THE PERFORMANCE IMPACT OF FIRM OWNERSHIP TRANSFORMATION IN CHINA

John Beirne, Guy S. Liu and Pei Sun

In 2013 all ECB
publications
feature a motif
taken from
the €5 banknote.

John Beirne
European Central Bank; e-mail: john.beirne@ecb.europa.eu

Guy S. Liu
Brunel University; e-mail: guy.liu@brunel.ac.uk

Pei Sun
Fudan University; e-mail: pei.sun@fudan.edu.cn

Abstract

Does firm ownership change affect performance? On the basis of a mean-value analysis and a fixed effects panel analysis of over 1100 Chinese companies during the period of ownership reform (1997-2003), this paper examines the performance impact of firm ownership transformation in China. The data used allows us to compare the performance impacts of different methods taken to restructure the ownership of state firms, such as full versus partial privatisation. For China, a state-capitalist nation and the world's largest state sector under transition, the mix of state and private ownership – partial privatisation – emerges as the best performing type of ownership model for firms. Here, the firm can gain the best synergy of both state support and private business strength. The experience of the Chinese reform shows that the political context and system are important influencing factors on ownership preference for a firm.

Non-technical summary

The process of privatisation in China began in the latter half of the 1990s with the aim to sell most of the state-owned enterprises (SOEs) with the exclusion of the 300 largest. This was the so-called 'grasp the large, release the small' policy. The rationale for 'grasping the large' was that the Chinese government wanted to compete with foreign rivals by bringing the selected large SOEs together to create a form of critical economic mass that could compare with the Japanese *keiretsu* or the Korean *chaebol*. The large firms that remained in state ownership were in industries that were considered by the Chinese government to be central to economic development.

The issue of whether or not the privatisation of formerly state-owned enterprises results in an increase in firm performance and efficiency has been the subject of a number of papers in the past. The conventional wisdom suggests that a positive relationship exists between privatisation and corporate performance. However, the bulk of the empirical literature on the issue is based on the post-communist Central and Eastern European (CEE) economies. Research that focuses on China is much scarcer. Moreover, the process of reform in China differs substantially from that of the CEE countries. While the CEE economies adopted privatisation initiatives across large and small firms alike, the official policy in China was the so-called *zhuada fangxiao* where particular large enterprises were kept in state ownership. Of the studies carried out on China, the results appear to be quite mixed as regards the benefits of privatisation and ownership reform for firm performance.

This paper provides a comprehensive assessment of the privatisation effects on Chinese enterprise performance using a unique dataset collected from a survey of 1184 firms whose ownership either remained under state control after business restructuring or transformed from state to either partial or full private ownership. The time period is from 1997 to 2003 so that the pre and post privatisation effects can be assessed. In order to ensure robustness in our econometric approach, two alternative techniques are implemented: (i) a mean-value approach, (ii) a fixed effects panel approach. The primary motivation is to provide some empirical evidence for the

impact of privatisation in China across a range of firm performance indicators. The paper is distinguished from previous studies due to the use of a unique dataset that permits an inter-temporal analysis to be made at annual intervals up to three years after ownership transformation, for both fully and partially privatised firms. This allows us to assess which type of ownership structure is most conducive to improving firm performance. Previous studies tended to focus on theoretical aspects of optimal ownership. As well as this, the paper looks at the implications of both full and partial privatisation, going beyond earlier research that has tended to focus on either one or the other. Thus the scope of this paper is wider than that of the majority of papers in this area. In addition, the econometric approach employed helps to assess the driver behind any changed firm performance identified in a setting that controls for both market and firm-specific effects. This fixed-effects approach helps to eliminate the problem of selection bias that can be common in these types of studies.

Our results suggest that ownership transformation has been a success in China and that this process should continue across the remainder of the SOEs that remain in full state ownership. Thus, our findings are in contrast to those of previous studies of this nature on China, but in alignment with the conventional view internationally that ownership restructuring stimulates firm performance improvement. Our findings indicate that partial privatisation has become the dominant form of privatisation development for the current political context of China as a state-capitalist economy. This is because mixed ownership gains the synergy from both the support of political resources and private efficiency. This argument is supported by evidence that a state-controlled partial privatisation is more effective in improving labour productivity when compared with fully privatised firms. Moreover, we also find that the privately-controlled scenario performs better in terms of profitability, and private 'insider-controlled' firms, consisting of both management and employees as the controlling shareholder, are more willing to invest in their own firm for the future. While focused on the case of China, this work also offers useful lessons (in terms of providing an empirical basis for policy making) to other countries that may be similar to China in terms of political context and the nature of firm ownership.

1. Introduction

This paper assesses the economic effects of privatisation for a large sample of Chinese firms over the period 1997 to 2003. The conventional wisdom suggests that the privatisation of state owned enterprises leads to better performance. We examine this proposition using two alternative econometric approaches across a sample of 1184 Chinese firms whose ownership either remained under the state after business restructuring or transformed from state to either partial or full private ownership. The two estimation techniques are as follows: (i) a mean-value approach, (ii) a fixed effects panel approach. We use these techniques to assess firm performance at varying intervals following the changed ownership structure. Specifically, we examine the post-privatisation impact at one, two and three year time periods.

In the case of China, there does not exist a substantial amount of research on the post-privatisation effects on firm performance. In addition, the work that has been done to date suggests that the Chinese experience is not in alignment with the conventional wisdom. Specifically, Chen *et al.* (1998), Sun and Tong (2003), Wei *et al.* (2003), Wang (2005), and Chen *et al.* (2006) find that privatised firms in China have performed poorly. Some of these authors have ascribed this outcome as due to the partial nature of the privatisation whereby the state retains the majority shareholding. Under such partial privatisations, the previous research suggests that the state exerts distortions upon firms that can impede efficiency and productivity improvement. Interestingly, our work suggests that partial privatisation can be an optimal form of privatisation in the context of China's political system which is characterised by state capitalism. With the powerful influence of the government in market competition, the mixed ownership enables the firm to gain constitutional advantages in accessing political resources together with private efficiency and support. This argument is evident by the high labour productivity of partially privatised firms when compared with full privatised counterparts. In addition, we also find that a privately-controlled scenario performs better in terms of profitability and the so called private 'insiders',

consisting of both management and employees as the controlling shareholder, are more willing to invest in their own firms for the future in the post-reform phase.

In this paper, we test the hypothesis that the change in ownership has caused an improvement in firm performance. The two key issues that we seek to address are whether or not there has been a change over time, and what the specific causes of the improved situation are if it has been identified. We test the sample variables across a number of performance variables as dependent variables in a manner that enables the control or exclusion of market or firm-specific effects (with regard to the panel estimation in particular). Clearly, this is important in terms of identifying causality as time-variant market effects and time-invariant firm-specific effects may impact upon firm performance. The fixed-effects panel estimation helps to address the potential selection bias problem that may affect the results. The firm performance variables assessed include net asset profitability, debt ratio, sales per worker, sales growth, asset growth, and labour force growth. Apart from the assets growth and sales growth variable, there is no evidence of an endogenous effect in the estimation in relation to other performance variables.

This paper is distinguished from previous work in two key respects: the scope of the paper encompasses both full and partial privatisation scenarios (and different majority shareholdings between the state and firm within the partial scenario) regardless of whether the firm is listed or not; and the econometric approach undertaken provides a mechanism to control for market and firm-specific effects that enables performance to be assessed simultaneously at one, two and three years intervals after privatisation. This goes beyond previous work which tended to empirically examine performance for one type of ownership, and contributes to studies of optimal ownership structure which tended to be theoretical in nature. Overall, our results suggest that ownership transformation has been a success in China and that this process should continue across the remainder of the SOEs that remain in full state ownership. In particular, how to increase a private role in corporate governance via increasing private ownership shall become a policy priority for China if the new Chinese government intends to continuously seek the dividend from its economic reform over the next 10

years. In general, our findings are in alignment with the conventional view internationally that ownership restructuring stimulates firm performance improvement (Djankor & Murrell, 2002; Hanousek *et al.*, 2007). In particular, our findings are in support of the argument that an ownership preference is related to the political system of an economy. This is borne out by the Chinese ownership reform experience: mixed ownership becomes more prevalent in China as a rational response to its current political system – state capitalism with government dominance in the market. The implication of our view is that China needs political reform before full privatisation is widely pursued as preferable ownership strategy for large corporations.

The remainder of the paper is structured as follows: section 2 describes the context and motivation for the study; section 3 sets out the data description and econometric approach to be employed; section 4 details the results; and section 5 concludes.

2. Context and Motivation

Over the past twenty-five years or so, a range of countries (mainly transition or developing economies) have adopted full privatisation schemes.[1] This was associated with the benefits expected in terms of efficiency and profitability. State-owned enterprises in China were highly inefficient prior to the shift towards more market economy type approaches to economic development.[2] China began its process of liberalisation in 1978 and has since gradually transformed its economy from a centrally-planned structure to a thriving market economy. The benefits of the economic reforms that were implemented have received much attention in the literature in terms of their effects on state-owned enterprises (SOEs). For example, Li (1997) noted that the total factor productivity of SOEs improved significantly. Other authors have rationalised this as being due to decentralised decision-making processes

---

[1] See Djankov and Murrell (2002) for a comprehensive survey of the literature across countries.

[2] There were a range of reasons for this inefficiency, such as the so-called 'soft budget constraint', whereby a form of moral hazard could be observed where the government bailed out failing SOEs. Other reasons include a lack of management autonomy in SOEs; and a system of appointing SOE executives based on their position in the bureaucratic hierarchy as opposed to the business and entrepreneurial skills. See Steinfeld (1998) for further details.

6

(Cao *et al.*, 1999; Lau *et al.*, 2000) and greater performance-related incentives for managers and employees (Groves *et al.*, 1994, 1995). Zhang *et al.* (2002) noted that while Chinese SOEs grew faster in terms of productive efficiency during 1996 to 1998, this was not the case in relation to profitability growth rates compared to firms with different ownership structures. More recently, Girma and Gong (2008) focused on the impact of FDI on employment, productivity and profitability in Chinese SOEs.[3]

Privatisation in China began in the latter half of the 1990s with the aim to sell most of the SOEs with the exclusion of the 300 largest (Lin, 2000; Megginson and Netter, 2001). This was the so-called 'grasp the large, release the small' policy (Movshuk, 2004, Green & Liu, 2006). The rationale for 'grasping the large' was that the Chinese government wanted to compete with foreign rivals by bringing the selected large SOEs together to create a form of critical economic mass that could compare with the Japanese *keiretsu* or the Korean *chaebol*. The large firms that remained in state ownership were in industries that were considered by the Chinese government to be central to the national development of the economy.[4]

The issue of whether or not the privatisation of formerly state-owned enterprises results in an increase in performance and efficiency has been the subject of a number of papers in the past. From a theoretical perspective, there would appear to be no consensus on the issue (Laffont and Tirole, 1993). This is based on the government's role in addressing market failure. Thus, privatisation may be preferable to state ownership in a competitive market, while state ownership may be preferable where a market failure needs to be addressed (e.g. in relation to public goods). This point was alluded to by Megginson and Netter (2001) in the context of the potential endogeneity problem associated with assessing the performance of firms in industries where market failure is an issue.[5] Laffont and Tirole (1993) also make the point that it is

---

[3] See also Dougherty *et al.* (2007) and Jefferson *et al.* (2003).

[4] These industries included, among others, chemicals, steel, utilities, and transportation equipment.

[5] This is perhaps not likely to be a major concern for the case of China, however, given that firms across all industries were in state ownership prior to the privatisation process. Nonetheless, the fixed-effects estimations employed in this paper that control for various firm-specific conditions helps to remove any selection bias concerns.

7

difficult to monitor the performance of managers in SOEs due to the lack of information from the stock market.[6] The theoretical view on why SOEs tend to perform poorly can be traced back to Shleifer and Vishny (1994) who noted that political interference in the operation of firms can distort the profit maximisation process. Thus, the transfer of management control to the private sector should address this inefficiency (Gupta, 2005).

Empirically, the conventional wisdom suggests that a positive relationship exists between privatisation and corporate performance. However, the literature is not so definitive on the issue of partial privatisation. The conventional wisdom that privatisation leads to improved firm performance can be traced in an empirical context to Megginson, Nash, and Van Randenborgh (1994) and La Porta and Lopez-de-Silanes (1999). The former study finds that privatisation improves the performance of state-owned enterprises, but only moderately. This was based on a sample of sixty-one international initial public offerings (IPOs). The latter study finds evidence of substantial profitability increases for privatised firms in a study of the Mexcian case over the period 1983 to 1991 across a sample of 218 firms. While noting these results, the authors make the point that it would be difficult to generalise these outcomes outside the case of Mexico. The main factor driving this conclusion is that prior to privatisation, Mexican firms had notably underperformed. Similarly, Lin *et al.* (1998) note that SOEs can become more efficient and competitive via privatisation.

Broadly, the previous literature on post-privatisation firm performance has tended to focus on one of three areas. Some studies examine privately owned versus state owned firms that operate in the same industry, where the finding is that private firms

---

[6] In relation to the lack of stock market information as a contributory factor to the poor performance of SOEs, a number of studies have been done in the past, primarily theoretical in nature. For example, Holmstrom and Tirole (1993) and Tirole (2001) note that managerial incentive contracts are likely to be restricted in the absence of information from the stock market; Fama (1980) notes that SOE managers lack a benchmark for their performance as a result of this; and Scharfstein (1988) and Stein (1988) highlight the restrictions for takeover opportunities.

have better performance (e.g. Caves, 1990; Vining and Boardman, 1992).[7] Other studies focus on firm efficiency and productivity following privatisation (e.g. Galal *et al.*, 1994; Megginson, Nash, and Van Randenborgh, 1994). A further strand of the literature examines the lower costs involved in contracting out the provision of public services to private suppliers (e.g. Donahue, 1989).

In terms of the empirical work done on privatisation, a substantial focus has been placed on the post-communist Central and Eastern European (CEE) economies.[8] It is difficult to draw precise lessons for China from the CEE country experiences. This is due to the fundamental difference in the approach adopted. While the CEE economies adopted privatisation initiatives across large and small firms alike, the official policy in China was the so-called *zhuada fangxiao* where particular large enterprises were kept in state ownership. There exists a relative dearth of empirical work on the privatisation effects in China across a wide spectrum of industries.[9] Two notable papers that address this issue are Otchere and Zhang (2001) and Chen *et al.* (2006). The former paper finds that privatised firms in China have greater profitability and efficiency levels. Chen *et al.* (2006) examine the pre- and post-privatisation operating and financial performance of former SOEs in China using accounting data and find that privatisation has not led to an improved level of firm performance. Their results are based on a sample of 1078 privatisations over the period 1991 to 2000. These authors also note two further issues that distinguish the Chinese approach to privatisation from that of other developing nations: (i) new capital is raised when listing takes place, and (ii) the state often retains voting control within the firm while claiming autonomous decision-making. The findings of Chen *et al.* (2006) are in

---

[7] Pohl *et al.* (1997) present a further study within this strand of the literature that compares the performance of state firms with *privatised* firms as opposed to *private* firms. In a study of 6300 firms across seven countries in Central and Eastern Europe, these authors find that productivity growth in privatised firms is in the region of three to five times higher than that of state firms.

[8] As well as those already cited in the text, others examples of such empirical studies include Estrin (1998); Estrin and Rosevear (1999); Grosfeld and Nivet (1997); and Hanousek *et al.* (2007).

[9] While there is not a substantial amount of previous research on China's privatisation effects, there are numerous studies of the economic reforms (e.g. Jefferson and Rawski, 1994; Sachs and Woo, 1997).

alignment with four other notable studies of the effects of privatisation on firm performance in China.[10]

In the case of China, it is important to bear in mind the economic reforms that were introduced in conjunction with the privatisation initiative. For example, a so-called 'modern enterprise system' was approved by the Chinese legislature in 1993 in conjunction with the adoption of Company Law. This was aimed at re-vitalising SOEs in China essentially by corporatising them (through the adoption of two forms of corporate ownership: limited liability and limited joint-stock companies). While the converted SOEs did outperform the uncorporatised ones, the entire process was marred by a selection bias whereby the government pre-selected the SOEs that had relatively stronger performance in any case (Movshuk, 2004). Nonetheless, over the period 1998-2000, the Chinese government officially claimed that the modern enterprise system was effective in enhancing the performance of SOEs. This was subsequently questioned by Studwell (2002) who noted that the improved performance of SOEs was due to exogenous factors such as the sharp oil price rise at the end of the 1990s and the one-off write-off of SOE debt which helped to reduce servicing costs. The key message from this is that, while some of the re-structuring initiatives have been questioned in terms of their effectiveness, it remains the case that the improvement in the performance of Chinese firms in the 1990s could be due to either re-structuring or privatisation or a combination of both. Thus, it is difficult to examine the issues in isolation. This is particularly the case for China where privatisation began to take place as the same time as many of the liberalisation initiatives.

The research findings on the issue of privatisation and re-structuring effects on firm performance are somewhat mixed.[11] In the specific case of China, there exists some

---

[10] See Chen *et al.* (1998); Sun and Tong (2003); Wei *et al.* (2003); and Wang (2005).

[11] For example, Bishop and Kay (1989); Vickers and Yarrow (1991); and Allen and Gale (1999) suggest that competition and regulatory policies have greater effects on performance than privatisation. On the other hand, Boycko, Shleifer and Vishny (1994); Nellis (1994); Brada (1996); and Shleifer

evidence to suggest that even in the absence of privatisation, re-structuring initiatives such as improving the allocation of property rights can boost firm performance (e.g. Groves *et al.*, 1994; Li, 1997). This is far from being a consensus view, however, as other authors such as Shirley and Xu (1998) refute these findings, claiming that privatisation is a crucial element necessary for enhancing firm performance. Of course, it is entirely conceivable that the combination of privatisation and economic reforms could yield aggregate outcomes greater than those that could be achieved by undertaking either one or the other. This is a difficult proposition to examine empirically however (Megginson and Netter, 2001).[12]

Otchere and Zhang (2001) has suggested that for firms that have privatised but remain in state control, the benefits in terms of efficiency would not be as great as under the scenario where the former SOE was controlled by the private firm. This reflects the earlier work done by Boardman and Vining (1989) and Boycko *et al.* (1996) who suggest that partial privatisation of this form may hinder the efficient operation of the firm. These authors suggest that in order to redress this issue, cash flow rights and control rights should remain with the private firm and not the government.

As well as focusing on performance improvements following privatisation in terms of productivity and efficiency, the employment gains have also been the subject of analysis. The results in this regard are more mixed however than the general consensus that privatisation yields efficiency gains. The previous literature documents decreases, no change and increases in employment levels following privatisation. A decline in employment can of course be rationalised in terms of downsizing to enhance efficiency. Studies reporting employment declines include La Porta and

---

(1998) suggest that privatisation is a vital component of the performance improvement process for firms.

[12] Work that has been done to address this issue has tended to be focused on a single industry, mainly the telecommunications industry. For example, Ros (1999) examined competition reforms and privatisation in the telecoms industry of 110 countries, finding that both improved efficiency but only privatisation broadens the network. Wallsten (2001) examines the same issue for 30 developing countries, finding that an increase in competition is the optimal single initiative, while competition reform in conjunction with privatisation yields the best overall results.

Lopez-de-Silanes (1999) for the case of Mexico and Harper (2002) for the Czech Republic. No change in employment is shown in Macqueira and Zurita (1996) for Chile, while increases are found across a range of countries in Megginson, Nash and van Randenbourg (1994) and Boubakri and Cosset (1998). Frydman *et al.* (1997) also find that privatisation is associated with a rise in employment in a study of 500 firms that were privatised in the early 1990s in the post-communist transition economies of the Czech Republic, Hungary and Poland.

To augment findings on the performance impacts of privatisation identified by studies above, this paper provides a comprehensive and detailed assessment of the privatisation effects on Chinese enterprise performance by using a bespokely designed survey sample of firms in the transition. The primary motivation is to provide some recent empirical evidence for the impact of privatisation in China across a range of firm performance indicators. We believe that the dataset used for this purpose is sufficiently large in terms of both the number of firms and the time span. In addition, the econometric approach is robust to a range of problems that can detrimentally the conclusiveness of results. The paper is also distinguished from previous studies due to its inter-temporal analysis of impact at one, two and three year intervals post-privatisation.

In particular, this paper adds to the literature in two respects. Statistically, a large sample of unique primary data is used across over 1100 Chinese firms, some of which have been fully privatised, some are partially privatised and others remain in state ownership. This allows us to assess which type of ownership structure is most conducive to improving firm performance. Institutionally, the paper compares full and partial privatisation for performance improvement. Previous studies have tended to focus on either one or the other. Thus the scope of this paper is wider than that of the majority of papers in this area. As well as this, the econometric approach employed helps to assess the driver behind any changed firm performance identified in a setting that controls for both market and firm-specific effects. This fixed-effects approach helps to eliminate the problem of selection bias, which been a common criticism of previous studies on this type of issue.

3. Methods to Estimate Performance Impacts of the Reform

Does ownership transformation change or improve performance? This is a commonly researched question but the answer lacks consensus, since research methods employed to investigate the question are widespread and differences in methodologies can result in different findings that could lead to controversial conclusions. To ensure the robustness of our performance assessment, we use two approaches to investigate the performance impact of ownership transformation in China. Data on 1184 firms in China who experienced ownership transformation over the period 1997 to 2003 was provided by the Institute of Enterprise Research of the Development Centre at the State Council of China. Further details about the sample data used for this study are reported in the Appendix. The main variables assessed were investment, sales growth, the debt ratio, net asset profitability, asset growth, sales per worker, and labour force growth. An inter-temporal analysis is made possible as data was provided for the variables at one, two, and three years after the reform process.

The first approach used is to statistically describe performance using a mean-value approach. This provides us with a high-level indication on the performance impact of the reform. Both parametric and non-parametric statistic testing techniques, such as t-statistics and Wilcoxon Rank Sums, are applied to examine mean differences for statistical significance. One needs to exercise a certain degree of caution in interpreting these results, however, since there is a limitation to using mean-difference tests. Firstly, it provides no information on causal factors, i.e. what causes the difference. Secondly, the method fails to show the robustness of the performance difference between pre and post reform when other effects are controlled for.

As well as implementing a mean-value analysis, we also apply a fixed effects panel data model to investigate performance change after the transformation. The panel data technique is particularly powerful in assessing performance change over time. In addition, it enables us to assess the question in a controlled environment. In other words, we can test performance change by controlling or excluding other possible effects on performance, such as time variant macroeconomic conditions, firm's own

specific effects like industry, location and technology etc. The model to test performance change after reform is specified as:

$$Y_{it} = \lambda_{t+1} + \lambda_{t+2} + \lambda_{t+3} + \sum_{1997}^{2003} T_t + \sum_{i=1}^{N} \alpha_i + \beta X_{it} + \varepsilon_{it} \qquad (1)$$

where Y is a performance variable, T captures the impacts of macroeconomic or market conditions each year from 1997 to 2003, α represents firm dummies to control for firm-specific effects, and X denotes other explanatory variables. Table 1 below presents the summary statistics of the variables used in this panel analysis.

[Insert Table 1]

In our estimation X includes, amongst other variables shown in Table 1, the logarithm of total assets to control the effect of business scale on firm performance. Using the assets variable to control for the scale effect is in line with firm performance studies from the financial economics literature (e.g. see Pasioura and Kosmidou, 2007). The impact of ownership transformation is denoted by λ_{t+1} to capture the ownership-switching or restructuring effect on subsequent performance one year after transformation, λ_{t+2} denotes the impact after two years, and λ_{t+3} after three years. All of the λ_s are tested both individually and jointly.

In reporting our regression results in the three series of tables, the λ_s are presented respectively as YR1 after GZ, which means performance impact one year after ownership reform (GZ), and YR2 after GZ for λ_{t+2}, and YR3 after GZ for λ_{t+3}. These three variables are tested against the total sample of data and sub-samples of different groups of data, respectively, in a way where market and firm-specific conditions that could possibly affect performance are excluded or controlled for. The results of testing these three variables against different samples are presented in Tables 5 to 9. Although it is popular in the financial economics literature to use contemporaneous assets as a control variable, see Pasioura and Kosmidou (2007) as an example, the possible endogenous link of this variable to a firm performance variable is taken into account in our empirical work. We take one-year lagged assets as a pre-determined

14

variable for the IV estimator of the fixed effect panel model, and compare estimates from the IV with ones under the exogenous assumption using a Wald statistic. There is no evidence from the total sample tests in support of the endogenous argument for all of performance variables except the sales growth and asset growth variables. As a result, we are cautious when in interpreting these two performance variables for ownership reform impacts. Furthermore, and given only marginal concerns on endogeneity, we avoid using the lagged assets variable given the loss in estimation efficiency that this would entail in relation to the reduction in the sample size. In particular, it would leave only a two year period for an assessment of the post-reform effects instead of a three year period.

4. Estimated Results and Findings

4.1 Is ownership transformation effective in turning businesses around?

This section pays particular attention to the findings regarding performance change over time.

[Insert Tables 2 to 9]

Firstly, in terms of the whole sample, our answer to the question about the performance change in the post-ownership transformation phase is 'No', but also 'Yes'. No change in profitability, in terms of the rate of profit return to net assets, is found in our estimations from the mean difference tests to advanced panel data estimations (see Tables 4 and 5). Despite a positive change in the profit rate of gross assets shown in the mean difference tests in Table 3, the evidence is insufficient to infer any significant conclusions since it is a controversial measurement of profitability (because of the possible effects of capital structure change after ownership reform, such as interest rate relief or debt reduction in the post privatisation phase to facilitate or intensify ownership reform).

Our 'Yes' answer to a positive change applies to labour productivity improvement after the reform. This productivity is measured by sales per worker, and it is found in

the panel results that productivity has improved significantly from year 2 of the reform onwards with an average rise in productivity of RMB 90 thousand per worker. This estimated figure excluded a rise in sales due to the favourable market conditions that occurred in the 2000s (since the year effects are controlled for in the regression). Table 7 also shows that the ratio of debts to assets has been significantly falling by 3.4 percentage points in the first year after the reform, by 3.8 percentage points in the second year and by 4.9 percentage points in the third year. The fall of the debt ratio suggests that ownership reform has stimulated enterprises to create additional asset value or debt reduction for investors.

The significant rise in both labour productivity and net assets is consistent with two further findings. Firstly, it is clear that sales growth increases by 10% in the second year after the reform and by 21% in the third year. Secondly, there is a consistent fall in the workforce by 8.5% in the first year after reform, by 12% in the second year and by 10% in the third year. The finding of labour shrinkage in our estimation is consistent with the results from the mean-difference test in Table 4, which shows that employment decreased by 7.8% in the first year after the reform.

In contrast to sales performance, the unchanged profitability can be explained by two expectations. Firstly, if we expect that the current objective of the firm is to seek more market share and higher business growth, it is perfectly reasonable that the firm will take the reform opportunity to expand the business first when it is in a faster growing stage. As long as profitability remains unchanged, more sales means more profits that can finance more investment for further business expansion to meet more demands. Secondly, it is expected that competition erodes profits, and the market in China is very competitive. Most of the firms in our sample operate in industries that are open to competition, and they are not in monopoly sectors. As a result, it is quite difficult to sustain profitability in an increasingly competitive market where the firm must keep its prices competitive. Realistically, we should not expect that our results would find a profitability rise for businesses in sectors that have been increasingly competitive.

Overall, the Chinese ownership reform has functioned as we would have expected in terms of both the workforce restructuring (more efficient and productive), and the ownership incentive change that encourages firms to be more competitive for further growth.

4.2 Does the class of ownership matter for performance change?

In the context of ownership reform, a further issue that arises is whether there are any groups of firms that perform better than others due to different reform arrangements or choices. Particularly, does the class of ownership matter for performance change?

Ownership in this case refers to the controlling shareholder of a firm that has its business controlled by that shareholder. Table 4 highlights performance changes over time from pre-reform to post reform in terms of different classes of ownership. In the tables, t+1 means the first year after ownership transformation and t-1 means the year before the transformation. For different classes of ownership, they all show significant improvement in terms of either all or a part of three performance indicators: the profit rate of gross assets, the profit margin of sales and employment reduction. Although their changes are different with the classes of ownership, it is hard to draw any meaningful implication on the basis of these differences. Simply, it cannot be concluded that their differences are a result of reform effect, since there are many factors that can be attributable to such changes. As a result, we move to look at estimations obtained from the panel data tests that control for market and firm specific effects such as industry, location and technology conditions.

Table 5 presents the results where we tested a change in the profit rate of net assets against three classes of ownership: state, private, and private insiders that consist of both management and employees as the controlling shareholder. The baseline of the change for comparison is the performance of its own firm in the year before the reform. As can be seen in the table, none of the classes of ownership show a significant improvement in profitability after the reform. This result is consistent with our explanations discussed in 4.1 above.

For labour productivity and other performance indicators, Table 5 shows that, firstly, the group of firms with state ownership has a significant increase in sales per worker by RMB 100 thousand in the second year after reform, and 90 thousand in the third year. This significant change is not shown either in the private ownership sample of firms or in the insiders ownership. In addition, state firms have experienced significant debt reduction on a continuous basis in years 1, 2 and 3 after reform. This effect is not evident for the other two groups. These two differing outcomes between state and private firms suggest the existence of a 'dumping strategy' pursued by the government for the reform. Ownership transformation is regarded as an opportunity to dump bad firms with a lot of unproductive assets that need to be written off. Meanwhile, more competitive and productive firms are retained and provided with favourable state support such as debt restructuring.

Turning to investment post reform, it is found, from both Table 3 on the mean difference tests and Table 6 on the panel data estimation, that the insiders ownership has significantly higher investment than the other groups of firms. The higher investment will lead the firms to make their businesses more sustainable and also more competitive in the long run. The evidence indicates that the insiders are very committed to their own businesses and, in particular, to the future where management and employees become the controllers of the business in which they have worked for many years. The implication of this finding contributes to the controversial debate on the performance of MBO-led privatisation in China. Apparently, an MBO-led privatisation where insiders control the firm leads to higher investment in business after privatisation.

Does the class of ownership matter for performance change? This is a central question often asked in the study of ownership reform and, in particular, privatisation. Some have argued positively and some negatively. Then what is our answer to be? From the discussion above and findings in the tables, we argue that ownership matters for performance but not in a way expected by the conventional wisdom that full privatisation is more preferable. Chinese reform experience shows that the different classes of ownership have different strengths in their performance achievement,

because it is expected that different owners have different interests in their prioritised goal for the business. Some classes are more effective for particular performance change categories, while others yield alternative performance gains. For example, partially privatised firms are more effective with regard to improving labour productivity, fully privatised firms are more interested in improving financial reward to investors, such as seeking higher profitability, and private management controlled firms (insiders) are more willing to invest in the future.

4.3 Do selling methods matter for performance change?

Will privatisation methods be different with different performance results post transformation? Table 9 provides some evidence that helps us to address the question. We take labour productivity as the performance measurement to assess selling methods that include: selling by open auction, selling by negotiation, selling by disseminating sales information to public (advertising nationwide), and selling capital stocks to dilute state ownership versus taking new investments to dilute the ownership.

Table 9 shows that firms sold via advertising to the public resulted in a significant change in sales per worker: RMB 200 thousand per work in year 1 and 300 thousand in year 3 after reform. In comparison, firms sold via negotiation or open auction do not show any significant change in their labour productivity. Dissemination of sales information to the public can maximise the chance of selecting the best investor(s) or management to takeover the firm, and this is implied by our findings.

To dilute state ownership, which approach can result in better performance improvement in the post reform: selling capital stock directly to private firms or taking new capital investment from private firms? Table 9 shows that the combination of the two can produce better performance improvement post transformation. For example, the 'combined' option resulted in firms experiencing a significant increase in sales per worker in years 1 and 2 after the reform.

19

Moreover, the background of firms can also make post-reform performance different. The group of firms that changed from sole state ownership to a shareholding system as the first shock of ownership reform experiences a significant change in sales per worker than the group of firms that experienced a rise in private investment as the second shock of reform. This is perhaps a result of attaining new private investors that make a fresh change to firm management and corporate governance. In short, the selling methods matter for subsequent performance after ownership transformation.

5. Conclusions

Does firm ownership change matter for performance, particularly in the case where the change is from state to private? Our study of the Chinese ownership reform for performance impact does not provide us with a clear-cut answer to the question. Overall, as the Chinese experience shows, changing ownership structure or class matters for performance, but not in a way expected by conventional wisdom that more private ownership brings better performance. Rather, it matters for performance in the sense that different structures or classes provide different strengths to firms. Overall, the transformation of state ownership to a mixed state and private structure seems to be the class yielding the best post-reform firm performance, e.g. more productivity improved after the reform.

The view above is supported by our finding that partial privatisation appears to be the best performing type of ownership model for firms from a growth perspective. State and private mixed firms are more effective at improving labour productivity for higher sales growth. Fully privatised firms, or privately-controlled partially privatised firms, are more effective at improving financial returns such as profitability to investors. Finally, private insider firms are more willing to invest in business for the future. The different performances across different classes of ownership are expected, because different investors may have different interests as regards the prioritisation of their business goals. Overall, ownership transformation has been successful in terms of performance improvement for firms transformed. All of our findings suggest that

the ownership restructuring (particularly that which brings private investment to state firms) is the most appropriate approach for reforming SOEs. Moreover, the government should speed up the process of transformation across the remainder of the state firms. The state and private mixed ownership should be promoted since it is well suited and consistent with the current political context of China. This enables the firm to gain favourable synergy gains from both the government and private sector.

Whether or not the state controlled partially privatised firms should move to full privatisation will depend firstly on how the latter can improve performance and competitiveness further. Crucially, it also depends on a change in the political system of China. The current state capitalism with government dominance in the economy is constitutionally legitimate, implying that firms can gain more political advantages by associating with the government. Thus, without political reform in the first instance, it is difficult to foresee full privatisation being prevalent for Chinese firms in the near future, particularly for large corporations.

References

Allen, F. and Gale, D. 1999. Corporate Governance and Competition, Wharton School Working Paper, University of Pennsylvannia

Bishop, M.R. and Kay, J.A. 1989. Privatisation in the United Kingdom: Lessons from Experience, *World Development*, vol. 17, 643-57

Boycko, M., Shleifer, A. and Vishny, R.W. 1994. Voucher Privatisation, *Journal of Financial Economics*, vol. 35, 249-66

Boubakri, N. and Cosset, J.C. 1998. The Financial and Operating Performance of Newly-Privatised Firms: Evidence from Developing Countries, *Journal of Finance*, vol. 53, 1081-110

Brada, J.C. 1996. Privatisation Is Transition – Or Is It?, *Journal of Economic Perspectives*, vol. 10, 67-86

Cao, Y., Qian, Y., and Weingast, B.R. 1999. From Federalism, Chinese Style to Privatisation, Chinese Style, *The Economics of Transition*, vol. 7 (1), 101-31

Caves, R.B. 1990. Lessons from Privatisation in Britain: State Enterprise Behavior, Public Choice and Corporate Governance, *Journal of Economic Behavior and Organisation*, XIII, 145-69

Chen, G., Firth, M. and Rui, O. 1998. The Economic Performance of Privatised Firms in China, Working Paper, The Hong Kong Polytechnic University

Chen, G., Firth, M. and Rui, O. 2006. Have China's Enterprise Reforms led to Improved Efficiency and Profitability for Privatised SOEs?, *Emerging Markets Review*, vol. 7, 82-109

Donahue, J.D. 1989. *The Privatisation Decision: Public Ends, Private Means*, New York: Basic Books

Dougherty, S., Herd, R. and He, P. 2007. Has a private sector emerged in China's industry? Evidence from a quarter of a million Chinese firms, *China Economic Review*, vol. 18, 309-34

Djankov, S. and Murrell, P. 2002. Enterprise Restructuring in Transition: A Quantitative Survey, *Journal of Economic Literature*, vol. 40, no. 3, 739-92

Estrin, S. 1998. Privatisation and Restructuring in Central and Eastern Europe, in Boone, P., Gomulka, S., and Layard, R. (eds.), *Emerging from Communism – Lessons from Russia, China and Eastern Europe*, MIT Press

Estrin, S. and Rosevear, A. 1999. Enterprise Performance and Ownership: The Case of Ukraine, *European Economic Review*, vol. 43, 1125-36

Fama, E.F. 1980, Agency Problems and the Theory of the Firm, *Journal of Political Economy*, vol. 88, 288-307

Frydman, R., Gray, C., Hessel, M. and Rapaczynski, A. 1997. Private Ownership and Corporate Performance: Evidence from Transition Economies, World Bank Working Paper No. 26, Washington, D.C.

Harper, J.T. 2002. The Performance of Privatised Firms in the Czech Republic, *Journal of Banking and Finance*, vol. 26, no. 4, 621-49

Hanousek, J., Kocenda, E. and Svejnar, J. 2007. Origin and Concentration: Corporate Ownership, Control and Performance in Firms after Privatization, *The Economics of Transition*, vol. 15, no. 1, 1-31

Galal, A., Jones, L., Tandon, P., and Vogelsang, I. (1994), *Welfare Consequences of Selling Public Enterprises: An Empirical Analysis*, Oxford and New York: Oxford University Press, Inc.

Girma, S. and Gong, Y. 2008. Putting people first? Chinese state-owned enterprises' adjustment to globalisation, *International Journal of Industrial Organisation*, vol. 26, 573-85

Grosfeld, L. and Nivet, F. 1997. Firms' Heterogeneity in Transition: Evidence from a Polish Panel Data Set, Working Paper, No. 47, William Davidson Institute

Groves, T., Hong, J., McMillan, J. and Naughton, B. 1994. Autonomy and Incentives in Chinese State Enterprises", *Quarterly Journal of Economics*, vol. 109, no. 1, 183-209

Groves, T., Hong, J., McMillan, J. and Naughton, B. 1995. China's Evolving Managerial Labor Market, *Journal of Political Economy*, vol. 103, 873-92

Gupta, N. 2005. Partial Privatisation and Firm Performance, *The Journal of Finance*, vol. LX, no. 2, 987-1015

Holmstrom, B. and Tirole, J. 1993. Market Liquidity and Performance Monitoring, *Journal of Political Economy*, vol. 101, 678-709

Jefferson, G. and Rawski, T. 1994. Enterprise Reform in Chinese Industry, *Journal of Economic Perspectives*, vol. 8, no. 2, 47-70

Jefferson, G., Hu, A.G.Z., Guan, X. and Yu, X. 2003. Ownership, performance, and innovation in China's large- and medium-size industrial enterprise sector, *China Economic Review*, vol. 14, 89-113

La Porta, R. and Lopez-de-Silanes, F. 1999. Benefits of Privatisation: Evidence from Mexico, *Quarterly Journal of Economics*, vol. 114, no. 4, 1193-242.

Laffont, J.J. and Tirole, J. 1993. *A Theory of Incentives in Procurement and Regulation*, Cambridge, MA, MIT Press

Lau, L.J., Quian, Y. and Roland, G. 2000. Reform without Losers: An Interpretation of China's Dual-Track Approach to Transition, *Journal of Political Economy*, vol. 108, 120-43

Li, W. 1997. The Impact of Economic Reform on the Performance of Chinese State Enterprises, 1980-1989, *Journal of Political Economy*, vol. 105, 1080-106

Lin, C. 2000. Corporate Governance of State-Owned Enterprises in China, Asian Development Bank Working Paper, Manila

Lin, J.Y., Cai, F. and Li, Z. 1998. Policy Burdens and State-Owned Enterprise Reform, *American Economic Review*, Papers and Proceedings, vol. 88, no. 2, 422-27

Macqueira, C. and Zurita, S. 1996. Privatizaciones en Chile, Eficiencia y Politicas Financieras, *Estudios de Administracion*, vol. 3, no. 2, 1-36

Megginson, W.L., Nash, R. and van Randenborgh, M. 1994. The Financial and Operating Performance of Newly Privatised Firms: An International Empiricial Analysis, *Journal of Finance*, vol. 49, 403-52

Megginson, W.L. and Netter, J.M. 2001. From State to Market: A Survey of Empirical Studies on Privatisation, *Journal of Economic Literature*, vol. 39, 321-89

Movshuk, O. 2004. Restructuring, Productivity and Technical Efficiency in China's Iron and Steel Industry, *Journal of Asian Economics*, vol. 15, 135-51

Nellis, J. 1994. Is Privatisation Necessary?, Viewpoint Note 17, World Bank, Washington D.C.

Otchere, I. and Zhang, Z. 2001. Privatisation, Efficiency and Intra-industry Effects: Analysis of China's Privatisation, *International Review of Finance*, vol. 2, 49-70

Pohl, G., Anderson, R.E., Claessens, S. and Djankov, S. 1997. Privatisation and Restructuring in Central and Eastern Europe, Technical Paper No. 368, The World Bank, Washington, D.C.

Pasioura, F. and Kosmidou, K. 2007. Factor Influencing the Profitability of Domestic and Foreign Commercial Banks in the European Union, *Research in International Business and Finance*, vol. 21, 222-37

Sachs, J.D. and Woo, W.T. 1997. Understanding China's Economic Performance, Working Paper, Harvard University

Scharfstein, D. 1988. The Disciplinary Role of Takeovers, *Review of Economic Studies*, vol. 55, 185-99

Schleifer, A. 1998. State versus Private Ownership, *Journal of Economic Perspectives*, vol. 12, 133-50

Schleifer, A. and Vishny, R. 1994. Politicians and Firms, *Quarterly Journal of Economics*, vol. 109, 995-1025

Shirley, M.M. and Xu, L.C. 1998. Information, Incentives, and Commitment: An Empirical Analysis of Contracts between Government and State Enterprises, *Journal of Law and Economic Organisation*, vol. 14, no. 2, 358-78

Stein, J.C. 1988. Takeover Threats and Managerial Myopia, *Journal of Political Economy*, vol. 96, 61-80

Steinfeld, E.S. 1998. *Forgoing Reform in China*, Cambridge: Cambridge University Press

Studwell, J. 2002. *The China Dream*, New York: Atlantic Monthly Press

Sun, Q. and Tong, W. 2003. China Share Issue Privatisation: The Extent of its Success, *Journal of Financial Economics*, vol. 70, 183-222

Ros, A.J. 1999. Does Ownership or Competition Matter? The Effects of Telecommunications Reform on Network Expansion and Efficiency, *Journal of Regional Economics*, vol. 15, 65-92

Tirole, J. 2001. Corporate Governance, *Econometrica*, vol. 69, 1-35

Vickers, J. and Yarrow, G. 1991. Economic Perspectives on Privatisation, *Journal of Economic Perspectives*, vol. 5, 111-32

Vining, A. and Boardman, A. 1992. Ownership vs. Competition: Efficiency in Public Enterprise, *Public Choice*, LXXII, 205-39

Wallsten, S. 2001. An Econometric Analysis of Telecommunications Competition, Privatisation, and Regulation in Africa and Latin America, *Journal of Industrial Economics*, vol. 49, no. 1, 1-19

Wang, C. 2005. Ownership and Operating Performance of Chinese IPOs, *Journal of Banking and Finance*, vol. 29, 1835-56

Wei, Z., Varela, O., D'Souza, J. and Hassan, M.K. 2003. The Financial and Operating Performance of China's Newly Privatised Firms, *Financial Management*, vol. 32, 107-26

Zhang, A., Zhang, Y. and Zhao, R. 2002. Profitability and productivity of Chinese industrial firms: Measurement and ownership implications, *China Economic Review*, vol. 13, 65-88

Table 1   Descriptive Statistics for Panel Data Estimation

Variable	Obs.	Mean	Std. Dev.	Max	Min
Log (Assets)	1080	9.388	2.001	3.135	12.880
Profit rate of net assets	1080	0.052	0.238	-2.810	1.724
Debt ratio	1080	0.624	0.225	0	1.678
Sales per worker	1080	43.356	95.464	0.049	903.67
Sales growth relative to the average of industry	1080	1.0412	0.332	0.0287	2.627
Assets Growth	1080	1.325	1.443	0.001	18.409
Log (Employees)	1080	6.785	1.936	0.0	11.036
Investment relative to sales	531	0.210	0.998	0.0	17.75

Table 2   Changes in investment, sales and debt ratio post transformation in terms of different classes of ownership

	Government As control owner		Asset management As control owner		State corporation As control owner	
	Firms	Mean	Firms	Mean	Firms	Mean
Investment (t+1)	28	0.076	57	0.171	233	0.124
Investment (t+2)	25	0.057	44	0.053	171	0.138
Investment (t+3)	18	0.055	40	0.098	129	0.263
Sales growth (t+1)	38	1.223	88	13.46	44	4.640
Sales growth (t+2)	31	1.071	68	2.289	46	1.569
Sales growth (t+3)	24	1.091	54	1.027	85	1.203
Debt ratio(t-1)	37	0.822	87	0.685	43	0.744
Debt ratio(t+1)	38	0.551	87	0.747	46	0.715
Debt ratio(t+2)	31	0.558	67	0.789	49	0.688
Debt ratio(t+3)	24	0.584	53	0.621	87	0.706

Note: investment is measured by investment / total assets; sale growth is growth rate of sales.

Table 3   Changes in investment, sales and debt ratio post transformation in terms of different classes of ownership

	Employees As control owner		Management As control owner		Private firms as control owner	
	Firms	Mean	Firms	Mean	Firms	Mean
Investment (t+1)	24	0.257	8	0.033	11	0.030
Investment (t+2)	22	0.290	5	0.068	7	0.124
Investment (t+3)	14	0.397	4	0.042	5	0.098
Sales growth (t+1)	54	6.085	37	1.292	22	1.512
Sales growth (t+2)	37	1.755	19	1.080	15	1.851
Sales growth (t+3)	25	0.985	13	3.611	8	2.050
Debt ratio(t-1)	54	0.742	38	0.717	22	0.698
Debt ratio(t+1)	54	0.662	29	0.809	23	0.695
Debt ratio(t+2)	37	0.642	19	0.727	15	0.566
Debt ratio(t+3)	25	0.635	13	0.725	8	0.501

Note: investment is measured by investment / total assets; sale growth is growth rate of sales.

Table 4   Performance Comparison between pre- (t-1) and post-transformation (t+1)

	Profit rate of assets(t+1) – Profit rate of assets (t-1)		Profit margin in sales (t+1) – Profit margin in sales (t-1)		Employment (t+1) - Employment (t-1)	
	No firms	Mean [p statistic]	No firms	Mean [p statistic]	No firms	Mean [p statistic]
Total sample	755	0.012** [0.003]	640	0.025 [0.216]	705	0.078** [0.001]
Government as controlling owner of the firm	38	0.005** [0.231]	38	0.151 [0.160]	38	0.056 [0.101]
Asset management firm as controlling owner of the firm	89	0.001 [0.478]	84	0.041** [0.009]	89	0.079** [0.001]
State-owned corporation as controlling owner of the firm	354	0.014** [0.037]	329	0.030** [0.002]	312	0.029** [0.018]
Domestic private firm as controlling owner of a firm	22	0.026** [0.002]	19	0.070** [0.003]	20	0.247** [0.001]
Firm inside management as controlling owner of a firm	36	0.026** [0.023]	35	0.050 [0.156]	38	0.244** [0.001]
Firm's employees as controlling owner of a firm	54	0.073** [0.059]	50	0.009 [0.354]	49	0.131** [0.001]
Private individual as controlling owner of a firm	38	0.027** [0.008]	34	0.023 [0.283]	34	0.077 [0.143]

Note: 1 profit rate of assets means profit rate of gross assets.

2. Employment is the proportion of redundancy in total workforce.

Table 5   Performance Impact of Ownership Transformation (the performance variable: Profit rate of net assets)

	Ownership Type					
	State Owner		Private Owner		Insiders Owner	
	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
Intercept	1.142	5.2	-0.483	-0.7	0.042	0.1
YR1: Year 1 after GZ	0.002	0.1	-0.017	-0.3	-0.030	-0.2
YR2: Year 2 after GZ	0.019	0.8	-0.121	-1.2	-0.038	-0.2
YR3: Year 3 after GZ	-0.024	-0.8	-0.118	-0.9	0.149	0.4
Log (assets)	-0.093	-3.9	0.074	1.1	-0.004	0.0
Year1997	-0.048	-0.9	-0.166	-0.8	-0.552	-1.5
Year1998	-0.028	-0.6	-0.039	-0.2	0.104	0.2
Year1999	-0.033	-0.9	0.022	0.2	0.238	0.6
Year2000	-0.038	-1.3	0.031	0.3	0.234	0.8
Year2001	-0.016	-0.6	0.019	0.3	0.002	0.0
Year2003	0.083	3.2	0.143	1.7	0.061	0.4
Summary Statistics						
Standard error	0.199		0.253		0.232	
R^2	0.6466		0.7385		0.5491	
χ^2 statistic (H_0:YR1+YR2+YR3=0)	[0.150]		[0.250]		[0.180]	
No of Firms	341		79		33	
No of observations	892		198		90	
χ^2 stat.(H_0: firm dummies=0)	[0.005]		[0.000]		[0.053]	
Wald χ^{2}: H_0 Assets as exogenous	[0.146]		[0.188]		[0.210]	

Table 6   Estimation of Investment Impact of Ownership Transformation

Independent variables:	Dependent variable: (investments)$_{it}$			
	Coeff.	t-stat	Coeff.	t-stat
Intercept	-0.610	-1.2	-0.603	-1.3
Owner: state (1) vs private(0)	0.042	0.2		
Owner: insiders (1) vs others (0)			0.395	1.8
Log (gross assets)$_{it}$	0.061	1.3	0.066	1.3
Year1997	0.041	0.3	0.041	0.3
Year1998	0.114	1.2	0.114	1.2
Year1999	0.116	1.4	0.116	1.4
Year2000	0.071	1.1	0.070	1.1
Year2001	0.028	0.5	0.027	0.5
Year2003	0.006	0.1	0.008	0.1
Summary Statistics				
Standard error	0.296		0.297	
R^2	0.74		0.74	
χ^2 statistic (H$_0$: owner = 0)	[0.950]		[0.025]	
No of Firms	238		238	
No of observations	531		531	
χ^2 stat.(H$_0$: firm dummies=0)	[0.080]		[0.080]	
Wald χ^2 H$_0$: Assets as exogenous	[0.573]		[0.218]	

Table 7 Performance Impact of Ownership Transformation using different Performance Indicators for Panel Data Estimation (total sample)

Performance variable (Y):	Profit rate of net asset		Debt ratio		Sales per worker		Sales Growth		Asset growth		Labour force growth	
Independent variables (X):	**Coeff.**	**t-stat**	**Coeff.**	**t-stat**	**Coeff.**	**t-stat**	**Coeff.**	**t-stat**	**Coeff.**	**t-stat**	**Coeff.**	**t-stat**
Intercept	1.053	4.8	0.258	2.0	-122.467	-3.3	0.980	20.2	-4.172	-24.8	-0.214	-1.0
YR1: 1 year after GZ	0.000	0.0	-0.034	-3.0	3.242	1.0	-0.011	-0.4	0.034	2.3	-0.085	-4.3
YR2: 2 years after GZ	-0.003	-0.1	-0.038	-2.6	9.638	2.3	0.101	3.5	0.087	4.5	-0.128	-5.1
YR3: 3 years after GZ	-0.040	-1.3	-0.049	-2.7	9.167	1.7	0.216	6.8	0.166	6.9	-0.101	-3.2
Log (assets)$_{it}$	-0.082	-3.6	0.047	3.5	14.297	3.7	0.002	0.5	0.554	31.5	0.138	6.1
year1997	-0.065	-1.2	-0.022	-0.7	-5.981	-0.7	-0.118	-1.9	0.060	1.5	0.029	0.5
year1998	-0.038	-0.9	-0.009	-0.4	-3.406	-0.5	-0.108	-2.3	0.078	2.3	0.024	0.5
year1999	-0.029	-0.8	-0.002	-0.1	-3.042	-0.5	-0.089	-2.3	0.032	1.1	0.037	1.0
year2000	-0.031	-1.1	0.017	1.0	-4.821	-1.0	-0.064	-1.9	0.043	1.9	0.039	1.3
year2001	-0.018	-0.7	0.008	0.6	-2.339	-0.6	-0.092	-3.0	0.019	1.0	0.031	1.3
year2003	0.091	3.6	0.010	0.7	7.277	1.7	0.044	1.4	-0.015	-0.8	-0.003	-0.1
Summary Statistics												
χ^2 statistic (H$_0$: YR1+YR2+YR3=0)	[0.856]		[0.005]		[0.040]		[0.001]		[0.001]		[0.001]	
Standard error	0.208		0.123		35.229		0.336		0.161		0.209	
R^2	0.674		0.808		0.911		0.086		0.740		0.313	
No of Firms	419		419		419		419		419		419	
No of observations	1086		1086		1086		1086		1086		1086	
χ^2 stat (H$_0$: firm dummies=0)	[0.001]		[0.001]		[0.001]		[0.900]		[0.005]		[0.900]	
Wald χ^2 (H$_0$ exogenous asset)	[0.586]		[0.151]		[0.825]		[0.051]		[0.002]		[0.454]	

Note: GZ stands for Ownership Transformation

Table 8   Performance Impact of Ownership Transformation: Comparing Samples of Different Controlling Ownership

| Independent variables(X): | Performance variable: **sales per worker** | | | | | | Performance variable: **growth of assets** | | | | | | Performance variable: **debt-to-assets ratio** | | | | | |
| | State sample | | Private sample | | Insiders sample | | State sample | | Private sample | | Insider sample | | State sample | | Private sample | | Insider sample | |
	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
Intercept	-122.34	-3.0	-125.05	-1.8	-159.67	-1.6	-3.943	-22.0	-4.756	-11.3	-4.401	-12.5	0.354	2.7	-0.155	-0.4	-0.139	-0.2
YR1: 1 year after GZ	4.06	1.1	-5.16	-0.7	-6.09	-0.3	0.032	2.0	-0.137	-3.2	-0.016	-0.2	-0.038	-3.1	0.009	0.2	0.141	1.1
YR2: 2 years after GZ	10.53	2.2	-1.80	-0.2	7.55	0.2	0.087	4.2	-0.230	-3.7	0.014	0.1	-0.042	-2.8	0.037	0.7	0.232	1.2
YR3: 3 years after GZ	9.87	1.7	-3.01	-0.2	32.53	0.6	0.167	6.6	-0.288	-3.5	0.122	0.6	-0.062	-3.4	0.073	1.0	0.330	1.0
Log (gross assets)$_{it}$	14.79	3.3	16.93	2.4	23.49	1.6	0.546	28.2	0.590	14.3	0.776	15.5	0.035	2.5	0.085	2.3	0.096	1.1
year1997	-6.91	-0.7	-7.41	-0.3	-35.78	-0.6	0.068	1.6	-0.378	-2.9	-0.109	-0.6	-0.039	-1.3	0.166	1.4	-0.030	-0.1
year1998	-3.92	-0.5	-9.49	-0.5	37.53	0.5	0.089	2.5	-0.604	-5.3	0.153	0.6	-0.012	-0.5	0.101	1.0	0.340	0.7
year1999	-4.31	-0.6	-1.75	-0.1	37.56	0.6	0.052	1.7	-0.477	-5.4	0.057	0.3	0.000	0.0	0.050	0.6	0.219	0.6
year2000	-5.75	-1.0	-3.88	-0.4	27.56	0.6	0.046	1.9	-0.302	-4.7	0.114	0.7	0.004	0.2	0.121	2.1	0.198	0.7
year2001	-4.48	-1.0	6.52	0.8	20.02	0.7	0.027	1.3	-0.202	-4.3	0.040	0.4	0.005	0.4	0.046	1.1	0.092	0.6
year2003	5.86	1.2	17.72	2.0	61.84	2.6	-0.012	-0.5	0.089	1.7	0.028	0.3	0.007	0.4	0.002	0.1	-0.069	-0.5
Summary Statistics																		
χ^2 statistic (H$_0$: YR1+YR2+YR3=0)	[0.040]		[0.600]		[0.150]		[0.000]		[0.000]		[0.200]		[0.000]		[0.500]		[0.500]	
Standard error	36.73		27.35		35.24		0.160		0.161		0.121		0.117		0.143		0.208	
R^2	0.90		0.96		0.94		0.749		0.728		0.881		0.833		0.730		0.480	
No of Firms	341		79		33		341		79		33		341		79		33	
No of observations	892		198		90		892		198		90		892		198		90	
χ^2 stat (H$_0$: firm dummies=0)	[0.025]		[0.005]		[0.005]		[0.080]		[0.065]		[0.025]		[0.050]		[0.090]		[0.250]	

Note: GZ stands for ownership transformation

Table 9   **Labor Productivity Impact of Ownership Transformation Comparing Different Selling Methods or Firm Pre-reform Backgrounds**

Dependent variable (Y): Sales per Worker	Selling methods										Background of reform			
	open auction		negotiation		open sales info		sell stock		stock + new invs		further transfor.		first transfor.	
Independent variables (X):	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
Intercept	-180.29	-1.1	-92.96	-2.1	-95.11	-1.5	-2.02	-0.1	-142.92	-2.0	-393.14	-2.7	-93.07	-2.5
YR1: 1 year after GZ	0.49	0.0	0.38	0.1	20.22	2.4	-0.64	-0.2	20.17	1.8	13.72	1.4	-0.09	0.0
YR2: 2 years after GZ	7.63	0.5	4.45	0.6	16.67	1.5	4.64	1.0	25.79	1.7	8.20	0.6	9.65	2.1
YR3: 3 years after GZ	13.14	0.8	8.59	0.9	30.50	2.2	8.62	1.5	21.06	1.1	16.92	1.0	6.67	1.2
Log (gross assets)$_{it}$	16.67	1.1	11.74	2.5	9.60	1.4	2.47	0.7	14.80	2.0	38.27	2.8	11.55	2.9
Year1997	-29.67	-0.7	-8.09	-0.4	-4.50	-0.2	-6.86	-0.6	5.31	0.2	17.35	0.6	-8.74	-0.9
Year1998	5.70	0.2	-5.90	-0.4	2.59	0.1	1.62	0.2	-2.41	-0.1	8.61	0.4	-4.95	-0.6
Year1999	8.34	0.4	-4.98	-0.4	6.44	0.4	-0.40	-0.1	2.31	0.1	13.12	0.7	-4.25	-0.6
Year2000	21.97	1.2	-6.59	-0.8	1.36	0.1	-1.88	-0.3	-3.01	-0.2	3.02	0.2	-4.38	-0.8
Year2001	13.71	1.0	-0.46	-0.1	-0.31	0.0	3.52	0.7	-4.73	-0.4	0.62	0.1	-0.13	0.0
Year2003	7.21	0.7	0.94	0.1	-12.46	-1.2	9.78	1.9	-11.36	-0.8	-13.64	-1.1	13.71	2.9
Summary Statistics														
χ^2 statistic (H$_0$: YR1+YR2+YR3=0)	[0.500]		[0.450]		[0.001]		[0.150]		[0.050]		[0.250]		[0.001]	
Standard error	21.20		34.47		41.24		25.44		45.98		46.63		32.42	
R^2	0.81		0.93		0.93		0.93		0.92		0.76		0.94	
No of Firms	27		182		104		158		74		86		309	
No of observations	69		436		250		395		181		226		788	
χ^2 stat (H$_0$: firm dummies=0)	[0.005]		[0.001]		[0.050]		[0.001]		[0.001]		[0.060]		[0.001]	

Note: GZ stands for ownership transformation

Appendix   The Survey Sample of Chinese Enterprises in 2004

The sample data used in this paper is based on a 2004 enterprise survey, conducted in the period August to December 2004 by the Institute of Enterprise Research at the Development Centre of Research of the State Council of China under the support of the World Bank. The survey issued two questionnaires to 6627 state enterprises that might have been transformed, or might have been reorganised. The aim of this large-scale survey was to learn about and assess the development of enterprise reform in China for policy purposes.

Across the 6627 surveyed enterprises, there were 74 central government-owned parent companies with 1524 subsidiaries, and 5103 local government owned enterprises (located in 16 provinces and cities involved actively in enterprise reform during the period). These places include Beijing, Chongqing, Hailongjian, Liaoni, Hebei, Henan, Shandong, Jiangshu, Jiangxi, Hubei, Hunan, Gongdong, Guangxi, Sanxi, Ganshu and Sichuan. Of the 6627 enterprises surveyed, 5073 returned their completed questionnaires. Of these, we removed 935 due to poor quality, leaving a sample of 4138 firms. Of these, there were 2696 questionnaires about ownership transformation and 1442 about enterprise reorganisation. Our analysis is based on the sample of the former group of firms who had reported a transformation in ownership at the time of the survey, i.e. a sample of 1184 firms (see Table A1).

Table A1 Summary statistics on cleaned survey data on ownership transformation

	All sample firms		Central gov. owned firms		Local gov. owned firms	
	Firms	% of sample	Firms	% of sample	Firms	% of sample
All firms transformed	1184	43.92	259	24.81	925	56.0
All non-transformed	1512	56.08	785	75.19	727	44.0
Total sample firms	2696	100	1044	100	1652	100

The sample of enterprises covers many industries from manufacturing to service sectors. The manufacturing industry includes agriculture-product processing, mining, construction, transportation, and service sectors including property development, consultancy services, telecommunication, and advertising. There are no sample enterprises from finance, electricity or the oil industry since these industries have a monopolistic market structure.