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The Financial and Operating Performance of Chinese Family-Owned Listed Firms[1]

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Abstract and Key Results

- While existing studies often use sector-level data to explain the phenomenal growth of the Chinese private sector, this paper complements the literature by using firm-level data to conduct a comparative study of performance between family-owned and state-owned firms in China.

- Taking a population comprising listed firms for the period 1999-2004, we analyze financial performance with reference to five measures: (1) revenue per employee, (2) revenue per unit of cost, (3) net profit per employee, (4) return on assets, and (5) market-to-book ratio.

- Having controlled for other firm characteristics, such as size, leverage, firm age, sales volatility, innovation and marketing, institutional environment and industry, our results confirm that family-owned firms achieve significantly better performances than state-owned enterprises. These results support the general consensus that China is increasingly reliant on private companies as an engine for economic growth and an employment hub.

Key Words

China · Family-owned Firms · State-owned Firms · Performance

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Introduction

The world has witnessed an economic miracle in China over the past quarter-century: with average annual growth at around 9 percent and GDP quadrupled, China is now the world's largest and fastest-growing emerging economy. It is commonly accepted that this unprecedented growth has benefited from China's progressive economic reform, which is successfully transforming the country's central planning system into a market economy. In this transition, the private sector has been the driving force behind China's remarkable GDP growth. Anderson et al. (2003) point out that the most significant phenomenon in China's current reform is the decline of state-owned enterprises and the rise of the private sector.

Anderson et al. (2003) document the development of the private sector in China since 1978 with convincing sector-level evidence. However, there is still a lack of firm-level evidence on the performance of private enterprises in China, mainly due to the problem of data availability and accuracy. Firm-level data for private enterprises are seldom publicly available. Given the uncertainty surrounding the political and economic environment, discretion is often a golden rule in these firms. For example, Geely, the largest private carmaker based in Zhejiang province, refused to take part in the 2004 survey conducted by the All-China Federation of Industry and Commerce on the largest Chinese private companies (McGregor 2004). And as Anderson et al. (2003) point out, data from private enterprises may not be accurate because of the possibility of "serious under-reporting." All this means that the existing literature mainly focuses on the restructuring of state-owned Chinese enterprises (e.g., Li 1997, Shirley/Xu 1998, Sun/Tong 2003) and pays little attention to the performance of private ownership.

This paper takes publicly-listed private firms as the research object. There are now more than one hundred family-owned firms listed on the Chinese stock market, more than 10 percent of the total. Inspired by Anderson et al. (2003), the present study attempts to examine the performance of private ownership as compared to state ownership. This comparison is very relevant in China, since family firms and state-owned enterprises (SOEs) are the two dominant forms of business organization in Asia (Claessens/Djankov/Lang 2000).

We use the following five measures for performance comparison between family-owned and state-owned firms: (1) revenue per employee, (2) revenue per unit of cost, (3) net profit per employee, (4) return on assets, and (5) market-to-book ratio. These measures respectively capture a firm's human resource performance, operating efficiency, productivity, economic profitability and market value. Specifically, we attempt to address the following question: *Do different ownership structures lead to different performances?*

Summary statistics, univariate tests and regressions all confirm the superior performance of family-owned firms in terms of operating efficiency and profitability; moreover, their stocks are preferred by investors over those of SOEs. The results remain stable in various robustness checks. Furthermore, by comparing the results from heavy and chemical industries with those from agricultural and light industries, we also observe that the performance superiority of family-owned firms exists mainly in sectors that were liberalized earlier and have lower entry barriers.

Our study contributes to the literature on family-owned firms in two ways. First, although the performance of private ownership has been extensively investigated all over

the world, there are few studies on Chinese enterprises. As the world's largest and fastest-growing emerging economy, the Chinese environment is interesting in its own right. A comprehensive study will undoubtedly shed more light on the effect of private ownership, and more importantly, it will have useful policy implications for China's ongoing privatization drive. Second, our study provides a micro basis for Anderson et al.'s (2003) macro analysis. In other words, our study provides solid firm-level evidence explaining and supporting Anderson et al.'s (2003) main finding that the private sector has been rising rapidly and is the main driving force behind China's impressive economic growth.

The rest of the paper proceeds as follows. Section two explains the theoretical framework used in this study. Section three analyzes the development of the private sector in China, with a presentation of the Chinese stock market and listed companies with different ownership structures, and Section four presents the sample and methodology, including clear definitions of a state-owned company and a family-owned company. The statistical results are reported in Section five, and Section six discusses the findings and concludes the paper.

Theoretical Framework

In this section, we review the existing literature explaining the performance gap between family-owned and state-owned firms. The five theoretical explanations put forward are principal-agent conflicts, contracting ability issues, soft budget constraints, corporate culture and organizational structure.

Principal-agent Conflicts

Jensen and Meckling (1976) brought the issue of misalignment between managers' interests and owners' interests to center stage. Using agency theory as a basis for developing a model of corporate structure, these authors define the agency relationship as "a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision-making authority to the agent" (p. 308). They define agency cost as the sum of (1) the monitoring expenditures incurred by the principal; (2) the bonding expenditures incurred by the agent; and (3) residual loss. Lower agency costs are associated with better performances and thus higher firm values, all other things being equal.

There are clear principal-agent conflicts between the state and the ultimate owners of the so-called "state-owned" firms, the citizens. Agency costs are incurred because the goal pursued by the state is very likely to be inconsistent with the goal pursued by the citizens. Apart from profit maximization, the state may pursue goals such as social welfare or other political purposes. To add to this, there are various governmental entities that *de facto* control the SOEs, and their interests can be contradictory. For example, SOEs may be controlled by central government and local government, or by various government departments. Conflicts of interest between these government entities add to the inefficiency of SOEs.

In a family-owned firm, the management team is made up of leading members of the founding family. This combination of owners and managers avoids many of the "agency"

problems that Western businesses face in getting executives to promote the interests of shareholders (Weidenbaum 1996). The empirical literature regarding corporate takeovers adds support to the agency theory position that more concentrated management ownership leads to greater firm efficiency (Jensen 1988, Scharfstein 1988). Takeovers concentrate ownership and control into the hands of a small group of managers and buyout specialists. This concentration is generally followed by improvements in operating efficiency and increases in firm value. The research on corporate efficiency and changes in value after a takeover suggests that reduced agency costs due to the concentration of control created by the takeover are responsible for the improvements (McConaughy/Matthews/Fialko 2001). The costs of monitoring are lower when management is concentrated, meaning family-controlled businesses should be more efficient (Fama/Jensen 1983). Referring specifically to closed organizations, Fama and Jensen suggest that family relationships among owner/managers should reduce agency costs as well as provide quasi-economic rents.

This difference in principal-agent conflicts between SOEs and family-owned firms is even more interesting in this study on listed firms. The popular view of the traditional SOE is that it pursues political and social goals in addition to profit maximization. However, Chinese listed SOEs are unencumbered by such political and social burdens, and are solely for-profit companies. As stated by the Chinese government, the objective of the SOE reform is to transform the traditional SOEs into modern corporations focusing primarily on profit maximization. Going public is regarded by the government as a very important part of that process.

The CSRC (Chinese Security Regulatory Committee) requires that before any IPO the intended SOE should go through a "preparation period", during which the non-productive assets of the original SOE will be divested. Traditional SOEs had departments handling non-productive activities such as retiree affairs, employee housing, etc. During the "preparation period", those departments and the corresponding assets are carved out, until usually only the productive and profitable business assets of the original SOE are left. After the preparation period, the original SOE is restructured as a corporation. Only by following this procedure can the new SOE obtain CSRC approval for an IPO.

The asset divestiture of Hualing Guanxian (Stock code 000932) is a typical example[2]. This is a SOE which produces and sells steel tube and wire, and underwent a three-year preparation period before its IPO. Before qualifying for a public offering, the non-productive assets of the original company were all divested. In the opinion of financial analysts, the assets of the listed company are all high–quality, profitable assets and the problem of social and other not-for-profit burdens was well addressed.

While the objective of profit maximization as pursued by the firm and its shareholders are well aligned in family-owned firms, there is a constant conflict between the for-profit mission of these listed SOEs and goals such as social welfare or other political purposes pursued by their largest shareholder – the state.

Contracting Ability Issues

Even if the state and citizens agree that profit maximization is the only goal to be pursued by SOEs, contracting ability issues will also make state ownership less efficient than private ownership.

Property rights literature suggests that there is a broader range of monitoring devices under privately-held ownership. Alchian (1977, p. 36) notes that, "behavior under [state and private] ownership is different, not because the objectives sought by organizations under each form are different, but, instead, because even with the same explicit organization goals, the costs-rewards system impinging on the employees and the 'owners' of the organization are different." Shleifer (1998) argues that the owners of public firms (the nation's citizens) are less able to write complete contracts with their managers because of their diffuse nature, making it difficult to tie the managers' incentives to the returns generated by their decisions.

Family businesses, in contrast, tend to solve this problem more easily. There is often a more clearly-defined culture because the family ethos determines the prevailing values, norms, and attitudes and the family members have extensive knowledge of the firm, having been familiar with it from early childhood (Kets de Vries 1993). Family control often serves to monitor and discipline managers (DeAngelo/DeAngelo 1985), and as a result, family-controlled firms are less likely to have any explicit incentive compensation plan (Kole 1997). McConaughy (2000) found that founding family CEOs in family-controlled firms earn less and receive less incentive pay than non-family CEOs in family-controlled firms, after controlling for size, managerial ownership, and tenure. His results are consistent with the family incentive alignment hypothesis, namely that founding family managers are naturally more motivated than non-family managers to achieve good firm performance. This concurs with Fama and Jensen's (1983) hypothesis that family control improves monitoring. In other words, more effective monitoring in family-controlled firms reduces the need to "incentivize" CEOs to aim for high performance.

Soft Budget Constraints

Soft budget constraints protect SOEs from market discipline, which is a vital requirement for a company's viability.

The concept of the soft budget constraint was coined by Kornai (1979, 1980). He describes the soft budget phenomenon as follows: "firms are bailed out persistently by state agencies when revenues do not cover costs" (Kornai 1998, p. 12), and defines soft budgets as "the expectation of the decision-maker as to whether the firm will receive help in time of trouble…" (Kornai 1998, p. 14). Stiglitz narrows the definition further to situations when "enterprises believe that any losses they incur will be made good by the government" (Stiglitz 1994, p. 184). Armed with the expectation that the state will give them a helping hand whenever the company runs into trouble, managers of SOEs are inclined to behave imprudently, e.g., invest in new projects with negative net present value. Such imprudent behavior eventually results in financial distress. Berglof and Roland (1998), and Frydman et al. (2000) all suggest that soft budget constraints have been a major source of inefficiency for SOEs.

Family businesses operate in a totally different environment. Their dynamics are different, because of the added dimensions of the family relationship and the time horizon (Kets de Vries 1993). Managers can adjust their capital structure to satisfy their own preferences regarding risk and return (Van Horne 1980). Managers in family-owned firms have a high personal investment in their firms, in terms of both finance and human capi-

tal. They also have a likelihood of receiving quasi-rents from their positions. It can thus reasonably be expected that they will run their business more conservatively and more diligently than their counterparts in state-owned firms.

Corporate Culture

Corporate culture is an important factor in explaining the difference in firm performance between family-owned and state-owned firms, as it is always related to a company's capability to adapt externally and integrate internally (Schein 1992).

Weidenbaum remarks that Chinese family firms are typically headed by a paterfamilias figure who is "all powerful in both social and economic spheres" (1996, p. 141). The leader of the family business has great authority that few subordinates would dare challenge, and he delegates key activities and positions to family members. As a result, the prevalent corporate culture is a command culture. A recent study conducted by Hay Group (2007) also finds that "*the Chinese leadership style is predominantly paternalistic in nature. Chinese CEOs are less likely to give rationales for decisions and more inclined to issue directives – this is known as the 'directive' leadership style*" (p. 5 et seq.). With this type of corporate culture, family enterprises can swiftly adapt to external changes and coordinate internal resources efficiently. Furthermore, a command culture is especially beneficial for firms competing in labor-intensive industries, because managers can force entry-level labor to accept low wages, long working hours and a poor working environment, and thus minimize production costs.

In contrast, state-owned enterprises are notorious for their huge administrative organ and hierarchy (Lockett 1988). Even after nearly twenty years of economic reform, the historical legacy makes it difficult for SOEs to adopt new practices (Ding/Goodall/Warner 2000) and hence their management structure remains overcomplex and inclined to redundancy. The culture of SOEs thus leads to bureaucracy and low efficiency problems. Tsui et al. (2006) find that compared with the organizational culture of private enterprises, SOE culture leads to less efficient external adaptation and internal integration.

Organizational Structure

Organizational efficiency is another advantage enjoyed by family-owned enterprises. Their relatively small size is one factor, as it increases the simplicity of the organizational structure. Another reason is that a simple organization structure allows the family to maintain control over a large range of business activities (Weidenbaum 1996). Simple organizational structure leads to simple decision-making. However, for SOEs, with their huge and complex organizational structure and bureaucratic hierarchy, decision-making is slow. It is quite common for a small problem to go through several layers of the hierarchy before it can be solved (Liu 2003).

Simple decision-making results in a consensus on firm strategies, risk-taking, and fast responsiveness. It also reduces the standardization, rigidity, and formalization associated with bureaucracy. As a result, compared with their state-owned counterparts, family-owned enterprises are more flexible and highly adaptable to environmental changes. For example, the Hay Group study (2007) confirms that family-owned firms, thanks to the

simple decision-making structure within their organization, are experienced in seeking harmony in outside business relations when they are *"faced with complex, multi-party negotiations involving other businesses and different parts of the local and/or national government – situations that would tax anyone's negotiating skills"* (p. 3).

General Hypothesis

The general hypothesis in this study is that family-owned enterprises outperform state-owned enterprises in China. This will be tested based on the above five factors of principal-agent conflicts, contracting ability issues, soft budget constraints, corporate culture, and organizational structure.

Institutional Background

This section begins with a brief overview of the growth of the private sector in China, and the link between family and private firms in Asia in general. We then examine the development of the Chinese stock market, and discuss listed companies with different types of ownership.

The Rise of the Private Sector in China

Since China implemented its open-door policy in 1978 and began the move towards a socialist market economy, it has experienced rapid economic growth, marked particularly by the relative decline in large state-owned enterprises (SOEs) and expansion in the number of small enterprises (Anderson et al. 2003)[3]. In its 2005 survey on the private sector in China, the Hong Kong based brokerage CLSA reported that the private sector in China was now responsible for about three-quarters of economic output and employment[4].

The 2004 survey[5] by the All-China Federation of Industry and Commerce also confirms China's increasing reliance on private firms as a motor for economic growth and new jobs (McGregor 2004). This survey of China's largest private firms shows that the number of privately-owned and run firms with revenues of more than RMB 120 million ($14.5m), the minimum for inclusion in the list, rose from 1,582 in 2002 to 2,268 in 2004. The sales revenues of the top 500 firms, totaling RMB 1.076 billion, were up 53 percent in 2003 year-on-year, and their net profit was up 40 percent. Only five firms reported an operating loss.

We believe there is a notable difference in the interpretation of the term "privately-owned firm" between the Western world and Asia. In the U.S. and U.K., ownership of a business is typically widely dispersed between a large number of small shareholders. In Asia, on the other hand, private ownership is mainly concentrated in the hands of members of one family, even in the case of listed firms. Claessens et al. (2000) undertook an extensive study of the ownership structure in nine Asian economies based on a sample of 2980 listed companies. They found that family firms and SOEs are the two dominant forms of business organization in this region, and the same observation was made about

Asia by Shapiro and Erdener (2003). Ownership concentration is prevalent in the region, and more than half of all East Asian corporations are controlled by families.

Claessens et al.'s (2000) study does not include China. However, as the largest, most highly developed country in Asia throughout history, China has long exerted significant influence on the continent's culture and social norms. The emphasis on family, for instance, is deeply rooted in Chinese culture. A company's senior managers will tend to come from the same family. "The essence of Chinese economic organization is familism" (Wong 1985, p. 58). The economic reform of 1978 gave a new lease of life to private ownership in China. When considering what form private ownership should take, a family firm is always the first choice for Chinese people.

On occasion, the Chinese business enterprise takes on some of the trappings of a modern western corporation, such as the recruitment of professional managers and a degree of public ownership, including listing of some of the family's firms on a major stock exchange. But even in such situations, the most desirable assets are held back in a maze of private businesses and trusts controlled by the family. Family members continue to make the strategic decisions, whether formally or behind the scenes (Weidenbaum 1996).

State-owned versus Family-owned Listed Firms

Since the early 1990s, the stock market has gained considerable momentum in China. Chinese shares were valued at 21.15 trillion yuan (2.79 trillion US dollars) on August 9, 2007, exceeding the nation's previous-year gross domestic product of 21.09 trillion yuan for the first time[6]. As stated by the Chinese government, the main purposes of the stock market are to raise much-needed capital for SOEs, and to facilitate SOEs' restructuring as "corporations (*gongsihua*)".

At first glance, going public, i.e., share issue privatization (SIP), is a way for SOEs to privatize state ownership; indeed, it has been a prevalent method of privatization around the world since the 1980s. Successful and influential cases of SIP include British Telecom, Volkswagen and Japanese Airlines, to name just three. However, an IPO by a SOE in China is at most a "partial privatization" process, because the government still retains majority ownership in most listed companies (Sun/Tong 2003). According to the China Securities Regulatory Committee's (CRSC) statistics, at the beginning of 2002, state shares accounted for 47 percent of total equity for an average listed company. Additionally, domestic legal-person shares, which are owned by SOEs, represent an average 11 percent of total equity. In short, most Chinese listed companies are still under the absolute control of the state.[7]

Family-owned listed firms are totally different in ownership nature from these "partially-privatized" listed SOEs, which, despite being truly partially privatized in the sense that their floated shares are held by individual or institutional investors, are still firmly controlled by the state, which holds an absolute majority of voting rights. Given the very weak legal framework for investor protection, minority shareholders have almost no say in the strategic decisions of such state-owned listed firms. In contrast, in listed firms where the largest shareholder is a family (our sample of family-owned listed firms), the state has withdrawn or never held any interest. We can thus validly separate family-owned listed firms from listed SOEs, and the two groups provide a good tool for comparison of performance by private and state ownership.

As indicated earlier in this section, since the stock market in China is designed as a place for SOEs to raise funds, there is a tremendous bias in favor of SOEs, to the detriment of non-SOEs, with regard to financing via equity markets. The first family-owned listed firm appeared in 1992, but during the period 1992–1997 the number of family-owned listed firms was minimal compared with the rapid increase in market capitalization and the total number of listed firms. In 1997, less than six percent of listed firms were family-owned, despite the increasing importance of non-state-owned enterprises in the Chinese economy. However, 1998 saw the start of a boom in family-owned listed firms, and by the beginning of 2001, there were 143 family-owned listed firms, or 15 percent of the total number of firms listed on the Chinese stock market.

Methodology and Sample

There are two strands of empirical literature on the performance of private ownership. One strand (e.g., Megginson/Nash/van Randenborgh 1994, Boubakri/Cosset 1998, Sun/ Tong 2003) compares the pre- and post-privatization performance of privatized enterprises. The other strand compares the performance of private enterprises with that of state-owned enterprises. This study belongs to the second strand, as we compare the performance of family-owned and state-owned listed firms.

For performance measures, we use (1) revenue per employee, (2) revenue per unit of cost, (3) net profit per employee, (4) return on assets (ROA)[8], (5) market-to-book ratio. Of these five measures, two relate to labor: revenue per employee and net profit per employee. Because of the large workforce, labor redundancy has been plaguing China's economy (Sheehan/Morris/Hassard 2000). The reallocation of surplus labor from inefficient enterprises to efficient enterprises is therefore one major aim of China's economic reform (Qian 2002), and these two measures were chosen because of the importance of labor productivity in that economic reform.

The first two variables listed above measure a company's operating efficiency in using labor, and its cost efficiency. The third and fourth variables capture a company's profitability. In particular, net profit per employee measures a company's labor efficiency in generating profit, and return on assets is an economic profitability indicator. The market-to-book ratio reflects investors' valuation of a listed company and thus can also be considered to indicate a listed company's performance on the stock market. Fama and French (1992) stress the importance of the market-to-book ratio in measuring value, asserting that this ratio is high for "strong firms with persistently high earnings". We tested the correlations between these five measures. The highest correlation coefficient is 0.4, between profit per employee and revenue per employee. These low correlations show that the five ratios capture different dimensions of performance.

Initially, summary statistics of the performance measures for listed family-owned firms and SOEs are compiled. We then evaluate the performance of family-owned enterprises using a standard panel data treatment evaluation procedure (Ashenfelter/Card 1985, Heckman/Holtz 1989, Frydman et al. 1999). The regression model is specified as follows.

(1) $Y_{it} = a_0 + a_1 P_{it} + a_2 C_{it} + \varepsilon_{it}$

In this model, i indexes individual firms, t indexes time (year). Y_{it}, the dependant variable, is the performance measure for firm i in year t. P_{it} is the treatment variable, equal to 1 if firm i is a family-owned enterprise in year t and 0 otherwise. C_{it} is a set of control variables which includes certain firm characteristics and industry dummies, and ε_{it} is the error term.

Daily and Dollinger (1991) demonstrated that there were differences between family-controlled and non-family-controlled firms. They found family-controlled firms to be smaller, have higher mortality rates, use different strategies, and rely less on formal control systems than non-family controlled firms. Therefore, in keeping with the literature (McConaughy et al. 2001), we control for the influence of firm size and capital structure by including total assets (in natural log form)[9] and leverage (ratio of total liabilities to total assets) in our model. We also control for other factors which might also influence firm performance, such as firm age, risk (proxied by the SD of the firm's annual sales during the sample period 1999-2004), advertising intensity (marketing expenses as a percentage of sales), and R&D intensity (proxied by administration expenses as a percentage of sales[10]).

Furthermore, we control for the influence of economic institutions by adding a measure of the efficiency of the institutional environment in the province the firms come from. This measure is the arithmetic mean of a series of institution indices (Fan/Wang 2004), which include (1) the relationship between government and the market (index based on the role of the market in allocating resources and enterprises' burden in addition to normal taxes); (2) development of non-state sectors (index based on the ratio of private sector industrial output to total industrial output, the ratio of private sector capital expenditure to total capital expenditure, and the ratio of private sector employment to total employment); (3) development of the product market (index based on the role of the market in determining product price and the regional trade barrier); (4) development of the labor market (index based on mobility of labor); (5) development of the capital market (index based on the competition of the banks and the role of the market in determining bank loans); (6) legal environment (index based on protection of property rights, protection of copyrights and consumers, and protection of employees).[11, 12]

The coefficient of primary interest is a_1, which measures the performance contrasts between family-owned firms and SOEs. A positive and significant a_1 implies that family-owned listed firms outperform listed SOEs on performance measure Y_{it}.

Our sample consists of A-share companies listed on the Chinese stock market during the period 1999-2004, for which the financial data needed to calculate the performance measures were available. Our study period starts in 1999 because the presence of family-owned firms among Chinese listed companies was marginal before that year (see the explanation in the following section of this paper, State-owned versus family-owned listed firms). 2004 is the most recent year with available data from the GTA and Wind Information Databases. Our definition of a family-owned listed firm is as follows: if a listed firm's largest shareholder is a family-owned firm or a natural person, then that firm qualifies as a family-owned listed firm. This gives a total sample of 6,077 firm-year observations, 671 of which are from family-owned firms.

This sample includes some of China's most famous family-owned firms. For example, "Hejin Touzi" (Shenzhen stock exchange code 000633) and "Xinjiang Tunhe" (Shanghai stock exchange code 600737) are owned by the Tang brothers; "Shimao Gufen" (Shanghai

stock exchange code 600823) is owned by the Xu Rongmao family; "Tiantong Gufen" (Shanghai stock exchange code 600300) is owned by the father and son team Pan Guangtong and Pan Jianqing.

To make sure the statistical results will not be distorted by any extreme observations, we winsorize the highest one percent and lowest one percent firm-year observations for each performance measure.

Empirical Results

In this section, we start with an analysis of univariate results as background information for the performance of family-owned and state-owned enterprises. However, the two types of firm have quite different firm characteristics, in terms of size, leverage, firm age, risk, R&D intensity, and institutional environment. So far, we cannot exclude the possibility that the performance differential is caused not by ownership difference, but by different firm characteristics. We therefore need to integrate all control variables and run the OLS regression. Before the regression test, we also conduct the VIF test. The maximum value is far below 10, indicating that our results will not be influenced by the multicollinearity problem (Rawlings 1988). Finally, we also run robustness checks.

Descriptive Statistics and Univariate Results

The mean and median of the performance measures and control variables for family-owned firms and SOEs are reported in Table 1. First, we test for the normality of the variables included in the table. This test, which is based on the skewness and kurtosis of the variables, rejected normality for all variables. (Results are not reported here for reasons of space.) Therefore, the appropriate test for equality between the two groups is the Wilcoxon ranksum test. The statistic for *total assets* shows that SOEs are significantly larger than family-owned firms: the mean and median total assets are RMB 2.49 billion and 1.29 billion for SOEs, compared to RMB 1.47 billion (mean) and 1.03 billion (median) for family-owned firms. Family-owned firms are also more aggressive in using financial leverage: their total leverage is significantly higher than that of SOEs. As shown below, their higher productivity and profitability justifies the choice of high-leverage capital structure. This result is different from results in the existing literature (Daily/Dollinger 1991), which find a lower leverage level. We believe this characteristic is specific to the Chinese economic environment. State-owned listed firms in China are frequently intensively involved in related-party transactions, and they are often treated as a cash cow by their local authorities (Jian/Wong 2003). The funds raised in a capital market by these firms are often lent to other non-listed related firms, sometimes even for social welfare uses. As a result, listed SOEs have fewer debts than their family-owned counterparts. In terms of firm age, it is a little surprising that the SOEs are on average younger than private companies. The reason is that SOEs are usually restructured and reincorporated before they can qualify to go public (Ding/Zhang/Zhu 2005). The results also show that listed SOEs have higher sales volatility. Furthermore, compared with listed SOEs, more family-owned listed firms are from regions with more efficient economic institutions.

Table 1. Summary Statistics

	State-owned			Family-owned			Wilcoxon
	Mean	**Median**	**S.D.**	**Mean**	**Median**	**S.D.**	**ranksum test**
Revenue per employee (in millions of RMB)	0.687	0.335	1.166	0.880	0.301	1.637	1.236
Net profit per employee (in ten thousands of RMB)	0.421	0.197	1.019	0.455	0.248	1.195	-2.294**
Revenue per unit of cost	1.412	1.279	0.425	1.477	1.361	0.450	-5.861***
Return on assets	0.025	0.031	0.056	0.019	0.029	0.064	1.465
Market-to-book ratio	3.148	2.671	1.730	3.897	3.177	2.316	-8.202***
Total assets (in billions of RMB)	2.490	1.290	11.200	1.470	1.030	1.460	7.683***
Total leverage	0.368	0.338	0.263	0.450	0.424	0.298	-8.243***
Age	7.501	7.000	4.071	9.179	9.000	3.556	-11.598***
Sd_rev	66.60	20.30	378.00	35.50	14.00	63.80	5.032***
Admin_sales	0.116	0.082	0.137	0.132	0.083	0.174	-1.312
Mkt_sales	0.062	0.040	0.086	0.127	0.042	1.011	-3.119***
Institution	6.564	6.423	1.658	6.730	6.423	1.787	-2.238**

This table reports the means, medians, and SD for (1) revenue per employee, (2) net profit per employee, (3) revenue per unit of cost, (4) return on assets, (5) market-to-book ratio, (6) total assets, (7) total leverage (total liabilities over total assets), (8) age (number of year of existence from the firm's establishment), (9) sd_rev – the SD of the firm's annual sales during the sample period 1999-2004, (10) administration expenses as a percentage of sales, (11) marketing expenses as a percentage of sales and (12) institution is a measure of the institutional environment of the province in which the firm is incorporated.
The z-statistic of the Wilcoxon ranksum test for equality is also given and asterisks denote significance level: ***=1%, **=5%, *=10%.

Except for the *revenue per employee* and *return on assets* measures, all other perform-ance measures are significantly better in family-owned firms than in SOEs. For the oper-ating efficiency measure, i.e., *revenue per unit of cost*, family-owned firms perform better than SOEs and the difference is significant. In terms of *net profit per employee*, family-owned firms have significantly better results than SOEs. Finally, in terms of *market-to-book ratio*, family-owned firms significantly outperform SOEs (the median is 2.671 and 3.177 respectively for SOEs and family-owned firms.). Since the market-to-book ratio reflects investors' perception of the listed company, this phenomenon implies that family-owned firms are recognized by the market as better performers, and they are also ex-pected to further improve their performance in the future.

Main Results of the Regression

Table 2 presents the regression results. Note that the number of observations changes slightly across different models because of data availability. The ownership difference is indicated by a dummy variable "*private*", equal to one if the company is family-owned, and zero if it is state-owned. The coefficient of this ownership dummy reflects the per-formance difference caused by different ownership nature. From Table 2, we can see that for all five performance measures, the coefficient of the ownership dummy is positive and significant. Our regression analysis thus yields solid evidence that family-owned firms have significantly better performances than SOEs.

Table 2. Regression Results for Performance Comparison between State-owned Enterprises and Family-owned Firms

	Revenue per employee		Net profit per employee		Revenue per unit of cost		Return on assets		Market-to-book ratio	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Private		0.171***		0.134***		0.054***		0.006***		0.234***
		(3.34)		(3.34)		(3.66)		(2.67)		(3.34)
Size	0.148***	0.153***	0.174***	0.179***	0.002	0.004	0.008***	0.008***	-1.164***	-1.155***
	(7.41)	(7.66)	(11.33)	(11.57)	(0.37)	(0.65)	(9.21)	(9.41)	(-41.65)	(-41.16)
Leverage	0.616***	0.603***	-0.620***	-0.629***	-0.278***	-0.282***	-0.081***	-0.081***	1.342***	1.311***
	(8.96)	(8.77)	(-12.04)	(-12.20)	(-14.40)	(-14.61)	(-25.69)	(-25.82)	(11.75)	(11.45)
Age	-0.002	-0.003	-0.011***	-0.012***	-0.002*	-0.002*	-0.001***	-0.001***	-0.006	-0.007
	(-0.56)	(-0.80)	(-3.38)	(-3.62)	(-1.66)	(-1.92)	(-6.55)	(-6.72)	(-0.98)	(-1.19)
Sd_rev	0.779*	0.752*	0.069	0.047	-0.227*	-0.236*	0.009	0.008	5.420***	5.380***
	(1.74)	(1.68)	(0.20)	(0.14)	(-1.76)	(-1.83)	(0.49)	(0.43)	(9.02)	(8.95)
Admin_sales	-0.223***	-0.227***	0.001	0.001	-0.006*	-0.006*	0.000	0.000	0.005	0.005
	(-5.27)	(-5.37)	(0.59)	(0.54)	(-1.78)	(-1.92)	(1.58)	(1.53)	(1.37)	(1.29)
Mkt_sales	-1.448***	-1.465***	-0.215***	-0.218***	1.766***	1.760***	-0.014***	-0.014***	-0.028	-0.029
	(-6.91)	(-6.99)	(-3.25)	(-3.28)	(29.07)	(28.99)	(-3.61)	(-3.62)	(-0.24)	(-0.24)
Institution	0.094***	0.094***	0.039***	0.039***	-0.019***	-0.019***	0.002***	0.002***	0.112***	0.111***
	(9.51)	(9.51)	(5.02)	(5.01)	(-6.69)	(-6.70)	(4.14)	(4.13)	(8.34)	(8.31)
No. of Obs.	5642	5642	5646	5646	5653	5653	5657	5657	5580	5580
R-squared	0.139	0.141	0.166	0.168	0.304	0.306	0.175	0.176	0.276	0.278

This table reports the regression coefficients for performance comparison. The dependant variables are the performance measures *revenue per employee, net profit per employee, revenue per unit of cost, return on assets,* and *market-to-book ratio.* The explanatory variable is *Private* which is a dummy variable equal to 1 if the firm is family-owned and 0 otherwise. For control variables, *size* is total assets (in natural log form), *leverage* is the ratio of total liabilities to total assets, *age* is the firm's number of years of existence from its establishment, *sd_rev* is the SD of the firm's annual sales during the sample period 1999-2004, *admin_sales* is administration expenses as a percentage of sales, *mkt_sales* is marketing expenses as a percentage of sales, *institution* is a measure of the institutional environment of the province in which the firm is incorporated. Industry fixed effect is controlled by including dummy variables for industry distribution. The coefficients of the industry dummy are not reported for reasons of space. Model 1 includes the control variables only and model 2 includes both explanatory variables and all control variables.

Robustness Checks

Before we discuss our results and conclude the paper, several issues that may bias our statistical results must be addressed: the issues of an imbalanced sample, unequal variances between subsamples, industry distribution and firm level heterogeneity.

First, not only there is an imbalance in the sample, since we have 5,406 observations of SOEs but only 671 for family-owned firms, but also the industry distribution is not identical for family-owned firms and SOEs. Therefore, we first report the industry distribution of SOEs and family-owned firms, following the industry classification used by the CSRC (China Security Regulatory Committee). We see from Table 3 that while there are few or no family-owned firms in metal, public utility or energy and electricity, such firms often have very strong positions in agricultural and light industries. This difference reflects the way China is opening up and liberalizing its economy.

Table 3. Industry Distribution of state-owned enterprises and family-owned firms

Industry	Family-owned firm		SOE	
	number	percentage	number	percentage
Agriculture	35	5.2%	152	2.8%
Chemical	36	5.4%	574	10.6%
Construction material	34	5.1%	250	4.6%
Electronics & communications	121	18.0%	443	8.2%
Energy and electricity	4	0.6%	222	4.1%
Finance and real estate	37	5.5%	151	2.8%
Food & wine	13	1.9%	190	3.5%
Heavy industry	27	4.0%	641	11.9%
Light industry	56	8.3%	394	7.3%
Medicine	52	7.7%	353	6.5%
Metal	0	0.0%	292	5.4%
Multi-segments	189	28.2%	612	11.3%
Public utility	0	0.0%	65	1.2%
Textile and garment	39	5.8%	333	6.2%
Transportation	14	2.1%	233	4.3%
Wholesale, retail and travel	14	2.1%	501	9.3%
Total	671	100%	5,406	100.0%

The table reports the frequency count of observations of state-owned enterprises and family-owned firms in each industry. The industry classification is by the CSRC (China Security Regulatory Committee).

Based on this table, we reduce the number of SOEs by deleting sectors with only a few family-owned firms. We delete all sectors with fewer than 20 family-owned firm observations: "energy and electricity", "food & wine", "metal", "public utility", "transportation", and "wholesale, retail and travel".

We then address the problem of unequal variance between the subsamples of family-owned firms and SOEs. We first conduct ANOVA tests. The results indicate that except for ROA and total assets, all other variables are significantly different for family-owned firms and SOEs (result not reported here for reasons of space). A variance ratio test is thus

applied to examine whether there is a difference in the variance of variables of family-owned firms and SOEs. The variance ratio test shows that the null hypothesis of equality of variance is rejected for all variables (result not reported here for reasons of space). As a result, a regression with robust standard error is required. This option, which is equivalent to requesting White-corrected standard errors, computes standard errors (and resulting t statistics) that are robust to departures from homoscedasticity. The results are reported in Table 4. We see that with robust standard error, the p value of the t-test increases slightly, and the revenue per employee, net profit per employee, revenue per unit of cost, and return on assets are still significantly higher in family-owned firms than in the SOEs. The results remain almost unchanged.

We next conduct a regression on two subsamples: agricultural and light industries, versus heavy and chemical industries. The reason is that some industries were liberalized earlier and have lower entry barriers for family-owned firms in terms of capital intensity,

Table 4. Regression results for performance comparison between SOEs and family-owned firms with industry adjustment and robust option

	Revenue per employee	Net profit per employee	Revenue per unit of cost	Return on assets	Market-to-book ratio
Private	0.146**	0.054***	0.144***	0.006**	0.206**
	(2.21)	(3.21)	(2.83)	(2.42)	(2.28)
Size	0.147***	-0.012*	0.134***	0.007***	-1.205***
	(6.52)	(-1.95)	(6.3)	(5.24)	(-30.33)
Leverage	0.672***	-0.229***	-0.616***	-0.08***	1.380***
	(5.94)	(-9.94)	(-6.83)	(-9.2)	(8.42)
Age	-0.002	-0.002	-0.011***	-0.001***	0.000
	(-0.59)	(-1.2)	(-3.21)	(-4.8)	(0.00)
Sd_rev	0.121	0.001	-0.160	0.006	5.280***
	(0.38)	(0.02)	(-0.81)	(0.48)	(8.97)
Admin_sales	-0.209***	-0.005	-0.001	0.000	0.008***
	(-2.5)	(-0.76)	(-0.57)	(0.28)	(2.9)
Mkt_sales	-1.196***	1.528***	-0.121	-0.009	-0.146
	(-4.93)	(5.84)	(-1.04)	(-1.18)	(-1.77)
Institution	0.064***	-0.017***	0.023***	0.002***	0.114***
	(6.31)	(-5.21)	(2.88)	(3.26)	(6.93)
No. of Obs.	4298	4285	4318	4304	4237
R square	0.140	0.296	0.133	0.149	0.275

This table reports the regression coefficients for performance comparison on a reduced sample in which industries with fewer than 20 family-owned firms are dropped, and with robust standard error. The dependant variables are the performance measures *revenue per employee, net profit per employee, revenue per unit of cost, return on assets,* and *market-to-book ratio.* The explanatory variable is *Private* which is a dummy variable equal to 1 if the firm is family-owned and 0 otherwise. For control variables, s*ize* is total assets (in natural log form), *leverage* is the ratio of total liabilities to total assets, *age* is the firm's number of years of existence from its establishment, *sd_rev* is the SD of the firm's annual sales during the sample period 1999-2004, *admin_sales* is administration expenses as a percentage of sales, *mkt_sales* is marketing expenses as a percentage of sales, *institution* is a measure of the institutional environment of the province in which the firm is incorporated. Industry fixed effect is controlled by including dummy variables for industry distribution. The coefficients of the industry dummy are not reported for reasons of space.
T-statistics are given in brackets and asterisks denote significance level: ***=1%, **=5%, *=10%.

Table 5. Regression Results for Performance Comparison between SOEs and Family-owned Firms in Different Industries

	Revenue per employee		Net profit per employee		Revenue per unit of cost		Return on assets		Market-to-book ratio	
	C&H	A&L	C&H	A&L	C&H	A&L	C&H	A&L	C&H	A&L
Private	-0.077	0.446***	0.071	0.337***	0.024	0.044**	0.008	0.008	-0.124	0.568**
	(-1.17)	(4.6)	(1.31)	(4.07)	(1.2)	(2.24)	(1.33)	(1.04)	(-0.66)	(2.32)
Size	0.152***	0.126**	0.090***	0.089**	-0.006	-0.013	0.002	0.007*	-0.914***	-1.676***
	(8.08)	(2.44)	(5.78)	(2.02)	(-1.1)	(-1.29)	(1.46)	(1.75)	(-17.31)	(-12.27)
Leverage	-0.034	0.053	-0.592***	-0.814***	-0.154***	-0.165***	-0.082***	-0.125***	1.081***	2.489***
	(-0.44)	(0.41)	(-9.14)	(-7.4)	(-6.58)	(-6.19)	(-11.81)	(-11.39)	(4.75)	(5.83)
Age	0.022***	-0.017*	0.007*	-0.018**	-0.002*	-0.008***	0.000	-0.001**	-0.006	0.028
	(5.07)	(-1.85)	(1.91)	(-2.29)	(-1.78)	(-4.2)	(0.66)	(-1.95)	(-0.49)	(1.19)
Sd_rev	-0.023	30.620***	-0.060	10.900***	0.062	-3.370***	0.016	0.804**	3.320***	39.300***
	(-0.11)	(6.14)	(-0.36)	(2.59)	(0.99)	(-3.39)	(0.88)	(2.00)	(5.79)	(3.08)
Admin_sales	-0.484***	-0.094	-1.144***	0.024***	0.036	-0.008	-0.243***	0.003***	0.957**	-0.252
	(-5.09)	(-1.17)	(-10.55)	(3.26)	(1.24)	(-0.45)	(-18.73)	(4.62)	(2.54)	(-0.66)
Mkt_sales	0.550	-1.115*	-0.284	-3.042***	1.068***	0.891***	-0.029	-0.387***	0.842	3.130**
	(1.3)	(-1.79)	(-0.85)	(-5.66)	(8.28)	(7.01)	(-0.82)	(-7.82)	(0.74)	(1.96)
Institution	0.031***	0.051***	0.005	0.017	-0.014***	0.004	0.000	0.002	0.130***	0.215***
	(3.31)	(2.4)	(0.65)	(0.94)	(-5.04)	(0.83)	(0.29)	(1.01)	(5.01)	(3.89)
No. of Obs.	1205	608	1203	609	1212	609	1209	610	1195	600
R square	0.130	0.175	0.214	0.206	0.139	0.199	0.369	0.305	0.239	0.265

This table reports the regression coefficients for performance comparison in different industries. A&L refers to the agricultural industry and light industry. C&H refers to the heavy industry and chemical industry. The dependant variables are the performance measures *revenue per employee, net profit per employee, revenue per unit of cost, return on assets,* and *market-to-book ratio.* The explanatory variable is *Private* which is a dummy variable equal to 1 if the firm is family-owned and 0 otherwise. For control variables, *size* is total assets (in natural log form), *leverage* is the ratio of total liabilities to total assets, *age* is the firm's number of years of existence from its establishment, *sd_rev* is the SD of the firm's annual sales during the sample period 1999-2004, *admin_sales* is administration expenses as a percentage of sales, *mkt_sales* is marketing expenses as a percentage of sales, *institution* is a measure of the institutional environment of the province in which the firm is incorporated. Industry fixed effect is controlled by including dummy variables for industry distribution. The coefficients of the industry dummy are not reported to conserve space.

T-statistics are given in brackets and asterisks denote significance level: ***=1%, **=5%, *=10%.

regulation, etc. Therefore it can be expected that family-owned firms will particularly outperform SOEs in these industries. The agricultural and light industries versus the heavy and chemical industries provide us with two ideal subsamples for comparison. The regression results show that in heavy and chemical industries, there is no significant difference between family-owned firms and SOEs in all five performance measures, whereas in agriculture and light industries, family-owned firms significantly outperform SOEs except on return on assets.

Our final robustness check includes a firm fixed effect to see whether the results are driven by some unobserved heterogeneity at firm level. We use the standard fixed effect panel data regression. To improve control for unobserved firm-level heterogeneity, we reduce our sample to obtain a balanced panel, retaining only firms which have observations for each year in the period 1999–2004. As expected, the results reported in Table 6 are slightly weaker than those in Table 2. For all five performance measures, the private dummy coefficient has the predicted direction. However, *Net profit per employee* and *Return on assets* are not statistically significant.

Table 6. Regression Results for Performance Comparison between SOEs and Family-owned Firms with Firm Fixed Effect

	Revenue per employee	Net profit per employee	Revenue per unit of cost	Return on assets	Market-to-book ratio
Private	0.261***	0.054	0.092***	0.002	0.645***
	(2.86)	(0.58)	(2.84)	(0.36)	(3.36)
Size	0.326***	0.152***	-0.043***	-0.003	-1.502***
	(9.02)	(4.06)	(-3.23)	(-1.09)	(-17.56)
Leverage	0.361***	-0.380***	-0.049**	-0.042***	3.623***
	(5.51)	(-5.76)	(-2.13)	(-7.68)	(17.13)
Age	0.052***	-0.010	-0.012***	-0.003***	-0.193***
	(6.32)	(-1.2)	(-3.87)	(-4.98)	(-9.81)
Admin_sales	-0.084***	0.009**	-0.086***	-0.058***	0.145*
	(-3.22)	(1.99)	(-8.73)	(-18.09)	(1.69)
Mkt_sales	-0.962***	-1.911***	0.857***	-0.064***	-0.650
	(-4.70)	(-10.61)	(11.72)	(-3.95)	(-1.57)
No. of Obs.	4385	4393	4394	4394	4341
R square	0.059	0.086	0.134	0.207	0.202

This table reports the regression coefficients for a performance comparison with firm fixed effect. The dependant variables are the performance measures *revenue per employee, net profit per employee, revenue per unit of cost, return on assets,* and *market-to-book ratio.* The explanatory variable is *Private* which is a dummy variable equal to 1 if the firm is family-owned and 0 otherwise. For control variables, *size* is total assets (in natural log form), *leverage* is the ratio of total liabilities to total assets, *age* is the firm's number of years of existence from its establishment, *admin_sales* is administration expenses as a percentage of sales, *mkt_sales* is marketing expenses as a percentage of sales.
T-statistics are given in brackets and asterisks denote significance level: ***=1%, **=5%, *=10%.

Discussion, Summary and Conclusion

Using financial data from the Chinese stock market, we compare the financial and operating performance of family-owned listed firms and state-owned listed firms. After controlling for size, leverage, firm age, sales volatility, innovation and marketing, institutional environment and industry distribution, we find that family-owned firms perform better in terms of operating efficiency and profitability; moreover, their stocks are preferred by investors over those of SOEs. Our results remain stable through several robustness checks.

These results are consistent with the existing literature. Leland and Pyle (1977) suggest a positive linear relationship between inside ownership and the market value of the firm. Since managerial control within family-owned firms is often exerted by family members, this linear relationship could be assumed to exist in most of the family-owned firms in our sample. Kirchhoff and Kirchhoff (1987) show in their empirical study that family members are more productive than other employees in family businesses. In a seminal study of the relationship between the level of managerial ownership and the value of large firms, Morck, Shleifer, and Vishny (1988) found that the Tobin's Q measure of firm value increases when the founding family holds one of the top two positions, for firms incorporated after 1950. McConaughy et al. (1998) found that family control is associated with higher firm performance. They suggest that families have better incentives to maximize firm value. In another study of 470 Fortune 500 companies for the period 1982-94, Kang (2000) indicates that family owners are positively associated with performance, and that there is a positive association with performance when a family member with some kind of ownership stake is the non-CEO chairman of the board. In addition, the factors of having a family as the single largest shareholder, and a family member in a non-CEO chairman position, are positively associated with corporate performance. Based on a Norwegian sample, Mishra, Randoy and Jenssen (2001) find a positive association between founding family control and firm value for four alternative definitions of founding family control.

The results shown in Table 5 are also very interesting. The agricultural and light industries were the starting point in the early 1980s for China's market opening and liberalization, and private firms in those industries have had plenty of time to build up their expertise and excellence; meanwhile, in the heavy and chemical industries private ownership was prohibited until very recently, and the entry barriers in those industries are still very high for private firms due to regulatory, capital and technology constraints. Table 5 suggests that the performance superiority of family-owned firms exists mainly in agriculture and light industries, but not in heavy and chemical industries. These results confirm that family-owned firms excel mostly in the sectors where they are long-established, and consequently indicate that family-owned firms need a long learning process to become good performers. These findings also suggest that our main results showing better overall performance by family-owned firms are driven by family-owned firms operating in agricultural and light industries.

To the best of our knowledge, this paper is the first empirical study to look at firm-level performance in China's private sector. Our paper thus contributes significantly to the literature, providing firm-level evidence on how family businesses are operating in main-

land China. Our results also support the general consensus regarding China's increasing reliance on private companies as a motor for economic growth and new jobs (McGregor 2004). This has some important practical implications that should influence the direction of further economic policy developments in China: in order to develop the Chinese economy and improve its efficiency, the government should allow the private sector to play a more active role, by providing a better regulatory environment and lowering the entry barriers related to technical, financial and political issues. Our results also show that family-owned firms excel mainly in the industries where they are long-established, such as agriculture or light industry. This indicates that it takes time for family-owned firms to understand their specific sector and to operate efficiently. Chinese policymakers thus need to devise a gradual, continuous industry liberalization strategy to elicit the fullest private-sector contribution to economic growth. This finding is also of great relevance to other transitional economies in the world.

This study undeniably has its limitations. The first is related to our sample choice, as the question may remain of whether listed family-owned firms are truly representative of China's private sector overall. As reported in the Financial Times[13], "tens of millions of small and medium-sized enterprises have wrested control of the economy from the state sector". From that standpoint, our large listed family-owned firms are not typical examples of Chinese private sector companies. Nevertheless, we believe our study remains valid for the following three reasons. First, this group of large and well-run listed family-owned firms represents the (very near) future for most successful private SMEs, thanks to the Chinese economy's rapid growth. Second, the problem of data availability is a serious obstacle to any empirical study on the performance of private SMEs in China. Third, the capital market offers a fairly homogenous institutional, financial and legal environment that provides a good basis for our comparison between listed family-owned firms and listed SOEs.

A second limitation concerns the methodology used in this study. With a large sample and statistical tests, the paper confirms the performance superiority of family-owned firms over SOEs in China. However, this methodological approach treats every firm like a black box, and not all the theoretical explanations developed in Section 2 can be tested directly. Therefore, case studies comparing family-owned firms and SOEs are required to contribute direct organizational and cultural observations showing why family-owned firms perform better.

Another limitation of the study is the partial use of control variables in our regression model. Due to the data availability problem, we were not able to control for the firm's product scope, which is very important as the scope with which a firm operates can significantly influence firm performance. Furthermore, for the same reason, only very rough measures were used in order to control for firms' advertising and research intensity.

In future research, it will be interesting, firstly, to observe whether the difference in performance between family-owned listed companies and state-owned listed companies is stable over time, and if possible, how it changes. Once more historical data have been accumulated, researchers will be able to carry out a longitudinal study on performance trends for family-owned listed firms, to observe in particular whether they successfully extend their performance into sectors outside their traditional areas of dominance, such as agricultural and light industries.

Secondly, investigation into the features of Chinese family-owned firms, especially the question of their corporate governance, is another avenue for exploration.

Then in the coming years, more and more family-owned firms will be handed down from the founders to the second generation, creating fertile ground for studies on successions and post-succession performance. This will be a particularly interesting research issue, since the successors will have been raised in a unique context with a mixture of post-communism, post-cultural revolution, rapid economic and social changes, and strict population control.

Endnotes

1 Two anonymous referees helped us to improve the paper considerably. We thank Thomas Jeanjean, Hervé Stolowy, Véronique Malleret, Nhutuyen Le (the discussant) and workshop participants at HEC School of Management, Paris (January 2005), at the 2nd EIASM Workshop on Family Firm Management Research (Nice, France, June 2006) and at the 2nd Asia-Pacific Corporate Governance Conference (Hong Kong Baptist University, Hong Kong, August 2007) for helpful comments. Yuan Ding and Hua Zhang would like to acknowledge the financial support of the CEIBS Research Foundation. They thank Yvonne Yuan and Yixin Luo for their able research assistance. The authors also thank Ann Gallon for her much appreciated editorial help. Part of the research was conducted when the first author was a member of HEC School of Management, Paris.

2 From Security Daily, August 22, 1999 (in Chinese).

3 As Anderson et al. (2003) have reported, the contribution of SOEs to GDP as measured by output percentage dropped from 77 per cent in 1978 to just over 28 per cent in 1999, and the relative output of privately-owned enterprises rose from zero to 18 per cent over the same period, while collectively-owned enterprises accounted for 35 per cent in 1999.

4 "Private sector 'in control of China economy'", Financial Times, September 13, 2005.

5 This is a questionnaire survey in which private enterprises that are willing to participate report their information on a voluntary basis. Since only three measures of accounting performance (sales revenue, total assets and net profit) are requested in the questionnaire, data from this survey are not adequate for an in-depth academic study because of both the insufficient number of accounting items and the lack of data accuracy. This explains why we did not take the private enterprises covered by this survey as our sample.

6 "*Mainland Stocks become world giants after defying global rout*", South China Morning Post, August 15, 2007, p. B20.

7 Since the IPO is not a real process of privatization for SOEs, contrary to the findings of previous studies on privatization (better performance after privatization, see Megginson et al. 2001 for a comprehensive survey), company performance in the post-listing years falls sharply from levels in both the prelisting years and the initial public offering years (Wang, Xu, and Zhu, 2001).

8 Another performance measure close to ROA is ROE (return on equity). The difference between ROE and ROA is the leverage (controlled in our study). ROE is a financial profitability measure from the shareholders' viewpoint, while ROA is an economic profitability measure. Since we are studying the economic efficiency of family-owned firms, we find ROA is more appropriate. The correlation between ROE and ROA in our sample is very high (0.875). As one of the robustness checks (not reported), we replace ROA by ROE as the performance measure, and the results are quite similar.

9 As a robustness check, we use "firm revenue" and "number of employees" (both in log form) as alternative proxies for size. The results (not reported) remain stable.

10 Under Chinese GAAP, firms do not report their R&D expenses on a separate line in their income statement, but book them under "Administration and general expenses".

11 As these individual indices are largely intercorrelated, we replace the arithmetic mean of all indices with individual index and conduct regressions for a robustness check. The results remain largely similar.

12 In tests not reported here, we add a dummy indicating the economic development level of the region the firms come from. The methodology is as follows: we rank each province's GDP per capita and categorize the 31 provinces into three groups respectively representing a developed region, a developing region, and an intermediate region. The region dummy is 3, 2, and 1 respectively for firms from the developed region, the

intermediate region, and the developing region. We do not report the result of the regional dummy; as it is highly correlated with the institution measure, we considered it sufficient to report the institution measure model only.

13 "Private sector 'in control of China economy' ", Financial Times, September 13, 2005.

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