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Have China's enterprise reforms led to improved efficiency and profitability?

Gongmeng Chen^a, Michael Firth^{a,*}, Oliver Rui^b

^a School of Accounting and Finance, The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong
^b School of Accounting at the Chinese University of Hong Kong, New Territories, Hong Kong

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Abstract

About twenty years ago, China set about reforming its moribund economy by introducing certain elements of free market capitalist economics. A major reform was the privatization of many State Owned Enterprises (SOEs) and listing the shares in them on the stock exchanges. To date, however, there have been few studies of the effectiveness of the privatizations and their impact on a firm's profitability and efficiency. To remedy this, our study sets out to investigate the operating performance of privatized firms. We find that there is a decline in profitability and asset utilization in the five years after privatization and this contrasts with the results for privatizations in other countries, which show improvements in financial performance. However, we also find that performance is a function of who controls the firm after its listing. In particular, the decline in performance is much less when private investors control the firm. A policy implication of our study is that the state needs to relinquish ownership control of listed firms so that economic efficiency and financial performance can be improved.

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* Corresponding author. Tel.: +852 2766 7062; fax: +852 2330 9845. *E-mail address:* afmaf@inet.polyu.edu.hk (M. Firth).

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1. Introduction

The privatization and subsequent stock market listing of State Owned Enterprises (SOEs) has increased dramatically in recent years (Kikeri et al., 1992). This increased activity is the result of changes in socio-political ideologies, the need for governments to raise cash and reduce state subsidies, and the desire to increase the competitiveness, performance, and technological growth of the enterprises. Privatizations come in many guises and forms. They range from those conducted in capitalist societies with established stock markets (e.g. Britain, Australasia, and Western Europe), to those conducted in developing countries (e.g. Bangladesh, India, South America, Turkey), and to those conducted in (formerly) communist countries that have no recent history of stock markets and no recent history of market economies (e.g. Eastern Europe and Russia). In some privatizations the state disposes of all its ownership interest, while in others the state retains a minority or even majority ownership stake. When the state retains some ownership, the process may be termed partial privatization; in this paper for ease of exposition we use the general term, privatization. Privatizations sometimes raise fresh capital for the firm through an issue of new shares; this gives additional resources to the managers and allows expansion of activities.

An extensive literature has developed which analyzes both theoretically and empirically, the occurrence and the economic performance of privatizations. Although many empirical studies have found that privatized companies experience improved economic efficiency and improved profitability, we caution against assuming these results apply to all countries. Reasons for initiating privatization programs, privatization processes, characteristics of privatized companies, maturity of stock markets, national economies, and political systems, differ across countries and so the findings from a study based on one country cannot be automatically extrapolated to another country.¹

The purpose of this study is to examine the changes in economic performance of newly privatized SOEs in the People's Republic of China (PRC). The privatization and listing of SOEs is an integral part of China's state enterprise reforms. Although privatizations in the United States, Canada, South America, Western Europe, Eastern Europe, and the ex-Soviet Union have been studied, there are few studies relating to China. The corporatization and privatization processes adopted in China differ markedly from those in other countries and so the experiences and outcomes from research based on data from those countries cannot be imputed to privatized SOEs in the PRC. One characteristic of Chinese privatized enterprises is that new capital is raised when listing takes place. Another characteristic is that the state often retains voting control of the firm although it claims to leave decision-making to the managers.² Whether the state's ownership has an impact on the economic performance of the firm is an empirical matter. As there is relatively little known about the effects of partial privatizations, our study hopes to shed some light on this method of economic reform in transitional economies. China's remarkable transition from socialism has been

¹ For example, Laban and Wolf (1993) and Jelic and Briston (1999) show that privatizations in transitional economies are quite different in nature than those in the West.

² Bortolotti and Faccio (2005) report that it is quite common for the state to keep a shareholding in privatized firms. Their study examined privatizations in 22 OECD countries. These are mostly industrialized countries and Japan is the only Asian country included.

characterized by institutional innovation, policy improvisation, and, above all, pragmatism. The unique blend of state and private ownership, that is a result of the economic reforms, calls out for research that informs current policy debate as well as contributes to our understanding of privatizations across different socio-political environments.

Our overall results show that China's enterprise reforms have not led to improved economic performance by privatized firms. In particular, we find a reduction in performance when comparing the profitability and efficiency of SOEs before listing to after listing. This finding contrasts with non-China privatization studies, which generally show improvements in performance measures. The poor profitability and efficiency of privatized firms identified by accounting measures, is also manifested in poor stock returns (Chen et al., 2000, 2004). Other comparisons show that China's privatization program is associated with reductions in debt levels, increases in capital expenditures, and growth in sales.

The overall results mirror those of earlier studies. Chen et al. (1998) were the first to document the poor performance of privatized firms in China. Subsequent studies by Sun and Tong (2003), Wei et al. (2003), and Wang (2005) confirmed these results. We extend prior research by delving into the ownership structure of the firms. We contend that different types of dominant shareholder have different objectives and these objectives influence the performance of IPOs. Previous studies (Chen et al., 1998; Sun and Tong, 2003; Wei et al., 2003) employed a simple breakdown of ownership using the legal description of the shares. This breakdown is not suitable for our purposes as it does not account for the cash flow rights of the owners and it does not clearly identify the dominant shareholders, or their motivations. In particular, the legal definition of shares ignores the cash flow rights of investors. By tracing the ultimate owner and by categorizing ownership type by their cash flow rights, we are better able to explain the impact of ownership on firm performance. We find that IPOs that have a dominant private shareholder after the listing do much better in terms of profitability and efficiency than other IPOs. We also find that IPOs where a SOE is the dominant stockholder fare better than IPOs controlled by a state agency, although not as well as those controlled by a private shareholder. Our research indicates that the type of controlling shareholder is vitally important in explaining the performance of privatized firms in China. We therefore attribute the overall poor performance of privatized firms to the half-hearted nature of the enterprise reforms. The influence of the state, reinforced by its continuing ownership stake, is seen as a serious impediment to the successful transformation of privatized SOEs. It is our contention that the relatively good performance of firms controlled by private investors points the way forward for China's future privatizations.

The paper proceeds by briefly reviewing some of the existing literature on privatizations. There then follows a description of the privatization processes used in China. The sample and research design are then described. This is followed by a presentation and discussion of the results. Finally, conclusions are drawn.

2. Prior research

Research has identified myriad problems with State Owned Enterprises (World Bank, 1995). For example, SOEs tend to employ excess labor (Boycko et al., 1996), tend to hire top

management because of their political connections rather than executive abilities (Krueger, 1990), and tend to have social and political objectives, which involve wealth redistribution rather than wealth creation. Other pervasive problems include political interference in an enterprise's operations and decision-making (Kornai, 1992) and the deliberate transfer of resources from companies to politicians and their supporters (Shleifer and Vishny, 1998). The privatization of SOEs can potentially remedy these problems and create vibrant companies that compete effectively in world markets. Privatization represents an organizational change that helps clarify property rights, motivates owners toward a common goal of profitability and economic efficiency, and establishes a system of financial incentives. Advocates of privatization argue that the discipline of private ownership will lead to greater economic efficiencies (Megginson et al., 1994; Shleifer, 1999). Yarrow (1986), Caves (1990), and Shirley and Nellis (1991) contend that it is the increased competition and increased managerial accountability, that usually accompany privatizations, that leads to improved financial performance. They argue that if there is no increase in competition and if the shareholder base is very narrow (e.g. shares that are largely held by government), then privatizations will likely fail to achieve operating and financial efficiencies.³ The conversion of SOEs to limited liability companies brings with it a different set of principal-agent problems and these can reduce the potential gains from privatization (Vickers and Yarrow, 1991). Kay and Thompson (1986) and Wortzel and Wortzel (1989) also discuss problems that privatized firms have in achieving efficiency gains.

There is a substantial literature that reports the results of empirical studies on the economic gains to privatizations. These studies include single country analyses (Boycko et al., 1995; Menyah and Paudyal, 1996; Vickers and Yarrow, 1988; Bishop and Kay, 1989; Caves, 1990; Barberis et al., 1996; Claessens and Djankov, 1999; Martin and Parker, 1995; Ramanadham, 1993; Thompson, 1987) and multi-country studies (Galal et al., 1994; Megginson et al., 1994; Boubakri and Cosset, 1998; Dewenter and Malatesta, 2001; D'Souza and Megginson, 1999; D'Souza et al., 2002). This type of research uses accounting data to measure profitability, productivity (e.g. profits or sales per employee), asset and sales growth, and leverage. To evaluate the performance of the newly privatized company, comparisons are made to other already-listed firms that are of similar size and in the same industry (e.g. Boardman and Vining, 1989; Atkinson and Halvorsen, 1986; Pryke, 1982; Caves and Christensen, 1980). Other evaluations involve time series comparisons where the change in performance is measured from pre- to post-privatization (e.g. Megginson et al., 1994; Boubakri and Cosset, 1998; D'Souza and Megginson, 1999); here, each firm acts as its own control. There is some inter-country variability in the way privatizations are listed on the stock exchange but there are also commonalities. Common features are the underpricing of IPOs, the use of fixed price offers, preference given to domestic investors, and provisions that seek to keep the privatized company controlled by domestic investors. These features are said to further the political and economic policy objectives of the governments concerned (Perotti, 1995; Jones et al., 1999).

A general consensus from past studies across a multitude of countries, including the transitional economies of Eastern Europe, is that privatization leads to improvements in

³ Note, however, that some empirical studies argue that privatized utilities, which operate in monopolistic markets, significantly improve their economic performance after the IPO.

profitability, productivity, efficiency, and growth (for reviews of this literature see Boubakri et al., 2002; Megginson and Netter, 2001; D'Souza et al., 2002). D'Souza and Megginson (1999 p. 1433) conclude that privatization 'works in a wide variety of countries, industries, and competitive environments' and therefore in almost every institutional setting. It should be noted, however, that these studies do not include firms from China (or else they include, at most, one or two firms from China) despite there being more than a thousand listings of (former) SOEs since 1990. Research studies have also examined the associations between performance, corporate governance, and the ownership profiles of privatized firms. In general, good performance is related to low government ownership, high foreign ownership, concentrated ownership, and changes in the board of directors and CEO. Economic gains from privatization are the result of capital market discipline imposed on managers, a stronger focus on the overall objective of profitability, and an increased exposure to competition (D'Souza et al., 2002). Privatization is said to alleviate two central problems associated with state ownership; namely political interference that distorts and confuses the firm's objective function and the lack of managerial discipline and incentives (Chen et al., 1998).

3. Privatizations in China

China's political leadership in the post-Mao era realized that the centrally planned economic system under communism had severe shortcomings and that the social welfare of its people was likely to deteriorate. Under the paramount leader, Deng Xiaoping, the government initiated major economic reforms, which incorporated some elements of the capitalist or market economy systems. These reforms were intent on increasing the self-reliance of individuals, increasing innovation, improving economic efficiency, and decreasing the financial demands placed on the state in supporting SOEs and in supporting the welfare of people. Central pillars of the reforms were the reduction or elimination of government control of markets (e.g. removal of production quotas and product specifications, removal of price controls, enhancing the mobility of labor, and allowing individuals the freedom to engage in business activities) and the corporatizing of selected SOEs where profitability becomes a major objective.

Initially, the reforms focused on introducing competition in the market place, removing production quotas and price controls, introducing performance contracts (Shirley and Xu, 2001), and giving more decision-making powers to managers. There was no change, however, in the ownership of SOEs (Gao, 1996; Rawski, 1994) and no change in the heavy social burdens placed on enterprises (Hu, 1997).⁴ These reforms were instrumental in enabling the Chinese economy to grow rapidly. At the same time, SOEs became increasingly unprofitable (Lin et al., 1998; Cao et al., 1999) and were plagued by economic inefficiency (Cheng and Lo, 2002) and under-investment.⁵ Thus creating markets for products and giving discretionary decision-making powers to managers were

⁴ Hu (1997) reviews the social burdens of SOEs and discusses ways to ameliorate these costs.

⁵ In contrast, Li (1997) reports that the economic performance of SOEs improved significantly during the 1980s. His study is based on a sample of 272 state enterprises.

not, in themselves, sufficient to optimize resource allocation. This led the state to the view that private ownership of companies may be needed in order to increase the economic efficiency of SOEs (Lin and Zhu, 2001). An alternative motivation for privatization is that the state wants to dump loss-making SOEs so that it is no longer obligated to provide subsidies (Li and Lui, 2001); of course it is difficult to sell loss-making firms. A policy was therefore established to convert selected SOEs into companies with share capital and to sell the shares to institutional and individual investors who acted independently of the state. The transfer, or more accurately the partial transfer, of ownership to financial institutions and individuals reduces the power or influence of the state to interfere with management decisions and makes company executives more accountable for their actions. Unlike some other ex-communist countries, where the governments privatized 100% of its SOEs, the Chinese government still wants to maintain ultimate control of the economy and so the new system, termed the 'socialist-market economy', is a mixture of free enterprise and state planning and control (Lin and Zhu, 2001).

To help operationalize the economic restructuring, the state and provincial governments select various SOEs to be corporatized. This involves reorganizing SOEs and forming them into limited liability companies legally distinct from the state and with ownership represented by share capital. Normally only part of an SOE is corporatized and then privatized. Generally it is the profitable operating assets and trade liabilities that are carved out into the privatized company. Unprofitable operations along with what may be called societal or welfare operations such as education, housing, and medical, are retained by the parent SOE or are hived off to the local municipality or other state institution.⁶ The decisions relating to what assets and operations are transferred to the company are made by the state and agencies of the state and are based on commercial and political factors. Profitable and commercially viable operations are transferred to the company as the state wants listed firms to be successful because further IPOs of state enterprises will be made in the future.

When SOEs (or parts of them) are first corporatized, the share capital is owned by the state and various entities of the state. The next step is the privatizing of selected corporatized SOEs. Here, shares in the companies are sold to individual investors either by way of a new issue of shares (thereby injecting cash into the firms) and–or by a sale of existing shares by the existing shareholders (the state and its entities) who reduce their investment stakes.⁷ Although shares are sold to individual investors, the state and its entities often retain ownership of 50% or more of the issued shares. The first shares issued to individuals occurred in 1984. These shares paid a stated dividend but there was no ready secondary market for buying and selling the shares. This lack of marketability for the shares dampened investor interest in privatizations. In order to increase marketability, and thus to make investment more appealing, two stock exchanges were created in the early 1990s. An additional benefit of listing is the provision of share price data, which helps

⁶ Privatized SOEs still have some social costs in their cost structures.

⁷ Privatizations in developed nations often involve the government selling its shares in the SOE and no new cash is injected into the company. Unlike most privatizations in Russia and Eastern Europe, IPO shares in China are issued for cash (that is there are no 'free' shares or share vouchers given out). The high rate of personal savings by households in China gives people the wherewithal to invest in shares.

facilitate the monitoring of managers' performances. This is especially helpful in the absence of bankruptcy risk or a market for corporate control.

The Shanghai Securities Exchange (SHSE) opened in December 1990 followed in July 1991 by the Shenzhen Stock Exchange (SZSE). These exchanges trade A-shares, reserved for domestic investors, and B-shares, reserved for foreigners.⁸ In 1993 certain SOEs were allowed to issue shares to foreigners and obtain listings in Hong Kong (termed H-shares) and in New York (N-shares); there are also a few listings on other foreign stock exchanges. The issue of B-, H-, and N-shares helps raise foreign currency, raises the visibility of China in the global financial industry, allows foreign practices and expertise to be observed and learnt, and develops an alternative source of finance for China's future needs. While the amount of capital raised by issuing foreign shares is quite small so far, the future capital needs to modernize China's industry and its infrastructure are so immense that substantial foreign investment will certainly be needed. The B-, H-, and N-shares issued to date may be viewed as a necessary learning experience in tapping global financial markets and for these markets to learn about China.

Although there have been more than 1000 privatizations by the end of 2001, the vast majority of SOEs remain 100% owned by the state and its various agencies and entities.⁹ The current economic plan calls for an increase in the rate of privatizations. While many SOEs wish to privatize, the Government has restricted the numbers. The state wishes to maintain an orderly flow of privatizations so as not to overwhelm the fledgling stock markets. Additionally, the state is concerned that the SOEs have the appropriate economic strength, have an adequate management structure, and have good business prospects, before they are allowed to issue shares to the public. The numbers of privatizations that are allowed for a year are set by the State Planning Commission, the People's Bank of China, and the China Securities Regulatory Commission (CSRC); this quota is allocated to individual ministries and geographical provinces based on the government's national and regional development plans.¹⁰ The selection of SOEs to be listed is based on economic and financial needs, commercial viability, political objectives, society concerns, and guanxi (personal relationships). The SHSE and SZSE analyze listing applicants to check their financial health and to ensure they have the necessary track record (which normally includes having made profits in the three years prior to listing).

3.1. Ownership

Privatized companies have three major categories of shares. First, there are shares owned by state ministries and departments and provincial and city governments and these shares are non-tradable. Second, there are legal entity shares that are restricted to other SOEs, institutions, and the foreign partners of corporatized foreign joint ventures. Legal

⁸ See Poon et al. (1998) for a description and discussion of stock markets in China. Starting in 2001, the state authorities allowed domestic investors who had access to foreign currencies to buy B-shares.

⁹ There are about 300,000 SOEs in China (Cao et al., 1999); the China Statistical Yearbook classifies 15,000 of these as large SOEs.

¹⁰ The quota system was relaxed in 2000 and market forces have become more important since then.

entity shares cannot be traded on the SHSE and the SZSE although some limited buying and selling can be made with the permission of the CSRC. Third, there are individual shares and these can be traded on organized stock exchanges (the SHSE and SZSE for Aand B-shares, the Stock Exchange of Hong Kong for H-shares and the New York Stock Exchange for N-shares). Companies aim for a wide spread ownership of A- and B-shares. This aids the development of the stock exchanges and it also enables more individuals to participate in capital ownership. For listed companies, about one third of the issued shares are owned by the state, one third by legal entities, and one third by individuals (A- and Bshareholders) and employees. A distinct characteristic of Chinese firms is that they have a dominant shareholder whose ownership is far higher than the second largest shareholder. According to Xu (2004), across all listed firms, the largest shareholder owns, on average, 46% of a firm while the second largest owns 7%. The dominant shareholder can therefore effectively control a firm and the shareholder's goals and objectives will influence the firm's objectives. Thus, we believe the dominant shareholder has a major influence on the firm.

In previous studies of firms' performance changes (Chen et al., 1998; Qi et al., 2000; Sun and Tong, 2003; Wang, 2005; Wei et al., 2003; Xu and Wang, 1998) researchers used a simple breakdown of ownership type that followed the legal classification of the shares. State shares and legal entity shares were regarded as two distinct groups. However, it is now recognized that this simple breakdown of ownership fails to capture the different motivations of the shareholders. We argue that instead of using the legal categorization of state and legal entity shares, it is far better to define ownership in terms of the dominant shareholders' objectives. State shares and legal entity shares are held by bureaucratic agencies and SOEs. Following recent research (Xu, 2004; Wang and Wong, 2004) we reclassify state and legal entity investors into bureaucratic agencies (for which we use the term 'State' or 'SAMB' even though some of them may hold legal entity shares) and those that are SOEs (from a legal perspective some of these may hold state shares and some may own legal entity shares). Furthermore, we divide SOEs into those that report to the central government (SOECG) and those that report to local government (SOELG). SOECGs tend to have national operations whereas SOELGs tend to be located in a specific city or province. Xu (2004) documents that SOECGs are closely monitored by state agencies such as the National Audit Office whereas SOELGs are more loosely monitored. According to Xu (2004), SOECGs are more assiduous in carrying out their responsibilities than are SOELGs.

State shares (as re-defined for our purposes) are held by agencies such as the state asset management bureaus (SAMB) and local finance bureaus. We use the term SAMB to denote the State shareholders. These agencies do not have cash flow rights from the shares they hold; dividends and other payouts by firms are remitted directly to the Ministry of Finance or local governments. The civil service bureaucrats who are in charge of the agencies that own the state (as defined for our purposes) shares are selected through political processes (Qian, 1998; Zhang, 1998). They are not chosen because of their business acumen, industry expertise, or empathy with free enterprise economics. Based on this background, we believe that the government bureaucrats have low incentives to monitor the firm and they place less emphasis on profit maximization as an objective of the firm. Note, however, that Bortolotti and Faccio (2005) and Gupta

(2005) conclude from their respective studies of privatizations in industrialized OECD countries and India that government controlled firms perform well. They argue that firms that are government controlled may receive favorable treatment and so performance is enhanced. Mok and Hui (1998) argue that by retaining a large ownership, the state is signaling its commitment to the firm. It is also argued that government control may be beneficial in countries with inadequate laws, poor enforcement of laws, and weak corporate governance (Estrin and Perotin, 1991). Here, the government may help guard against the expropriation of minority shareholder wealth and may help impose discipline on managers. Thus we acknowledge there are competing arguments on government ownership and these arguments lead to different predictions on the way government shareholders impact firm performance.

In contrast to SAMB shareholders, SOEs have profit objectives and receive dividends from their investments. Moreover, SOE investors typically have expertise in the firm's industry (especially if the listed firm is a spin-off from the SOE). We believe having a SOE as the major shareholder in a listed firm will put pressure on the firm to maximize profits. The listed firm's earnings will be included in the consolidated accounts of the SOE. Further, we argue that firms with SOECGs as their major shareholder will be more likely to have better performance than firms with SOELGs as their major shareholder. Our argument is based on the greater and more consistent oversight of SOECGs than SOELGs (Xu, 2004).

While tradable shares are usually held by investors who have individually small stakes Xu (2004) identified a growing number of cases where a private blockholder has become the largest shareholder. The private blockholder is usually a private firm although some are private individuals and private institutions. These investors have representation on the board of directors and they want to maximize stock prices. Unlike SAMB and SOE investors, private blockholders can sell their shares relatively easily and at market value. Moreover, private blockholders can use the shares as collateral for personal loans and a high share price increases the value of the collateral. Thus private investors focus on the profitability and efficiency of the firms they invest in.

Foreign shareholders tend to be financial institutions based in Europe, Hong Kong, Japan, and North America. These investors have the resources to analyze company performance and they have experience (from elsewhere) in trying to effect operational and management changes if profitability and efficiency are poor. At the empirical level, Boubakri et al. (2002), D'Souza et al. (2002), and Earle and Telegdy (2002) conclude that the presence of foreign shareholders is associated with superior performance by privatized firms. However, as some foreign shareholders tend to own quite small stakes in Chinese companies (because the number of foreign shares issued by a company tends to be limited), this may deter foreign shareholders from actively monitoring and disciplining managers.

The central authorities decide who the initial shareholders should be (SAMB, SOECG, SOELG, and percent of tradable shares) and there are few changes thereafter. Thus the type of dominant shareholder is largely exogenous to the firm. The authorities also allow some firms to issue shares to foreigners although the percentage of foreign shares is decided by the state. The controlling shareholders influence listed firms through their voting rights and through board representation. In the case of SAMB investors,

their nominees for directors tend to be bureaucrats with no specific industry expertise. These directors are accustomed to the state bureaucracy and they may be less cognizant of, or have less empathy with, commercial realities. In contrast, when the dominant shareholder is a SOE (SOECG and SOELG), their nominees for directors tend to have substantial and relevant industry experience. Dominant private blockholders nominate themselves (if an individual) as directors or nominate people with substantial industry experience. Independent non-executive directors are very rare during the time period of our study.¹¹

The quality of top-level management is a crucial factor in the commercial success of firms and is something that is seen to be impeding China's privatizations. One characteristic of listed privatized firms in the PRC is that top managers often have little or no share ownership. This characteristic contrasts sharply with IPOs of private companies and of former SOEs in other countries. Typically any reward systems based on economic performance are of small magnitude (Firth et al., in press-a) and so the general lack of incentives provides little motivation for managers.

The special characteristics of Chinese privatizations described above (share ownership structure, appointment of top executives, and management reward and incentive systems) imply there may be different objectives and motivations in running companies when compared to privatizations in other nations. While the overriding goals of privatization are to modernize industry, improve growth, satisfy customers, and improve economic efficiency, the share ownership and management shareholdings characteristics may reduce the economic gains from converting SOEs to public companies. This paper examines whether the strong international consensus that improved profitability and improved efficiency accompanies privatizations, extends to the People's Republic of China. The results will shed some light on whether China's unique style of enterprise reform has been successful in transforming SOEs into efficient and profitable firms.

4. Research design

In order to investigate the impact of privatizations on the economic performance of SOEs we compare the financial performance of the companies prior to listing to the performance after listing. The research design we adopt is similar to those employed by Megginson et al. (1994), Boubakri and Cosset (1998), D'Souza and Megginson (1999), and D'Souza et al. (2002); the similarity in research designs enables us to compare the results from China to the results from international data. Comparisons with non-privatized SOEs are not used, as there are no publicly available data on them.

The economic variables we examine are measures of profitability, efficiency, growth, capital investment expenditures, and debt ratios. We also examine changes in employment levels from the prospectus date to three years after listing. Note, however, that employee numbers tend to change very little after privatization as the state weeds out 'excess' labor

¹¹ The CSRC issued Statement 102 'Guidelines for Establishing an Independent Directors System for Listed Companies' and it stipulated that by June 2003, one-third of a firm's directors should be independent and non-executive. Prior to this date there were no regulations requiring independent non-executive directors.

before hand and there is often a condition or understanding that layoffs will be minimal in the first few years after listing (Li and Lui, 2001). Changes in dividends, which are investigated in other countries, are not examined here as very few China SOEs pay dividends prior to the IPO.¹² The variables for the before privatization period are measured as the averages of the variable for the three years immediately prior to listing (t-1, t-2, t-3, where t is the year of listing). A variable for the post listing period is the average of that variable for the three or five years subsequent to the listing year (years t+1, t+2, t+3, t+4, t+5). Year t+1 is the first complete year after listing. Averaging over three years is similar to the approaches adopted in other studies (Boubakri and Cosset, 1998; Megginson et al., 1994), while averaging over five years gives longer-term performance measures. IPO prospectuses give summarized accounting data for the three years. Averaging over three years in the post listing period allows us to include IPOs made up to the end of 2000, whereas averaging over five years in the post listing period allows us to include IPOs made up to the end of 1998.

The variables we use are measures of profitability (operating profit divided by sales, operating profit divided by assets, and operating profit divided by shareholders' equity), asset efficiency as measured by total asset turnover (sales divided by total assets), capital expenditures (capital expenditures to sales, capital expenditures to assets), sales, and debt ratios (total debt to assets, long term debt to shareholders' equity). If privatization spurs economic efficiency and business growth and innovation, then we expect profitability, asset efficiency, capital expenditures, and growth to increase. A directional hypothesis for debt ratios is less clear although studies in other countries have documented a reduction in borrowings.

One characteristic of the listing of privatized SOEs is that fresh capital is usually raised from selling new shares to the investing public (A-shares and B-shares). This contrasts with privatizations in many other countries. The new equity capital is used for buying long-term assets, reducing debt levels, and increasing working capital.¹⁴ The sales or profits generated from these new investments may take some time to appear and in these cases changes in profitability and efficiency ratios will be 'biased' downwards¹⁵ vis-à-vis the results from countries where privatized firms do not raise new capital. To adjust for this 'bias' and to make our results more comparable with non-China studies, we run our tests excluding the new issue proceeds from total assets and shareholders' equity.¹⁶

¹² SOEs do make payments and transfers to the state prior to privatization but these cannot be regarded as being equivalent to dividends.

¹³ Chinese accounting standards are used. Although accounting disclosures have increased over the period studied, the rules for computing earnings have been stable (Tang et al., 1996; Xiang, 1998).

¹⁴ Information in prospectuses rarely gives detailed breakdowns of what the proceeds will be used for or the amounts involved.

¹⁵ For example, the proceeds from a new issue of shares may be invested in new plant and machinery. Sales and profits from the products produced by the new plant and machinery may take three or more years to occur. While total assets and shareholders' equity increase, there is no change in sales or profits in the first few years. Performance and efficiency measures therefore fall.

¹⁶ This adjustment will create an upward bias in performance changes for those companies that invest new issue proceeds very quickly and are able to reap sales and profits from the investments in the first few years.

This adjustment procedure is used in the tests reported in Tables 2–4. We also run the tests where new issue proceeds are included in total assets and shareholders' equity.

The significances of differences in performances across pre-and post-privatization periods are tested via parametric *t*-statistics and non-parametric Wilcoxon and sign statistics. We partition the sample based on the type of dominant owner and the presence or not of a foreign shareholder. Data on ownership requires a very detailed analysis of a firm's major shareholders. First we trace the ultimate owner of the shares and this involves looking behind the nominee names. Then we classify the major owners into four groups (SAMB, SOECG, SOELG, and private).

4.1. Regression models

In addition to comparing the mean performance measures before and after privatization, we also develop a pooled inter-temporal and cross-sectional regression model to explain the changes in performance from pre-privatization to post-privatization. The regression model allows us to test our hypotheses on ownership type. Earlier we argued that different types of dominant owner have different objectives and these objectives will be transmitted to the listed firms. We also include a number of control variables in the regression model. The model is:

$$DV = \beta_0 + \beta_1 DOM + \beta_2 SOECG + \beta_3 DOM^* SOECG + \beta_4 SOELG + \beta_5 DOM^* SOELG + \beta_6 PRIV + \beta_7 DOM^* PRIV + \beta_8 FOR + \beta_9 \Delta GNP + \beta_{10} SIZE + \beta_{11} EXCH$$
(1)

where DV is the dependent variable. The dependent variables are percentage changes in profit/sales (return on sales: ΔROS), profit/assets (return on assets: ΔROA), profit/ shareholders' equity (return on equity: ΔROE), asset turnover ($\Delta ASTURN$), capital expenditures/sales ($\Delta EXP/S$), capital expenditures/total assets ($\Delta EXP/TA$), real sales (sales deflated for changes in inflation) (GRO), debt to total assets ($\Delta D/TA$), and long term debt to equity $(\Delta D/E)$. Changes are measured as the average value over the three years prior to the IPO to the average value over the three years after the IPO. In sensitivity tests (reported later), we change the period over which we measure changes. DOM is the percentage stock ownership of the largest shareholder minus the percentage stock ownership of the second largest shareholder in the firm. DOM is a measure of the dominance of the major shareholder. The greater the dominance, the more influence the largest shareholder can exert on the firm. SOECG is a dummy variable that is coded one (1) if the dominant shareholder is a SOE that reports to the central government. SOELG is coded one (1) if the dominant shareholder is a SOE that reports to the local government. PRIV is coded one (1) if the dominant shareholder is a private investor. DOM, SOECG, SOELG, and PRIV are measured at the time of the IPO. Prior to the IPO, all shares were owned by the state or legal entity. Subsequent to the IPO, there are few changes in the dominant shareholder (see Xu, 2004).

We hypothesize that a listed firm with a dominant owner (PRIV=1) will have the greatest improvement in performance. This is because the private controlling shareholder is very focused on performance and is a direct beneficiary of a firm's improved profitability and efficiency. SOECG and SOELG investors are also expected to put pressure on firms to improve performance. We argue that the most pressure to improve performance will come from PRIV, SOECG, and SOELG (in that order). If our hypothesis is true, the ownership variables will have positive coefficients, with PRIV>SOECG>SOELG. The other type of dominant owner (SAMB) is captured in the intercept. As we argued earlier, the state is likely to put the least pressure on firms to improve performance (but we acknowledge there are counter arguments). We interact SOECG, SOELG, and PRIV with DOM to see if the ownership effects are enhanced by the degree of dominance they have. The presence of a foreign investor is expected to put pressure on firms to improve performance and so we include the variable FOR (FOR = 1if there is a foreign shareholder after the IPO) in the model. Δ GNP, SIZE, and EXCH are included in the model as control variables. Changes in the economy are expected to have an effect on the performance of privatized SOEs and we use change in GNP to capture this factor. Δ GNP is the percentage change in gross national product per capita from the three years prior to the privatization to the three years (or five years) after privatization. The GNP numbers are deflated for changes in inflation. SIZE is the log of market capitalization of the company and EX is a dummy variable taking the value one (1) if the company is listed on the Shanghai Securities Exchange. We include industry and time dummy variables. Industry controls for industry factors and time controls for the year factor (and thus controls for macro factors including changes in the government's economic policies).

4.2. Sample

The study examines 1078 privatizations made during the period 1991 to 2000. This represents all privatizations made during the period where the IPO and the listing of the shares occurred within a year of one another.¹⁷ We collect data on profits, sales, total assets, shareholders' equity, capital expenditures, total debt, long-term debt, and share ownership. IPO prospectuses are used to collect data for the three years prior to listing and annual reports and corporate announcements published in newspapers are used to collect data for the up to five years subsequent to listing. Industry sector information come from the SHSE and the SZSE. Sales numbers (used in calculating change in sales) are deflated by the Consumer Price Index published by the State Statistical Bureau. Peak listing years are 1993, 1994, 1996, 1997, and 2000. Table 1 presents some summary characteristics of the listings. By 2000 the ratio of the market capitalization to GDP had risen to a remarkable 54%; in 1996 it was just 14%. As we use, at a minimum, three year's post listing data for averaging, our sample includes

 $^{^{17}}$ IPOs made in the 1980s did not list until at least 1990 because the first stock exchange was not opened until December 1990. If the IPO and its listing are more than one year apart, it becomes difficult to decide which is year *t*, the year of privatization.

	Number of IPO 1	istings		Total market	Ratio of market	Total number of shares in issue (billion)
	Shanghai stock exchange	Shenzhen stock exchange	Total	capitalization (RMB billion)	capitalization to GDP (%)	
1991	0	4	4	109.19	0.51	6.29
1992	21	18	39	1048.13	3.93	68.87
1993	77	53	130	3531.01	10.20	387.73
1994	65	43	108	3690.62	7.89	684.54
1995	17	15	32	3474.00	5.94	726.9
1996	105	102	207	9842.37	14.50	1219.54
1997	90	125	215	17,529.24	23.54	1942.67
1998	55	51	106	19,505.7	24.90	2526.8
1999	46	52	98	26,471.2	32.32	3089.0
2000	88	51	139	48,090.9	53.79	3791.7
Total	564	514	1078			

Table 1 Data sample: summary statistics of IPO listings

Summary statistics of number of IPO listings by stock exchange, total stock market capitalization of all listed firms as of December 31 each year, ratio of stock market capitalization to GDP, and total number of shares in issue as of December 31 each year. The information is from China Monthly Economic Indicators published by the China Securities Regulatory Commission (CSRC).

companies listed by 2000 and which had at least three years of post privatization accounts data available by 2004.

5. Results

Table 2 shows the mean and median performance measures before (column 2) and after (column 3) privatization, the hypothesized change in performance (column 4), the mean and median difference between before and after performance measures (column 5), and the percentage of increases in performance measures (or percentage of decreases in the case of leverage) (column 6). *t*-statistics, Wilcoxon tests, and sign tests are used to examine the statistical significance of changes in performance (columns 5 and 6). The three-year row (five-year row) compares the average performance from three years prior to the privatization to three years (five years) after.

A striking feature of the Table 2 results is that profitability and asset efficiency deteriorate after privatization. The mean return on sales falls from 13.4% to 11.9% after privatization (using three-year post listing data). When using five-year post listing data, the mean return on sales also falls. The mean changes of -1.5% (three years) and -1.2% (five years) are not statistically significant. The median changes and the percentage of privatizations that improve return on sales, while showing a reduction in performance, are also not significant at conventional levels. The mean and median changes in return on assets and return on equity fall dramatically after privatization. The reduction in profitability contrasts sharply with the results from prior privatization studies that use data from other countries (Megginson and Netter, 2001); these other studies include situations where, like China, the privatization is accompanied by an injection of new equity in the firm and where the government retains an ownership stake. The mean asset

Table 2

Changes in economic performance from before privatization to after privatization

Performance measure	Mean (median) before privatization	Mean (median) after privatization	Predicted change	Mean (median) change	Percentage of privatizations that improved performance
Profitability					
Return on sales					
(t-3, t+3)	0.134	0.119	+	-0.015	46
	(0.108)	(0.092)	+	(-0.016)	
(t-3, t+5)	0.120	0.108	+	-0.012	48
	(0.091)	(0.087)	+	(-0.004)	
Return on assets					
(t-3, t+3)	0.100	0.067	+	-0.033**	26**
	(0.085)	(0.058)	+	(-0.027)**	
(t-3, t+5)	0.089	0.048	+	-0.041**	29**
	(0.072)	(0.042)	+	(-0.030)**	
Return on equity					
(t-3, t+5)	0.241	0.135	+	-0.116**	16**
	(0.209)	(0.118)	+	(-0.091)**	
(t-3, t+5)	0.230	0.102	+	-0.128**	17**
	(0.195)	(0.101)	+	(-0.094)**	
Activity					
Total asset turnover					
(t-3, t+3)	0.934	0.598	+	-0.336**	17**
	(0.837)	(0.538)	+	(-0.299)**	
(t-3, t+5)	0.980	0.512	+	-0.468**	16**
	(0.849)	(0.437)	+	$(-0.412)^{**}$	
Investment		· /			
Capital expenditures to sales					
(t-3, t+3)	0.161	0.410	+	0.249**	84**
	(0.090)	(0.307)	+	(0.217)**	
(t-3, t+5)	0.160	0.375	+	0.215**	82**
	(0.083)	(0.283)		(0.200)**	
Capital expenditures	· /			× /	
to total assets					
(t-3, t+3)	0.104	0.193	+	0.089**	69**
	(0.089)	(0.160)	+	(0.071)**	
(t-3, t+5)	0.097	0.185	+	0.088**	70**
(* 2,1 2)	(0.073)	(0.154)	+	(0.081)**	
Output	()			(,	
Real sales					
(billion RMB)					
(t-3, t+3)	0.306	0.653	+	0.347**	89**
(* 2,1 2)	(0.168)	(0.359)		(0.191)**	
(t-3, t+5)	0 293	0 700	+	0 407**	94**
(* 5,7 5)	(0.148)	(0.411)		(0.263)**	<i>.</i>
Leverage	(()		(3.200)	
Debt to assets					
(t-3, t+3)	0.550	0.462	_	-0.088*	68**
(* 5, * 5)	(0.572)	(0.458)	_	(-0.114)**	50
(t-3, t+5)	0 539	0.475	_	-0.064*	69**
(* 2,7 2)	(0.578)	(0.461)	_	(-0.117)**	
	(0.070)	(0.701)		(0.11/)	

Performance measure	Mean (median) before privatization	Mean (median) after privatization	Predicted change	Mean (median) change	Percentage of privatizations that improved performance
Long term debt to equity					
(t-3, t+3)	0.427	0.205	_	-0.222**	67**
	(0.303)	(0.126)	-	(-0.177)**	
(t-3, t+5)	0.440	0.137	-	-0.303**	73**
·	(0.327)	(0.119)	_	(-0.208)**	

Table 2 (continued)

This table presents comparisons of performance measures before and after the partial privatization of SOEs. For each variable we show the mean and median values for the three years prior to privatization and for the three (n = 1078) and five (n = 841) years after, the expected sign of change in performance, the mean and median change in performance, and the percentage of cases were performance improved or moved in the direction hypothesized. Statistical significance is based on *t*-tests (mean differences), Wilcoxon tests (median differences), and sign tests (percentage changes). Real sales has been adjusted for movements in inflation measured by the Chinese Consumer Price Index.

(t-3, t+3) compares performances for the three years before listing to the three years after.

(t-3, t+5) compares performances for the three years before listing to the five years after.

** Statistically significant at the 0.01 level; * statistically significant at the 0.05 level.

turnover ratios fall dramatically indicating a sharp reduction in operational efficiency. Only 17% (16%) of companies improve their sales to assets ratios over the three years (five years) after listing. This disheartening picture of efficiency is even worse if the proceeds (or uses) of the new issue are included in the asset base.

The capital expenditure investment ratios and real sales show statistically significant increases. This evidence from the China is similar to that from other countries; privatized companies significantly increase capital expenditures compared to when they were wholly government owned and they expand real output. Results from Table 2 demonstrate a significant fall in debt to equity ratios after privatization. The mean (median) long-term debt to shareholders' equity falls from 0.43 to 0.21 (0.30 to 0.13) using the three-year post listing comparison. A similar picture is shown when we use the five-year post listing comparison. The significant reductions in debt ratios are consistent with the results from other countries. One characteristic of our data is that the long-term debt to shareholders' equity is low when compared with other countries (see Megginson et al., 1994; Boubakri and Cosset, 1998). As our post-privatization debt ratios are measured over three and five years, the results indicate that there is no substantial new debt raised other than that used to repay maturing debt.¹⁸

We partition the results across the different types of ownership (SAMB, SOECG, SOELG, PRIV, and FOR). In Table 3 we show the results for the firms that are controlled by a private investor.¹⁹ While the changes in ROS, ROA, and asset turnover are negative they are not statistically significant; the decline for ROE is significant for the three years

¹⁸ The state has a total quota for bond issuance and they give preference to non-listed companies. Up to 1998 only one listed company had been approved to issue bonds (Du et al., 1998). Bank borrowing is available but is subject to political considerations as well as commercial judgments.

¹⁹ The results for the other ownership types are available on request.

Table 3

Changes in economic performance from before privatization to after privatization for firms that have a dominant private owner

Performance measure	Mean (median) before privatization	Mean (median) after privatization	Predicted change	Mean (median) change	Percentage of privatizations that improved performance
Profitability					
Return on sales					
(t-3, t+3)	0.154	0.125	+	-0.029	45
	(0.120)	(0.101)	+	(-0.011)	
(t-3, t+5)	0.138	0.121	+	-0.017	48
	(0.102)	(0.090)		(-0.012)	
Return on assets	· /			· /	
(t-3, t+3)	0.095	0.087	+	-0.008	46
	(0.082)	(0.076)		(-0.006)	
(t-3, t+5)	0.091	0.090	+	-0.001	46
(* 2,1 2)	(0.084)	(0.073)		(-0.010)	
Return on equity	(((((((((((((((((((((((((((((((((((((((((
(t-3, t+3)	0.237	0.202	+	-0.035*	41*
$(t 5, t \cdot 5)$	(0.193)	(0.180)		(-0.013)	11
(t-3, t+5)	0.216	0.192	+	-0.024	47
(i - 5, i + 5)	(0.193)	(0.172)	1	(-0.019)	-17
Activity	(0.195)	(0.174)		(0.01))	
Total asset turnover					
(t-3, t+3)	0.879	0.788	+	_0.091	46
(i-5, i+5)	(0.752)	(0.700)	1	(0.091)	40
$(t \ 3 \ t+5)$	(0.752)	(0.703)	+	(-0.043)	45
(i-5, i+5)	(0.741)	(0.600)	1	(0.030)	45
Investment	(0.741)	(0.099)		(-0.042)	
Capital avpanditures to calas					
(t - 2, t+2)	0.169	0.450	+	0 202**	05**
(i-5, i+5)	(0.005)	(0.450)	1	(0.277)**	85
(4 2 4 5)	(0.093)	(0.372)	1	$(0.277)^{**}$	70**
(l-3, l+3)	0.108	0.557	Ŧ	(0.269)**	/9
	(0.092)	(0.300)		(0.208)	
to total assots					
to total assets $(1 - 2 - 1 + 2)$	0.100	0.217		0 117**	70**
(t-3, t+3)	0.100	0.217	+	0.11/**	/8***
(1 2 (1 5)	(0.083)	(0.188)		(0.105)**	70**
(t-3, t+5)	0.105	0.210	+	0.105**	/8**
	(0.079)	(0.179)		(0.100)**	
Real sales (billion RMB)	0.0(0)	0.(12		0.215**	00**
(t-3, t+3)	0.268	0.613	+	0.315**	90**
	(0.173)	(0.384)		(0.211)**	oott
(t-3, t+5)	0.264	0.623	+	0.259**	89**
_	(0.172)	(0.382)	+	(0.210)**	
Leverage					
Debt to assets				0.051	(a.t.
(t-3, t+3)	0.536	0.485	-	-0.051	63*
	(0.568)	(0.481)	-	(-0.087)*	
(t-3, t+5)	0.540	0.499	-	-0.041	55
	(0.527)	(0.500)	_	(-0.027)	

Performance measure	Mean	Mean	Predicted	Mean	Percentage of
	(median) before privatization	(median) after privatization	change	(median) change	privatizations that improved
					periormanee
Long term debt to equity					
(t-3, t+3)	0.397	0.208	_	-0.189*	60
	(0.314)	(0.149)	_	$(-0.173)^*$	
(t-3, t+5)	0.358	0.213	_	-0.145*	58
	(0.314)	(0.157)	_	(-0.157)**	

Table 3 (continued)

This table presents comparisons of performance changes for 141 firms where the major shareholder is a private investor (an investor that has no affiliation to state, regional, or local government and their associated ministries). For each variable we show the mean and median values for the three years prior to privatization and for the three and five years after, the expected sign of change in performance, the mean and median change in performance, and the percentage of cases were performance improved or moved in the direction hypothesized. Statistical significance is based on *t*-tests (mean differences), Wilcoxon tests (median differences), and sign tests (percentage changes). Real sales has been adjusted for movements in inflation measured by the Chinese Consumer Index. (t-3, t+3) compares performances for the three years before listing to the three years after.

(t-5, t+5) compares performances for the three years before fisting to the three years after.

(t-3, t+5) compares performances for the three years before listing to the five years after listing.

** Statistically significant at the 0.01 level; * statistically significant at the 0.05 level.

after listing analysis. A comparison of Tables 2 and 3 suggests private control is associated with less worse performance change. This finding is consistent with our argument that private investors place more pressure on firms to maintain (and increase) profit and efficiency. We therefore conclude that the disappointing performance changes highlighted in Table 2 stem from firms that have a dominant state shareholder. Privately controlled firms show increases in capital expenditures, growth in real sales, and declines in debt ratios; these results are similar to those for the overall sample shown in Table 2.

5.1. Regression results

Regression Eq. (1) results are shown in Table 4. Model fits are low although the Rsquares are similar to those reported in other privatization studies. The dependent variables are the changes in variables from before to after privatization. The major variables of interest are the different types of dominant owner and the extent of their dominance (given by the interaction terms). First we discuss the regression results for the four performance variables (ΔROS , ΔROA , ΔROE , $\Delta ASTURN$). The four intercept terms are negative and significant. This reflects the overall negative performance of the privatized firms. SOECG has positive and significant coefficients for the performance regressions (the first four regressions). The positive signs indicate that IPOs that have a SOECG as the dominant shareholder perform better than SAMB firms (SAMB is captured by the intercept term). The positive coefficients on DOM * SOECG imply that the more dominant the SOECG is (i.e. the SOECG has many more shares than the second highest shareholder), the greater is their influence on a firm's performance improvement (vis-à-vis the state). The interaction terms are statistically significant for the ΔROE and $\Delta ASTURN$ regressions. SOELG is not significant. PRIV has positive and significant coefficients for the four performance regressions. When a private investor is the dominant owner of a privatized firm,

Table 4
Regression results
Performance measure

Performance measure									
Independent variable	Δ Return on sales (Δ ROS)	Δ Return on assets (Δ ROA)	Δ Return on equity (Δ ROE)	Δ Total asset turnover (Δ ASTURN)	Δ Capital expenditures to sales (Δ EXP/S)	Δ Capital expenditures to assets (Δ EXP/TA)	Δ Real sales (GRO)	Δ Debt to assets $(\Delta D/TA)$	Δ Long-term debt to equity $(\Delta D/E)$
Intercept	-2.361	-3.973	- 5.855	-14.274	11.286	5.230	15.385	-3.695	-11.81
-	(-3.27)**	(-2.84)**	(-3.36)**	(-2.88)**	(3.14)**	(1.99)*	(2.96)**	$(-2.10)^*$	(-2.98)**
DOM	-0.837	-1.232	-0.985	-1.349	2.169	0.865	2.647	-0.988	-2.743
	(-2.01)*	(1.96)*	(-1.78)	(-1.82)	(1.53)	(1.17)	(1.75)	(-0.82)	(-1.97)*
SOECG	1.744	3.414	3.066	6.750	2.848	1.452	3.849	-1.663	-1.680
	(1.96)*	(2.11)*	(2.30)*	(2.89)**	(1.93)	(1.77)	(2.15)*	(-2.01)*	(-1.38)
DOM*SOECG	0.237	0.417	0.372	0.891	1.166	0.494	1.264	-1.215	-0.403
	(1.48)	(1.59)	(1.96)*	(1.97)*	(1.82)	(1.35)	(1.81)	(-1.98)*	(-1.02)
SOELG	0.750	0.867	0.655	0.439	3.361	1.062	1.227	0.087	0.975
	(1.18)	(1.23)	(0.99)	(0.87)	(2.01)*	(1.90)	(1.70)	(0.91)	(1.21)
DOM*SOELG	0.119	0.097	0.089	0.105	0.843	0.748	0.836	0.006	0.878
	(0.87)	(0.65)	(0.58)	(0.62)	(1.28)	(1.18)	(1.22)	(0.40)	(1.44)
PRIV	3.136	4.833	5.908	8.555	0.819	0.636	-0.392	-0.354	-1.969
	(2.15)*	(2.97)**	(3.29)**	(3.46)**	(0.88)	(0.48)	(-0.87)	(-1.34)	$(-2.13)^*$
DOM*PRIV	0.948	1.049	1.207	1.106	0.368	0.097	-0.138	-0.227	-1.06
	(2.27)*	(1.98)*	(2.15)*	(2.04)*	(1.49)	(0.82)	(-0.45)	(-0.88)	(-1.88)
FOR	0.975	0.837	1.434	1.198	-0.972	-0.181	-1.275	0.498	1.694
	(1.53)	(1.44)	(1.89)	(1.93)	(-1.00)	(-0.93)	(-1.87)	(1.12)	(1.31)
ΔGNP	0.177	0.168	0.234	0.248	0.155	0.289	0.178	0.093	0.127
	(1.20)	(1.03)	(1.15)	(0.129)	(1.96)*	(1.87)	(1.98)*	(0.84)	(0.76)
SIZE	-0.013	-0.168	-0.287	-0.315	0.133	0.262	0.157	0.064	0.135
	(-0.86)	(-1.04)	(-1.43)	(-1.28)	(1.01)	(1.28)	(1.33)	(0.37)	(1.11)
EXCH	0.148	0.081	0.008	-0.136	-0.104	-0.074	0.015	0.007	-0.038
	(0.82)	(0.78)	(0.46)	(-0.99)	(-0.73)	(-0.58)	(0.40)	(0.21)	(-0.44)
Adjusted R^2	0.098	0.113	0.118	0.135	0.147	0.082	0.062	0.175	0.192

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performance is significantly better than if the SAMB is the major investor. This result is consistent with our argument that private investors are more focused on the profitability and efficiency of their investments. The interaction term DOM*PRIV has positive and significant coefficients and so the extent to which a major private shareholder dominates the next highest shareholder has a considerable impact on a firm's performance. The coefficients on PRIV are significantly higher than the coefficients on SOECG for the Δ ROS and Δ ROE regressions. We also find that the coefficients on PRIV and SOECG are significantly higher than the coefficients on PRIV and SOECG are significantly higher than the coefficients on SOELG in all the four performance regressions. These analyses give support to our prediction that PRIV and SOECG investors exert more pressure on firms to maximize performance than do SOELG and SAMB shareholders. FOR has positive coefficients but they are not significant. Thus there is no statistically significant evidence that foreign investors are associated with better performing firms. Foreign investors are not dominant investors but we had expected them to pressure firms to increase profitability and efficiency; our results fail to find statistical support for our hypothesis. The control variables are not significant in the first four regressions.

We now examine the last five regressions. Capital expenditure increases after the IPO (see the $\Delta EXP/S$ and $\Delta EXP/TA$ regressions). Firms with SOELGs as the dominant shareholder have the highest increase in capital expenditures ($\Delta EXP/S$). Real growth is higher when SOECGs are the dominant investor. SOECG dominant investors are also associated with greater reductions in debt to total assets, and PRIV is associated with lower debt to equity. In general, however, the ownership variables do not explain much of the variability in changes in capital expenditures, sales, and debt.

5.2. Employment levels

We have employment data for 941 privatizations. The data are employment levels as published in the IPO prospectuses and employment levels in years 1, 2, and 3, as given in the annual reports. Unfortunately employee data for each of the three years prior to listing are not disclosed. As discussed earlier, there are often implicit (and sometimes explicit)

t-statistics in parentheses. ** Statistically significant at the 0.01 level. * Statistically significant at the 0.05 level.

Notes to Table 4:

This table presents regression results that seek to explain changes in performance from pre- to post-privatization. The dependent variables are change in return on sales (ΔROS), change in return on assets (ΔROA), change in return on equity (ΔROE), change in asset turnover ($\Delta ASTURN$), change in capital expenditures to sales (ΔEXP / S), change in capital expenditures to assets (Δ EXP/TA), change in real sales (GRO), change in debt to assets $(\Delta D/TA)$, and change in long-term debt to equity $(\Delta D/E)$. Independent variables are: DOM = the percentage stock ownership of the largest shareholder minus the percentage stock ownership of the second largest shareholder in the firm; SOECG = a dummy variable that is coded one (1) if the dominant shareholder is a SOE that reports to the central government; SOELG = a dummy variable that is coded one (1) if the dominant shareholder is a SOE that reports to the local government; PRIV = is a dummy variable that is coded one (1) if the dominant shareholder is a private investor. DOM, SOECG, SOELG, and PRIV are measured at the time of the IPO; DOM * SOECG, DOM * SOELG, and DOM * PRIV are interaction terms of DOM and ownership; FOR = a dummy variable taking the value one (1) if there is foreign ownership in the company; $\Delta GNP =$ percentage change in gross national product per capita from the three years prior to the privatization to the three years after privatization. The GNP numbers are deflated for changes in inflation; SIZE=log of market capitalization of the company after listing; EXCH=a dummy variable taking the value one (1) if the company is listed on the Shanghai Securities Exchange. Industry and time (year) dummy variables are also included.

guarantees that employee numbers will not be dramatically cut in the first few years after listing and so the usefulness of productivity measures based on output per employee is somewhat diminished. Table 5 shows the results. The mean and median employees of a privatized SOE change very little from the prospectus date to the three years after listing. Real profit per employee, where profit is adjusted for inflation, capital expenditure per employee, real sales per employee, and total assets per employee increase significantly. The change in profit per employee and sales per employee show that productivity has increased. This productivity gain is driven by investment in new assets (capital expenditures and total assets per employee increase substantially by the third year after listing).

5.3. Sensitivity tests

The change in performance measure used in Tables 2–5 compare the average performance in the three years prior to listing to the average performance in the three (or five) years after listing. Two alternative measures are also used. Firstly, the average performance measured over the three years before listing are compared to the performance in years t+3 and t+5. Secondly, the performance in year t-1 is compared to the performance in years t+3 and t+5. These alternative measures allow time for the privatized firms to restructure. The results from these sensitivity tests are qualitatively similar to those reported in Tables 2–5. When the new issue proceeds are included in total assets and shareholders' equity, the changes in performance (return on assets, return on equity, total asset turnover) are even worse than those reported in Tables 2–5. These sensitivity tests confirm that profitability and efficiency deteriorate after the privatization and listing of SOEs.

Table 5

Employment statistics								
Variable	Mean (median) year 0	Mean (median) year 3	Mean (median) change	Percentage of privatizations that increased employee numbers/ productivity				
Employees	2516 (1732)	2523 (1781)	7 (49)	50				
Real net profit/ Employee	24,216 (14,007)	35,277 (20,694)	11,061** (6687)**	67**				
Capital expenditure/ Employee	21,033 (10,518)	141,440 (82,673)	120,407** (72,155)**	95**				
Real sales/Employee	181,272 (113,567)	374,418 (209,992)	193,146** (964,993)**	97**				
Total assets/employee	240,724 (161,300)	726,483 (455,293)	485,759** (293,993)**	97**				

This table shows changes in employee levels and productivity levels from the prospectus date of the firm to three years after listing. The number of observations is 941. For each variable we show the mean and median values using data reported in the prospectus (year 0), at year 3 (using data from the annual report), and the change. The final column shows the percentage of privatizations that increased employee numbers and employee productivity. Statistical significance is based on *t*-tests (mean differences), Wilcoxon tests (median differences), and sign tests (percentage changes). Real net profit and real sales are adjusted for movements in inflation measured by the Chinese Consumer Price Index.

** Statistically significant at the 0.01 level.

Additional sensitivity tests examine whether the changes in profitability are the result of opportunistic earnings management. Here, profits may be increased in year t - 1 by the use of discretionary accounting accruals, which, by their very nature, reverse in the following year. This has the effect of 'over-stating' profits in year t - 1 (or year t) and 'understating' profits in year t (or year t+1). By 'over-stating' profits in year t-1 (or the forecast of profits in year t), the issue price of the IPO may be increased. It is extremely difficult to estimate such earnings management and this is especially so in China. Our sensitivity tests involve omitting year t-1 and year t+1, as these are the years when the effects of IPO earnings management may be more prevalent. Comparing profitability measures from year t-3 to years t+2 and t+3 and comparing years t-3 and t-2 to years t+2 and t+3 yield results that are directionally and statistically the same as those reported in Tables 2–5. These sensitivity tests corroborate our findings that profitability measures deteriorate after privatization. We also find that profitability does not increase dramatically in the three years prior to the IPO and so this does not point to SOEs manipulating their financial statements prior to privatization.

5.4. Discussion

In stark contrast to arguments that privatization increases economic efficiency and motivates managers to maximize profitability, our results show that return on investment ratios fall and asset turnovers decrease. Our evidence is opposite to that found in empirical studies examining privatizations in both 'developed' nations and 'developing' nations (Megginson et al., 1994; Boubakri and Cosset, 1998; D'Souza and Megginson, 1999; La Porta and Lopez-de-Silanes, 1999). However, certain ownership types mitigate the poor performance. Firms that have a private investor as the dominant shareholder fare better than other firms. In particular, there is no significant deterioration in return on sales, return on assets, and asset turnover. This contrasts with other types of firms. Firms whose controlling shareholder is a SOE that reports to the central government (SOECG) have performance changes that are better than firms with the SAMB or SOELGs as the dominant investor. These findings are consistent with our conjectures and they demonstrate that when cash flow rights accrue directly to the dominant investor, firms are motivated to perform better. Sales and capital expenditures grow rapidly after privatization. The proceeds of the IPO, together with subsequent seasoned equity offerings, fund asset expansion. The injection of assets and operations from the parent SOE or other SOEs also enhances sales growth. Although sales revenues increase substantially, this is the result of expanding the asset base rather than an increase in efficiency.

Although it is not the main focus of our paper, we also examine stock returns in the three years after listing. In common with prior research we find the aftermarket performance of IPOs is very poor (Chen et al., 2000). We also find that SAMB-controlled firms fare the worst and PRIV-controlled and SOECG-controlled firms do the best. The three-year stock returns are associated with changes in profitability. The stock return results are consistent with the operating performance results shown in Tables 2–4.

A reduction in profitability after listing has also been reported in some studies of IPOs (e.g. Firth, 1997; Mikkelson et al., 1997). Although Chinese privatizations also raise new

capital upon listing, we argue that they are very different from IPOs in the U.S. and other 'developed' countries. IPO firms (in other countries) are often controlled by wealth maximizing entrepreneurs and they operate in competitive markets with limited government influence. These IPOs typically continue the corporate objectives already in place before the listing. In sharp contrast, the privatizations of Chinese SOEs are supposed to involve fundamental changes in business philosophy. We believe our study is more in the 'privatization of SOEs' strand of research than the 'IPOs of private firms' strand. Nevertheless there are some similarities in the characteristics of Chinese privatizations and IPOs in 'developed' countries.

We argue that China's styles of privatizations have inhibited the incentives and motivations associated with free market policies. Although the government appears wedded to the idea of competition and free markets, the reality is that social and political factors sway the guidance and influence the state exerts on companies. The social disruption caused by the privatizations (for example reducing staff levels) and other parts of the overall economic reforms, may lead the government to influence companies' staffing levels and staff benefits (Li and Lui, 2001). Although privatizations represent a move towards individual ownership of companies, the fact is that in many cases the state retains voting control. The objectives of the government will sometimes depart from those of profit maximization and hence economic efficiency will be compromised. When the controlling ownership devolves to SOEs (particularly SOECGs) and private investors, firms perform much better.

One reason for the poor performance of privatizations relates to top management. Typically the senior and junior management of privatized SOEs are the same as before privatization. Studies in other countries, however, have concluded that changing top management (retiring or firing incumbents and recruiting new executives) is a crucial factor in the economic success of privatized SOEs (Barberis et al., 1996; Dyck, 1997; Frydman et al., 1999; La Porta and Lopez-de-Silanes, 1999). This characteristic is absent in the privatization of SOEs in China. Initially, managers are often political appointees who have little or no experience of running businesses. These managers are schooled in the old ways of protected state ownership, highly regulated markets, and receiving and following directions from government or regional ministries. They are ill equipped to handle the sudden change to a market economy, competition, and profit objectives. These executives tend to be ideologically bound to the government²⁰ and to the systems in place before the move to a market economy. At the empirical level, Firth et al. (in press-b) find that a change in top executives at privatized Chinese SOEs has not led to an improvement in corporate performance. Senior executives in the privatized SOEs often have little or no share ownership in their companies and so they may be less motivated towards achieving shareholder wealth maximization. Firth et al. (in press-a) show that bonus-incentive schemes based on corporate profitability and-or share price appreciation are of small magnitude.²¹ However, the pay-performance sensitivities are higher in those firms that are controlled by a private investor.

²⁰ Many senior executives of SOEs are appointed, in part, because of connections to the government and to the Communist Party.

²¹ For some counter evidence see Groves et al. (1994, 1995).

We believe the twin themes of continuing state interference and poorly motivated management (allied with weak incentive systems) has resulted in the deterioration of profitability and economic efficiency in privatized companies. Our conclusions are echoed by comments from senior advisers and academics in the PRC. Jinglian Wu, a senior economic adviser to the Chinese government, comments that corporatized companies 'have failed to put in place adequate corporate governance' (Wu, 1999, p.3). He also states that government agencies previously supervising the SOE companies 'continue to intervene with day-to-day management even after corporatization', and 'managers' incentives are inadequate' (p.3). Lin et al. (1998) in reviewing the state owned enterprise reforms, are critical of the weak corporate governance structures and the lack of incentives, which they view as the hallmarks of recent privatizations. Remedying weak corporate governance and improving managerial incentive systems are the keys to improving the economic performance of privatized companies (Qian, 1996).

6. Conclusions

The privatization of SOEs is a major plank of China's economic reforms. The conversion of SOEs into profit maximizing companies with significant non-government ownership is seen as a way to re-vitalize industry, enhance technological advancement and growth, and reduce or eliminate subsidies from the state. Success in these pursuits will manifest themselves in the form of increased profitability, improved efficiency, increased capital expenditures, and growth in output. Unfortunately, the operating and financial results from China's privatizations have been poor and are far from the hopes and aspirations of the economic planners. Although sales have increased, this is due to the increased assets and operations injected into the firms.

While product markets have become more open and competitive, the reform of SOEs has been somewhat half-hearted. Privatization of SOEs is supposed to be a spur to increased profitability, efficiency, growth, and investment. We argue that China's privatizations have not been able to rid enterprises of government interference and control. This is because the state in its various guises controls many privatized companies via shareholding influence and by board and management representation. When the dominant shareholders do not have cash flow rights (e.g. the dividends flow to another ministry or the state treasury) they lack the motivation to closely monitor firms.

We contend that in order to realize the full benefits from privatization, the state and its entities need to sell all of their shares to individuals and non-government affiliated institutional investors. Government ownership of shares sometimes impedes and at other times inhibits management from pursuing policies designed to maximize profitability and efficiency. Privatized SOEs where the state retains significant ownership tend to be run more bureaucratically than commercially (OECD, 2000). While privatizations have been said 'to work' in almost all other countries (D'Souza and Megginson, 1999) this cannot be said of China. China's enterprise reforms have not so far led to improvements in efficiency and profitability.

The poor performance of privatized companies has not gone unnoticed by the Chinese government and by the national media. This has led to an intense policy debate within the government as to the way to proceed. Some leaders have called for a rolling back of the enterprise reforms and for a strengthening of central planning and government control of organizations and industries. They contend that privatizations are a failure and are simply not suitable for China. Other leaders, however, argue that the poor performance of companies is because the privatizations are half-hearted and that the state needs to give complete autonomy to the firms in order for the reforms to work. The outcome of this policy debate will help determine the prosperity of China in the new millenium and as it tackles the challenges and opportunities presented by its recent membership of the World Trade Organization.²² Hopefully, our results will help inform the current on-going debate and our discussion will serve as counterweight to those who wish to revert to a centrally planned economy.

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²² The annual plenary session of the Communist Party Central Committee (September 1999) decided to slow down the privatization process. An official communique indicated that there will be fewer new privatizations, that Communist Party committees inside companies should play a more active role in directing the affairs of SOEs, that subsidies will be paid to SOEs, and that more help will be given to bankrupt state enterprises. Interestingly, the communique also stated that there should be less government interference in the running of existing privatized companies and that managerial pay and performance incentives will be increased.

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