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Citation

JIANG, Guohua; YUE, Heng; and ZHAO, Longkai. A re-examination of China's share issue privatization. (2009). *Journal of Banking and Finance*. 33, (12), 2322-2332.

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A re-examination of China's share issue privatization

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ARTICLE INFO

Article history:

Received 10 December 2008

Accepted 9 June 2009

Available online 16 June 2009

JEL classification:

G15

G32

G34

Keywords:

Share issue privatization

State-owned enterprise

Profitability

China

ABSTRACT

Previous studies show that in contrast to evidence that share issue privatization (SIP) in most other countries have improved firm profitability, China's SIP of the 1990s had no such effect. We argue that the main reason for the failure of China's SIP is likely to have been the weak institutional environment in place at that time. We examine China's SIP in a more recent period in which the institutional environment was greatly improved. Using a matching sample method, we find that SIP firms continued to experience negative post-SIP profitability changes in our sample period. However, their performance decline was significantly less than that of their matched non-SIP SOEs. We also find that the introduction of the independent director rule helped to improve firm performance. Our results reconcile the findings of the SIP effect in China with international evidence and illustrate the importance of a developed capital market to ensuring the success of privatization schemes.

1. Introduction

Share issue privatization (SIP), in which government sell shares in state-owned enterprises (SOEs) to private investors through IPOs and list the issuing companies on the stock market, has been the most popular method of privatization and been successful in improving firm efficiency and profitability. Megginson and Netter (2001) review a broad range of SIP studies and conclude that SIP almost always improves firm efficiency and profitability, regardless of whether it takes place in transitional or non-transitional economies.¹ In a recent paper, Gupta (2005) also finds evidence that partial privatization has a positive impact on firm profitability. Shleifer (2005) provides an in-depth analysis of why private ownership is superior to public ownership in the context of most economic activities, a theoretical argument supportive of documented empirical results.

Transforming a pure SOE into a SIP firm is expected to improve firm performance for at least two reasons. First, a pure SOE is not usually profit-oriented. It is part of the central economic plan and serves the government's fiscal and social objectives. By contrast, a SIP firm, following the injection of private capital and with

a new ownership structure that includes private investors, is more profit-oriented. Second, SIP firms are also listed on the stock market. As Gupta (2005) argues, the stock market can serve as a powerful monitoring and disciplinary tool that improves a firm's corporate governance. These factors should lead to better post-SIP performance.

However, studies of China's SIP find that in the early stages (i.e., the 1990s) firm profitability did not improve. For example, based on a sample of 634 SOEs that went through the SIP process between 1994 and 1998, Sun and Tong (2003) find that firm profitability, as measured by return on sales (ROS), decreased from 16.5% in the pre-SIP period to 11.4% in the post-SIP period.² Similarly, Wang et al. (2004) examine 793 SIP firms and find that ROS decreased 8.3% around the time of a firm's privatization. Given that these results conflict with the evidence from studies undertaken in other parts of the world and that the Chinese economy experienced robust growth during this period, they are somewhat surprising.

Shleifer and Vishny (1997) offer explanations for why privatization might not work from a corporate governance perspective. For example, privatization will not work if it does not create major private shareholders, if there is an absence of protection of minority

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¹ There are exceptions though. For example, Harper (2002) finds that although the overall effects of privatization are positive, Czech firms privatized in the first wave experienced a decline in performance.

² Sun and Tong (2003) use a larger set of performance measures than profitability and find some improvements after SIP measured by real net profits, real EBIT, and real sales. However, as we argue later, these measures are inappropriate for measuring profitability changes in the Chinese SIP setting because all SIP in China has involved primary offerings and resulted in an enlarged asset and equity base.

shareholders, and/or if the management is incompetent.³ All three of these problems exist in the early SIP firms in China.

First, China's SIP, while introducing private investors to the former SOEs, did not result in a transfer of effective control from the state to private investors. The original objective of the Chinese government in implementing the SIP was to raise capital for state-owned enterprises. The motive for SIP in China was thus quite different from that in eastern European countries, which first experienced a change in political regime, followed by privatization. Governments in the eastern European countries usually gave up control of SIP firms. In contrast, there was no shift of political regime in China, and its privatization program can be characterized as a *reluctant* one. Rather than being seen as a way to strengthen the market, share issue privatization was seen as a way to strengthen the state.

Second, even where the state maintains effective control over SIP firms, if the stock market can provide meaningful minority investor protection through market institutions and mechanisms, SIP might still work. However, in the early stages of China's SIP process, these institutions (such as independent audit and independent director) and mechanisms (such as cumulative voting and proxy voting) were near to non-existent. The stock market was seen as an experiment and did not feature in any of the Communist Party's official public reports until 1999 (see [Walter and Howie, 2003](#)).

Finally, the management of SIP firms was mostly inherited from their predecessor SOEs, and was accountable to their government controlling shareholders, thus limiting the potential for improved level of management expertise after SIP.⁴

All three factors outlined above might explain why China's SIP in its early stages did not improve firm profitability ([Sun and Tong, 2003](#); [Wang et al., 2004](#)). Privatization per se, and especially partial privatization that does not involve a change of control or does not establish a meaningful level of investor protection, is no guarantee of success.

In this paper, we re-examine the effect of China's SIP in a more recent period (1999–2002). This period is widely seen as a new stage in the development of the Chinese stock market and SIP program. After an experiment lasting eight years, China's stock market was finally recognized in an official public report of the Communist Party in 1999 ([Walter and Howie, 2003](#)). The private sector began to be seen as an integral part of the socialist economy. Giant SOEs in mainstay industries, such as national petroleum and telecommunications companies, started to go through the SIP process.

Furthermore, the Asian financial crisis of 1997 exposed the governance weakness of Asian securities markets ([Johnson et al., 2000](#)) and strengthened the Chinese regulator's will to build stronger market institutions and mechanisms. Regulatory authority over securities market was consolidated into the China Securities and Regulatory Commission (CSRC) in 1998, a development that was quickly followed by the implementation of the first Securities Law on July 1, 1999. The CSRC, separately or in conjunction with other government agencies and the legislature, moved fast to establish modern market institutions and governance mechanisms.⁵

Given these improvements in Chinese investor protection, we believe it is worthwhile re-examining whether or not the SIP process during this recent period was successful. The fact that the state sector still accounted for 37% of China's GDP in 2006 makes this question an important one. SOEs are still inefficiently run. Par-

tial privatization through the SIP seems to be the only feasible way forward, and evaluating whether or not SIP works and, if so, what makes SIP work, could shed light on the future of China's economic reforms.

Using a sample of 149 manufacturing firms that were wholly state-owned before being restructured into shareholding companies and listed on the stock exchanges through the SIP process, we re-examine the effects of SIP on firm performance. We use a matching sample method to pair SIP firms with non-SIP SOEs and identify the effects of SIP. Most empirical studies on SIP effects use the direct comparison method developed by [Megginson et al. \(1994\)](#) (MNR). As [Megginson and Netter \(2001\)](#) point out, the MNR method may involve a selection bias problem, because "governments have a natural tendency to privatize the 'easiest' firms first, those SOEs sold via share offerings may well be among the healthiest state-owned firms."

Our data suggests that the selection bias problem is extremely severe in China. The SOEs that went through the SIP process and listed on the stock markets were those that had performed better than their peers. In our sample, we find that before IPO, 99% of SIP firms were in the top 20% of SOEs in terms of total assets, 95% were in the top 20% of SOEs in terms of ROS, and 100% were in the top 20% of SOEs in terms of ROA. The average ROS before SIP was 18.5%, and the average ROA before SIP was 13.3%. This suggests that the SIP process has involved severe selection bias. If it is not controlled for, there is a tendency for the superior performance in the pre-SIP period to revert to normal levels in the post-SIP period, leading to negative performance changes.

Previous studies (e.g., [Barber and Lyon, 1996](#)) suggest that a matching approach is appropriate to control for the selection bias problem. While SIP studies such as [Megginson and Netter \(2001\)](#) also recognize that a pre-event performance matching approach is preferred, matching data is very difficult to obtain for such studies because the information for non-listed firms is not usually publicly available. We obtained access to a State Statistical Bureau of China database which contains enough balance sheet and income statement information on all unlisted manufacturing SOEs over the period 1998–2003 to make matching possible. The matching approach also controls for the impact of economy-wide fluctuations in the performance of SIP firms.

For each SIP firm, we find a matching SOE in the same manufacturing industry that was of a similar size and had similar pre-SIP performance ([Barber and Lyon, 1996](#)), but has not gone through the SIP process. We then compare the post-SIP profitability of SIP firms with that of SOE firms to identify the real effect of SIP on firm performance. We measure profitability using ROS. We find that the ROS of SIP firms in our sample declined, confirming findings in prior studies: median ROS decreased by a significant 4.1%. However, we also find that the matching SOEs experienced a greater decline in ROS, with a fall of 7.4%. In other words, SIP firms outperformed matched SOEs by a statistically significant 2.5% margin.⁶ Our evidence thus suggests that SIP had a positive effect on firm profitability in China during the recent period of stock market development. Our result holds for both revenue privatizations and control privatizations, is robust as we vary the ROS measurement horizon, and holds after controlling for other variables.

In further tests, we find that over our sample period (1999–2002), the outperformance of SIP firms relative to matched SOEs increased significantly, indicating that as China built up investor protection and corporate governance mechanisms, the SIP process became more successful. In particular, we find that the introduc-

³ We are grateful to the referee for making this point to us.

⁴ As late as 2007, the government arranged the chairmen or CEOs of China Telecom, China Netcom, and China Mobile to swap posts, though these three firms are listed firms in competition with one another.

⁵ See Section 2 for more detailed discussion of the changes.

⁶ This conclusion depends on the assumption that the SIP firms and their matched SOEs were drawn from the same population of SOEs. We thank the referee for cautioning us on this assumption and discuss it in Section 3.

tion of independent directors to corporate boards in 2001 had a significantly positive impact on SIP firms' relative performance.

This study potentially advances our understanding of the privatization mechanism and its effects. Most of the literature analyzes privatizations involving a transfer of control from the state to private investors. Partial privatization with no transfer of control has been largely dismissed as ineffectual in policy debates and its effects have been overlooked in the literature (Gupta, 2005). Our study indicates that partial privatization might still work in spite of the absence of a change of control if the stock market plays a role in monitoring and disciplining the state shareholder. Relative to pure state ownership, the SIP process can create healthy checks and balances for SIP firms. Whether or not SIP works thus crucially depends on whether market institutions and governance mechanisms are put in place to protect minority (private) investor interests. During the period we study, the Chinese government established a host of modern market institutions and governance mechanisms. Our results appear to support the view that these institutions and mechanisms collectively improved the results of the SIP process.

The rest of the paper is organized as follows. Section two reviews China's stock market development and SIP process, and outlines the motivation for our study. Section three introduces the new dataset and our matching approach. Section four reports our empirical results and we present our conclusions in section five.

2. Development of China's stock market and motivation of this study

In the late 1970s, China still remained a centrally controlled economy, with the government controlling and planning almost all economic activities. The government controlled not only the capital allocation process, but also production plans, labor markets and product markets. As a result, SOEs were highly unproductive and inefficient. The concept of profit maximization was entirely absent from SOEs. Rather, the objectives of SOEs included fulfilling the government's economic plans and serving social objectives such as employment (e.g., Lin et al., 1998)⁷.

In the 1980s, the Chinese government adopted various measures aimed at reforming SOEs. These measures were mainly to give more latitude to SOE management in managing their firms and to align the goal of SOE management with that of the government. These reform measures were successful to certain extent (Li, 1997). However, by the late 1980s, it was clear that the government could no longer finance all SOEs itself, and that the reform efforts taken thus far had not resulted in sufficient improvements in SOE performance. A dramatic reform step was thus taken with the opening of the Shanghai and Shenzhen stock exchanges in 1990 and 1991, respectively. There is little doubt that the original purpose the government had in mind for the stock market was to raise capital for SOEs through partial privatizations while retaining its status as the controlling shareholder (Walter and Howie, 2003).⁸

To serve this financing need and keep the new market under control, the central bank (the People's Bank of China, or PBC) was designated as the stock market regulator and adopted a quota system for selecting SIP candidates.⁹ Under this quota system, the PBC specified the amount of shares firms were allowed to issue to the

public each year. The PBC deliberately kept the quota low in the 1990s to ensure the market was kept under control. As a result, demand for share issuance far exceeded the amount of shares allowed under the quota system, which created incentives for governments to choose firms that urgently needed capital to participate in the SIP instead of selecting firms that could produce sustainable profits.

This early period in the stock market and SIP process was characterized by a lack of the market institutions and mechanisms required to discipline listed firms and protect minority investors' interests. For example, it was not until 1996 that the Chinese Institute of Certified Public Accountants (CICPA) issued the first set of auditing standards, and China did not promulgate a set of accounting standards in modern sense until 1998.¹⁰ Listed firms were required to have a board of directors, but nearly all directors were members of the management team of either the listed firm or one of its controlling shareholders. To make matters worse, shares owned by Chinese governments at all levels were made non-tradable to avoid diluting state control, which meant that controlling shareholders could not benefit from share price appreciation, reducing their incentive to improve SIP firms' operating performance.

Studies on China's SIP find that the SIP program of the 1990s did not improve firm profitability. In a study based on a sample of 634 SOEs that went through the SIP process during the period 1994 to 1998, Sun and Tong (2003) find that firm profitability, as measured by net income divided by sales revenues (ROS), decreased from 16.5% in the pre-SIP period to 11.4% in the post-SIP period. Similarly, Wang et al. (2004) examine 793 SIP firms and find that ROS decreased 8.3% around the time of privatization. Lin et al. (1998) also suggest that the SOE reform of the 1990s was far from successful.¹¹

Shleifer and Vishny (1997) offer explanations for why privatization might not work from a corporate governance perspective. For example, privatization will not work if it does not create major private shareholders, if there is an absence of minority shareholder protections, and/or if the management is incompetent. In fact, all three problems existed in the early SIP firms in China. First, while the SIP program introduced private investors into the former SOEs, it did not result in a change in effective control. The government, as the controlling shareholder, still exerted effective control over SIP firms. Second, as we argue above, the new stock market lacked the institutions (e.g., independent auditing or independent directors) and mechanisms (e.g., cumulative voting or proxy voting) required to protect minority shareholders' interests, thus diminishing the monitoring and disciplinary role of the stock market. Third, SIP firms' management teams and boards were effectively appointed by controlling shareholders, and in most cases were inherited from their predecessor SOEs.

In this paper, we revisit the issue of whether China's share issue privatization program improved firm profitability using a more recent SIP sample (1999–2002). We conduct this study for three reasons.

First, as Allen et al. (2005) find, China's rapid economic growth in the last two decades was mainly driven by the private sector. The private sector outperformed not only the state sector, but also the listed sector. Nevertheless, it is worth noting that although the state sector's contribution to the economy as a whole had been shrinking, it still accounted for 37% of China's GDP in 2006. The vast majority of the state sector is still inefficiently run, and how

⁷ Boubakri et al. (2009) find that even in strategic industries, there exist a negative effect of state ownership on profitability and operating efficiency.

⁸ A general perception among government officials, and people at large, was that as long as the government controlled the shareholding companies (former SOEs), the socialist state nature of these companies did not change. If it were not for this perception, share issue privatization would not have been possible in China.

⁹ Throughout the 1990s, nearly all IPOs were share issue privatizations of former SOEs.

¹⁰ Prior to 1998, Chinese accounting standards were based on Soviet-style systems, which were designed to suit the needs of a central planning system rather than to serve shareholders' informational needs.

¹¹ Some senior Chinese government officials also expressed similar concerns. For example, Sheng Huaren, the former Minister of the State Economic and Trade Commission, admitted that "many profound contradictions and problems exist in the SOE reforms and they have not yet been solved" (Li, 2001). We thank the referee for making this point to us and providing supporting materials.

this part of the economy should be reformed has been a hotly debated topic in recent years. SIP is still one of the main candidates for resolving this problem, and evaluating the effects of the SIP program based on more recent data will contribute to the debate and its ultimate resolution.

Second, and more importantly, the market institutions and mechanisms that protect minority shareholders' interests have been greatly improved in recent years, and this change could potentially improve the effectiveness of the SIP process. In this respect, the turning point came in 1998. The Asian financial crisis of 1997 exposed the governance weakness of Asian securities markets (Johnson et al., 2000) and strengthened the determination of Chinese regulators to build stronger market institutions and mechanisms.

In April 1998, the China Securities and Regulatory Commission (CSRC) was recognized as the sole regulatory body for China's securities market, inheriting regulatory power over the securities market from the Securities Committee of the State Council and the People's Bank of China. This consolidation of market regulatory power greatly enhanced the efficiency of market regulation. On July 1, 1999, the first Securities Law came into effect. For the first time, the Securities Law formalized the issuance, listing, and trading of securities in China's domestic market. It also provided a system of standard mechanisms designed to protect the interests of investors and clarified the fiduciary duties of market participants.

After the consolidation of regulatory power in the CSRC and the enactment of the Securities Law, the CSRC moved aggressively to promote investor protection and discipline listed firms. In 1998, the CSRC standardized the contents and formats of interim reports, annual reports, and prospectuses for rights offerings. These new rules greatly improved the quality of listed firm's disclosures. In August 2001, the CSRC introduced an independent director rule that made it mandatory for listed firms to include independent directors on their boards. In January 2002, the CSRC and SETC (State Economic and Trade Commission) jointly issued the "Codes of Corporate Governance" and the CSRC began conducting regular inspections on listed firm compliance. In the meantime, the CSRC engineered the emergence of institutional investors in China. In 1999, the Investment Fund Law was added to the legislative agenda of the People's Congress. By the end of 2005, institutional investors held roughly 20% of all tradable shares in Chinese listed firms. Also, the security analysts industry emerged and CSRC issued several rules in 1998 to regulate the industry.

Another important development that occurred during this period was that the government came to appreciate the weakness of the IPO quota system and replaced it with an approval system in March 2001. Under the approval system, the ability of IPO candidates to generate sustainable profits became important in determining the success or failure of the applications for SIP (Kao et al., 2009).

Taken together, the regulatory, corporate governance, and market institution developments outlined above are likely to have had a positive impact on China's stock market. Morey et al. (2009) find that improvements in corporate governance result in significantly higher valuations in emerging markets. Berkman et al. (2005) examine the wealth effects of regulatory changes made by the CSRC between 2000 and 2002. They find that these new regulations significantly increased firm value, and that firms with weak governance benefited disproportionately more relative to firms with strong governance. Similarly, these new developments may well have improved the effectiveness of the SIP process in our more recent sample.

The third reason for conducting this study is that the analysis we carry out using a matched sample approach, which is not employed in earlier China SIP studies, may allow us to reach more reliable conclusions. In SIP studies, it is important to construct a

matched sample of SOE firms that have not gone through the SIP process, i.e., purely state-owned enterprises. Privatization usually comes in waves and is completed within a short time span. A pure pre- and post-privatization comparison could thus be confounded by factors other than privatization itself, such as the economic cycle or other temporary shocks to the overall economy.

To better evaluate whether SIP improves SOE performance, we should observe the pre- and post-SIP differences in performance measures for a SIP sample, as well as the pre-post differences in the same measures for a matched SOE sample. As long as the pre-post differences in the measures for the SIP sample are significantly better than those for the matched SOE sample, we can conclude that SIP improves firm performance. In other words, our question should be "did SIP firms perform better than similar SOEs that were not partially privatized?"

In China, another confounding factor is that the government tends to select better-performing SOEs to go public, and because China has thousands of SOE firms to choose from, the pre-SIP profitability of SIP firms is likely to be much higher than that in other countries. For example, Megginson et al. (1994) find that the median pre-SIP ROS of the SIP firms they examined was 4.4%, while D'Souza and Megginson (1999) calculated the median pre-SIP ROS of the SIP firms in their sample as 5.0%. In contrast, the median pre-SIP ROS of the SIP firms in our sample was 18.5%. As Fama and French (2000) note, "there is a strong presumption in economics that, in a competitive environment, profitability is mean-reverting."¹² Furthermore, they find that mean reversion is faster when profitability is further from its mean in either direction. Other studies, such as those conducted by Barber and Lyon (1996) and Nissim and Penman (2001), also document that earnings tend to revert to the mean.¹³ Knapp et al. (2006) find that the impact of mean reversion of bank profitability is significant for post-merger performance. Dutta and Jog (2009) also consider this issue in their study of the long-term performance of acquiring firms. The mean reversion pattern of profitability suggests that when there is a selection bias problem in a SIP sample such that pre-SIP profitability is high, post-SIP profitability will decline towards the mean level, even if the SIP has no effect on profitability.

To remedy these potential problems, we match SIP firms with SOE firms based on industry, size, and performance in the pre-SIP year. According to Barber and Lyon (1996) and Megginson and Netter (2001), a matching method is appropriate when pre-event operating performance is unusual and can be used to control for the mean reversion problem. The matched sample approach also teases out the impact of economy-wide fluctuations on changes in SIP firm performance.

3. Data and methodology

3.1. Data

Our data for unlisted SOEs were collected by the State Statistical Bureau of China and include balance sheet and income statement information for all manufacturing firms classified as SOEs between 1998 and 2003. To be included as a matching candidate in our analysis, we require that there be sufficient financial information available on the SOE in question and that it maintained its state-

¹² An earlier argument for mean reversion of profitability is attributed to Stigler (1963, p. 54): "There is no more important proposition in economic theory than that, under competition, the rate of return on investment tend toward equality in all industries."

¹³ Other reasons exist for mean-reverting earnings. For example, Barber and Lyon (1996) argue that accounting methods can introduce a temporary component to the performance measurement, such as non-recurring income or expenses. When the temporary component dissipates, performance will revert to the mean. Mean reversion could also be a simple statistical phenomenon.

owned status for the whole six-year period. These requirements leave us with 7761 state-owned firms as matching candidates for each year in our sample period.

Our SIP sample is taken from the CCER China Stock Database. The CCER China Stock Database has records on 359 firms that went public on the Shanghai and Shenzhen stock exchanges between 1999 and 2002. Our SIP sample period begins in 1999 and ends in 2002. This period is shorter than the sample period for our matching SOEs because for every SIP firm, we need to use financial data from the year before its IPO year to choose a matched SOE, and we need to measure post-SIP performance based on financial data from at least one year after the IPO year.

From the initial IPO sample of 359 firms, we then exclude (1) non-manufacturing firms; and (2) firms that were not wholly state-owned enterprises before the IPO. We retain only manufacturing firms because the matching SOE firms are from the manufacturing industry. This criterion mitigates possible industry effects. We keep only pure SOE firms that went public due to our research focus on share issue privatizations. Earlier works on China's SIP use all IPO firms as their SIP sample, thereby introducing noise by including firms that were not SOEs before their IPO. Our final SIP sample consists of 149 firms.

3.2. Methodology

The methodology commonly used in the SIP literature (e.g., Megginson et al., 1994; Sun and Tong, 2003) is to compare the three-year performance before SIP with the three-year performance after SIP, excluding the SIP year. We design our methodology in a similar fashion but also take our matched SOE firms into account.

Firstly, for each SIP firm, we compute its pre-SIP and post-SIP financial performance measures (total assets, return on sales, etc.) as their respective annual averages for each firm during the pre- or post-SIP period. The pre- and post-SIP periods are at most three years, respectively, but could be as short as one year because our data on matching SOEs are limited to the 1998–2003 period, and our SIP sample ranges from 1999 to 2002.

Secondly, in each year from 1999 to 2002, we compute notional pre-SIP and post-SIP financial and performance measures for each SOE, as if the SOE went public in the same year as its matched SIP firm.

Thirdly, we choose one matching SOE for each SIP firm. We first select SOEs with pre-SIP total assets within $\pm 30\%$ of the total assets of the SIP firm during the same period, and with pre-SIP profitability within $\pm 30\%$ of the profitability of the SIP firm during the same period. Then, from among the surviving candidates we choose the one with the smallest difference in profitability from the SIP firm. Using ROS to measure profitability enables us to find matching SOEs for 147 SIP firms.¹⁴

To evaluate the effects of SIP on firm profitability, we examine the difference between SIP firms and matched SOE firms in terms of profitability changes around the SIP year. The examined variable is as follows:

$$\begin{aligned} \Delta prof &= \Delta prof_{SIP} - \Delta prof_{Match} \\ &= (prof_{post-SIP} - prof_{pre-SIP}) - (prof_{post-matching} \\ &\quad - prof_{pre-matching}) \end{aligned} \quad (1)$$

where *Prof* stands for profitability. We call this variable *adjusted profitability* (e.g. adjusted-ROS). Adjusted profitability measures whether SIP firms became more or less profitable than SOEs that did not go through the SIP process. If adjusted profitability is

¹⁴ Using a more restrictive range of $\pm 25\%$ does not change the conclusion of our paper. Instead of matching each SIP firm to only one SOE firm, we also try matching each SIP firm to a group of SOE firms. The results are qualitatively the same.

positive, we conclude that partial privatization through the stock market resulted in a greater improvement in firm profitability than that experienced by SOEs that remained wholly state-owned.

Our main financial measure for profitability is return on sales (ROS), defined as earnings before interest and taxes (EBIT) divided by sales.¹⁵ The reason we rely on ROS to measure profitability is that there is an important difference between Chinese SIP and SIP in other countries. In China, SIP is a primary offering process, rather than the secondary offering process as in most other countries. This difference is important when we study performance changes resulting from SIP. In a secondary offering, the government sells its equity holdings in an SOE and receives the proceeds, and the only immediate impact on the SOE is the change in shareholder(s). By contrast, in a primary offering, the government does not sell any shares in the SOE. Instead, the SOE-turned listed company issues new shares directly to private investors and keeps the proceeds of the offering for itself. As such, one of the direct results of a primary offering is an equivalent increase in the firm's assets and shareholders' equity. Put differently, a secondary offering does not change the asset base of the company, whereas a primary offering results in a larger company.

This characteristic of China's SIP process immediately poses a serious problem for us in measuring performance changes from the pre- to post-SIP period. Many performance measures used in studies of non-Chinese SIP (e.g., D'Souza and Megginson, 1999) are inappropriate for calculating performance changes in Chinese SIP firms.

First, most firm size-related measures are inappropriate in the Chinese context because the size of SIP firms grew by the amount of proceeds received from the issuance of new shares, which on average was about 40% of the SIP firm's total assets. As Sun and Tong (2003) and Wang et al. (2004) show, with a larger asset base and presumably better asset quality, it is natural for a SIP firm to record increases in revenues, total profits, total EBIT, etc. These measures, regardless of whether they are inflation-adjusted, cannot be used to ascertain whether SIP results in improved performance.

Second, the two most widely used measures of profitability, return on assets (ROA) and return on equity (ROE), are inappropriate for measuring changes in profitability after SIP. Even if a SIP firm does not experience any change in profitability, with its enlarged asset base and equity base after SIP, the ROA and ROE for the firm will automatically decrease. Therefore, ROA or ROE changes are not proper measures to draw conclusion on whether China's SIP improves firm profitability or not.

There is, however, another measure of profitability that does not suffer from this bias: return on sales (ROS, defined as net income or EBIT divided by total sales revenues). This measure is conceptually similar to another traditional measure of corporate profitability, profit margin, and measures how good a firm is at controlling costs and expenses (Nissim and Penman, 2001). Both Sun and Tong (2003) and Wang et al. (2004) use ROS as one of their measures of profitability.

For the reasons outlined above, we rely mostly on ROS to measure the profitability of SIP firms in this study.

4. Empirical results

4.1. Preliminary analysis

We document some financial performance measures for our SIP firms around the SIP year in Table 1. All measures for each firm are averaged over the pre- or post-SIP period. The table reports sample

¹⁵ Our definition of ROS is slightly different from that of Sun and Tong (2003), where ROS is defined as net income divided by sales. Our SOE database does not include tax information or a "net income" item.

Table 1
Financial performance of manufacturing SIPs and all IPOs around stock listing.

Sample	Variables	Median (mean) pre_SIP	Median (mean) post_SIP	Median (mean) change	Wilcoxon test	+/- (proportion Z-test)
Manufacturing SIP (obs = 149)	Sales	505 (272)	866 (494)	361 (187)	15.27***	136/13 (10.077)***
	Total Assets	603 (382)	1494 (1085)	891 (660)	21.21***	149/0 (12.207)***
	EBIT	75 (51)	101 (64)	25 (15)	5.09***	104/45 (4.833)***
	ROS	0.185 (0.183)	0.123 (0.122)	-0.062 (-0.041)	-11.56***	29/120 (-7.455)***
	ROA	0.133 (0.124)	0.056 (0.057)	-0.077 (-0.064)	-19.07***	7/142 (-11.060)***
Whole IPO (obs = 359)	Sales	308 (750)	530 (1379)	216 (630)	23.03***	325/34 (15.358)***
	Total Assets	455 (1328)	1213 (2657)	721 (1329)	32.85***	357/2 (18.736)***
	EBIT	54 (121)	69 (186)	17 (65)	7.5***	247/112 (7.125)***
	ROS	0.185 (0.22)	0.123 (0.119)	-0.049 (-0.101)	-16.77***	68/291 (-11.769)***
	ROA	0.113 (0.127)	0.056 (0.054)	-0.059 (-0.073)	-25.34***	32/327 (-15.570)***

This table reports performance changes for manufacturing SIP firms and for all IPO firms around stock listing between 1999 and 2002. IPO sample includes all IPOs on the Shanghai and Shenzhen Stock Exchanges while the manufacturing SIP sample includes SIP firms in manufacturing industry that were wholly state-owned before the share issuance. EBIT is earnings before interests and taxes; ROS is EBIT divided by total sales; ROA is EBIT divided by total assets. Total assets and Sales are in million Yuan. Pre-SIP and Post-SIP periods are defined as three years before or three years after the SIP year (SIP year excluded). We report sample median and mean (in parenthesis) of each variable in the Pre- or Post-SIP period. The Wilcoxon Z-test is used to test for any statistically significant changes in the median value (paired observation). The last column shows the number of positive versus negative changes, and the proportion Z-test is used to test whether the proportion of positive change is greater than 50%.

*** Significance at 0.01 level.

medians and means for all SIP firms in the pre- and post-SIP periods, as well as the changes in these measures. We use Wilcoxon statistics to test whether the median changes are statistically significant and use proportion Z-statistics to test whether the proportion of positive changes is greater than 50%.

The median (mean) sales revenue for the 149 SIP firms increased from RMB 505 (272) million before SIP to RMB 866 (494) million after SIP. A Wilcoxon test of 15.27 shows that the increase is statistically significant. 136 of the 149 firms experienced increases in sales revenues after SIP and a proportion Z-test shows that the number of increases is statistically significantly greater than the number of decreases. Similar increases are also evident for total assets and EBIT.

On the other hand, both ROS and ROA decreased after SIP. ROS decreased from a median (mean) of 18.5% (18.3%) to 12.3% (12.2%), and ROA decreased from a median (mean) of 13.3% (12.4%) to 5.6% (5.7%). Wilcoxon statistics indicate that the decreases in ROS and ROA from the pre-SIP period to after the post-SIP period are statistically significant, while a Z-test shows that decreases outnumbered increases.

Table 1 also reports similar results for all IPO firms between 1999 and 2002. For all IPO firms, sales revenues, total assets, and EBIT increased after the IPO, whereas ROS and ROA decreased. This post-IPO underperformance of Chinese firms is consistent with evidence from other countries (e.g., Teoh et al., 1998) and cautions us that we should be careful in concluding that SIP did not improve firm profitability based purely on the profitability changes measured in SIP firms themselves. The results shown in Table 1 are qualitatively similar to those reported by Sun and Tong (2003) and Wang et al. (2004), although our sample period is more recent.¹⁶ Our evidence indicates that even in the more recent period, SIP did not result in an absolute improvement in firm performance.

¹⁶ Note that Sun and Tong (2003) and Wang et al. (2004) included all IPO firms, while most of our analyses focus only on manufacturing SIP firms. However, Table 1 indicates that within our sample, the decline of ROS in the manufacturing SIP sample (-0.062) is more than that in the all IPO sample (-0.049).

Table 2 presents medians for total assets, sales, EBIT, ROS, and ROA for all potential matching SOE candidates in the period between 1998 and 2003. We have 7761 SOEs available in each year. These SOEs have average total assets of around RMB 22 million and average sales of around RMB 8 million. Given that the typical SOE are much smaller than the typical SIP firm, it is important that we control for firm size when we choose matching SOEs for SIP firms.

The profitability of SOEs, measured by median EBIT, ROS, and ROA, declined dramatically between 1998 and 2003. Median EBIT declined from 0.112 million Yuan in 1998 to 0.020 million Yuan in 2003, median ROS declined from 2.4% to 0.5%, while median ROA declined from 1.1% to 0.3%. This decline in SOE profitability during what was a period of rapid economic growth in China is perplexing. If anything, it shows that the reform of the state sector was far from successful, and that further reform, such as the privatization of SOEs through SIP, is warranted. It also highlights the importance of adopting a matching approach when studying the impact of SIP on firm profitability. Our data show that while SIP firms may not have achieved a net increase in profitability, their performance may have deteriorated even further had they remained wholly state-owned.

We also report ROS and ROA in the notional pre-SIP period (as if the SOE went through SIP in that year) for all SOEs in the last two columns of Table 2. Notional pre-SIP ROS was used in constructing the matched sample. Over our sample period, a decline in these measures among the SOEs is evident as well.

We argue in section two that the mean reversion of corporate profitability is one factor that can affect the results of SIP studies if not properly controlled for. Figs. 1 and 2 clearly indicate that the profitability of both Chinese SOEs and Chinese SIP firms tends to be mean-reverting.

For each year between 1998 and 2003, we sort all SOEs into ten deciles based on their ROS (year $T = 0$), then hold these deciles constant and observe their median ROS in the following 4 years (if available). Fig. 1 show that SOE firms in their top ROS decile in year 0 experienced substantial decline of ROS subsequently, while SOE firms in their bottom ROS decile in year 0 experienced substantial

Table 2
Descriptive statistics for potential matching SOE firms.

Year	Total Assets	Sales	EBIT	ROS	ROA	ROS _{pre}	ROA _{pre}
1998	22.014	8.251	0.112	0.024	0.011		
1999	22.450	8.259	0.090	0.020	0.009	0.024	0.011
2000	23.304	9.013	0.099	0.019	0.009	0.021	0.010
2001	23.471	8.565	0.056	0.013	0.006	0.019	0.009
2002	22.913	8.630	0.031	0.009	0.004	0.014	0.007
2003	22.335	8.411	0.020	0.005	0.003		

This table presents the median of Total Assets, Sales, EBIT, ROS and ROA of potential matching SOE firms by year between 1998 and 2003. Total assets and Sales are in million Yuan. We have 7761 firms that remain state-owned during 1998–2003 with necessary financial information in each year. EBIT is earnings before interests and taxes, ROS is EBIT divided by total sales; ROA is EBIT divided by total assets. For each year between 1999 and 2002, we also report the notional pre-SIP ROS and ROA (as if these SOEs went SIP in that year). Pre-SIP periods are defined as three years before the specific year but are limited within 1998–2003. ROS_{pre} and ROA_{pre} are the average of ROS and ROA in the pre-SIP period.

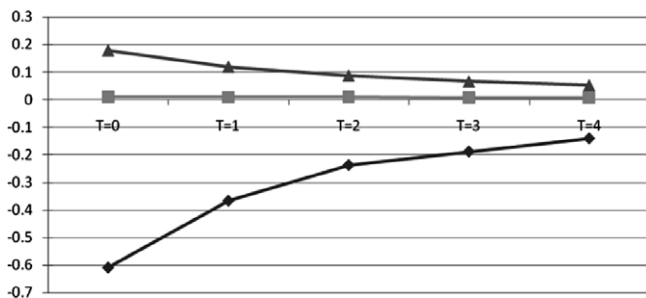


Fig. 1. The mean reversion of return on sales in SOEs. In each year between 1998 and 2003, we sort 7671 SOE firms into ten deciles based on their return on sales ($T = 0$), then we keep the deciles constant and report median ROS for the top, middle and bottom deciles for the next four years.

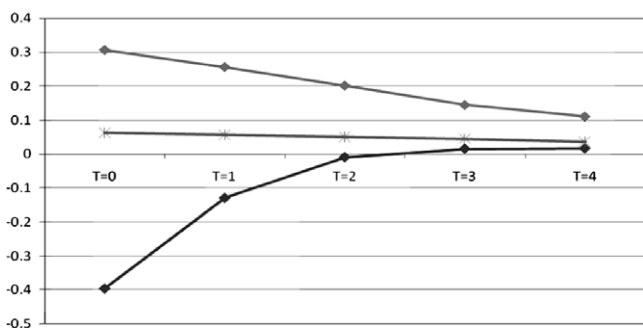


Fig. 2. The mean reversion of return on sales in SIP Firms. In each year between 1998 and 2003, we sort all SIP firms in Shanghai and Shenzhen stock exchanges into ten deciles based on their return on sales ($T = 0$), then we keep the deciles constant and report median ROS for the top, middle and bottom deciles for the next four years.

increase of ROS.¹⁷ In Fig. 2, we conduct the same analysis for all SIP firms between 1998 and 2003; the pattern of mean reversion is similar. Consistent with the prediction of Fama and French (2000), the extreme deciles tend to show faster and greater reversion to the mean.

When the Chinese government started to implement its share issue privatization program to reform its SOEs in the early 1990s, it intentionally chose more profitable SOEs to privatize. For one thing, offering shares in more profitable SOEs was more readily acceptable to private investors and was likely to result in higher share prices. Hence, SIP firms tend to be drawn from the top deciles of SOEs in terms of ROS and ROA, and their profitability tends to

revert to the mean rather quickly. Table 3 shows that this is indeed the case.

In Table 3, we compare our SIP firms and SOE firms in terms of pre-SIP total assets, ROS, and ROA. Our procedure for doing so is as follows, using total assets as an example. In each year between 1999 and 2002, we sort all SOEs into ten deciles based on their pre-SIP period total assets (Total Asset_{pre}). The first two rows of Panel A in Table 3 report the decile medians for notional pre-SIP and post-SIP period total assets. We then assign each of the 149 SIP firms to one of the ten deciles if the pre-SIP period total assets of the SIP firm falls into the Total Assets_{pre} range for that decile. # of SIP represents the number of SIP firms in a decile, and % of SIP sample is the same number divided by 149.

The first observation we make based on Table 3 is that consistent with Figs. 1 and 2, the profitability of SOEs tends to be mean-reverting. SOE firms in more profitable pre-SIP ROS deciles tend to experience lower post-SIP ROS, while SOE firms in less profitable pre-SIP ROS deciles achieve higher ROS in the post-SIP period. These trends hold true in spite of the fact that across all deciles, total assets do not appear to have changed much between the two periods.

The key evidence presented in Table 3 is that SIP firms were mostly larger, more profitable SOEs before they went through the SIP process. Of the 149 SIP firms, 116 (77.9%) are in the largest 10% of all SOEs, and 31 (20.8%) are in the second largest 10% of all SOEs. Even the two remaining SIP firms are large enterprises.

In terms of pre-SIP period profitability, when measured by ROS, 115 (77.2%) of the SIP firms are in the most profitable 10% of all SOEs and 26 (17.4%) are in the second most profitable 10%. Even the remaining SIP firms are more profitable than the average SOE. Measured by ROA, the distribution is even more skewed, with 138 (92.6%) of SIP firms in the top 10% and all of the remaining firms in the second most profitable 10%.

Taken together, Table 3 and Figs. 1 and 2 show that our SIP sample has an extremely severe selection bias problem. SIP firms were highly profitable large SOEs in the pre-SIP period, and even in the absence of SIP, their profitability tends to deteriorate in the next few years. This result, which we document in Table 1, confirms the findings of Sun and Tong (2003) and Wang et al. (2004). We now turn to measuring SIP effects with a matching sample approach.

4.2. Adjusted ROS for SIP firms

Our main results on the impact of SIP on firm profitability are reported in Table 4. In Table 4, we report adjusted ROS as described in Eq. (1), which is the change in SIP firm profitability minus the change in SOE profitability from the pre-SIP period to the post-SIP period. ROS is the ratio of earnings before interest and taxes (EBIT) to sales. As we argue earlier, this is probably the only appropriate measure of profitability for SIP firms in the Chinese setting because it is not affected by the infusion of IPO proceeds. Sun and Tong (2003) and Wang et al. (2004) endorse this approach by using ROS as one of their profitability measures.

In Panel A of Table 4, we report pre- and post-SIP period ROS for both the SIP sample and the matched SOE sample, as well as the changes in this measure. The median (mean) pre-SIP ROS for SIP firms is 18.4% (18.6%). Post-SIP ROS drops to a median (mean) of 12.2 (12.3%). The difference in these two medians, -4.1% , is statistically significant at the 1% level according to the Wilcoxon test of -11.41 . The proportion Z-test shows that the number of SIP firms that suffered a decline in profitability after SIP outnumbered those that enjoyed increased profitability. Based on similar results, Sun and Tong (2003) and Wang et al. (2004) conclude that SIP did not improve SOE profitability.

¹⁷ Figs. 1 and 2 only show the top, middle and bottom deciles. Other deciles experience expected pattern of mean reversion as well.

Table 3

The comparison of pre-SIP performance between SIP firms and SOEs.

Deciles	1	2	3	4	5	6	7	8	9	10
<i>Panel A: deciles sorted by pre-SIP total assets</i>										
Total Assets _{pre}	1.2	3.4	6.6	11.2	17.9	29.0	46.5	76.6	149.1	480.3
Total Assets _{post}	1.3	3.5	6.7	11.5	18.2	29.4	47.6	77.6	154.6	549.4
# of SIP	0	0	0	0	0	0	0	2	31	116
% of SIP Sample	0	0	0	0	0	0	0	1.3	20.8	77.9
<i>Panel B: deciles sorted by pre-SIP ROS</i>										
ROS _{pre}	-0.562	-0.171	-0.058	-0.005	0.012	0.027	0.043	0.064	0.094	0.175
ROS _{post}	-0.241	-0.075	-0.028	0.000	0.005	0.015	0.024	0.034	0.045	0.073
# of SIP	0	0	0	0	0	0	1	7	26	115
% of SIP Sample	0	0	0	0	0	0	0.7	4.7	17.4	77.2
<i>Panel C: deciles sorted by pre-SIP ROA</i>										
ROA _{pre}	-0.081	-0.034	-0.014	-0.001	0.005	0.013	0.022	0.033	0.051	0.105
ROA _{post}	-0.033	-0.014	-0.008	0.000	0.002	0.006	0.012	0.019	0.028	0.056
# of SIP	0	0	0	0	0	0	0	0	11	138
% of SIP Sample	0	0	0	0	0	0	0	0	7.4	92.6

This table compares the pre-SIP firm characteristics of SIP firms with notional pre-SIP firm characteristics of SOEs. In each year between 1999 and 2002, we sort SOE firms into 10 deciles based on their notional pre-SIP period total assets, ROS, or ROA. Total Assets_{pre} and Total Assets_{post} refer to the median pre-SIP or post-SIP period total assets for each decile. Then every SIP firm is assigned into a decile based on its Total Assets_{pre}, and # of SIP is the number of SIP firms whose Total Assets_{pre} falls into the range of that decile. % of SIP sample is # of SIP divided by 149. All variables are defined similarly for ROS and ROA.

Table 4

Adjusted ROS for SIP firms.

	Median (Mean) Pre_SIP	Median (Mean) Post_SIP	Median (Mean) Change	Wilcoxon Test	+/- (Proportion Z-test)
<i>Panel A: pre- and post-SIP ROS of SIP and SOE samples</i>					
SIP sample	0.184 (0.186)	0.122 (0.123)	-0.041 (-0.063)	-11.412***	29/118 (-7.341)***
SOE sample	0.185 (0.185)	0.09 (-0.121)	-0.074 (-0.306)	-8.492***	30/117 (-7.176)***
SIP-SOE	0.000 (0.001)	0.031 (0.244)	0.025 (0.243)	3.417***	94/53 (3.382)***
Wilcoxon test	-0.542	3.440***	3.417***		
<i>Panel B: adjusted ROS for different measures of pre- and post-SIP periods</i>					
One year (obs: 147)			0.038 (0.468)	3.769***	93/54 (3.217)***
Two years (obs: 112)			0.029 (0.047)	2.672***	71/41 (2.835)***
Three years (obs: 88)			0.036 (-0.003)	2.287**	55/33 (2.345)**
<i>Panel C: adjusted ROS for different modes of privatization</i>					
Control			0.044 (0.021)	2.669***	44/21 (2.852)***
Privatization Revenue			0.024 (0.419)	2.209**	50/32 (1.988)**
Privatization Wilcoxon test of group difference			0.622		

This table compares ROS of SIP firms with ROS of SOEs around share issue privatization. Matched SOEs were chosen from a large unlisted SOE dataset based on pre-SIP period total assets and ROS. Panel A reports pre-SIP and post-SIP ROS for SIP sample and matched SOE sample, where post-SIP period could vary from one year to three years. Panel B reports adjusted ROS for SIP sample, separately for SIP firms whose post-SIP period is one, two or three years. Panel C divides the whole SIP sample into two groups according to whether the government still controls the SIP firms (i.e. holding more than 50% of common shares), and reports adjusted ROS for the two groups. Wilcoxon Z-statistic is used to test for any significant change in the median value (paired observation) of profitability. The last column reports the number of positive versus negative changes and the proportion Z-statistic on whether the proportion of positive change is different with 50%.

** Significance at 0.05 level.

*** Significance at 0.01 level.

However, Panel A of Table 4 also shows that during the same period, SOEs that did not go through the SIP process experienced a greater decline in profitability, with median (mean) ROS falling from 18.5% (18.5%) in the notional pre-SIP period to 9% (-12.1%¹⁸) in the notional post-SIP period. The median change in ROS (-7.4%) for the SOEs is statistically significant as well. The median (mean) adjusted ROS for SIP firms is thus 2.5% (24.3%), and the median adjusted ROS is also statistically significant. The proportion Z-test result indicates that more SIP firms enjoyed a positive adjusted ROS than a negative one. Our results clearly show that during our sample period, share issue privatized firms performed better

than similar SOEs that remained state-owned in terms of higher return on sales.

The third row of Panel A shows that the median (mean) ROS difference between SIP firms and SOE firms in the pre-SIP period (when matching is conducted) is 0% (0.1%), and the Wilcoxon test shows that the median difference is not statistically different from zero. This indicates that our matching procedure produces reasonable SOE matches.

In Panel A of Table 4, the pre-SIP period and post-SIP period for each firm may not include an equal number of years due to data availability. For example, a 1999 SIP firm's pre-SIP period is one year, but its post-SIP period includes three years. To avoid this measurement window problem, we divide our SIP sample into three sub-samples. The three sub-samples include SIP firms with equal length pre- and post-SIP periods of one year, two years,

¹⁸ Outliers in the SOE sample contributed to the large negative ROS mean.

and three years, respectively. Panel B of Table 4 reports the adjusted ROS figures for these three sub-samples. The median (mean) adjusted ROS for these three sub-samples are 3.8% (46.8%) for the one-year window, 2.9% (4.7%) for the two-year window, and 3.6% (−0.3%) for the three-year window. All three median adjusted ROS measures are statistically significant, and a proportion Z-test for all three sub-samples indicates that more SIP firms experienced positive adjusted ROS than negative adjusted ROS.

The improvement in ROS after share issue privatization is not affected by whether the SIP is a control privatization (where the government retains less than 50% of the firm's shares) or a revenue privatization (where the government retains more than 50% of the firm's shares). Panel C of Table 4 shows that the mean (median) adjusted ROS for control privatization firms is 4.4% (2.1%) and 2.4% (41.9%) for revenue privatization firms. A Wilcoxon test on the median adjusted ROS for these two modes of privatization shows that they are insignificantly different. Sun and Tong (2003) argue that control privatizations are expected to yield superior performance improvements to revenue privatizations (D'Souza and Megginson, 1999). Our result does not support this argument. We are not surprised to find that there is no significant difference between the effects of these two privatization modes on SOE profitability in China. Even if the government retains a holding of less than 50% of a SIP firm, it remains the SIP firm's controlling shareholder in most cases. D'Souza and Megginson (1999) argue that selling voting control to outside investors is the most conducive way to efficiency improvements. The Chinese government clearly has not sold control of SIP firms to private investors, even in firms in which it is not a majority shareholder.

4.3. Multivariate analysis of the impact of institutional changes on the SIP process

So far, our analyses show that SIP firms experienced a smaller decline in profitability during our sample period than their matched SOE firms. While this indicates that SIP has a positive impact on firm profitability,¹⁹ the impact we measure is not large enough to deliver SIP firms an absolute increase in profitability.

Nevertheless, as we have argued, our sample period can be distinguished from the earlier SIP period in that there was a fast build-up of laws, regulations, and corporate governance mechanisms that protect investors' interests during the period we study. Both the regulators and the market became more mature than they were during the initial SIP period, which corresponds to the Sun and Tong (2003) sample. We argue that these changes are likely to have bolstered the chances of success of the SIP process in the period we analyze.²⁰

¹⁹ The robustness of this finding depends on the assumption that the SIP firms and the matched SOEs are drawn from the same population of SOEs. While our matching approach controls for industry, size, and pre-event performance, as suggested in earlier studies, two other factors might still compromise the efficacy of our procedure. First, SIP firms might have managed earnings upwards to attain SIP approval (Ahronay et al., 2000); however, this factor, if present, is likely to work against a finding of better performance among SIP firms, as managed earnings tend to revert to the mean more quickly. Second, because SIP firms are likely to have been more politically connected to the government than matched SOEs, allowing them to achieve better performance through such connections rather than through the SIP process. However, Fan et al. (2007) find that political connections are associated with poorer, not better, performance in China. Even so, there may be other factors we have not considered that render the two samples inherently different, so our results should be interpreted with caution.

²⁰ As we have pointed out earlier, we aim to re-examine the effect of share issue privatization on firm profitability. Ideally, we should also include the Sun and Tong (2003) sample in our study, and compare whether the adjusted ROS for our sample is greater than the similarly constructed adjusted ROS for the Sun and Tong (2003) sample. However, the State Statistical Bureau of China database does not cover the Sun and Tong (2003) sample period, making what would have been a meaningful comparison impossible.

To understand the effect of changes in the investor protection environment on the success of the SIP process, we run a set of multivariate regressions.

First, we observe that because China's investor protection laws and regulations, as well as its corporate governance mechanisms, were mainly established during our sample period, we run a simple regression where adjusted ROS is regressed on a time variable, T . T represents a time trend that takes the values of 1–4 for 1999–2002, respectively. If investor protection improved during this period and the stock market provided a meaningful amount of investor protection, we should observe that the coefficient on T is positive, meaning that over time, as investor protection improves, the relative performance of SIP firms to that of SOEs increases.

The regression result is reported in the second column of Table 5. The coefficient on T is 0.061 and it is significant at the 10% level. This result supports the view that the SIP process improved, even during our short sample period, indicating that the institutional changes made during this period might have strengthened the positive impact of SIP.

Second, we use regression analysis to examine the impact of an important step taken to protect minority shareholders' interests, the introduction of a rule mandating the appointment of independent directors to the boards of Chinese listed firms.

The CSRC established the independent director rule on August 16, 2001. To guarantee their independence, independent directors and their immediate families (both the director's family and her or his spouse's family) were not permitted to work for or own a significant number of shares in the listed firms on whose boards they sat, own a significant stake in any of the firm's controlling shareholders or other major shareholders, or provide consulting services to the listed firm or any of its affiliates. The independent directors appointed to the board of any listed firm were also to include one director with an accounting background. The independent director rule gives independent directors a broad range of power over major decisions, such as the hiring of external auditors, the approval of major related party transactions, the nomination of senior executives, and the design of executive compensation plans.

Table 5
Multivariate analysis on performance change.

	ΔROS	ΔROS	ΔROS	ΔROS
T	0.061*			
	(0.031)			
INDEP		0.074**	0.066**	
		(0.030)	(0.031)	
BOARD		−0.025*	−0.023	
		(0.015)	(0.015)	
INDEP/BOARD				0.530*
				(0.292)
SHARE_HIRF			−0.516	−0.578*
			(0.345)	(0.346)
STATE			0.060	0.059
			(0.152)	(0.152)
FOREIGN			0.022	0.009
			(0.124)	(0.125)
Constant	−0.043	0.294**	0.405**	0.213**
	(0.083)	(0.148)	(0.169)	(0.107)
Adjusted R2	0.018	0.039	0.037	0.025

The table reports estimation results of the multivariate analysis on performance changes. The dependent variable ΔROS is adjusted ROS. T represents time trend taking 1–4 as for year 1999 to year 2002, respectively. STATE is the retained state ownership after SIP. FOREIGN takes the value of one if the firm issues foreign shares and zero otherwise. BOARD is the size of firm board. INDEP is the number of independent board members. SHARE_HIRF is the Hirfindhal index of large shareholders, defined as the sum of squares of stock percentages of the first to fifth largest shareholders. Standard errors are in parentheses.

* Significance at 10% level.

** Significance at 5% level.

As such, the independent director rule for the first time brought third-party checks and balances to the major decision-making activities of Chinese business enterprises, and its impact should not be underestimated in an economy in which insider control is a typical feature.²¹

To test the impact of the independent director rule on our results, we regress adjusted ROS on the number of independent directors (INDEP) or the percentage of independent directors on the board (INDEP/BOARD) and a set of control variables. The control variables include the following: BOARD (the size of the firm's board); SHARE_HIRF (the Hirfindahl index of large shareholders, defined as the sum of the squares of the stock percentages held by each of the five largest shareholders, in which a higher SHARE_HIRF represents a more concentrated shareholding); STATE (the level of state ownership retained after SIP); and FOREIGN (an independent variable taking the value one if the SIP firm is also listed on a foreign exchange, including Hong Kong, and zero otherwise).

SHARE_HIRF measures the concentration of ownership in the top five major shareholders. A higher concentration of ownership exacerbates the entrenchment problem and makes the firm more susceptible to expropriation. Thus, we expect a higher concentration of ownership to have a negative impact on the profitability of SIP firms. SIP firms that cross-list on a foreign exchange are subject to the investor protection and corporate governance mechanisms of the foreign exchange concerned, which tend to be a better source of discipline than China's domestic stock market, so we expect it to have a positive effect on SIP firms. Since the prior literature does not offer a clear explanation for the impact of BOARD or STATE, we do not offer a prediction of their impact on SIP firms.

The regression results are reported in Table 5. In the third column, we include only INDEP and BOARD as the independent variables. The coefficient on INDEP is 0.074, which is significant at the 5% level. The coefficient on BOARD is -0.025 and is significant at the 10% level. While having a larger board without independent directors did not help SIP firms, independent directors help improve SIP firms' profitability relative to non-SIP SOEs. In the fourth column of Table 5, we add SHARE_HIRF, STATE, FOREIGN to INDEP and BOARD as independent variables. Adding these ownership structure and cross-listing variables does not change the impact of independent directors, but BOARD becomes insignificant. None of the added variables show any significance in explaining the adjusted ROS.

Finally, we regress adjusted ROS on INDEP/BOARD, the percentage of independent directors on the board, and the control variables. The results are reported in the fifth column of Table 5. The coefficient on INDEP/BOARD is 0.530 and is significant at the 10% level. Increasing the level of independent director representation on the board improves SIP firm profitability. In addition, the coefficient on SHARE_HIRF is -0.578 and is significant at the 10% level, indicating that more diversified ownership is associated with higher SIP firm profitability.

In summary, the multivariate analyses we present indicate that over our sample period, the SIP process became more effective in improving firm profitability. In particular, one newly established investor protection mechanism, the independent director rule, had a positive impact on the SIP process. SIP firms with more independent directors, which were largely prompted to appoint such directors as a result of the new rule, enjoyed higher adjusted ROS than their matched SOEs.

5. Conclusions

The extant privatization literature mainly finds that privatization is effective in improving business firm efficiency and profitability. However, Shleifer and Vishny (1997) argue that privatization might not work if it does not create major private shareholders, or where the market does not provide a meaningful amount of investor protection. Consistent with Shleifer and Vishny's argument, Sun and Tong (2003) and Wang et al. (2004) find that share issue privatized firms in China actually experienced declining profitability in the 1990s, a period in which China's stock market was in its infancy and modern market institutions and mechanisms were absent.

In this paper, we re-investigate the issue of whether China's share issue privatization (SIP) improves the profitability of former state-owned enterprises (SOEs). We examine SIP firms in a more recent period in which the institutional environment had been greatly improved. In addition, based on a newly available dataset providing financial information on China's non-listed SOEs, we adopt a matching sample approach not used in earlier studies on Chinese SIP. We match a sample of 149 SIP firms in the manufacturing industry to SOEs that did not go through the SIP process and investigate changes in the profitability of SIP firms relative to those in pure SOEs. In this way, we are able to measure the effect of SIP on firm profitability more precisely.

Our results confirm the findings of earlier studies (Sun and Tong, 2003; Wang et al., 2004) that the absolute level of SIP firm profitability declined after privatization, even in the more recent period we analyze. Nevertheless, we find that SIP, as an independent process, still has a positive effect on firm profitability. Specifically, SIP firms experienced a decline in ROS that was 2.5% lower than the decline suffered by SOEs that did not go through the privatization process. This result is robust to alternative profitability measurement periods, regardless of whether the SIP process was a control privatization or a revenue privatization.

We attribute the better performance of SIP firms relative to that of non-SIP SOEs to the institutional changes implemented in the late 1990s and early this decade. After the financial crisis of 1997 exposed the governance weakness of Asian securities markets, Chinese regulators aggressively passed laws and regulations that improved corporate governance and increased investor protection in Chinese listed firms. The major initiatives taken include the consolidation of securities market regulation into the hands of the CSRC in 1998, the enactment of the Securities Law in 1999, and the establishment of the independent director rule in 2001.

The results presented in this paper indicate that privatization per se might not work well in the absence of modern market institutions and mechanisms. Without proper respect for and protection of minority shareholders' interests, partial privatization might be used to strengthen the state (by giving the state direct and discretionary control over private capital) rather than to strengthen the market.

Nearly 40% of the Chinese economy, one of the largest economies in the world, is still attributed to the state sector, in spite of the state sector being inefficiently run and highly unprofitable (other than SOEs in the monopoly industries). Privatization of the state sector still poses an important challenge to the Chinese government. Collectively, our study and prior studies indicate that the early experience of SIP in China should not be viewed as an invalidation of the privatization process; rather, it indicates that further improvements in investor protection and corporate governance mechanisms are needed to make the privatization process successful.

Allen et al. (2005) compute the LLSV creditor rights and shareholder rights scores (La Porta et al., 1998) for China. Overall, the

²¹ While some Chinese firms appointed independent directors to their boards prior to the introduction of the independent director rule, they were few and far between. The new rule mandated that listed firms include two independent directors on their boards by June 30, 2002 and that one-third of their boards should be made up of independent directors by June 30, 2003.

majority of LLSV sample countries have better creditor and shareholder protection than China. Furthermore, in terms of enforcement of investor protection laws, in the two categories for which China's results are given (the rule of law and government corruption), China's measures are significantly below the average measures for LLSV sample countries, regardless of their legal origin. China also lacks an independent and efficient judicial system with a sufficient pool of qualified legal professionals.

In summary, despite the progress that has been made in what is still a weak institutional environment supporting China's stock market, our study indicates that the SIP process resulted in a relative improvement in profitability among SIP firms when compared to SOEs that remained under state control. Our study points to the possibility that the success of the SIP process also relies on a strong, private investor-friendly capital market. In 2005 and 2006, China went through a share reform process that made all non-tradable shares tradable. This reform better aligns the interests of controlling shareholders with those of private investors, as both will benefit from share price appreciation that better operating performance generates. After implementing a complete set of laws and regulations that are now comparable to those in place in developed markets, Chinese regulators have turned their attention to enforcement. All these positive steps may contribute to making the ongoing SIP process more successful in the future.

Acknowledgements

This paper was originally submitted to Professor Giorgio Szego on Feb 21, 2006 and was revised three times prior to submission through EES. The authors appreciate valuable comments and suggestions from Hongbin Cai, Yu-Jane Liu, and workshop participants at Peking University and the 30th anniversary conference of the *Journal of Banking and Finance*. The authors also thank the National Natural Science Foundation of China for financial support (Approval numbers 70532002 and 70702002).

References

- Allen, F., Qian, J., Qian, M., 2005. Law, finance, and economic growth in China. *Journal of Financial Economics* 77, 57–116.
- Ahronay, J., Lee, J., Wong, T.J., 2000. Financial packaging of IPO firms in China. *Journal of Accounting Research* 38, 103–126.
- Barber, B.M., Lyon, J.D., 1996. Detecting abnormal operating performance: the empirical power and specification of test statistics. *Journal of Financial Economics* 41, 359–399.
- Berkman, H., Cole, R., Fu, J., 2005. Agency conflicts, expropriation and firm value: evidence from securities-market regulation in China. Working paper, Massey University.
- Boubakri, N., Cosset, J., Guedhami, O., 2009. From state to private ownership: issues from strategic industries. *Journal of Banking and Finance* 33, 367–379.
- Dutta, S., Jog, V., 2009. The long-term performance of acquiring firms: a re-examination of an anomaly. *Journal of Banking and Finance* 33, 1400–1412.
- D'Souza, J., Megginson, W.L., 1999. The financial and operating performance of newly privatized firms in the 1990s. *Journal of Finance* 54, 1397–1438.
- Fama, E., French, K., 2000. Forecasting profitability and earnings. *Journal of Business* 73, 161–175.
- Fan, J., Wong, T.J., Zhang, T., 2007. Politically-connected CEOs, corporate governance and post-IPO performance of China's newly partially privatized firms. *Journal of Financial Economics* 84, 330–357.
- Gupta, N., 2005. Partial privatization and firm performance. *Journal of Finance* 60, 987–1015.
- Harper, J.T., 2002. The performance of privatized firms in the Czech Republic. *Journal of Banking and Finance* 26, 621–649.
- Johnson, S., Boone, P., Breach, A., Friedman, E., 2000. Corporate governance in the Asian financial crisis. *Journal of Financial Economics* 58, 141–186.
- Kao, J.L., Wu, D., Yang, Z., 2009. Regulations, earnings management, and post-IPO performance: the Chinese evidence. *Journal of Banking and Finance* 33, 63–76.
- Knapp, M., Gart, A., Chaudhry, M., 2006. The impact of mean reversion of bank profitability on post-merger performance in the banking industry. *Journal of Banking and Finance* 30, 3503–3517.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., Vishny, R., 1998. Law and finance. *Journal of Political Economy* 106, 1113–1155.
- Li, R., 2001. Three-year target for SOE reform reached. *Beijing Review* 44, 19–21.
- Li, W., 1997. The impact of economic reform on the performance of Chinese state enterprises, 1980–1989. *Journal of Political Economy* 105, 1080–1106.
- Lin, Y., Cai, F., Zhou, L., 1998. Competition, policy burdens, and state-owned enterprise reform. *American Economic Review* 88, 422–427.
- Megginson, W.L., Netter, J.M., 2001. From state to market: a survey of empirical studies on privatization. *Journal of Economic Literature* 39, 321–389.
- Megginson, W.L., Nash, R.C., Randenborgh, M.V., 1994. The financial and operating performance of newly privatized firms: an international empirical analysis. *Journal of Finance* 49, 404–452.
- Morey, M., Gottesman, A., Baker, E., Godridge, B., 2009. Does better corporate governance result in higher valuations in emerging markets? Another examination using a new data set. *Journal of Banking and Finance* 33, 254–262.
- Nissim, D., Penman, S., 2001. Ratio analysis and equity valuation: from research to practice. *Review of Accounting Studies* 6, 109–154.
- Shleifer, A., 2005. State versus private ownership. Working paper, Harvard University.
- Shleifer, A., Vishny, R., 1997. A survey of corporate governance. *Journal of Finance* 52, 737–783.
- Stigler, G., 1963. *Capital and Rates of Return in Manufacturing Industries*. Princeton University Press, Princeton, New Jersey.
- Sun, Q., Tong, W., 2003. China share issue privatization: the extent of its success. *Journal of Financial Economics* 70, 183–222.
- Teoh, S., Welch, I., Wong, T.J., 1998. Earnings management and long-term underperformance of initial public offerings. *Journal of Finance* 53, 1935–1974.
- Walter, C., Howie, F., 2003. *Privatizing China*. John Wiley & Sons (Asia) Pte Ltd., Singapore.
- Wang, X., Xu, C.L., Zhu, T., 2004. State-owned enterprises going public: the case of China. *Economics of Transition* 12, 467–487.