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Abstract

Using a comprehensive panel data set of China's state-owned enterprises, we investigate the impacts of privatization, of different time sequences and extent of non-state ownership, on social welfare and firm performance. Attention has been focused on the sources of gain in firm performance and the long-run impacts of privatization. It is found that the privatization of China's state-owned enterprises was achieved with limited compromise on social welfare responsibilities, and significant gain in firm performance was obtained by motivating the management and reducing agency cost at the management level.

JEL classification codes: L21; L33; D21; P31

Keywords: Organizational Changes; Privatization; Social welfare responsibilities; Agency costs

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Abstract

Using a comprehensive panel data set of China's state-owned enterprises, we investigate the impacts of privatization, of different time sequences and extent of non-state ownership, on social welfare and firm performance. Attention has been focused on the sources of gain in firm performance and the long-run impacts of privatization. It is found that the privatization of China's state-owned enterprises was achieved with limited compromise on social welfare responsibilities, and significant gain in firm performance was obtained by motivating the management and reducing agency cost at the management level.

1. Introduction

An issue of perennial research interest is why certain organizations persist over time despite of their inefficiency. A case in point is China's state-owned enterprises. State-owned enterprises have poor financial performance as compared with China's private enterprises and foreign-invested enterprises operating in China.[1] The existence of some of these state-owned enterprises cannot be justified, even from a social welfare point of view. Yet China's state-owned enterprises are slow to undergo privatization.[2] It is understood that an organization, once in existence, will lead to the formation of various interest groups, and any organizational change is resisted by those groups whose interests would be adversely affected. Thus, the key to understanding organizational changes lies in the proper delineation of relevant interest groups and analysis of their payoff changes in the process of change.[3] Using a comprehensive panel data set of Chinese enterprises, we investigate how the interests of various parties affiliated with state-owned enterprises are affected during the privatization process. It is found that privatization of China's state-owned enterprises was achieved with little compromise on social welfare

[1] Indeed, studies have shown that reform and privatization of China's state-owned enterprises have led to significant improvements in efficiency and performance (Gordon and Li, 1995; Groves, Hong, McMillan, and Naughton, 1994, 1995; Li, 1997; Li and Xu, 2004; Zhang, Zhang, and Zhao, 2001). See Djankov and Murrell (2002) for a survey of enterprise restructuring in the transition economies, and Megginson and Netter (2001) for a survey of privatization in both developed and developing economies.

[2] There are studies focusing on the incentives for the Chinese central and local governments to privatize its state-owned enterprises (Bai, Lu, and Tao, 2005; Bai, Lu, and Tao, 2006; Guo and Yao, 2005; Li and Lui, 2004).

[3] For a recent study on the role of interest parties for and against privatization in the telecom sector, see Li and Xu (2002).

responsibilities, and much gain in post-privatization firm performance was achieved by motivating management and reducing the agency cost at the management level.

In general, an enterprise has various interest groups affiliated with it: suppliers, customers, and governments. Suppliers (including those of labor services, management services, capital inputs, and other inputs) would like the enterprise to pay higher prices for the inputs, customers prefer the enterprise to set lower prices for the outputs, and the governments seek to collect more taxes from the enterprise. However, the owners of the enterprise are the key stakeholders, with an objective of profit maximization. They manage the enterprise themselves or delegate the management to professionals. Any agency cost arising from the separation of ownership and management, as in the case of publicly held firms, could be dealt with through monitoring by the board members, proxy fights by the shareholders, or corporate takeovers in the capital market. State-owned enterprises in China are very much like the publicly held firms of the developed economies in the sense that their ownership is *widely* held by *all people* in the society, but the de facto control of the state-owned enterprises is held by the State Assets Agency – the equivalent of a board of directors. What is different in China is that the owners (all people in the society) do not have any direct authority in choosing the members of the State Assets Agency and appointing the management of state-owned enterprises.[4] The State Assets Agency may have social welfare objectives other than profit maximization (Bai, Li, Tao, and Wang, 2000), and the management appointed by the State Assets Agency is neither motivated nor disciplined for profit maximization. So long as senior management staff meets the social welfare objectives of the State Assets Agency, they are free to pursue their personal interests, thereby resulting in severe agency costs.

Privatization of state-owned enterprises will lead to a change in payoffs for the suppliers, customers, governments, and owners. In this paper, we use a panel data set of 15,496 enterprises from 1998 to 2003 to examine in detail how privatization of China's state-owned enterprises affects the interests of the concerned parties. All the firms in the

[4] It is the ruling party of China – Chinese Communist Party – that decides on the membership of the State Assets Agency.

sample were 100% state-owned in 1998, and 2,866 (18.50%) of them had privatization of different degrees during the sample period. The data-set provides information on firm operation, performance, and productivity. It also provides information on the social welfare responsibilities of state-owned enterprises, such as size of employment, wages and benefits per employee, prices of main products, and government taxes. Clearly, the data is rich enough for us to measure how payoffs change for various interest groups affiliated with China's state-owned enterprises: customers, suppliers (employees and management), and governments.

In this study, we look at the following indicators of firm performance and social welfare responsibilities. There are: (1) social welfare indicators on labor (size of employment, wage per employee, and welfare per employee), consumers (price index), and governments (tax payments, inclusive and exclusive of value-added taxes), (2) indicators on firm profitability and productivity (logarithm of total assets, logarithm of sales, operating income to sales, operating income to total assets, operating income per employee, and sales per employee), and (3) individual components of the operating income to sales (profits from main products to sales, profits from other products to sales, managerial expenses to sales, and financial expenses to sales).

Our results show that the extent of labor layoffs in China's privatization is not as significant as in many other countries (for example, Mexico, as studied by La Porta and Lopez-de-Silanes, 1999). While those who lost their jobs are worse off in the privatization process, those retained have actually benefited from higher wages and better welfare. Regarding the impact of privatization on other social welfare objectives, we find that price index decreases with the extent of privatization (i.e., consumers benefit from the privatization) while there is no statistically significant change in tax payments. Both firm profitability and productivity are found to increase in the percentage of non-state ownership or the extent of privatization. In addition, much of the improvement in the "operating income to sales" comes from the reduction in "managerial expenses to sales" (53.85%) and the decrease in "financial expenses to sales" (35.91%). To conclude, our analysis suggests that privatization of China's state-owned enterprises is achieved with

limited compromise on social welfare responsibilities, and much of the improvement in firm performance comes from the reduction in agency costs at the management level. Anecdotal evidence does suggest that state-owned enterprises generally have bloated management structure with an excessive amount of managerial expenses. This is because the State Assets Agency has social welfare objectives, and so long as the management meets those objectives, it is neither motivated nor disciplined for profit maximization. Hence, the challenge for privatization of state-owned enterprises lies in transferring the control of state-owned enterprises from the State Assets Agency to shareholders, and then introducing incentive and/or disciplinary mechanisms for the management to pursue profit maximization. Given that the size of employment decreased with the extent of privatization, the other challenge for privatization of state-owned enterprises is to protect the interests of those unlucky workers and maintain social stability (Bai, Li, Tao, and Wang, 2000).

Unlike the former Soviet Union and the Eastern European countries, China has taken a gradual approach to privatizing its state-owned enterprises. Therefore there might be subsequent privatization after the initial (partial) privatization. Indeed in our sample there are firms that underwent up to four rounds of partial privatization. It is therefore important to know how well the first partial privatization works and if the subsequent rounds of privatization add any value. It is also interesting to know if there is any threshold level of non-state ownership (say, 50%) above which there will be significant effects of privatization. We find that the first privatization has the largest impact on profitability (operating income to total assets and operating income to sales) and productivity (operating income per employee and sales per employee). The second privatization still has some impact, but subsequent ones do not. The combined extent of privatization in the first and second rounds could be either above or below 50%. Consistently, we find that privatization – including privatization that reduced state ownership below 50% and the one that kept state ownership more than 50% – has significant impacts on firm profitability and productivity, though the former has stronger effects than the latter.

An important indicator for the success of organizational changes such as the privatization of China's state-owned enterprises is sustained performance improvement in the long run. Under-reporting financial performance prior to privatization does not lead to sustainable success in the long run; nor do one-time government subsidies at the time of privatization (Frydman, Gary, Hessel, and Rapaczynski, 1999; Song and Yao, 2004). To address this concern, we look at the long-run performance of privatized firms, and find that there is sustainable improvement in the profitability and productivity up to four years after the privatization. Furthermore, the main source of sustained performance improvement remains the reduction of managerial expenses. This suggests that once a state-owned enterprise is privatized through either management buyout or by outside investors, there emerge real (not nominal) and active shareholders who would put pressure on the State Assets Agency, or the board of directors, to pursue profit maximization. Incentive and/or disciplinary systems are then put in place to streamline and motivate the management, which leads to sustainable performance improvement in the long run.

In establishing the impact of privatization on firm performance, we need to control for a potential selection bias problem: that firms undergoing privatization may have some unobserved characteristics explaining their superior post-privatization performance. As China has taken a gradual and selective approach to privatizing its state-owned enterprises (Cao, Qian, and Weingast, 1999), the selection bias problem is a serious concern. To deal with this issue, we use the firm fixed-effect estimation method in case there are unobserved firm-specific time-invariant factors influencing firm performance. There could also be unobserved time-variant factors affecting firms that underwent privatization differently than those that did not. To control for this possibility, we focus on a sub-sample of 2,866 firms that all had privatization in the sample period (i.e., from 1999 to 2003), and compare the performance in the time period of 1998 to 2002 of those enterprises privatized from 1999 to 2002 with those that did not have privatization until 2003. The firm fixed-effect model, together with the refinement of the sample, helps us to control for the selection bias problems in the privatization analysis.

The structure of the paper is as follows. In Section 2, we describe our sample of Chinese state-owned enterprises, and offer some summary statistics. The method of econometric analysis and the results are presented in Section 3. The paper concludes with Section 4.

2. Data

Our data is based on the annual surveys of manufacturing and mining firms conducted by the National Bureau of Statistics of China from 1998 to 2003. These annual surveys cover all state-owned enterprises, and those non-state-owned enterprises that had five millions or more RMB (Chinese currency) annual sales. The number of enterprises covered in the surveys varied from approximately 162,000 to approximately 196,000.[5] The data contain enterprise identification information, and their operation and performance information extracted from balance sheets and income statements.

We first use the enterprise identification code, uniquely assigned to each enterprise by the National Bureau of Statistics of China, to search for those enterprises that appeared in each year of the sample period (1998-2003) and come up with a balanced panel data-set of 61,163 enterprises.[6] As our objective is to understand how privatization works in China, we focus on a sub-sample of enterprises that were 100% state-owned in 1998.[7] Among the 61,163 enterprises in the balanced panel, 17,126 of them were 100% state-owned in 1998. There are enterprises in which the state ownership first decreased from 100% and then went up during the sample period; after deleting these reversal cases the

[5] The numbers of firms surveyed from 1998 to 2003 are, respectively, 164,981, 161,888, 162,755, 171,117, 181,428, and 196,222.

[6] We use the panel data-set to examine whether subsequent privatization adds any value to the initial privatization, and also investigate the long-run impacts of partial privatization.

[7] For each enterprise the data-set has information on its sources of capital. China's National Bureau of Statistics classifies six possible sources of capital: state-owned capital, collectively-owned capital, private capital, capital from HMT (Hong Kong, Macau, and Taiwan) investors, capital from foreign investors, and legal-person capital, the last of which can be further classified into state-owned legal-person capital and collectively-owned legal-person capital and can be combined with state-owned capital and collectively-owned capital respectively.

sample size is reduced to 15,496.[8] Among the 15,496 enterprises that were 100% state-owned in 1998, 12,630 of them remained fully state-owned until 2003 and 2,866 of them were privatized to various degrees by 2003.[9]

Our sample of 15,496 enterprises is highly comprehensive, as it covers all of the 39 mining and manufacturing industries and all of the 31 Chinese regions. For each industry, Tables 1a and 1b show, respectively, the absolute number and percentage of first privatization during the entire sample period. Medical and pharmaceutical products had the highest percentage of first privatization (43.63%), followed by beverage production (36%), chemical fiber (35%), raw chemical materials and chemical products (28.57%), and nonmetal mineral products (26.06%). Other minerals mining and dressing was the only industry that had no privatization at all during the sample period, followed by production and supply of tap water (3.95%), tobacco processing (3.97%), petroleum and natural gas extraction (5%), and logging and transport of timber and bamboo (7.41%). For each of the 31 Chinese regions, Tables 1c and 1d show, respectively, the absolute number and percentage of first privatization during the sample period. Jiangsu province had the highest percentage of first privatization (45.44%), followed by Shandong (31.38%) and Sichuan (31.16%). Tianjin had the lowest percentage of first privatization (4.13%), with Guizhou (6.36%) and Tibet (7.14%) being the second and third lowest of the 31 Chinese regions.

Among the 15,496 enterprises that were 100% state-owned in 1998, 2,866 had (first-time) privatization during the remaining sample period (i.e., 1999-2003). Four hundred seventy-one of the 2,866 enterprises had a subsequent (second-time) privatization; 90 out of the 471 enterprises had a third-time privatization; and finally, 13 out of the 90

[8] The reversal cases are not considered, as the rationales for this type of organizational changes could be quite different from those of gradual and increasing privatization.

[9] Any decrease in state ownership is referred to as privatization. Here we do not further classify privatization by the types of new capital, which could be collectively-owned, privately owned, HMT ownership, or foreign ownership. Frydman, Gary, Hessel and Rapaczynski (1999) analyzed how the benefits of privatization might vary with respect to the types of new, non-state ownership. There are other types of restructuring and privatization in China, such as share-issuing privatization (Sun and Tong, 2003; Wang, Xu and Zhu, 2004), shareholding ownership (Jefferson and Su, 2005), and privatization of township and village enterprises (Li and Rozelle, 2000).

enterprises had a fourth-time privatization. See Table 2 for details. Sixty-five percent of the first privatizations was complete privatization (i.e., zero state-ownership), with the corresponding numbers for the second, third and fourth privatization being 54%, 51%, and 54%, respectively. Seventy-five percent of the first privatizations led to majority control by non-state ownership (i.e., less than 50% state-ownership), with the corresponding numbers for the second, third, and fourth privatization being 74%, 73%, and 85%, respectively.

We examine the impact of privatization using two sets of indicators: one for social welfare responsibilities and the other for firm performance. The set of indicators for social welfare responsibilities measure the effects of privatization on labor (logarithm of employment, wage per employee, and welfare per employee), consumers (price index), and governments (tax payments), where price index is the ratio of current value of total output to constant value (in 1990 price) of total output, and tax payments are those inclusive of value-added taxes and those exclusive of value-added taxes.[10] The set of indicators for firm performance include: size of operation (logarithm of total assets, and logarithm of sales), profitability (operating income to total assets and operating income to sales), and productivity (operating income per employee and sales per employee). To investigate further the sources for the increase in firm profitability, we decompose operating income to sales into four components: profits from main products, profits from other products, managerial expenses to sales, and financial expenses to sales.[11]

The definition of the above indicators on social welfare responsibilities and firm performance is summarized in Table 3.

[10] As value-added taxes tend to fluctuate with inventories across years, the tax payments both inclusive and exclusive of the value-added taxes are used to measure the contributions made by the enterprises to government tax revenue.

[11] Operating income is the sum of profits from main products and profits from other products, minus the managerial expenses and financial expenses. Profits from main products is equal to net sales revenue minus production cost, sales costs, and sales taxes; Managerial expenses include all the expenses incurred for the administrative purposes, such as salary and welfare, entertaining costs, meeting expenses, and traveling expenses of administrative staff; Financial expenses include net interests paid and commission charged by banks.

3. Econometric analysis

3.1. The impact of privatization on social welfare and firm profitability

To establish the exact effect of privatization on firm performance, we need to control for the potential selection bias problem. China has taken a gradual and selective approach to privatizing its state-owned enterprises. This raises the issue of whether the performance change of privatized firms really comes from their ownership change or if it is due to some unobserved features of those state-owned enterprises selected for privatization.[12] Ideally, all aspects of privatized firms, both time-variant and time-invariant, need to be taken into consideration before the residue in performance is assigned to the ownership effect. In practice, we do not have the complete list of time-variant and time-invariant variables, and we compensate that by using two estimation strategies. First, privatized firms may have some unobserved firm-specific and time-invariant characteristics that could explain their superior performance. To address this concern, we follow Frydman, Gray, Hessel and Rapaczyski (1999) and Gupta (2005) by estimating firm fixed-effect models that could account for those unobserved firm-specific and time-invariant characteristics. Second, it is also possible that there are some time-variant characteristics separating state-owned firms that were privatized from those that were not. To address this concern, we restrict our sample to those state-owned enterprises that were privatized from 1999 to 2003, and compare the performance of those that were privatized from 1999 to 2002 with those that didn't get privatized until 2003, over the time period 1998-2002. Presumably, state-owned enterprises that were privatized in later years may share some time-variant characteristics with those privatized in earlier years, and therefore they are a better comparison group than those never privatized in the sample period. To summarize, we first estimate the following benchmark model using a sample of 2,866 enterprises that were state-owned in 1998 but were privatized in the remaining sample period (1999-2003).

[12] Similarly, in deciding whether to privatize state-owned enterprises, China's local and central governments may consider its impact on social welfare, and hence the possible selection bias problem.

$$y_{i,t} = \alpha_i + \alpha_t Year_t + \alpha_0 X_{i,t} + \alpha_1 NonSShr_{i,t} + \alpha_2 HHI_{j,t} + \varepsilon_{i,t}, \quad (1)$$

where $y_{i,t}$ is the performance indicator of firm *i* in year t, $X_{i,t}$ is a set of time-variant firm-specific factors that could explain the performance indicator, $Year_t$ is a set of year dummies capturing possible differences in the macroeconomic environment during the sample period, $HHI_{j,t}$ is Herfindahl Index of 2-digit industry *j* in year t, $NonSShr_{i,t}$ indicates the percentage of non-state ownership in year t, α_i captures time-invariant firm-specific fixed effect, and $\varepsilon_{i,t}$ is the error term.

All the performance indicators ($y_{i,t}$) considered in this study are listed in groups 1-3 of Table 3, corresponding to the indicators on social welfare responsibilities, firm performance, and individual components of the operating income to sales. The set of time-variant firm-specific factors ($X_{i,t}$) include: surplus labor ratio, debt equity ratio, percentage of new products in total output, and percentage of fixed assets for operation in total fixed assets. [13,14] The summary statistics of $y_{i,t}$, $X_{i,t}$, $NonSShr_{i,t}$, and $HHI_{j,t}$ are given in Table 3. Throughout the following analysis, we will focus on the impact of non-state ownership (or its variations) on the performance indicators. The effects of $X_{i,t}$ and $HHI_{j,t}$ on the performance indicators will not be formally discussed.

Table 4 summarizes the estimation results of the benchmark model (1). Panel A is about the impact of privatization on the social welfare responsibilities of state-owned enterprises. It is found that the size of employment decreases with the extent of

[13] Surplus labor ratio is defined as the percentage of workers who would be laid off if the company were operating at the industry-average level of sales per capita. It is equal to $(L_i - \frac{S_i}{S} * L) / L_i$ where L_i or S_i is firm $i's$ employment (or sales), and L (or S) is the industry-average employment (or sales) calculated at the 2-digit industry level using annual surveys on manufacturing firms of year t; debt assets ratio equals total liabilities over total assets of firm i in year t; new products ratio is the percentage of new products in total outputs. Under China's statistical classification, a product is considered new if it is produced for the first time in an industry or a region, and such status is given only for the first four years of production.

[14] In regressions on performance indicators which are relevant to labor, we exclude the surplus labor ratio from $X_{i,t}$. These performance indicators include logarithm of labor, wage per labor, welfare per labor, operating income per employee, and sales per employee.

privatization (*the percentage of non-state ownership*), while both the wage per employee and welfare per employee increase with the extent of privatization. Thus, concerning the interests of workers, there are both winners (those retained) and losers (those laid off). Price index is found to decrease with the extent of privatization, suggesting that consumers are better off in the privatization process. This is in contrast to the result from the literature that once privatized, former state-owned enterprises are no longer subject to government regulations and hence tend to raise prices for their products and services (La Porta and Lopez-de-Silanes, 1999). Besides the social welfare responsibilities to workers and customers, state-owned enterprises are also expected to provide a significant share of tax revenue for governments to undertake public-good projects. Studies have also revealed that, even with the same tax rates, state-owned enterprises have much less incentive to hide business activities and evade taxation than privately-owned companies (Cai, Liu and Xiao, 2005). It is thus conjectured that the tax payments shall decrease with the extent of privatization. However, our estimation results show that privatization has no statistically significant effect on the tax payments, both inclusive and exclusive of value-added taxes. To the extent that privatization leads to greater sales and higher operating income, our results still lend support to the conjectured decrease in the tax payments.

Panel B is about the impact of privatization on firm performance. The logarithm of sales increases with the extent of privatization, but the logarithm of total assets decreases with the percentage of non-state ownership. Two measures of profitability, operating income to sales and operating income to total assets, are increasing in the percentage of non-state ownership, both with the 1% statistical significance. In addition, two measures of labor productivity, operating income per employee and sales per employee, are also increasing with the extent of privatization, again both with the 1% statistical significance. Taken together, the results summarized in panels A and B reveal that privatized firms employ fewer workers and work with fewer assets, but they manage to achieve higher sales and operating income. Clearly, privatization leads to significant improvements in firm performance.

For owners of the privatized firms, operating income to sales is one of the most important measures of firm performance. To better understand the sources of gain in operating income to sales, we examine its individual components: (1) profits from main products to sales, (2) profits from other products to sales, (3) managerial expenses to sales, and (4) financial expenses to sales. The operating income to sales is the sum of (1) and (2), minus (3) and (4). As shown in Panel C, higher (post-privatization) operating income to sales comes from lower managerial expenses to sales, lower financial expenses to sales, higher profits from main products to sales, and lower profits from other products to sales, with the first three being 1% statistically significant and the last one being 10% statistically significant. More importantly, the reduction in the managerial expenses to sales and that in the financial expenses to sales contributed, respectively, 53.85% and 35.91% of the gain in the operating income to sales. In contrast, the profits from main and other products to sales contributed a combined 10.24% of the gain in the operating income to sales. These results reveal that much of the inefficiency of state-owned enterprises lies in agency cost at the management level. China's state-owned enterprises, though nominally owned by all people in the society, are actually controlled by the State Assets Agency, which has multiple social welfare objectives other than profit maximization and appoints management to meet those objectives. The management of state-owned enterprises is neither motivated nor disciplined to pursue profit maximization. Without legitimized ownership to the cash flows of state-owned enterprises, the management cares more about the size of the operation than the bottom line, and enjoys the perks accompanying with the scale of the operation, resulting in severe agency cost at the management level. With privatization, however, there emerge real (not nominal) and active shareholders, who put pressure on the State Assets Agency or the board of directors to pursue profit maximization and motivate management for that objective.

From the estimation results of benchmark model (1), we can conclude that privatization of China's state-owned enterprises was achieved with limited compromise on the social welfare responsibilities, and much gain was obtained by motivating and monitoring management for profit maximization.

3.2. Partial privatization

China has taken a gradual approach to privatizing its state-owned enterprises. Initial privatization tends to be partial in scope, and is often followed by subsequent privatization. It is thus interesting to know how well the first (often partial) privatization works in terms of its impact on social welfare and firm performance, or whether the subsequent privatization adds any value to the first privatization. To investigate the effects of initial and subsequent privatizations, we replace the percentage of non-state ownership of model (1) – a key independent variable representing the extent of privatization – by four indicator variables for the privatization sequence. The revised econometric model is as follows:

$$y_{i,t} = \alpha_i + \alpha_t Year_t + \alpha_0 X_{i,t} + \alpha_1 First\_priv_{i,t} + \alpha_2 Second\_priv_{i,t} + \alpha_3 Third\_priv_{i,t} + \alpha_4 Fourth\_priv_{i,t} + \alpha_5 HHI_{j,t} + \varepsilon_{i,t}$$

…….(2)

$First\_priv_{i,t}$ equals one for year t and the years thereafter if firm i was privatized in year t for the first time, and zero otherwise. $Second\_priv_{i,t}$, $Third\_priv_{i,t}$, and $Fourth\_priv_{i,t}$ are defined similarly. Here, only four indicator variables are introduced because firms in our sample went through at most four rounds of partial privatization.

Table 5 summarizes the estimation results of model (2). The signs and statistical significance of First_Priv in Table 5 are almost the same as those of the percentage of non-state ownership in Table 4. Specifically, with the first privatization, (1) the size of employment decreases, but both the wage per employee and welfare per employee increase, (2) the logarithm of sales increases, (3) both the operating income to total assets and the operating income to sales increase, (4) both operating income per employee and sales per employee increase, and (5) much of the gain in the operating income to sales comes from the reduction in the managerial expenses to sales and the reduction in the financial expenses to sales, not from the increase in profits from main or other products.

The results on price index and the logarithm of total assets are no longer statistically significant. The only different and statistically significant result is that the tax payments, both inclusive and exclusive of the value-added taxes, actually increased after the first privatization. Thus we can conclude that the first privatization works very effectively no matter how partial it is. As for the benefits of subsequent privatization, we find that the second-time privatization still adds value in terms of greater operation (logarithm of sales), higher firm profitability (operating income to total assets and operating income to sales) and higher firm productivity (operating income per employee). With the second-time privatization, the size of employment reversed its decline and started to increase, but the wage and welfare per employee continued to increase. The tax payments (both inclusive and exclusive of value-added taxes) also continued to increase. Our results, however, show that any further (third-time or fourth-time) privatization adds little value in almost all performance indicators.

The results of the first and subsequent privatization seem to suggest that the scope of privatization is not critically important in the case of China. One may argue, however, that in our sample 75% of the state-owned enterprises undergoing the first privatization were no longer state-controlled (i.e., less than 50% state ownership) and an additional 45% of the state-owned enterprises undergoing the second privatization were controlled by non-state owners (see Table 2 for details). Thus the question of whether it is important to have more than 50% non-state ownership in order to have any impact of privatization must be addressed.[15] To address this question, we replace the percentage of non-state ownership in model (1) by two indicator variables about whether the state still has majority control after the privatization. The modified estimation model is as follows:

$$y_{i,t} = \alpha_i + \alpha_t Year_t + \alpha_0 X_{i,t} + \alpha_1 NonSShr\_Maj_{i,t} + \alpha_2 NonSShr\_Min_{i,t} + \alpha_3 HHI_{j,t} + \varepsilon_{i,t}$$

…….. (3),

[15] Using data on telecom sector privatization around the world, Li and Xu (2004) found that only full privatization led to substantial improvement in allocation of capital and labor, output expansion, network penetration, and labor and total factor productivity.

where $NonSShr\_Maj_{i,t}$ equals 1 if non-state ownership in firm i is higher than fifty percent in year t and zero otherwise; $NonSShr\_Min_{i,t}$ equals 1 if non-state ownership in firm i is lower or equal to fifty percent in year t and zero otherwise. As shown in Table 6, firm profitability (measured by operating income to total assets and operating income to sales) improves after the privatization, regardless of who has majority control; so do the two measures of productivity (operating income per employee and sales per employee). However, judging by the size of coefficients, privatization that resulted in majority control by non-state owners has a bigger impact on firm profitability and productivity than privatization with the state retaining more than 50% ownership. For privatization with majority non-state ownership, much of the gain in the operating income to sales still comes from the reduction of managerial expenses to sales, reduction of financial expenses to sales, and profits from main products (in the decreasing order of importance); but the reduction of managerial expenses to sales is no longer a major source of gain for privatization with minority non-state ownership. On social welfare responsibilities, both privatization with majority non-state ownership and that with minority non-state ownership have positive impacts on the wage and welfare per employee. However, the size of employment increased and the price index also increased under privatization with minority non-state ownership, while both decreased under privatization with majority non-state ownership. On the tax payments, only privatization with minority non-state ownership has positive and statistically significant impact.

Taken together, our results on partial privatization (first versus subsequent privatization, and privatization with the state retaining more than 50% ownership versus that with less than 50% state ownership) suggest that, no matter how limited the scope of the privatization is, it introduces real (not nominal) and active shareholders who put pressure on the State Assets Agency or the board of directors to pursue profit maximization instead of some social welfare objectives. Incentive systems are then put in place to motivate management to streamline the management structure (i.e., reducing the agency cost) and improve firm performance and productivity.

3.3. Long-run impact of privatization

The analysis in the previous two sections has found significant impact of privatization on firm performance and social welfare responsibilities. The estimation models (1)-(3) used in the analysis, however, impose a restriction of uniform impact of privatization (the percentage of non-state ownership) across the sample period. There is anecdotal evidence that state-owned enterprises tend to take actions of short-term and transitory effects, such as under-reporting their financial performance prior to privatization or receiving large one-off subsidies during the privatization process. However, the success of China's state-owned enterprises privatization hinges upon the sustained impact on firm performance and social welfare responsibilities. To investigate the long-run impact of privatization, we modify model (1) by replacing the percentage of non-state ownership by four interaction terms between the percentages of non-state ownership with dummy variables indicating the number of years after the initial privatization (Song and Yao, 2005). The revised estimation model is as follows:

$$y_{i,t} = \alpha_i + \alpha_t Year_t + \alpha_0 X_{i,t} + \sum_{k=1}^{4} \alpha_k Year_k \_ AfterPriv * NoSShr_t + \beta_1 HHI_{j,t} + \varepsilon_{i,t} \quad \text{..... (4),}$$

The year of initial privatization is defined as year 1 after privatization.

$Year_k \_ AfterPriv$ is equal to 1 for the year in which firm i has been privatized for k years.

Since the earliest possible privatization in our sample occurred in 1999 and the time period examined for firm performance and social welfare responsibilities runs from 1998 to 2002, the highest number of years after initial privatization (or subscript k) is 4. In model (4), privatization is allowed to have differential impacts across the sample period. Assume that a state-owned enterprise had a partial privatization of 10% non-state ownership in 1999. Then the same percentage of non-state ownership (10%) could have impact α_1 on a performance indicator of year 1999, impact α_2 on the performance indicator of year 2000, impact α_3 on the performance indicator of year 2001, and impact

α_4 on the performance indicator of year 2002. If the impact of non-state ownership on the performance indicator decreases across the sample period (i.e., α_k decreasing with respect to k), then there is limited long-rum impact of privatization.

As shown in Table 7, the negative impact of non-state ownership on the size of employment was steady and significant up to four years after the privatization, while the positive effects of non-state ownership on the wage and welfare per employee increased throughout the post-privatization period. The price index did not have any statistically significant change in the first year of privatization, but then had a pronounced decrease up to four years after the privatization. As in our benchmark case (model (1)), the impact of non-state ownership on the tax payments was insignificant and remained so in the post-privatization period.

The increase in firm profitability (operating income to total assets and operating income to sales) was significant in the first two years after privatization, and then became steady. Possibly due to the steady decrease in the size of employment, the improvement in firm productivity (operating income per employee and sales per employee) was significant and increasing throughout the post-privatization period. As in our benchmark case (model (1)), much of the gain in the operating income to sales comes from the reduction in the managerial expenses to sales and the reduction in the financial expenses to sales, not from the increase in the profits from main products. More significantly, the decreases in the managerial expenses to sales and in the financial expenses to sales were significant and widening throughout the post-privatization period. In contrast, the increase in the profits from main products was significant only up to two years after the privatization. With a survey data of 218 privatized and state-owned enterprises in the Czech Republic, Hungary and Poland, Frydman, Gary, Hessel and Rapaczynski (1999) found immediate but no sustained impact of privatization. Based on a data-set of over 6,000 privatized and state-owned enterprises in Bulgaria, the Czech Republic, Hungary, Poland, Romania, the Slovak Republic and Slovenia, Claessens and Djankov (2002) found that the impacts of privatization were small at the beginning but then grew over time. Song and Yao (2004) used a relatively small sample of Chinese firms and found no immediate but gradual and

sustained effects of privatization. Our analysis shows that there was both immediate and sustained improvement in firm profitability and productivity throughout the post-privatization period, and it lends strong support to the success of China's state-owned enterprises privatization.

4. Conclusion

Since China started its economic reform in the late 1970s, its economy has experienced some of the most spectacular growth in its history. Much of China's economic growth, however, has been driven by its private enterprises, even though property rights protection was not formally written into China's constitution until March 2004, and multinationals operating in China. State-owned enterprises have been losing their competitive position in the market place, and yet the Chinese government has been slow in privatizing those enterprises. It has been suggested that China's state-owned enterprises are maintained for serving various social welfare objectives (consumer welfare, government tax revenue, and workers' interests) rather than profit maximization. China's state-owned enterprises are theoretically owned by all people in the society, but they are effectively controlled by the State Assets Agency, who has multiple social welfare objectives. The management of a state-owned enterprise – appointed by the State Assets Agency – needs to meet the social welfare objectives, but beyond that the management is neither motivated nor disciplined to pursue profit maximization. Instead, the management may pursue its private benefits from control – resulting in severe agency cost. Thus privatization of China's state-owned enterprises could well be resisted by the various interest parties (social welfare groups and management) whose payoffs might be adversely affected by the process.

With the objective of understanding why inefficient organizations such as China's state-owned enterprises may persist over time, we use a comprehensive panel data-set of 2,866 Chinese state-owned enterprises to investigate the impact of privatization on social welfare responsibilities and firm performance. We found that the privatization of China's

state-owned enterprises was achieved with limited compromise on the social welfare responsibilities: (1) privatization had a negative impact on the size of employment, but those employees who retained their jobs had their wage and welfare increased, (2) the price index decreased with the extent of privatization, suggesting that consumers benefited from the process, and (3) there was no statistically significant impact on the tax payments, both inclusive and exclusive of the value-added taxes. We found that privatization had a significant impact on firm performance: (1) logarithm of total assets decreased but the logarithm of sales increased with the extent of privatization, (2) both operating income to sales and operating income to total assets increased with the percentage of non-state ownership, and (3) both operating income per employee and sales per employee increased with the extent of privatization. The gain in the operating income to sales – a key measure for firm performance – was found to come from, in order of decreasing importance, (1) the decrease in the managerial expenses to sales, (2) the decrease in the financial expenses to sales, and (3) the increase in profit from main and other products. We also examined the robustness of our results to the sequence and extent of privatization, and investigated if there was any sustained impact of privatization on social welfare responsibilities and firm performance in the long run. Our analysis suggests there are two obstacles in the privatization of China's state-owned enterprises: how to ensure the interests of those unlucky workers who were laid off in the privatization process, and how to replace the management's private benefit (managerial expenses or agency cost) with incentive mechanisms that motivate the management to pursue profit maximization.

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Table 1
Definition and Summary Statistics of Variables

This table reports annual summary statistics for state-owned enterprises used in econometric analyses for the period 1998-2002, including firms privatized between 1999 and 2002 and firms privatized in 2003. The number of firms is 2866. The maximum number of observations is 14330.

Variable Name	Definition	Mean	STD	MAX	MIN	Number of Observation
NonSShr	Share of non-state ownership	0.292	0.436	1	0	14330
HHI	Herfindahl Index	43.868	57.233	1533.591	4.569	14330
Debt_R	Debts to total assets ratio	0.722	0.327	5.921	0	14329
Suplus_Lab	Surplus labor ratio	0.451	0.315	0.985	-0.83	14317
NewProdR	Percentage of new products in total output	0.043	0.147	1	0	14261
OP_T_FixAss	Percentage of fixed assets for operation in total fixed assets	0.817	0.210	1.000	0.277	14299
Log_Labor	Logarithm of employee	5.639	1.185	9.122	3.790	14317
Wage_Labor	Wage per employee per year (in thousand Yuan per person)	8.026	5.331	42.378	3.000	14317
Welfare_Labor	Welfare per employee per year (in thousand Yuan per person)	1.097	0.963	8.237	0	14317
Price	Price index (outputs in current price / outputs in price of 1990)	1.421	0.988	11.881	0.419	14223
Tax1	Total amount of tax, including value added tax (in million Yuan)	4.247	12.836	144.237	0	14330
Tax2	Total amount of tax, excluding value added tax (in million Yuan)	1.250	4.062	44.930	0	14330
OI_TA	Operating Income to Total Assets	0.001	0.067	0.254	-0.298	14329
OI_S	Operating Income to Sales	-0.043	0.238	0.910	-5.737	14249
OI_Labor	Operating Income per employee (in thousand Yuan per person)	0.708	11.677	68.113	-59.637	14317
S_Labor	Sale per employee (in thousand Yuan per person)	108.209	134.637	952.989	9.560	14317
MExp_S	Managerial expenses to Sales	0.156	0.191	4.410	0.044	14249
FExp_S	Financial expenses to Sales	0.044	0.067	0.824	-0.024	14249
OpProf_S	Product selling profit to sales	0.139	0.142	1.065	-1.564	14249
OthProf_S	Other profits to sales	0.018	0.109	3.538	-3.417	14249
Log_TA	Logarithm of total assets	11.851	1.459	17.500	8.296	14329
Log_S	Logarithm of sales	9.805	1.547	14.115	6.910	14249

Table 2A
Privatization of SOE during the Sample Period by Industry (Number of Firms)

			Privatized for the first time in year				
Industry	SOE in 1998	SOE in 2003	1999	2000	2001	2002	2003
Coal Mining and Processing	543	431	9	21	18	16	48
Petroleum and Natural Gas Extraction	20	19	0	0	0	0	1
Ferrous Metals Mining and Dressing	55	49	2	0	2	0	2
Nonferrous Metals Mining and Dressing	210	178	1	5	1	9	16
Nonmetal Mining and Dressing	206	170	1	8	2	7	18
Other Minerals Mining and Dressing	3	3	0	0	0	0	0
Logging and Transport of Timber and Bamboo	27	25	0	0	1	0	1
Food Processing	1048	779	45	52	45	45	82
Food Production	430	328	21	20	24	13	24
Beverage Production	350	224	27	31	21	25	22
Tobacco Processing	126	121	0	0	1	1	3
Textile Industry	547	410	20	39	24	22	32
Garment and Other Fiber Products	129	108	4	3	5	3	6
Leather, Furs, Down and Related Products	69	57	2	1	6	2	1
Timber Processing, Bamboo, Cane, Palm Fiber and Straw Products	104	90	2	1	3	2	6
Furniture Manufacturing	52	42	3	1	1	0	5
Papermaking and Paper Products	215	163	12	11	10	7	12
Printing and Record Medium Reproduction	792	715	8	11	7	17	34
Cultural, Educational and Sports Goods	73	65	2	2	1	0	3
Petroleum Refining and Coking	79	59	2	5	5	4	4
Raw Chemical Materials and Chemical Products	938	670	43	57	64	37	67
Medical and Pharmaceutical Products	369	208	25	35	37	32	32
Chemical Fiber	40	26	4	4	2	0	4
Rubber Products	87	65	6	3	5	3	5
Plastic Products	199	162	9	2	9	5	12
Nonmetal Mineral Products	1132	837	72	48	62	43	70
Smelting and Pressing of Ferrous Metals	163	124	4	7	9	5	14
Smelting and Pressing of Nonferrous Metals	151	119	7	5	8	4	8
Metal Products	342	279	19	10	3	13	18
Ordinary Machinery	841	661	29	39	31	30	51
Special Purposes Equipment	876	715	21	39	36	27	38
Transport Equipment	924	800	19	16	23	24	42
Electric Equipment and Machinery	412	305	22	17	27	13	28
Electronic and Telecommunications	289	230	12	15	18	6	8
Instruments, meters, Cultural and Clerical Machinery	210	184	3	8	3	7	5
Other Manufacturing	87	70	0	4	2	4	7
Production and Supply of Power, Steam and Hot Water	1756	1612	18	16	26	33	51
Production and Supply of Gas	134	117	2	0	2	3	10
Production and Supply of Tap Water	1468	1410	3	5	5	11	34
Total	15496	12630	479	541	549	473	824

Table 2B
Privatization of SOE during the Sample Period by Industry (Percentage)

Industry	(1) SOE in 1998 (Ind / Total)	(2) SOE in 2003 / SOE in 1998	(3) 1999 / Sum (1999 to 2003)	(4) 2000 / Sum (1999 to 2003)	(5) 2001 / Sum (1999 to 2003)	(6) 2002 / Sum (1999 to 2003)	(7) 2003 / Sum (1999 to 2003)
Medical and Pharmaceutical Products	2.38%	***56.37%***	15.53%	21.74%	22.98%	19.88%	19.88%
Beverage Production	2.26%	***64.00%***	21.43%	24.60%	16.67%	19.84%	17.46%
Chemical Fiber	0.26%	***65.00%***	28.57%	28.57%	14.29%	0.00%	28.57%
Raw Chemical Materials and Chemical Products	6.05%	***71.43%***	16.04%	21.27%	23.88%	13.81%	25.00%
Nonmetal Mineral Products	7.31%	***73.94%***	24.41%	16.27%	21.02%	14.58%	23.73%
Electric Equipment and Machinery	2.66%	***74.03%***	20.56%	15.89%	25.23%	12.15%	26.17%
Food Processing	6.76%	***74.33%***	16.73%	19.33%	16.73%	16.73%	30.48%
Petroleum Refining and Coking	0.51%	***74.68%***	10.00%	25.00%	25.00%	20.00%	20.00%
Rubber Products	0.56%	***74.71%***	27.27%	13.64%	22.73%	13.64%	22.73%
Textile Industry	3.53%	***74.95%***	14.60%	28.47%	17.52%	16.06%	23.36%
Papermaking and Paper Products	1.39%	***75.81%***	23.08%	21.15%	19.23%	13.46%	23.08%
Smelting and Pressing of Ferrous Metals	1.05%	***76.07%***	10.26%	17.95%	23.08%	12.82%	35.90%
Food Production	2.77%	***76.28%***	20.59%	19.61%	23.53%	12.75%	23.53%
Ordinary Machinery	5.43%	***78.60%***	16.11%	21.67%	17.22%	16.67%	28.33%
Smelting and Pressing of Nonferrous Metals	0.97%	***78.81%***	21.88%	15.63%	25.00%	12.50%	25.00%
Coal Mining and Processing	3.50%	***79.37%***	8.04%	18.75%	16.07%	14.29%	42.86%
Electronic and Telecommunications	1.86%	***79.58%***	20.34%	25.42%	30.51%	10.17%	13.56%
Other Manufacturing	0.56%	***80.46%***	0.00%	23.53%	11.76%	23.53%	41.18%
Furniture Manufacturing	0.34%	***80.77%***	30.00%	10.00%	10.00%	0.00%	50.00%
Plastic Products	1.28%	***81.41%***	24.32%	5.41%	24.32%	13.51%	32.43%
Metal Products	2.21%	***81.58%***	30.16%	15.87%	4.76%	20.63%	28.57%
Special Purposes Equipment	5.65%	***81.62%***	13.04%	24.22%	22.36%	16.77%	23.60%
Nonmetal Mining and Dressing	1.33%	***82.52%***	2.78%	22.22%	5.56%	19.44%	50.00%
Leather, Furs, Down and Related Products	0.45%	***82.61%***	16.67%	8.33%	50.00%	16.67%	8.33%
Garment and Other Fiber Products	0.83%	***83.72%***	19.05%	14.29%	23.81%	14.29%	28.57%
Nonferrous Metals Mining and Dressing	1.36%	***84.76%***	3.13%	15.63%	3.13%	28.13%	50.00%
Timber Processing, Bamboo, Cane, Palm Fiber and Straw Products	0.67%	***86.54%***	14.29%	7.14%	21.43%	14.29%	42.86%
Transport Equipment	5.96%	***86.58%***	15.32%	12.90%	18.55%	19.35%	33.87%
Production and Supply of Gas	0.86%	***87.31%***	11.76%	0.00%	11.76%	17.65%	58.82%
Instruments, meters, Cultural and Clerical Machinery	1.36%	***87.62%***	11.54%	30.77%	11.54%	26.92%	19.23%
Cultural, Educational and Sports Goods	0.47%	***89.04%***	25.00%	25.00%	12.50%	0.00%	37.50%
Ferrous Metals Mining and Dressing	0.35%	***89.09%***	33.33%	0.00%	33.33%	0.00%	33.33%
Printing and Record Medium Reproduction	5.11%	***90.28%***	10.39%	14.29%	9.09%	22.08%	44.16%
Production and Supply of Power, Steam and Hot Water	11.33%	***91.80%***	12.50%	11.11%	18.06%	22.92%	35.42%
Logging and Transport of Timber and Bamboo	0.17%	***92.59%***	0.00%	0.00%	50.00%	0.00%	50.00%
Petroleum and Natural Gas Extraction	0.13%	***95.00%***	0.00%	0.00%	0.00%	0.00%	100.00%
Tobacco Processing	0.81%	***96.03%***	0.00%	0.00%	20.00%	20.00%	60.00%
Production and Supply of Tap Water	9.47%	***96.05%***	5.17%	8.62%	8.62%	18.97%	58.62%
Other Minerals Mining and Dressing	0.02%	***100.00%***	--	--	--	--	--

Note: Sorted ascending by column 2.

Table 2C
Privatization of SOE during the Sample Period by Province (Number of Firms)

			Privatized for the first time in year				
Province	**SOE in 1998**	**SOE in 2003**	**1999**	**2000**	**2001**	**2002**	**2003**
Beijing	487	421	14	9	13	13	17
Tianjin	750	719	5	6	7	7	6
Hebei	998	812	31	30	32	30	63
Shanxi	564	465	20	19	18	15	27
Inner Mongolia	272	214	10	18	4	7	19
Liaoning	517	437	18	10	9	16	27
Jilin	453	384	14	12	20	7	16
Heilongjiang	449	375	15	12	19	11	17
Shanghai	556	482	14	18	7	19	16
Jiangsu	702	383	36	70	59	60	94
Zhejiang	459	337	22	43	37	9	11
Anhui	303	235	11	14	7	14	22
Fujian	441	394	7	8	10	8	14
Jiangxi	545	466	4	14	12	13	36
Shandong	889	610	54	54	65	36	70
Henan	1114	927	27	25	28	32	75
Hubei	486	346	21	14	23	32	50
Hunan	450	401	5	7	5	14	18
Guangdong	999	815	43	44	36	27	34
Guangxi	635	589	9	5	11	9	12
Hainan	156	138	2	1	7	3	5
Chongqing	220	179	13	4	7	3	14
Sichuan	568	391	21	32	57	26	41
Guizhou	566	530	6	5	6	4	15
Yunnan	496	380	25	23	25	18	25
Tibet	28	26	0	0	0	0	2
Shaanxi	518	465	11	8	3	11	20
Gansu	403	315	12	13	10	17	36
Qinghai	67	58	1	1	1	4	2
Ningxia	64	52	2	7	2	1	0
Xinjiang	341	284	6	15	9	7	20
Total	15496	12630	479	541	549	473	824

Table 2D
Privatization of SOE during the Sample Period by Province (Percentage)

Province	(1) SOE in 1998 (Ind / Total)	*(2) SOE in 2003 / SOE in 1998*	(3) 1999 / Sum (1999 to 2003)	(4) 2000 / Sum (1999 to 2003)	(5) 2001 / Sum (1999 to 2003)	(6) 2002 / Sum (1999 to 2003)	(7) 2003 / Sum (1999 to 2003)
Jiangsu	4.53%	***54.56%***	11.29%	21.94%	18.50%	18.81%	29.47%
Shandong	5.74%	***68.62%***	19.35%	19.35%	23.30%	12.90%	25.09%
Sichuan	3.67%	***68.84%***	11.86%	18.08%	32.20%	14.69%	23.16%
Hubei	3.14%	***71.19%***	15.00%	10.00%	16.43%	22.86%	35.71%
Zhejiang	2.96%	***73.42%***	18.03%	35.25%	30.33%	7.38%	9.02%
Yunnan	3.20%	***76.61%***	21.55%	19.83%	21.55%	15.52%	21.55%
Anhui	1.96%	***77.56%***	16.18%	20.59%	10.29%	20.59%	32.35%
Gansu	2.60%	***78.16%***	13.64%	14.77%	11.36%	19.32%	40.91%
Inner Mongolia	1.76%	***78.68%***	17.24%	31.03%	6.90%	12.07%	32.76%
Ningxia	0.41%	***81.25%***	16.67%	58.33%	16.67%	8.33%	0.00%
Hebei	6.44%	***81.36%***	16.67%	16.13%	17.20%	16.13%	33.87%
Chongqing	1.42%	***81.36%***	31.71%	9.76%	17.07%	7.32%	34.15%
Guangdong	6.45%	***81.58%***	23.37%	23.91%	19.57%	14.67%	18.48%
Shanxi	3.64%	***82.45%***	20.20%	19.19%	18.18%	15.15%	27.27%
Henan	7.19%	***83.21%***	14.44%	13.37%	14.97%	17.11%	40.11%
Xinjiang	2.20%	***83.28%***	10.53%	26.32%	15.79%	12.28%	35.09%
Heilongjiang	2.90%	***83.52%***	20.27%	16.22%	25.68%	14.86%	22.97%
Liaoning	3.34%	***84.53%***	22.50%	12.50%	11.25%	20.00%	33.75%
Jilin	2.92%	***84.77%***	20.29%	17.39%	28.99%	10.14%	23.19%
Jiangxi	3.52%	***85.50%***	5.06%	17.72%	15.19%	16.46%	45.57%
Beijing	3.14%	***86.45%***	21.21%	13.64%	19.70%	19.70%	25.76%
Qinghai	0.43%	***86.57%***	11.11%	11.11%	11.11%	44.44%	22.22%
Shanghai	3.59%	***86.69%***	18.92%	24.32%	9.46%	25.68%	21.62%
Hainan	1.01%	***88.46%***	11.11%	5.56%	38.89%	16.67%	27.78%
Hunan	2.90%	***89.11%***	10.20%	14.29%	10.20%	28.57%	36.73%
Fujian	2.85%	***89.34%***	14.89%	17.02%	21.28%	17.02%	29.79%
Shanxi	3.34%	***89.77%***	20.75%	15.09%	5.66%	20.75%	37.74%
Guangxi	4.10%	***92.76%***	19.57%	10.87%	23.91%	19.57%	26.09%
Tibet	0.18%	***92.86%***	0.00%	0.00%	0.00%	0.00%	100.00%
Guizhou	3.65%	***93.64%***	16.67%	13.89%	16.67%	11.11%	41.67%
Tianjin	4.84%	***95.87%***	16.13%	19.35%	22.58%	22.58%	19.35%
Total	100.00%	***81.50%***	16.71%	18.88%	19.16%	16.50%	28.75%

Note: Sorted ascending by column 2.

Table 3
Sequence of Privatization and Share of State Ownership during the Sample Period

Panel A: First-time Privatization

	Year of Privatization					
Type of Change in State Ownership	**1999**	**2000**	**2001**	**2002**	**2003**	**Total**
All_100%→0%	297	343	356	315	557	**1868**
All_100%→0%<50%	51	65	62	41	69	**288**
All_100%→50%=<100%	131	133	131	117	198	**710**
Total	**479**	**541**	**549**	**473**	**824**	**2866**

Panel B: Second-time Privatization

	Year of Privatization					
Type of Change in State Ownership	**1999**	**2000**	**2001**	**2002**	**2003**	**Total**
0%<50%→0%		15	28	30	24	**97**
0%<50%→0%<50%		10	8	8	11	**37**
50%=<100%→0%		25	36	39	57	**157**
50%=<100%→0%<50%		14	18	12	13	**57**
50%=<100%→50%=<100%		19	27	41	36	**123**
Total		**83**	**117**	**130**	**141**	**471**

Panel C: Third-time Privatization

	Year of Privatization					
Type of Change in State Ownership	**1999**	**2000**	**2001**	**2002**	**2003**	**Total**
0%<50%→0%			7	6	11	**24**
0%<50%→0%<50%			7	5	4	**16**
50%=<100%→0%			5	7	10	**22**
50%=<100%→0%<50%			0	2	2	**4**
50%=<100%→50%=<100%			2	9	13	**24**
Total			**21**	**29**	**40**	**90**

Panel D: Fourth-time Privatization

	Year of Privatization					
Type of Change in State Ownership	**1999**	**2000**	**2001**	**2002**	**2003**	**Total**
0%<50%→0%				3	2	**5**
0%<50%→0%<50%				1	2	**3**
50%=<100%→0%				0	2	**2**
50%=<100%→0%<50%				0	1	**1**
50%=<100%→50%=<100%				0	2	**2**
Total				**4**	**9**	**13**

Table 4
The Impact of Non-state Ownership
This table summarizes the estimation results of model (1).

Panel A: Social Welfare

	Labor			Price	Tax	
Independent Variables	**Logarithm of Labor**	**Wage per Labor**	**Welfare per Labor**	**Price Index**	**Tax (including Value Added Tax)**	**Tax (excluding Value Added Tax)**
NonSShr	-0.1775***	1.8113***	0.2154***	-0.0687***	-0.1331	0.0438
	(0.0236)	(0.1032)	(0.0186)	(0.0190)	(0.2361)	(0.0747)
HHI	0.0024***	0.0143***	0.0023***	0.0043***	0.0556***	0.0178***
	(0.0002)	(0.0008)	(0.0001)	(0.0001)	(0.0018)	(0.0006)
R square	0.0390	0.0320	0.0343	0.0500	0.0962	0.0958
Number of Observation	14226	14226	14226	14189	14226	14226

Note: ***, **, and * represent significant at 1%, 5%, and 10% percentage, respectively.

Panel B: Firm Performance

	Size of Operation		Profitability		Productivity	
Independent Variables	**Logarithm of Total Assets**	**Logarithm of Sales**	**Operating Income to Total Assets**	**Operating Income to Sales**	**Operating Income per Employee**	**Sales per Employee**
NonSShr	-0.1437***	0.2069***	0.0144***	0.0381***	2.2801***	51.5037***
	(0.0306)	(0.0331)	(0.0012)	(0.0043)	(0.2175)	(2.5566)
HHI	0.0037***	0.0022***	0.0001***	0.0000***	0.0055***	0.1403***
	(0.0002)	(0.0002)	(0.0000)	(0.0000)	(0.0016)	(0.0191)
R square	0.0684	0.0557	0.1252	0.0909	0.1286	0.3164
Number of Observation	14226	14196	14226	14196	14226	14196

Note: ***, **, and * represent significant at 1%, 5%, and 10% percentage, respectively.

Panel C: Decomposition of Operating Income to Sales

Independent Variables	**Managerial Expenses to Sales**	**Financial Expenses to Sales**	**Products Selling Profits to Sales**	**Other Profits to Sales**
NonSShr	-0.0205***	-0.0137***	0.0093***	-0.0054**
	(0.0036)	(0.0012)	(0.0028)	(0.0020)
HHI	0.0003***	0.0000***	0.0002***	0.0001***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
R square	0.0456	0.0995	0.0240	0.0068
Number of Observation	14196	14196	14196	14196
Percentage in overall change of operating income to sales				
NonSShr	53.85%	35.91%	24.32%	-14.08%

Note: ***, **, and * represent significant at 1%, 5%, and 10% percentage, respectively.

Table 5
The Impact of Initial and Subsequent Privatization

This table summarizes the estimation results of model (2).

Panel A: Social Welfare

	Labor			Price	Tax	
Independent Variables	**Logarithm of Labor**	**Wage per Labor**	**Welfare per Labor**	**Price Index**	**Tax (including Value Added Tax)**	**Tax (excluding Value Added Tax)**
First_Priv	-0.0815**	1.7270***	0.2124***	-0.0243	0.5898**	0.2331**
	(0.0236)	(0.0947)	(0.0175)	(0.0180)	(0.2230)	(0.0706)
Second_Priv	0.0975*	0.6959**	0.1255**	-0.0021	1.6848**	0.6546***
	(0.0553)	(0.2439)	(0.0439)	(0.0449)	(0.5584)	(0.1767)
Third_Priv	0.0679	-0.9768	-0.0937	0.2118*	-0.4789	-0.0492
	(0.1245)	(0.6925)	(0.1248)	(0.1275)	(1.5856)	(0.5016)
Fourth_Priv	0.4121	-0.8967	-0.2346	-0.0237	-0.5377	1.9267
	(0.5946)	(2.7509)	(0.4957)	(0.5065)	(6.2984)	(1.9924)
HHI	0.0024***	0.0141***	0.0022***	0.0043***	0.0558***	0.0179***
	(0.0002)	(0.0008)	(0.0001)	(0.0001)	(0.0018)	(0.0006)
R square	0.0334	0.0405	0.0392	0.0095	0.0976	0.0982
Number of Observation	14226	14226	14226	14189	14226	14226

Note: ***, **, and * represent significant at 1%, 5%, and 10% percentage, respectively.

Panel B: Firm Performance

	Size of Operation		Profitability		Productivity	
Independent Variables	**Logarithm of Total Assets**	**Logarithm of Sales**	**Operating Income to Total Assets**	**Operating Income to Sales**	**Operating Income per Employee**	**Sales per Employee**
First_Priv	0.0221	0.2700***	0.0133***	0.0322***	2.0404***	43.0218***
	(0.0289)	(0.0315)	(0.0012)	(0.0041)	(0.2057)	(2.4355)
Second_Priv	-0.2343	0.1445**	0.0061**	0.0183*	0.8404	-9.0661
	(0.6426)	(0.0684)	(0.0029)	(0.0101)	(0.5152)	(6.0751)
Third_Priv	-0.0307	0.3826**	0.0033	0.0151	0.5743	-0.7086
	(0.1820)	(0.1939)	(0.0081)	(0.0287)	(1.4627)	(17.2493)
Fourth_Priv	0.6725	0.5329	-0.0053	-0.0039	1.1646	-7.1149
	(0.7227)	(0.7699)	(0.0323)	(0.1137)	(5.8103)	(68.5178)
HHI	0.0037***	0.0022***	0.0001***	0.00002***	0.0053***	0.1331***
	(0.0002)	(0.0002)	(0.0000)	(0.0000)	(0.0016)	(0.0191)
R square	0.0688	0.0599	0.1268	0.0912	0.1202	0.2361
Number of Observation	14226	14196	14226	14196	14226	14226

Note: ***, **, and * represent significant at 1%, 5%, and 10% percentage, respectively.

Panel C: Decomposition of Operating Income to Sales

Independent Variables	Managerial Expenses to Sales	Financial Expenses to Sales	Products Selling Profits to Sales	Other Profits to Sales
First_Priv	-0.0127***	-0.0125***	0.0106***	-0.0036*
	(0.0034)	(0.0012)	(0.0026)	(0.0019)
Second_Priv	-0.0079	-0.0012	0.0083	0.0009
	(0.0085)	(0.0029)	(0.0066)	(0.0048)
Third_Priv	-0.0169	0.0059	0.0104	-0.0065
	(0.0240)	(0.0083)	(0.0186)	(0.0136)
Fourth_Priv	-0.0033	-0.0052	-0.0492	0.0368
	(0.0952)	(0.0329)	(0.0738)	(0.0538)
HHI	0.0003***	0.00004***	0.0002***	0.0001***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
R square	0.0447	0.0998	0.0250	0.0066
Number of Observation	14196	14196	14196	14196

Note: ***, **, and * represent significant at 1%, 5%, and 10% percentage, respectively.

Table 6
Difference between Majority and Minority Non-state Ownership

This table summarizes the estimation results of model (3).

Panel A: Social Welfare

	Labor			Price	Tax	
Independent Variables	**Logarithm of Labor**	**Wage per Labor**	**Welfare per Labor**	**Price Index**	**Tax (including Value Added Tax)**	**Tax (excluding Value Added Tax)**
NonSShr_Maj	-0.1753***	1.8651***	0.2284***	-0.0489**	0.1420	0.0901
	(0.0646)	(0.1007)	(0.0181)	(0.0186)	(0.2304)	(0.0729)
NoSShr_Min	0.0875**	1.5192***	0.2161***	0.0875**	3.3437***	1.1982***
	(0.0395)	(0.1773)	(0.0320)	(0.0327)	(0.4057)	(0.1283)
HHI	0.0017***	0.0142***	0.0022***	0.0043***	0.0554***	0.0177***
	(0.0002)	(0.0008)	(0.0001)	(0.0001)	(0.0018)	(0.0006)
R square	0.0358	0.0422	0.0404	0.0103	0.1005	0.1013
Number of Observation	14226	14226	14226	14189	14226	14226

Note: ***, **, and * represent significant at 1%, 5%, and 10% percentage, respectively.

Panel B: Firm Performance

	Size of Operation		Profitability		Productivity	
Independent Variables	**Logarithm of Total Assets**	**Logarithm of Sales**	**Operating Income to Total Assets**	**Operating Income to Sales**	**Operating Income per Employee**	**Sales per Employee**
NonSShr_Maj	-0.0614**	0.2600***	0.0144***	0.0370***	2.2797***	49.4758***
	(0.0301)	(0.0327)	(0.0012)	(0.0042)	(0.2126)	(2.5020)
NoSShr_Min	0.4554***	0.3976***	0.0127***	0.0252***	1.6328***	11.6870***
	(0.0481)	(0.0518)	(0.0021)	(0.0074)	(0.3745)	(4.4065)
HHI	0.0037***	0.0022***	0.0001***	0.00002***	0.0054***	0.1392***
	(0.0002)	(0.0002)	(0.0000)	(0.0000)	(0.0016)	(0.0191)
R square	0.0742	0.0594	0.1265	0.0911	0.1018	0.2702
Number of Observation	14226	14196	14226	14196	14226	14226

Note: ***, **, and * represent significant at 1%, 5%, and 10% percentage, respectively.

Panel C: Decomposition of Operating Income to Sales

Independent Variables	Managerial Expenses to Sales	Financial Expenses to Sales	Products Selling Profits to Sales	Other Profits to Sales
NonSShr_Maj	-0.0187***	-0.0134***	0.0105***	-0.0056**
	(0.0035)	(0.0012)	(0.0027)	(0.0020)
NoSShr_Min	0.0054	-0.0094***	0.0169***	0.0043
	(0.0062)	(0.0021)	(0.0048)	(0.0035)
HHI	0.0003***	0.00004***	0.0002***	0.0001***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
R square	0.0447	0.0998	0.0250	0.0066
Number of Observation	14196	14196	14196	14196

Note: ***, **, and * represent significant at 1%, 5%, and 10% percentage, respectively.

Table 7
Long-run Effects of Privatization

This table summarizes the estimation results of model (4).

Panel A: Social Welfare

	Labor			Price	Tax	
Independent Variables	**Logarithm of Labor**	**Wage per Labor**	**Welfare per Labor**	**Price Index**	**Tax (including Value Added Tax)**	**Tax (excluding Value Added Tax)**
NonSShr*Year_1_after	-0.1874***	1.5420***	0.1818***	-0.0286	-0.3596	-0.0535
	(0.0454)	(0.1521)	(0.0274)	(0.0280)	(0.3481)	(0.1102)
NonSShr*Year_2_after	-0.1741***	1.9278***	0.2517***	-0.0696**	0.1921	0.1566
	(0.0450)	(0.1634)	(0.0294)	(0.0301)	(0.3737)	(0.1183)
NonSShr*Year_3_after	-0.1984***	1.9527***	0.2217***	-0.1215***	-0.1222	0.0233
	(0.0464)	(0.1943)	(0.0350)	(0.0357)	(0.4443)	(0.1406)
NonSShr*Year_4_after	-0.1848***	2.1233***	0.2120***	-0.0993**	-0.3314	0.0902
	(0.065	(0.2719)	(0.0490)	(0.0499)	(0.6216)	(0.1967)
HHI	0.0024***	0.0143***	0.0023***	0.0043***	0.0556***	0.0178***
	(0.0002)	(0.0008)	(0.0001)	(0.0001)	(0.0018)	(0.0006)
R square	0.0365	0.0410	0.0386	0.0104	0.0963	0.0960
Number of Observation	14226	14226	14226	14189	14226	14226

Note: ***, **, and * represent significant at 1%, 5%, and 10% percentage, respectively.

Panel B: Firm Performance

	Size of Operation		Profitability		Productivity	
Independent Variables	**Logarithm of Total Assets**	**Logarithm of Sales**	**Operating Income to Total Assets**	**Operating Income to Sales**	**Operating Income per Employee**	**Sales per Employee**
NonSShr*Year_1_after	-0.1737***	0.1587***	0.0092***	0.0273***	1.4863***	39.5239***
	(0.0407)	(0.0440)	(0.0018)	(0.0063)	(0.3206)	(3.7678)
NonSShr*Year_2_after	0.1076*	0.2475***	0.0168***	0.0437***	2.5353***	52.9779***
	(0.4511)	(0.0484)	(0.0019)	(0.0068)	(0.3443)	(0.4057)
NonSShr*Year_3_after	0.0120**	0.2568***	0.0180***	0.0461***	2.8696***	62.5143***
	(0.0555)	(0.0590)	(0.0023)	(0.0080)	(0.4094)	(4.8110)
NonSShr*Year_4_after	-0.1787**	0.1925**	0.0179***	0.0431***	3.1100***	66.8582***
	(0.0764)	(0.0801)	(0.0032)	(0.0113)	(0.5730)	(6.7337)
HHI	0.0037***	0.0022***	0.0001***	0.00001***	0.0056***	0.1411***
	(0.0002)	(0.0002)	(0.0000)	(0.0000)	(0.0016)	(0.0191)
R square	0.0685	0.0559	0.1261	0.0913	0.1014	0.2546
Number of Observation	14226	14196	14226	14196	14226	14226

Note: ***, **, and * represent significant at 1%, 5%, and 10% percentage, respectively.

Panel C: Decomposition of Operating Income to Sales

Independent Variables	Managerial Expenses to Sales	Financial Expenses to Sales	Products Selling Profits to Sales	Other Profits to Sales
NonSShr*Year_1_after	-0.0087***	-0.0121***	0.0124**	-0.0059*
	(0.0005)	(0.0018)	(0.0041)	(0.0030)
NonSShr*Year_2_after	-0.0217***	-0.0129***	0.0138**	-0.0047
	(0.0057)	(0.0020)	(0.0044)	(0.0032)
NonSShr*Year_3_after	-0.0311***	-0.0157***	0.0039	-0.0046
	(0.0067)	(0.0023)	(0.0052)	(0.0038)
NonSShr*Year_4_after	-0.0371***	-0.0175***	-0.0041	-0.0073
	(0.0095)	(0.0033)	(0.0073)	(0.0054)
HHI	0.0003***	0.00004***	0.0002***	0.0001***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
R square	0.0464	0.0998	0.0250	0.0068
Number of Observation	14196	14196	14196	14196

Note: ***, **, and * represent significant at 1%, 5%, and 10% percentage, respectively.