of state control in both measures. Table 5 shows that, MBOs are much likely to have state influence. The average state ownership is only 1%, significantly lower than the sample average of 19%. MBOs are also much less likely to have state intervention in its daily decision making (16% vs. 31% sample mean).

Table 6 demonstrates that state control hinders performance of privatized firms. In columns (1) and (2) of Table 6, state ownership is associated with significant worse post-privatization performance (at the 5% and the 10% levels). In columns (3) and (4), state influence in daily decision making is associated with lower operating efficiency (at the 1% and 10% levels). These results highlight that the success of privatization depends critically on whether the government could commit to retreating from the daily operations of firms and refraining from using the firms to achieve its political objectives. In the Chinese case, a big political objective in many regions is employment. The fact that we have found that MBOs significant improve earnings per employee ratio suggests that one reason that state control reduces efficiency is that firms cannot lay off excess workers based on economic considerations.

IV.B Post-Privatization Restructuring Measures

In this subsection, we further examine the restructuring measures that MBO firms undertake after privatization that could enhance incentives and / or improve efficiency. In our survey, we investigate four restructuring measures. They are introduction of new human capital through changes of the management team; performance-based pay, which could enhance incentives in addition to equity ownership; adoption of international

accounting standard; and establishment of a board of directors. It is worth noting that in MBO firms, since ownership and control are already aligned, governance does not seem to be a big concern. Anecdotal evidences as well as our own conversations with managers suggest that board of directors is often established because the firm, at the time of MBO, needs to raise financing from other large shareholders who eventually sits on the board and because the board can help with professionalization of the firm.⁹

As reported in Table 7, MBOs are more like to change members of core management team, to adopt international accounting standard and professional independent auditing, and to establish a board of directors. Interestingly, consistent with aligned interests between principle and agents,¹⁰ MBO firms do not need to have performance-based pay to further enhance incentives.

Selling to Outsiders is not likely to change core management team. Probably reflecting separated ownership and control, these firms are more likely to use performance-based pay to align incentives. Firms sold to outsiders are not more likely to adopt international accounting standard, nor do they establish board of directors.

Noticeably, both adopting international accounting standard and a formal board of directors at MBO firms are ways to professionalized the firm and prepare the firm for public listing. Thus, it is possible that managers of MBO firms are considering eventually listing the firms and thus use the public capital market as an exist strategy. This can be part of the reasons why, in contrast to the failure of insider privatization in Eastern Europe and Russia (Barberis et al., 1996) MBOs in China are successful. At the time of

⁹ One of the coauthors of this paper happens to serve in the board of an MBO company, along with lawyers and accountants. The board provides valuable professional advice to the company.

¹⁰ Among 471 MBOs, except for 2 firms, managers are the largest shareholder. In the remaining two firms, one has the government and the other has workers as the largest shareholder.

mass privatization, the countries have not established product markets, labor markets, or financial markets. Private ownership is an unfamiliar phenomenon. Under this situation, managers or private owners may not have sustained interest in running the firms, nor do they have a clear exit strategy. In contrast, when the delayed privatization in China happens, market institutions have developed and, equally importantly, the private sector has become a big part of the economy. From the measures that they MBO firms have taken after privatization in improving efficiency and to professionalize the firms, it is clear that incentives are perfectly aligned and the managers could fully capitalize the efficiency gain in the eventual sale of the market.

As a summary, we find that freedom from state control is associated with better performance and state influence is significantly less among MBO firms. Moreover, MBO firms are more likely to adopt restructuring measures including change of management team, adoption of international accounting standards, and establishment of a board of directors. These measures not only introduce new human capital to the privatized firms, but also help professionalization of the firms which can makes public listing a potential exit strategy. These mechanisms of performance improvement make it hard to argument that our findings are simply driven by endogenous selection of MBOs.

V. Endogeneous Choice of MBOs – Two-State Least Square Estimates

In this section, we provide additional evidence from instrumental-variable (IV) estimation to show that our results are not driven by endogenous selection of MBOs. Before we present this analysis, we would like to stress that our results so far are inconsistent with the selection argument. Our differences-in-differences analysis fully

controls for unobserved firm heterogeneity that might lead to selection. Our analysis of the mechanism of performance improvement shows that MBO firms are less likely to have state influence which hurts performance; that they also do implement restructuring measures that enhance managers' incentives and their abilities to improve performance. Finally, as we report in Table 1 (Panel B), MBO firms tend to be weaker performers prior to privatization, which could motivate the government to commit not to exert influence on the firms through MBOs. Thus "reverse selection" is also possible, which tend to bias our differences-in-differences estimates downwards.

Nevertheless, we address the selection concern empirically, by finding instruments for MBOs. We use two sets of instruments. One is related to the government's incentive. Since starting from the late 1990s, privatization has become a decision at the level of local governments, except for the very large firms that go public. Thus the incentive of the local government plays an important role in choices of privatization method. In particular, how likely the government is committed to refraining from exerting influence on the firms is the key determinant for MBOs – note that MBO firms have the least influence from the government. There are two possible reasons for government commitment. One is when firm's problem is deeper and more radical measures are more necessarily. The other is when the government does not need to use the firms to achieve its political goals, such as unemployment, social welfare, or fiscal balance.

To this end, we use five variables as direct measure of government incentives and three indirect measures including city-level economic and demographic variables that may influence government incentives. Direct measure of government incentives include

whether the firm has been previously privatized/restructured, whether privatization includes land, whether the government provides the firm with land, and whether the government provides loan guarantee to the firm, and finally, the fiscal balance of the local government (note this is a city-level variable). Indirect measures at the city-level include the share of SOE in total industrial output, local GDP per capita, and population growth.

If land is privatized with the firm and if government has provided land “for free,” then the government may not want the firms to be bought out by managers unless it can be properly compensated. If the firm has relied on government loan guarantees, it is possible that the SOE problems are deeper and the government may have more incentive to “let it go.” In such cases, the insiders may be at a better position to manage the firm, resulting in an MBO. As to whether the firm has been previously privatized, its ex ante impact is clear. One possibility is that the previous privatization is a failed attempt, which gives the government more incentive to let the insiders who are better at running them to take over. However, it is also possible that these firms have deeper problems and insiders may not be willing to buy it out.¹¹

The effect of fiscal balance is not obvious ex ante. On the one hand, when the government fiscal condition is weak it may be more eager to sell off the company completely to raise cash, in which case MBO is a likely choice since MBO firms typically has less ties with the government afterwards. However, it is also possible that in areas where fiscal condition is weak, the government does not have the financial resources to fulfill its social responsibilities, such as social welfare and re-deployment of laid off

¹¹ It should be noted that although this explanation seem to suggest that MBO firms may have relatively better quality, it does not drive our results since this variation should be absorbed in the firm fixed effects.

workers. Thus it cannot commit to refraining from exerting influence on the firm and thus may prefer a more partial privatization so that it could achieve its social and political goals, resulting in a lower incidence of MBOs.

Among the city-level economic variables, we expect the share of SOE output to be negatively related to MBOs. As discussed earlier, due to the “delayed” privatization in China, by late 1990s, most of the SOEs were losing money and could not pay their workers or gave their workers enough work (such “no work” status without being formally laid off is called *xia gang*). This unemployment (both explicit and implicit) problem is most severe in areas previously dominated by SOEs. Meanwhile, if there is not an active private sector in the local area, the unemployed workers can not easily find new jobs. Thus the share of SOE output is meant to capture both the unemployment problem and the difficulty in re-deploying laid-off workers.

Thus our first-stage regression contains both firm-level (i.e., privatization-program level) and city-level variables as below:

$$MBO_i = \beta \text{Firm-level Variables}_i + \delta \text{City-level Variables}_i + \varepsilon_i \quad (3)$$

We note that our endogenous variable is discrete. In such cases, the two-stage least square model can be applied.¹²

Table 8 presents the summary statistics of the instrumental variables. Consistent with our conjecture, MBO firms are less likely to have obtained land from government for free and land is less likely to be included in privatization (at the 1% levels). MBOs are significantly more popular among cities with greater fiscal balance, higher per capital

¹² See e.g., Wooldridge (2006).

GDP, and greater population growth, Finally, MBOs are less likely to be chosen when the share of SOE output is greater, implying greater unemployment and less opportunity to deploy laid off workers.

Table 9 reports the first stage estimates. As expected, government allocation of land is significantly negatively related to MBOs. Government loan guarantee and land being included in privatization have the expected signs but are not statistically significant. Previous attempts of privatization are significantly negative, consistent with the view that managers are less willing to buy out these firms.

Government fiscal balance is significantly negative, which is consistent with the hypothesis that in areas with weak fiscal condition, the government prefers a more partial privatization so that they could exert its influence on firms to achieve social goals. Finally, the share of SOE output is, as expected, significant negative, reflecting the incentive of government to use non-MBO and more partial privatization when unemployment problem is more severe and re-deployment of laid-off workers is more difficult. This finding further supports the less state control and thus greater likelihood to lay off excess worker as a mechanism of improved efficiencies for MBO firms.

The second-stage estimation results are reported in Table 10. The results are qualitatively similar to the OLS estimates presented in Table 4. That is, MBOs significantly improve performance (columns (1) and (2) of Table 5). The *Post* dummy itself is significantly negative, suggesting that other methods of privatization are associated with worse performance. In columns (3) and (4), Selling to the private sector is associated with insignificant performance change for ROA measure but significantly reduce performance for earnings per employee.

It is important to note that the point estimates of the endogenous variable $MBO*Post$ from the TSLS is about three-times larger than the OLS estimates. To the extent that the endogenous choice of MBOs drives the results, instrument-variable estimates should be lower than the OLS estimates. Thus what we observed in Table 1 is more likely to have happened, that is MBOs tend to be weaker, rather than stronger, firms, for which the government could commit not to exert influence later. Thus after correcting for this “reverse” selection, our estimated effect of MBOs on performance improvements are actually larger than the OLS estimates, which provide further support that endogenous choices of MBOs do not drive our results.

VI Conclusion

Using a unique hand collected nationwide random sampling survey firm level data we find what privatization method lead to restructuring and results to improved performance. Moreover, we find local governments which had stronger fiscal disciplines and had less concerns on potential labor shedding tend to privatize through this method. The endogeneity problem is carefully controlled by several ways to make sure that we have discovered causalities, not just correlations. The following is a short summary of our major discoveries.

- a) It is a systematic study of China’s privatization at a national level (all regions and all industries) covering all small, medium and large firms, and all privatization methods;
- b) The impact of China’s privatization on firm performance is mixed that when all privatization methods are pooled together, there is no measurable impact;

- c) Among all major privatization methods, only management buy-out (MBO) had significant and positive impacts in improving performance, whereas other privatization strategies failed to make a difference;
- d) Compared with other privatization methods, city governments' role in MBO firms were substantially reduced; and MBO firms substantially restructuring more and deeper;
- e) Selection bias problems are mitigated in the above discoveries through a difference-in-difference approach to control not privatized group (or non MBO group) and before privatization performance;
- f) City governments with a stronger fiscal discipline or with less concerns on labor shedding were more pro MBO method in privatization;

The above result d) is not only confirmed but is even stronger when we use city governments' characteristics as instrument variables.

China's privatization provides several insights into privatization in general. First, the Chinese experiences highlights the importance of both the commitment of the government not to intervene in corporate decisions and the incentives of large shareholders. The governments' continued influence in privatized firms hurt performance. Meanwhile, only when the large shareholders' incentives are in place, would will the firms undertake fundamental restructuring measures to enhance efficiency. Second, the Chinese experience suggests that postponing privatization to accumulate create stable market institutions increases the effectiveness of privatization. In particular, the privatized firms can benefit from the established labor markets for managerial talent and from better developed financial institutions to obtain external financing. Finally,

established capital market can provide an exit strategy for the new owners to capitalize on the efficiency gains.

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Table 1. Sample Distribution of Ownership, Size, Location, and Industry

This table compares the distribution of our survey sample with that of the population by ownership, size, location, and industry. The NSB database does not have information on ownership; thus we infer ownership based on registration type. North China includes Beijing, Tianjin, Hebei; North-East: Heilongjiang, Jilin, Liaoning; North-West: Xinjiang, Qinghai, Ningxia, Gansu, Shaanxi, Innermongolia; North-Central: Shanxi, Henan, Shandong; South-West: Xizang, Yunan, Guizhou, Sichuan, Chongqing; East: Shanghai Jiangsu, Zhejiang; South: Guangxi, Guangdong, Fujian, Hainan; South-Central: Hubei, Hunan, Jiangxi, Anhui.

	Survey Sample		Population	
	Number	%	Number	%
	(1)	(2)	(3)	(4)
<i>Panel A: Ownership Distribution</i>				
SOEs & COEs	904	30%	61,596	19%
Private	1,012	34%	136,158	42%
Joint Venture and Foreign Owned	447	15%	61,595	19%
others	696	21%	64,837	20%
<i>Panel B: Size Distribution</i>				
Large	87	3%	3,242	1%
Medium	491	17%	35,660	11%
Small	2,419	80%	285,284	88%
<i>Panel C: Regional Distribution</i>				
North	300	10%	25,936	8%
North-East	209	7%	22,693	7%
North-West	150	5%	12,967	4%
North-Central	480	16%	48,628	15%
South-West	180	6%	16,209	5%
East	1,019	34%	113,465	35%
South	419	14%	58,353	18%
South-Central	240	8%	25,935	8%
<i>Panel D: Industry Distribution</i>				
non-manufacturing industries	1	0%	13	0%
Mining	273	9%	37,662	12%
Food, Beverage & Tobacco	264	9%	29,431	9%
Textiles	366	12%	49,402	15%
Timber and Paper Products	275	9%	28,441	9%
Petroleum & Chemical	495	17%	49,159	15%
Metals	633	21%	66,682	21%
Machine and Electronics	515	17%	53,351	16%
Electricity, Gas and Water	175	6%	10,045	3%

Table 2. Basic Facts and Summary Statistics

This table presents basic facts of China's privatization and summary statistics of financial variables used in the empirical analysis. Profits are defined as earnings before interest, tax, and depreciation. Significance levels are all based on two-tailed tests of differences. In Panel A.3 differences between the MBO firms and other methods and between Selling to Outsiders and other methods are tested. Differences between SOEs and non-SOEs are tested in column (5) of Panel B.1, differences between MBOs and non-MBOs are tested in column (4) of Panel B.2. Significance at the 1%, 5%, and 10% levels is indicated by ***, **, and *, respectively.

Panel A: Basic Facts of China's Privatization

A.1 Year of Privatization

Year	# of firms	Percentage
1999	60	8%
2000	103	14%
2001	102	14%
2002	109	15%
2003	129	18%
2004	95	13%
2005	108	15%
2006	11	2%
Total	717	100%

A2. Methods+A32 of Privatization

	# of firms	Percentage
Explicit Ownership Change:		
MBO	338	47%
Selling to Outsiders	157	22%
Without Explicit Ownership Change:		
Listed	8	1%
Joint Venture	11	2%
Lease	56	8%
Employee Holding	70	10%
Others	77	11%
Total	717	100%

A3. Ownership of Privatized Firms

		MBO	Selling to Outsiders	Other	All
Ownership by the Largest Shareholder	Mean	37%***	64%	91%***	60%
	Median	(30%***)	(70%)	(100%***)	(51%)
Ownership by the Second and Third Largest Shareholder	Mean	27%**	20%***	30%*	26%
	Median	(22%**)	(15%***)	(30%**)	(20%)

Table 2. Basic Facts and Summary Statistics (Cont'd)*Panel B: Financial Information of Chinese Firms**B.1 Overview of Financial Information of Chinese Firms*

		State-Owned Enterprises (SOEs)				
		Whole Sample	Privatized	Non-Privatized	Difference	Non-SOEs
		(1)	(2)	(3)	(4)	(5)
Assets (in thousands)	Mean	165,365	310,034	220,416	89,619***	46,205***
	Median	(25,146)	(54,295)	(42,772)	(11,523***)	(14,398***)
Sales (in thousands)	Mean	115,127	198,769	131,551	67,218***	52,906***
	Median	(20,475)	(26,533)	(19,905)	(6,628***)	(18,400***)
Leverage	Mean	0.092	0.137	0.138	-0.0016	0.043***
	Median	(0.003)	(0.057)	(0.048)	(0.009)	(0***)
Profit / Assets	Mean	0.108	0.073	0.059	0.014***	0.152***
	Median	(0.067)	(0.045)	(0.038)	(0.007***)	(0.099***)
Profit / Sales	Mean	0.063	0.030	0.031	-0.001	0.097
	Median	(0.075)	(0.075)	(0.065)	(0.01***)	(0.078***)
Profit / #Employee	Mean	22.000	14.317	16.656	-2.339**	29.270***
	Median	(9.240)	(6.790)	(4.742)	(2.048***)	(13.821***)
Number of Firms		13,676	4,360	2,754		6,495

B.2 Financial Variables Before and After Privatization

		Privatized SOEs			MBOs		
		Before	After	Difference	Before	After	Difference
		(1)	(2)	(3)	(4)	(5)	(6)
Assets (in thousands)	Mean	260,428	389,630	129,202***	117,114***	167,404	50,290***
	Median	(54,685)	(53,989)	(-697)	(44,237***)	(38,609)	(-5,629)
Sales (in thousands)	Mean	155,596	268,043	112,447***	77,595***	141,074	63,479***
	Median	(24,662)	(31,691)	(7,029***)	(22,121***)	(24,452)	(2,331***)
Leverage	Mean	0.143	0.126	-0.017***	0.132**	0.114	-0.019**
	Median	(0.072)	(0.040)	(-0.032***)	(0.069**)	(0.029)	(-0.04***)
Profit / Assets	Mean	0.054	0.102	0.048***	0.047**	0.130	0.083***
	Median	(0.039)	(0.057)	(0.018***)	(0.036)	(0.065)	(0.029***)
Profit / Sales	Mean	0.023	0.043	0.020	0.016	0.069	0.052***
	Median	(0.071)	(0.084)	(0.013***)	(0.065***)	(0.085)	(0.02***)
Profit / #Employee	Mean	10.883	19.682	8.799***	7.901***	20.889	12.988***
	Median	(5.230)	(10.693)	(5.463***)	(4.449***)	(10.894)	(6.445***)

Table 3. A First Look at the Effect of Privatization

This table presents the OLS estimates of the effect of privatization on firm performance, based on the sample containing both privatized and non-privatized SOEs. Performance measures are calculated as operating profits (earnings before interest, tax, and depreciation) over assets, sales, and number of employees, respectively. Robust standard errors are in parentheses. Significance at the 1%, 5%, and 10% levels is indicated by ***, **, and *, respectively.

	Performance Measures		Performance Measures	
	Profits / Assets	Profits /	Profits / Assets	Profits /
		#Employee		#Employee
	(1)	(2)	(3)	(4)
<i>Panel A. Performance of Chinese Firms</i>				
Lag of Perfmance	0.633*** (0.067)	0.061 (0.053)	0.633*** (0.067)	0.061 (0.053)
Log (sales)	0.012*** (0.002)	11.452*** (0.867)	0.012*** (0.002)	11.460*** (0.866)
Leverage	-0.021* (0.012)	-0.574 (2.975)	-0.021* (0.012)	-0.591 (2.977)
Privatized Firms	-0.039*** (0.006)	-24.743*** (2.310)	-0.040*** (0.006)	-24.204*** (2.273)
SOE	-0.041*** (0.006)	-19.628*** (2.193)	-0.041*** (0.006)	-19.594*** (2.182)
Post Dummy			0.001 (0.009)	-0.961 (1.678)
Year Dummies	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
Observations	9412	9308	9412	9308
R-squared	0.29	0.15	0.29	0.15
<i>Panel B. Effect of Privatization on Performance</i>				
Lag of Perfmance	0.629*** (0.067)	0.473*** (0.093)	0.051 (0.198)	-0.02 (0.060)
Log (sales)	0.010*** (0.002)	5.341*** (0.600)	0.068*** (0.014)	11.938*** (1.663)
Leverage	-0.036*** (0.012)	-2.046 (3.099)	-0.049 (0.040)	-3.765 (5.583)
Privatized Firms	-0.003 (0.005)	-2.419** (1.221)		
Post Dummy	0.015 (0.010)	1.892 (1.230)	0.016 (0.014)	-1.222 (1.695)
Year Dummies	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes		
Firm Fixed Effects	No	No	Yes	Yes
Observations	4903	4840	4903	4840
R-squared	0.32	0.48	0.63	0.77

Table 4. The Influence of Privatization Method

This table presents the influence of different privatization methods on firm performance, based on the sample of privatized firms. Performance measures are calculated as operating profits (earnings before interest, tax, and depreciation) over assets, sales, and number of employees, respectively. Robust standard errors are in parentheses. Significance at the 1%, 5%, and 10% levels is indicated by ***, **, and *, respectively.

	Performance Measures		Performance Measures		Performance Measures	
	Profits / Assets	Profits / #Employee	Profits / Assets	Profits / #Employee	Profits / Assets	Profits / #Employee
	(1)	(2)	(3)	(4)	(5)	(6)
Lag of Perfmance	0.608*** (0.018)	0.564*** (0.018)	0.027 (0.219)	0.042 (0.092)	0.027 (0.219)	0.042 (0.092)
Log (sales)	0.011*** (0.002)	4.874*** (0.358)	0.084*** (0.021)	13.590*** (1.569)	0.084*** (0.021)	13.585*** (1.569)
Leverage	-0.045** (0.020)	-2.532 (2.916)	-0.002 (0.025)	3.59 (3.942)	-0.002 (0.025)	3.672 (3.951)
Post Dummy	-0.003 (0.011)	0.025 (1.655)	-0.018 (0.020)	-5.573** (2.750)	-0.019 (0.034)	-4.784 (4.133)
MBO * Post	0.039** (0.016)	4.225* (2.305)	0.062** (0.027)	8.179*** (2.923)	0.064* (0.039)	7.391* (4.249)
Outsider Control * Post					0.004 (0.036)	-1.745 (4.658)
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes				
Firm Fixed Effects	No	No	Yes	Yes	Yes	Yes
Observations	3025	2991	3025	2991	3025	2991
R-squared	0.33	0.42	0.66	0.69	0.66	0.69

Table 5. Allocation of Control Rights and Restructuring Measures

This Table presents the percentage of firms in each privatization methods that are still have strong state influence. Significance levels are based on two-tailed tests of differences between the MBO firms and other methods and between Selling to Outsiders and other methods; significance at the 1%, 5%, and 10% levels is indicated by ***, **, and *, respectively.

Panel A. State Ownership and Control

	State Ownership Above Mean	Strong State Control in Corporate Decision Making
MBO	1%***	16%***
Selling to Outsiders	15%	25%*
Other	50%	59%
Whole Sample	19%	31%

Panel B: Post-Privatization Restructuring Measures

	Change of Core Management Team	Performance Based Compensation	International Accounting & Independent Auditing	Establishing Board of Directors
MBO	64%	8%	11%**	84%***
Selling to Outsiders	61%	15%***	7%	67%***
Other	60%	2%	5%	71%
Whole Sample	62%	7%	8%	76%

Table 5. The Influence of State Control

This table presents the OLS estimates of the effect of privatization on firm performance, based on the sample of privatized firms. Performance measures are calculated as operating profits (earnings before interest, tax, and depreciation) over assets, sales, and number of employees, respectively. Robust standard errors are in parentheses. Significance at the 1%, 5%, and 10% levels is indicated by ***, **, and *, respectively.

	Performance Measures		Performance Measures	
	Profits / Assets	Profits / #Employee	Profits / Assets	Profits / #Employee
	(1)	(2)	(3)	(4)
Lag of Perfmance	0.027 (0.219)	0.044 (0.092)	0.025 (0.219)	0.043 (0.092)
Log (sales)	0.085*** (0.021)	13.627*** (1.575)	0.085*** (0.021)	13.609*** (1.570)
Leverage	-0.002 (0.025)	3.555 (3.919)	-0.006 (0.025)	3.198 (3.924)
Post Dummy	0.031** (0.015)	0.407 (1.655)	0.041** (0.018)	0.847 (1.729)
State Share Above Mean * Post	-0.107** (0.052)	-11.059* (5.911)		
State Control in Decision Making * Post			-0.083*** (0.030)	-6.729* (3.566)
Year Dummies	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes
Observations	3025	2991	3025	2991
R-squared	0.66	0.68	0.66	0.68

Table 7. Restructuring and Professionalization of Privatized Firms

This table presents logit model of restructuring measures and professionalization after privatization. Robust standard errors are in parentheses. The financial variables are the three-year average after privatization. Significance at the 1%, 5%, and 10% levels is indicated by ***, **, and *,

	Change of Core Management Team (1)	Performance Based Compensation (2)	International Accounting & Independent Auditing (3)	Establishing Board of Directors (4)
Lag of Perfmance	-0.073** (0.036)	-0.264*** (0.080)	0.192*** (0.065)	0.244*** (0.046)
Log (sales)	-0.223 (0.343)	0.45 (0.773)	-3.570*** (0.992)	-0.069 (0.408)
Leverage	-0.631** (0.302)	0.422** (0.187)	-0.522 (0.575)	-0.501*** (0.182)
Selling to Private Sector	-0.166 (0.171)	1.793*** (0.423)	-0.094 (0.369)	-0.055 (0.203)
MBOs	0.388** (0.151)	-1.253*** (0.272)	0.991*** (0.318)	0.782*** (0.189)
Industry Fixed Effects	Yes	Yes	Yes	Yes
Observations	606	606	606	606

Table 8. Summary Statistics of Instrumental Variables

This table presents the summary statistics of instrumental variables. Significance levels are based on two-tailed tests of differences between the MBO firms and other methods; significance at the 1%, 5%, and 10% levels is indicated by ***, **, and *, respectively.

		Privatized SOEs	MBOs
<i>Firm Level Variables</i>			
Government guarantee of loans	Mean	0.07	0.07
Government allocation of land	Mean	0.69	0.62***
Previous Attempts of Privatization	Mean	0.05	0.04
Inclusion of Land in Privatization	Mean	0.78	0.73***
<i>City Level Variables</i>			
Fiscal Balance (Revenue/Expenditure)	Mean	0.67	0.70***
	Median	0.71	(0.71***)
Log (GDP per Capita)	Mean	9.72	9.77*
	Median	9.71	(9.78*)
Population Growth	Mean	0.03	0.04*
	Median	0.01	(0.01***)
% of Industry Output by SOEs	Mean	0.25	0.24
	Median	0.17	(0.16*)

Table 9. Determinants of MBO Choices

	Independent Variable: MBO		
	(1)	(2)	(3)
<i>Incentives of the Government:</i>			
Government guarantee of loans	0.063 (0.068)	0.053 (0.068)	0.054 (0.070)
Government allocation of land	-0.108** (0.046)	-0.109** (0.048)	-0.109** (0.048)
Previous Attempts of Privatization	-0.178** (0.082)	-0.174** (0.082)	-0.172** (0.083)
Inclusion of Land in Privatization	-0.047 (0.053)	-0.048 (0.054)	-0.044 (0.054)
Fiscal Balance (Revenue/Expenditure)	0.192* (0.109)	0.223* (0.126)	0.211 (0.203)
<i>City-Level Economic Variables:</i>			
Log (GDP per Capita)	-0.031 (0.037)	-0.102** (0.043)	-0.580** (0.277)
Population Growth	0.273* (0.152)	0.206 (0.147)	0.075 (0.163)
% of Industry Output by SOEs		-0.191 ^a (0.123)	-0.177 (0.126)
<i>Lagged City Level Variables:</i>			
Lagged Fiscal Balance (Revenue/Expenditure)			0.002 (0.198)
Lagged Log (GDP per Capita)			0.506* (0.277)
Lagged Population Growth			0.134 (0.122)
Dummy for the Year of Privatization	No	Yes	Yes
Observations	709	681	663
R-squared	0.16	0.18	0.19

Table 10 Two-Stage Least Square Estimates of the Effect of MBOs on Performance

This table presents second stage estimates of the effect of MBO on performance. The first-stage regression is the same as column (3) in Table 7. Performance measures are calculated as operating profits (earnings before interest, tax, and depreciation) over assets, sales, and number of employees, respectively. Robust standard errors are in parentheses. Significance at the 1%, 5%, and 10% levels is indicated by ***, **, and *, respectively.

	Performance Measures		Performance Measures	
	Profits / Assets	Profits / #Employee	Profits / Assets	Profits / #Employee
	(1)	(2)	(3)	(4)
Lag of Perfmance	0.037*	0.062***	0.036*	0.061***
	(0.021)	(0.022)	(0.021)	(0.022)
Log (sales)	0.080***	12.965***	0.080***	12.950***
	(0.007)	(1.031)	(0.007)	(1.030)
Leverage	0.001	3.022	0.004	3.566
	(0.034)	(5.085)	(0.034)	(5.091)
Post Dummy	-0.089*	-15.398**	-0.076	-13.063*
	(0.049)	(7.408)	(0.050)	(7.514)
MBO * Post	0.204**	27.595**	0.194**	25.762*
	(0.092)	(13.785)	(0.092)	(13.814)
Outsider Control * Post			-0.038	-6.566*
			(0.024)	(3.612)
Year Dummies	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes
Observations	2787	2754	2787	2754
R-squared	0.66	0.69	0.66	0.69