Long-term stock performance of Chinese IPOs [*]

1. Introduction

Previous US studies show evidence that stocks of firms that go public significantly underperform their matched peers (Loughran and Ritter, 1995; Ritter, 1991; Ang et al., 2007). Long-term underperformance has been observed also in many non-US countries (Aggarwal et al., 1993; Álvarez and González, 2001; Aussenegg, 2000; Cai and Wei, 1997; Drobetz et al., 2005; Keloharju; 1993, Kim et al., 1995; Levis, 1993; Omran, 2005; Page and Reyneke, 1997). The existence of long-term underperformance still remains as puzzle in finance field, although numerous works have been devoted to this issue (Brav and Gompers, 1997; Teoh et al., 1998; Kahle, 2000; Schultz 2003; Guo et al., 2006).

Researchers have recently paid much attention to Chinese IPOs that have some unique characteristics (Chan et al., 2004; Huang and Song, 2005; Mok and Hui, 1998; Yu and TSE, 2006; Wang, 2005). However, only a limited number of studies address long-term stock underperformance of Chinese IPOs. As an exception, Chan et al. (2004) document that A-share IPOs experience only small underperformance, with the wealth relatives

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ranging from 0.90 to 0.98.[1] This result suggests that Chinese IPO firms suffer less from long-term stock underperformance. Analyses of Chinese IPOs will allow us to find some key factors associated with long-term stock underperformance during post-IPO periods.

This paper is principally intended to investigate why Chinese IPOs experience smaller long-term stock underperformance. Using a sample of 447 IPOs that went public during 2000-2004, we find that the wealth relative of the whole sample ranges from 0.90 to 0.98 for the 60 month investment period after IPO, which is much higher than international evidences (Cai and Wei, 1997; Loughran and Ritter, 1995; Omran, 2005; Álvarez and González, 2001 and Drobetz et al., 2005). Importantly, the significant portion of Chinese IPOs is privatization of state-owned enterprises (SOEs); in our sample more than 70% of IPOs are SOEs. SOEs have some special characteristics that potentially affect the long-term stock performance: small reduction in managerial ownership; concentrated ownership structure; close political connections with the government which help SOEs receive preferential treatments. We find that SOEs do not underperform (they had wealth relatives greater than one) during the 60-month period after the IPO. In contrast, the wealth relative of non-SOEs during the 36-month (60-month) period ranges from 0.63 to 0.67 (0.48 to 0.64), which is similar or lower than those of US and other countries' IPOs. Those results suggest that the smaller underperformance of Chinese IPOs mainly comes from better performance of SOEs.

[1] Chan et al. (2004) also find that B-share IPOs outperform all benchmarks, with the wealth relatives ranging from 1.105 to 1.453.

We also investigate whether the special characteristics of SOEs cause their better long-term stock performance. However, we find no evidence that the unique ownership structure, preferential access to bank loans, small earnings management affect the SOEs' long-term performance. In addition, we do not find evidence that SOEs tend less to fall into financial distress than the non-SOEs during the post-IPO period. The non-existence of long-term stock underperformance for Chinese SOEs still remains as puzzle. It is likely that several unobserved factors (e.g., less information asymmetry; investors' sentiment on SOEs) are related to long-term stock performance of SOEs that go public.

The remainder of this paper is organized as follows. Section 2 presents background information and hypothesis. Section 3 explains the methodology. Section 4 shows sample selection procedures and long-term stock performance of sample firms. Section 5 presents empirical results. Finally, Section 6 is a brief summary of the paper.

2. Background information and hypothesis

In China, a series of economic reforms has been conducted during the past 30 years, which has enhanced China's transition from a central-planned economy towards a market-oriented economy. As a key aspect of economic reform, the Chinese Government established the Shanghai Stock Exchange (SHSE) in 1990 to help the privatization of SOEs, followed by the Shenzhen Stock Exchange (SZSE) in 1991. The privatization of SOEs is an important step in Chinese economic reform.

Before going public, SOEs need to be reorganized as corporations via selling shares to their employees, other SOEs, and legal entities at a price around the book value of equity.

Then, SOEs that meet the listing requirements need to apply for listing approval from the China Securities Regulatory Commission (CSRC). Upon approval, companies sell about one-third of their shares to the public at the time of the IPO (Wang, 2005). Only A-shares (those traded only by Chinese citizens of The People's Republic of China on the SHSE and the SZSE) and B-shares (those traded only by foreign investors on the two stock exchanges) are issued at the IPO.

However, SOEs, which are outcome of central-planned economy, show several special characteristics even after the privatization. As the final controller of SOEs, the state still owns the majority of outstanding shares of SOEs after IPOs (Hovey and Naughton, 2007) and has enough power to appoint managers for SOEs. Managers of SOEs usually receive only cash compensations and have only a limited number of shares both before and after the IPO; there are no severe reductions in managerial ownership in Chinese IPOs, which are common in other countries' IPOs.

Some of managers of SOEs are current or former government officials (Fan et al., 2007; Francis et al., 2009; Chen et al., 2011). As a result, the SOEs have close political connections with the governments (Fan et al., 2007; Francis et al., 2009). The political connections bring preferential benefits to SOEs in many aspects: the preferential access to bank debt in good terms; monopoly in some protected industries; high possibility of wining the competition for government procurements (Wang, 2005; Francis et al., 2009). Those preferential treatments are likely to make investors believe that SOEs have a low bankruptcy risk.

Meanwhile, the political connections play an important role also in the IPO process. Chinese government introduced a governance system (Issuance Quota System) to select companies for going public in 1993, which relies on regulatory decentralization. Under the Issuance Quota System, the CSRC imposes the maximum number of shares that can be issued for each year to local governments. In addition, the system rewards local governments by allocating more stock issuance quotas if listed companies recommended by the local government perform better during the post-IPO periods. Those facts give local government officials an incentive to choose firms that perform well to go public; they want those companies to spur local economic developments, which improve their career paths (Du and Xu, 2009; Li and Zhou, 2005; Maskin et al., 2000). Due to the political connection, the local government officials have advantages in access to information about SOEs operating in their regions. As a result, they are likely to choose SOEs to go public. Consistent with this view, Du and Xu (2009) present evidence that the Issuance Quota System decreases earnings management by SOEs. The Issuance Quota System was formally abolished in 2000, but Du and Xu (2006) suggest that it actually governed the stock market until around 2003.

It would be also noteworthy that the Chinese Central Government adopted the Channel Restrictions System between 2001 and 2004. Under this system, CSRC allocated the number of IPO underwritings to each securities firm. As with local government officials in the Issuance Quota System, if a securities firm underwrites IPO firms that perform well during the post-IPO period, the securities firm is rewarded by more stock issuance channels. Importantly, Chinese securities firms are also SOEs. This system is likely to

give securities firms an incentive to underwrite better quality SOEs; securities firms are likely to play a similar role to local government officials in the Issuance Quota System.

As mentioned, Chan et al. (2004) suggest that Chinese IPOs suffer less from long-term stock underperformance. Importantly, the unique characteristics of SOEs that go public (low reduction in managerial ownership; concentrated ownership structure; better access to bank debt; political connection; small earnings management) potentially have a positive effect on their long-term stock performance. Those discussions give rise to the following hypothesis.

Hypothesis: *SOEs experience smaller long-term stock underperformance than non-SOEs do. The better long-term stock performance of SOEs is the main reason for the small underperformance of Chinese IPOs.*

3. Methodology

In order to compare with evidence from the US and other countries (Cai and Wei, 1997; Gompers and Lerner, 2003; Levis, 1993; Loughran and Ritter, 1995; Ritter, 1991), we use the buy-and-hold return (BHR) as a long-term performance measure. Loughran and Ritter (2000) report that BHRs capture around 80-90% of true abnormal returns. BHRs that accurately measure investor experience will serve as an appropriate performance indicator in the Chinese stock market, where over 90% of investors are individuals (Barber and Lyon, 1997; Brav, 2000). We compute 12, 24, 36, 48, and 60-month BHRs after the IPO by using the following computation (hereafter denoted by BHR_{12}, BHR_{24}, BHR_{36}, BHR_{48}, BHR_{60}, respectively). See Table 1 for definitions of variables.

$$BHR_{it} = \prod_{t=1}^{T}(1+R_{it}) - 1,$$

$$T \in (12,24,36,48,60),$$

where R_{it} is the monthly stock return of firm i in month t. We define month 1 as the month after the firm's IPO. We compute R_{it} as

$R_{it} = (P_{it} - P_{it-1} + D_t)/P_{it-1}$, where P_{it} is the closing price of firm i's stock at month t. D_{it} is the dividend payment of firm i in month t.

[Insert Table 1 about here]

We choose as a matched firm the non-IPO company (firms that went public before December 1997) that is closest to the IPO firm in Fama and French's (1992, 1993) 3-factors; the matched firm's BHR is used as a benchmark return. Specifically, we adopt three matching methods: size-matching, book-to-market (B/M) matching, and size and B/M-matching (Chan et al., 2004; Ritter, 1991). Barber and Lyon (1997) document that matching by size and B/M ratio yields well-specified test statistics in virtually all sampling situations. In the size-matching procedure, a non-IPO firm that has a market value of tradable shares at the end of 1999, which is closest to the IPO firm's market value on the initial trading day, is adopted as a matched firm. Similarly in the B/M-matching, we choose as a matched firm the non-IPO firm that has B/M ratio (book value of equity multiplied by the ratio of tradable shares to total shares divided by the market value of tradable shares) at the end of 1999, which is closest to the IPO firm's first trading day's B/M ratio. In the size-and-B/M matching, we divide sample firms into two

groups based on firm size, and then select as a matched company the non-IPO firm in the same size group that is closest in B/M ratio to the IPO firm.[2]

As with many previous studies (Aggarwal et al., 1993; Cai and Wei, 1997; Chan et al., 2004; Levis, 1993 and Kim et al., 1995; Ritter, 1991), we adopt wealth relatives to examine whether Chinese IPO stocks experience long-term underperformance,

$$\text{WR} = \frac{1 + \text{average BHR for IPOs}}{1 + \text{average BHR for matched firms}},$$

where wealth relatives lower than one mean that IPO firms underperform their matched companies. We also use adjusted BHR (IPO firm's BHR less matched firm's BHR; hereafter denoted by AD-BHR) as an additional long-term stock performance measure.

4. Sample selection and data

4.1. Sample selection

We analyze Chinese A-share IPOs that went public on the SHSE and SZSE during the 2000-2004 period. We obtain financial data as well as dividend data from the OSIRIS database; buy-and-hold returns are computed by merging the monthly stock price data with the dividend data. Corporate ownership structure and stock price data are collected from the China Center for Economic Research Database (CCER Database). We hand-collect data of corporate ownership structure before IPO from firms' prospectus. We start

[2] SOEs that went public during the period under analysis tend to be large in size. In the size-and-B/M matching, we cannot find a matched company for all IPO firms if we divide the sample firms into three or more groups according to size.

our analytical period with year 2000 because our financial data starts in that year. We need stock price and dividend data during the five years after IPOs; that is why we end the sample period with year 2004. During the whole sample period, Chinese IPOs are subject to the Issuance Quota System and/or the Channel Restrictions System. We do not include B-share IPOs because there were only six B-share IPOs during the period, which are much smaller in offering size compared to A-share IPOs.[3] We also exclude financial companies because of their different accounting statement formats. As a result of those procedures, our sample consists of 447 companies, of which 357 firms are listed on the SHSE and 90 firms on the SZSE.

[Insert Table 2 about here]

Panel A of Table 2 shows the distribution of our sample by calendar year. During these five years, IPO markets were more active in 2000 and 2004. Most (approximately 80%) of our sample firms went public on the SHSE. Panel B presents the industry distribution of our sample firms. Manufacturing firms account for a substantial part of the sample companies.

4.2. Long-term stock performance of sample firms

Panel A of Table 3 shows long-term stock performance for the entire sample. The sample firms experienced negative buy-and-hold returns for a few years after their IPOs, probably because China experienced bear markets during the period under review; the

[3] For B-share IPOs during 2000 to 2004, the amount of new stock offerings ranges from 0 billion to 27.2 billion RMB, whereas that of A-share IPOs ranges from 779.8 to 1527 billion RMB (China Capital Markets Development Report issued by the CSRC in 2008).

Shanghai Composite Index declined from 2245.44 in June 2001 to 998.23 in June 2005 (China Capital Markets Development Report 2008, issued by the CRSC). In contrast to Chan et al. (2004), who adopted the period January 1993 to December 1998 as a sample period, our sample period allows us to avoid the hot-market effect on long-term stock performance (Derrien, 2005; Derrien and Womack, 2003; Helwege and Liang, 2004).

[Insert Table 3 about here]

Consistent with previous studies, most of the presented wealth relatives are lower than one. AD-BHRs are significantly negative for 24 or 36 months after IPO, suggesting that Chinese IPO firms experience long-term underperformance. In the 36-month investment period, the wealth relatives are 0.82 to 0.84, which are similar to other countries' evidence (Table 4). As shown in Panel A of Table 4, the wealth relatives of US IPOs ranges from 0.80 to 0.83. However, it is noteworthy that the wealth relatives for the 60-month investment periods are over 0.90, which is much higher than other countries' evidence with the wealth relatives from 0.70 to 0.81 (Panel B of Table 4). AD-BHRs are not significantly different from zero. As with Chan et al. (2004), these findings suggest that Chinese IPOs experience small long-term stock underperformance.

[Insert Table 4 about here]

By using the CCER database, we identify 326 firms (73% of sample firms) as being controlled by central and local governments, state agencies, and other state-owned enterprises and institutions. In this research, we define those companies as SOEs; the fraction is consistent with the notion that privatization of SOEs accounts for a significant

portion of IPOs in China (Du and Xu, 2006). To test our hypothesis, we show long-term performance measures separately for SOEs and non-SOEs (Panels B and C of Table 3). They show that SOEs have higher wealth relatives than non-SOEs do. For the 36-month investment horizon, SOEs' mean wealth relatives are over 0.9, while those of non-SOEs are around 0.65. These figures suggest that SOEs suffer less from long-term underperformance than non-SOEs. Consistent with the wealth relative results, the SOEs' adjusted buy-and-hold returns (AD-BHRs) are significantly higher than those of non-SOEs. It would be important to compare the presented wealth relatives to those reported in previous studies (see Table 4). In 36- and 60-month investment horizons, the wealth relatives of non-SOEs, which range from 0.48 to 0.67, are similar or much lower than those in previous studies for other countries. In contrast, those of SOEs that range from 0.91 to 1.12 are much higher than other countries' wealth relatives. Remarkably, SOEs' wealth relatives over the 60-month investment period are over one, suggesting that SOEs that go public do not underperform their counterparts. These findings clearly support our hypothesis that small long-term underperformance associated with Chinese IPO companies (Chan et al., 2004) comes from SOEs' small underperformance.

4.3. Characteristics of SOEs

As mentioned in the background information section, SOEs have some special characteristics, which potentially impact on the long-term stock performance. Our next question is whether these characteristics generate the better long-term performance of SOEs

In general, IPOs are accompanied by substantial reductions in managerial ownership, which potentially engender severe agency costs (Ritter, 1984). In contrast to IPO firms in other countries, managers of Chinese SOEs in our sample have almost no shares before IPO and the idea of increased agency conflicts does not apply to those companies. Instead, SOEs have concentrated ownership structures even after IPO, which potentially solve free-rider problems (Shleifer and Vishny, 1986), because the state holds substantial portions of shares. In addition, SOEs have close political connections with the governments, which can help SOEs to receive the governments' preferential treatments, especially better access to bank loans (Tian, 2001; Wang, 2005)[4]. The preferential access to external capital may mitigate underinvestment problems that have a negative impact on the value of firms with rich growth opportunities (Helwege and Liang, 2005). Previous studies show evidences that IPO firms with unusually high accruals in IPO year experience poor long-term stock performance thereafter (Teoh et al., 1998; Rao, 1993 and Roosenboom et al., 2003). However, Du and Xu (2009) suggest that SOEs manipulate their earnings less.

We collect variables of sample companies to examine whether those factors are associated with the non-existence of underperformance for SOEs: the change in the percentage ownership by the manager and directors (hereafter denoted by Ch_MANAGEROWN); the percentage owned by the largest shareholder (hereafter

[4] Given that SOEs are the most important driver for Chinese economic development, the central and local governments have an incentive to preferentially allocate funds to SOEs. Since most major banks in China are also controlled by the central or local governments, the latter are prone to support the development of SOEs by providing loans through government-owned banks.

denoted by TOPONE); the ratio of bank debt to total debt (BANKL); discretionary current accruals (DCA).

[Insert Table 5 about here]

Table 5 presents descriptive statistics. The median MANAGEROWN (percentage ownership by the top manager and directors) is zero both in the IPO year and the year before IPO. As a result, the median Ch_MANAGEROWN is also zero. Panels B and C of Table 5 clearly show that this characteristic is attributable to SOEs; SOEs have significantly lower managerial ownership both in the IPO year and the year before IPO; as a result, SOEs experience significantly smaller reduction in managerial ownership before and after IPO.

In contrast, the median TOPONE is 45.57%, which suggests that the ownership structure is highly concentrated in Chinese IPO companies; especially, SOEs have a more concentrated ownership structure (the median TOPONE is 52.70 %). The concentrated ownership structure of SOEs is attributable to the fact that the government holds a substantial part of those firms' shares even after IPOs (Chi and Padgett, 2005a). Table 5 also shows that the mean BANKL is significantly higher for SOEs than for non-SOEs. Consistent with Du and Xu (2009), Panels B and C of Table 5 show that the mean DCA is significantly lower for SOEs than for non-SOEs.

5. Empirical results

5.1. Univariate analyses

We divide our sample firms into groups under Ch_MANAGEROWN, TOPONE, BANKL and DCA (the IPO year data are used for those variables) and compare long-term performance measures, to investigate whether the SOEs' better performance comes from their ownership structures, preferential access to bank debt and small earnings management. For Ch_MANAGEROWN for which many observations take a value of zero, we establish a group that consists of firms that take a value of zero (Group 3 which is the highest Ch_MANAGEROWN group) and then divide the remaining firms equally into two groups (Group 1 is the lowest Ch_MANAGEROWN group). For BANKL (Panel C) there are many observations that take a value of zero; we set Group 1, which includes the firms with zero BANKL. Then we divide the remaining firm equally into two groups (Group 3 is the highest BANKL group). For TOPONE and DCA, we divide sample firms equally into four groups (Group 4 is the highest TOPONE or DCA group). Hereafter, we focus on 36- and 60-month adjusted buy-and-hold returns as a measure of long-term stock returns.

Table 6 presents results when computing AD-BHR by using the size-and-B/M matching procedure (results are qualitatively the same when using size-matching and B/M-matching procedures). Panel A of Table 6 shows that for the entire sample, the AD-BHR decreases monotonically with Ch_MANAGEROWN; Group 3 (firms with zero Ch_MANAGEROWN) performs significantly better in the long term than Group1. For SOEs, the result also shows that there is a monotonically positive relation between Ch_MANAGEROWN and adjusted buy-and-hold return. However, there is not a significant difference in adjusted buy-and-hold returns between groups 1 and 3 (at the

five percent level). The result does not support the idea that Chinese SOEs that go public experience small underperformance because there are almost no reductions in managerial ownership.

For the entire sample and SOEs, we do not find any monotonic relation between TOPONE and the adjusted buy-and-hold return. SOEs that belong to Group 4 show significantly better returns over the 36-month investment horizon than Group 1 SOEs. However, the difference becomes insignificant when we adopt the 60-month investment period. Similarly, we do not find any clear relation between BANKL and the adjusted buy-and-hold return. Panel D also presents no evidence that for SOEs the adjusted BHR is significantly associated with DCA. The univariate test results do not support the idea that Chinese SOEs that go public experience small underperformance due to the concentrated ownership structure, preferential access to bank debt, and/or earnings management.

5.2. Regression analyses

For the sake of examining whether SOEs have better long-term stock performance after controlling for various factors, we conduct regression analysis that adopts AD-BHRs as a dependent variable. The key independent variable is the dummy variable that takes a value of one for SOEs and zero for non-SOEs (D_SOE). We also include ownership structure variables (Ch_MANAGEROWN and TOPONE), BANKL, DCA and other control variables (firm age, offering size, leverage and firm size). Previous studies show evidence that firm age is positively related to long-term performance (Jegadeesh et al., 1993; Schultz, 1993; Hensler et al., 1997; Ritter, 1991). We follow

them and investigate the relation between firm age (AGE) and long-term stock price performance. We also adopt offering size as a control variable following previous studies that report a significant relation between offering size and long-term stock performance (Allen et al., 1999; Chi and Padgett, 2005b; Fan et al. 2007; Firth, 1997; Hensler et al., 1997; Ritter, 1991; Schultz, 1993). Bhabra and Pettway (2003) shows that there is a positive relation between leverage and long-term stock price performance. In this analysis, leverage is defined as the ratio of total liabilities divided by total assets (LEVERAGE). Previous studies present a positive relation between firm size and long-term performance (Chen, 2001; Naceur and Ghanem, 2001). We define firm size as the natural logarithm of total assets (LNASSET).[5] In each regression, we delete observations for which the dependent variable takes a value greater (lower) than its 99% (1%) percentile level to delete abnormal values. When necessary independent variables are not available, the observation is also deleted from the analysis. As mentioned, D_SOE is significantly associated with Ch_MANAGEROWN, TOPONE, BANKL and DCA (Table 5), but Table 7 shows no serious correlations among other variables.

[Insert Table 7 around here]

[Insert Table 8 around here]

[5] Previous studies show a positive relation between underwriter reputation and long-term performance (Carter et al., 1998; Paudyal et al., 1998; Bhabra and Pettway, 2003). However, all of our sample firms are underwritten by Chinese securities companies which are controlled by the government and have no high reputation at international level. That is why we do not adopt underwriter reputation in the independent variable.

Table 8 presents the regression results. Models 1 and 3 do not adopt ownership structure variables (Ch_MANAGEROWN; TOPONE), BANKL and DCA to simply examine whether SOEs experience better long-term stock price performance after controlling for firm age, size and leverage. Models 1 and 3 in Table 8 show that D_SOE has positive and significant coefficients in all specifications. Panel A (regression of AD-BHR computed by size-matching) indicates that the SOEs have about 29.1% (34.2%) higher 36- (60)-month adjusted buy-and-hold returns. Given that the mean AD-BHR_{36} (AD-BHR_{60}) is about -17% (-1.4%), this effect is economically large. The result serves as evidence that SOEs that go public experience small underperformance.

Models 2 and 4 include Ch_MANAGEROWN, TOPONE, BANKL and DCA. Panels A and B of Table 8 show that D_SOE still has a positive and significant coefficient. The result suggests that SOEs that go public perform better in the long term after controlling for the effect of ownership structure, preferential access to bank loans and earnings management. Ch_MANAGEROWN has positive but insignificant coefficients in most of estimations. In unreported analysis, we conduct regression analyses that include the interaction term between Ch_MANAGEROWN and D_SOE and find the interaction term having an insignificant coefficient. These results are not consistent with the view that SOEs do not experience severe underperformance because they have only a small reduction in managerial ownership. Similarly, TOPONE has an insignificant coefficient in all models. Concentrated ownership structures do not serve as a key reason why SOEs that go public experience small underperformance. For BANKL, all models engender an insignificant coefficient. Again, our results do not support the view that the preferential

access to bank loans is a reason for the better long-term performance of SOEs. Model 2 of Panel B engenders a negative and significant coefficient on DCA. However, all the other models do not carry a significant coefficient. We do not find robust evidence that SOEs experience small underperformance because they manipulate earnings less. Overall, our analyses do not support the view that Chinese SOEs do not suffer from long-term stock underperformance because of their unique ownership structures, preferential access to bank debt, and small earnings management.

Regarding control variables, Table 8 suggests that large firms tend to have significantly better long-term stock performance. In our research, leverage has a negative and significant impact on 36-month investment period, and the significant impact disappears during 60-month period after IPO. Offering size has a negative effect on 36-month performance when we adopt the size-and-B/M matching procedure. AGE has a negative and significant impact on long-term stock performance when we adopt the size-and-B/M matching procedure.

5.3. Additional analyses

Previous studies suggest that underpricing in the IPO process is related to long-term underperformance. Ritter (1991) and Loughran et al., (1994) show evidences that US companies have lower average initial returns and higher long-term returns. On the other hand, several researchers argue that underpricing is reckoned as a signal from better informed issuers to less informed investors about the firm's future cash flow (Allen and Faulhaber, 1989; Grinblatt and Hwang, 1989; Welch, 1989). Indeed, Álvarez and

González (2005) find a positive relation between underpricing and long-term performance in the Spanish capital market. In our data, SOEs have higher average initial return (136.66%) than non-SOEs' (108.48%). However, our unreported regression analyses suggest that D_SOEs still have a significantly better long-term performance after controlling for their high initial returns

Du and Xu (2006, 2009) suggest that IPO firms, which are selected by regional governments, are better pre-performing SOEs. However, our data find no significant difference in operating performance at the IPO year (operating income divided by assets minus DCA) between SOEs and non-SOEs. Finally, we investigate the frequency that IPO firms get into financial distress to test the view that SOEs have better long-term performance because of their low bankruptcy risk. SOEs that have political connections are more likely to be bailed out through bank lending when getting into financial difficulties than non-SOEs (Faccio et al., 2006). This fact suggests that SOEs have low bankruptcy risk, which potentially affects long-term stock performance. In April 1998, the Shanghai and Shenzhen Stock Exchanges created a "Special Treatment" (ST) category to distinguish shares of those companies with financial problem (defined as reporting negative income for two consecutive years) and put a daily price limit on those stocks. Subsequent to the enactment of the Securities Law in July 1999, the two exchanges issued new rules that suspense trading of shares of companies that reported negative income for three consecutive years; those stocks are categorized as "Particular Transfer" (PT) stocks. PT companies that report negative income for additional three consecutive years are forced to be de-listed. (China Capital Markets Development Report

issued by the CSRC in 2008). We define ST and PT firms as those that get into financial distress.

In our sample, 33 firms are marked with ST or PT label during the five years after IPO. Of them, 22 firms are SOEs which accounts for the 6.75% of the total SOE sample. On the other hand, 9.09 percent (11) of non-SOEs went into the ST or PT category. The difference in proportion is not statistically significant. We cannot argue that the low probability of getting into financial distress is a major source of small long-term stock underperformance of SOEs.

6. Conclusions

Previous studies commonly show evidence that stocks of firms that go public underperform their matched peers in the few years after the IPO (Aggarwal et al., 1993; Álvarez and Gonz áez, 2001; Aussenegg, 2000; Drobetz et al., 2005; Loughran and Ritter, 1995; Keloharju; 1993, Kim et al., 1995; Omran, 2005; Page and Reyneke, 1997; Ritter, 1991). The existence of long-term underperformance is one of puzzles in corporate finance research. In contrast, Chan et al. (2004) document that Chinese IPO companies only slightly underperform their matched peers. Therefore, our paper investigates why Chinese firms that go public experience smaller long-term underperformance than those in other countries do by using 447 A-share IPOs between 2000 and 2004.

We find that Chinese IPOs experience small stock underperformance during the 60 month period after their IPO. The wealth relative of the whole sample ranges from 0.90 to 0.98, which is much higher than those in international evidences (Cai and Wei, 1997;

Loughran and Ritter, 1995; Omran, 2005; Álvarez and González, 2001 and Drobetz et al., 2005). Strikingly, SOEs do not experience underperformance during the 60 month period after the IPO. The small underperformance of Chinese IPOs comes from the better performance of SOEs.

SOEs have several unique characteristics that potentially affect long-term stock performance: low reduction in managerial ownership; concentrated ownership; preferential access to bank loans; small earnings management. However, our analyses present no evidence that those factors are the main reason why SOEs suffer less long-term stock underperformance. The absence of underperformance for SOEs still remains as puzzle. It is likely that some unobserved factors (e.g., less information asymmetry; investors' sentiment on SOEs) affect long-term stock performance of SOEs that go public.

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Table 1 **Definitions of variables**	
Variables	Definitions
BHR	Buy-and-hold return
Wealth Relative	One plus buy-and-hold return for the IPO firm divided by one plus buy-and-hold return for the matched firm.
AD-BHR	Adjusted buy-and-hold return; buy-and-hold return for the IPO firm less buy-and-hold return for the matched firm.
D_SOE	A dummy variable that takes a value of one for firms controlled by the state and zero for others.
DCA	Discretionary current accruals that are computed by Teoh et al.'s (1998) method.
SIZE	Market value of tradable shares
B/M ratio	The book value equity multiplied by the ratio of tradable shares to total shares and then divided by the market value of tradable shares.
BANKL	The fraction of bank loans to total liabilities.
MANAGEROWN	The percentage ownership by manager and directors
Ch_MANAGEROWN	The percentage ownership by manager and directors at IPO year minus the percentage ownership by manager and directors before IPO year.
TOPONE	The percentage ownership by the largest shareholder.
LEVERAGE	Total liabilities divided by total assets.
AGE	Age of the firm at the point of IPO
LNASSET	Natural Logarithm of total assets
LNOFFERSIZE	Natural Logarithm of the number of offering shares multiplied by the offering price

Table 2
Sample distribution

This table shows the sample distribution by IPO year (Panel A) and industry (Panel B). Our sample consists of 447 firms that went public on the Shanghai Stock Exchange (SHSE) and Shenzhen Stock Exchange (SZSE) between 2001 and 2004.

Panel A : Distribution by IPO year

IPO year	Number of IPOs	(%)
2000	135	30.2
2001	78	17.5
2002	69	15.4
2003	65	14.5
2004	100	22.4
Total	447	100

Panel B: Distribution by industry

Industry	Number of IPOs	(%)
Agriculture, fishing, and stockraising	18	4.1
Mining	13	2.9
Manufacturing	293	65.5
Electricity, gas, and water	22	4.9
Construction	11	2.5
Transportation and warehousing	26	5.8
IT	27	6.0
Wholesale and retail	18	4.1
Real estate	7	1.6
Social service	9	2.0
Media	1	0.2
Comprehensive	2	0.4
Total	447	100

Table 3
Long-term stock performance of the entire sample

This table presents the long-term stock performance of Chinese IPO companies. The sample consists of 447 Chinese firms that went public on the Shanghai Stock Exchange (SHSE) and the Shenzhen Stock Exchange (SZSE) between 2001 and 2004. Matched firms are selected from those that went public before December 1997 (non-IPO firms) in three ways: size-matching, B/M-matching, and size-and-B/M matching. In the size-matching procedure, a non-IPO firm that has a market value of tradable shares at the end of 1999, which is closest to the IPO firm's market value on the initial trading day, is adopted as a matched firm. In the B/M-matching, we choose as a matched firm the non-IPO firm that has a B/M ratio (book value of equity multiplied by the ratio of tradable shares to total shares divided by the market value of tradable shares) at the end of 1999, which is closest to the IPO firm's B/M ratio on its first trading day. In the size-and-B/M matching, we divide sample firms into two groups based on firm size and then select as a matched company the non-IPO firm in the same size group that is closest in B/M ratio to the IPO firm. See Table 1 for definitions of variables.

Investment period (month)	Sample firms' BHR	Size matching			B/M matching			Size-and-B/M matching		
		Wealth relative	AD-BHR	t-statistics	Wealth relative	AD-BHR	t-statistics	Wealth relative	AD-BHR	t-statistics
Panel A:Entire sample (N=447)										
12	-0.204	0.983	-0.014	-0.87	1.005	0.004	0.30	0.993	-0.006	-0.41
24	-0.345	0.930	-0.050	-2.41 **	0.919	-0.058	-2.72 ***	0.939	-0.042	-2.22 **
36	-0.204	0.820	-0.175	-4.03 ***	0.836	-0.157	-3.54 ***	0.831	-0.162	-3.16 ***
48	-0.176	0.978	-0.019	-0.31	0.991	-0.008	-0.12	0.984	-0.013	-0.22
60	-0.211	0.982	-0.014	-0.26	0.920	-0.068	-1.34	0.900	-0.087	-1.82 *
Panel B: SOEs (N=326)										
12	-0.176	1.013	0.010	0.56	1.010	0.008	0.48	1.005	0.004	0.27
24	-0.323	1.001	0.001	0.04	0.967	-0.023	-1.02	1.005	0.003	0.15
36	-0.242	0.910	-0.075	-1.69*	0.948	-0.042	-0.94	0.967	-0.026	-0.56
48	-0.154	1.120	0.091	1.24	1.111	0.084	1.10	1.254	0.068	0.91
60	-0.174	1.120	0.136	2.30**	1.066	0.051	0.83	1.053	0.030	0.53
Panel C: Non-SOEs (N=121)										
12	-0.279	0.902	-0.079	-2.56**	0.992	-0.006	-0.25	0.956	-0.033	-1.25
24	-0.403	0.763	-0.185	-4.22***	0.799	-0.150	-3.15***	0.784	-0.165	-4.10***
36	-0.102	0.669	-0.445	-4.30***	0.658	-0.527	-4.37***	0.630	-0.527	-3.88***
48	-0.235	0.709	-0.315	-3.04***	0.750	-0.255	-2.76***	1.005	-0.232	-2.73***
60	-0.310	0.623	-0.417	-4.01***	0.639	-0.390	-4.72***	0.484	-0.404	-4.98***
Difference test (SOEs versus Non-SOEs)										
12	0.103	0.111	0.089	2.51***	0.018	0.014	0.45	0.049	0.037	1.21
24	0.080	0.238	0.186	4.09***	0.168	0.127	2.66***	0.221	0.168	3.98***
36	-0.140	0.241	0.370	3.83***	0.290	0.424	4.35***	0.337	0.501	4.44 ***
48	0.081	0.411	0.406	2.98***	0.361	0.340	2.46***	0.249	0.300	2.25**
60	0.136	0.497	0.553	4.77***	0.427	0.441	3.89***	0.569	0.435	4.09***

***: Significant at the 1% level
**: Significant at the 5% level
*: Significant at the 10% level

Table 4
International Evidence of IPO Long-term Performance

This table summarizes international evidence of long-term stock performance of firms that go public. Some papers use a range of benchmarks; in those cases, the average BHR and wealth relative are presented.

Paper	Country	Sample period	Sample size	BHR (%)	Wealth relative
Panel A: 36-month return					
Ritter (1991)	USA	1975-1984	1526	34.47	0.83
Loughran and Ritter (1995)	USA	1970-1990	4753	8.4	0.80
Levis (1993)	UK	1980-1988	712	55.72	0.89
Álvarez and González (2001)	Spain	1987-1997	56	-24.68	0.81
Keloharju (1993)	Finland	1984-1989	79	-22.4	0.79
Aussenegg (2000)	Poland	1991-1999	185	225.14	1.04
Cai and Wei (1997)	Japan	1971-1992	180	34.2	0.73
Kim et al. (1995)	Korea	1985-1988	99	84.34	1.49
Aggarwal et al. (1993)	Brazil	1980-1990	48	-47.0	0.67
Aggarwal et al. (1993)	Chile	1982-1990	18	-23.7	0.83
Omran (2005)	Egypt	1994-1998	51	-34.0	0.77
Page and Reyneke (1997)	South Africa	1980-1991	118	17.72	0.78
Panel B: 60-month return					
Loughran and Ritter (1995)	USA	1970-1990	4753	15.7	0.70
Brav and Gompers (2003) (venture-backed IPOs)	USA	1972-1992	934	46.4	1.13
Brav and Gompers (2003) (nonventure-backed IPOs)	USA	1975-1992	3407	21.7	1.01
Álvarez and González (2001)	Spain	1987-1997	56	-30.72	0.81
Drobetz et al. (2005)	Switzerland	1983-2000	120	-26.17	0.78
Cai and Wei (1997)	Japan	1971-1992	180	62.1	0.80
Omran (2005)	Egypt	1994-1998	51	-58.0	0.70

Table 5
Descriptive Statistics

This table indicates descriptive statistics for the entire sample (Panel A), SOEs (Panel B), and non-SOEs (Panel C). Sample firms consist of 447 firms that went public on the Shanghai Stock Exchange (SHSE) and the Shenzhen Stock Exchange (SZSE) between 2001 and 2004. See Table 1 for definitions of the variables.

Panel A: Entire sample

	Mean	Standard deviation	Minimum	Median	Maximum	*N*
MANAGEROWN (in the year before IPO) (%)	6.54	19.45	0.00	0.00	100.00	447
MANAGEROWN (in the IPO year) (%)	4.58	13.75	0.00	0.00	74.80	447
Ch_MANAGEROWN (before and after IPO) (%)	-1.97	5.82	-31.71	0.00	0.00	447
TOPONE (%)	45.69	16.62	6.14	45.57	89.62	447
BANKL (%)	8.65	14.52	0.00	0.00	85.40	447
DCA	0.050	0.287	-3.247	0.033	4.144	447
AGE	3.403	2.662	0.000	3.000	12.000	447
LNASSET	20.789	0.887	19.371	20.638	26.609	447
LNOFFERSIZE	19.767	0.711	16.028	19.691	23.172	446
LEVERAGE (%)	33.50	15.00	0.00	32.80	82.20	447
Number (%) of SOEs	326	(72.93)				
Number (%) of firms that went public on the Shanghai Stock Exchange	357	(79.87)				

Panel B: SOEs

MANAGEROWN (in the year before IPO) (%)	0.71	3.68	0.00	0.00	36.50	326
MANAGEROWN (in the IPO year) (%)	0.48	2.56	0.00	0.00	26.45	326
Ch_MANAGEROWN (before and after IPO) (%)	-0.22	1.14	-10.76	0.00	0.00	326
TOPONE (%)	48.91	16.10	15.94	52.70	89.62	326
BANKL (%)	9.50	15.42	0.00	0.00	85.40	326
DCA	0.035	0.227	-3.247	0.032	0.814	326
AGE	3.107	2.627	0.000	2.000	12.000	326
LNASSET	20.916	0.955	19.371	20.724	26.609	326
LNOFFERSIZE	19.854	0.748	16.028	19.767	23.172	325
LEVERAGE (%)	34.10	14.80	0.00	33.40	82.20	326

Panel C: non-SOEs

MANAGEROWN (in the year before IPO) (%)	22.26	32.07	0.00	0.27	100.00	121
MANAGEROWN (in the IPO year) (%)	15.61	22.73	0.00	0.18	74.80	121
Ch_MANAGEROWN (before and after IPO) (%)	-6.65	9.59	-31.71	-0.10	0.00	121
TOPONE (%)	37.10	14.94	6.14	37.23	73.11	121
BANKL (%)	6.40	11.52	0.00	0.00	51.23	121
DCA	0.091	0.406	-0.402	0.036	4.144	121
AGE	4.198	2.603	0.000	3.000	11.000	121
LNASSET	20.447	0.541	19.483	20.359	21.980	121

Table 5 (Continued)

LNOFFERSIZE	19.535	0.536	17.642	19.475	21.255	121
LEVERAGE (%)	31.80	15.40	0.00	31.00	71.80	121

Difference test (SOEs versus Non-SOEs)

	Mean difference	t-statistics	Median difference	Z-statistics
MANAGEROWN (in year before IPO) (%)	-21.55***	-11.94	-0.27***	-9.15
MANAGEROWN (in the IPO year) (%)	-15.13***	-11.84	-0.18***	-9.13
Ch_MANAGEROWN (before and after IPO) (%)	6.43***	11.89	0.10***	9.25
TOPONE (%)	11.81***	7.02	15.47***	6.67
BANKL (%)	3.10**	2.01	0.00*	1.67
DCA	-0.056*	-1.83	-0.004	-0.48
AGE	-1.091***	-3.91	-1.000***	-4.95
LNASSET	0.468***	5.10	0.366***	5.32
LNOFFERSIZE	0.319***	4.30	0.292***	4.47
LEVERAGE (%)	2.30	1.44	2.40	1.48

***: Significant at the 1% level
**: Significant at the 5% level
*: Significant at the 10% level

Table 6
Adjusted buy-and-hold returns for subsamples

This table indicates adjusted buy-and-hold returns separately for subsamples formulated upon Ch_MANAGEROWN (Panel A), TOPPNE (Panel B), BANKL (Panel C) and DCA (Panle D). For Ch_MANAGEROWN, in which many observations take a value of zero, we make a group that consists of firms that take a value of zero (Group 3) and then divide the remaining firms into two groups (Group 1 is the lowest Ch_MANAGEROWN group). For TOPONE and DCA, we divide the sample firms equally into four groups (Group 4 is the highest TOPONE/DCA group). For BANKL, there are many observations that take a value of zero; we set Group 1 which includes all firms with value of zero, then equally divide the remaining firms into two groups (Group 3 is the highest group). Each subsample is further divided into SOEs and non-SOEs. See Table 1 for definitions of variables.

	Group 1 (Lowest)	Group 2	Group 3	Group 4 (Highest)	Highest Group versus lowest group	
					Difference	t-statistics
Panel A: Ch_MANAGEROWN						
36-month investment period						
Entire sample	-0.736	-0.169	-0.012		0.724***	4.93
SOEs	-0.204	-0.174	0.023		0.227	-1.08
Non-SOEs	-0.926	-0.146	-0.198		0.728**	2.32
60-month investment period						
Entire sample	-0.434	-0.234	0.039		0.472***	3.46
SOEs	-0.361	-0.193	0.113		0.474*	1.86
Non-SOEs	-0.460	-0.355	-0.358		0.102	0.54
Panel B: TOPONE						
36-month investment period						
Entire sample	-0.285	-0.312	-0.058	0.038	0.323**	2.55
SOEs	-0.278	0.044	-0.005	0.086	0.364**	2.43
Non-SOEs	-0.292	-0.961	-0.277	-0.577	-0.284	-0.77
60-month investment period						
Entire sample	-0.288	-0.178	0.126	0.011	0.299**	2.33
SOEs	-0.158	-0.028	0.192	0.053	0.211	1.39
Non-SOEs	-0.459	-0.452	-0.147	-0.533	0.074	0.20
Panel C: BANKL						
36-month investment period						
Entire sample	-0.108	-0.432	-0.024		0.085	0.72
SOEs	0.032	-0.298	0.097		0.065	0.62
Non-SOEs	-0.442	-0.795	-0.478		-0.035	-0.11
60-month investment period						
Entire sample	-0.085	-0.225	0.043		0.128	1.18
SOEs	0.007	-0.035	0.141		0.134	1.06
Non-SOEs	-0.303	-0.741	-0.326		-0.023	-0.12
Panel D: DCA						
36-month investment period						

Table 6 (Continued)

Entire sample	0.022	-0.075	-0.245	-0.354	-0.376**	-2.15
SOEs	0.114	-0.006	-0.121	-0.093	-0.207	-1.31
Non-SOEs	-0.201	-0.313	-0.593	-0.945	-0.745*	-1.72
60-month investment period						
Entire sample	0.018	0.106	-0.241	-0.240	-0.258*	-1.85
SOEs	0.136	0.133	-0.053	-0.108	-0.244	-1.40
Non-SOEs	-0.264	0.012	-0.766	-0.539	-0.275	-1.27

***: Significant at the 1% level
**: Significant at the 5% level
*: Significant at the 10% level

Table 7
Correlation Matrix

This table indicates the correlation matrix among independent variables. See Table 1 for definitions of variables.

	Ch_MANAGEROWN	TOPONE	BANKL	DCA	LEVERAGE	AGE	LNASSET	LNOFFERSIZE
Ch_MANAGEROWN	1.000							
TOPONE	0.349	1.000						
BANKL	0.082	0.038	1.000					
DCA	-0.069	0.019	-0.102	1.000				
LEVERAGE	0.016	0.015	0.238	0.077	1.000			
AGE	-0.070	-0.282	0.047	-0.007	0.167	1.000		
LNASSET	0.155	0.291	0.231	-0.005	0.359	0.025	1.000	
LNOFFERSIZE	0.172	0.301	0.132	-0.009	0.016	-0.172	0.339	1.000

Table 8
Cross-sectional regression results

This table shows regression results of AD-BHR, which is computed by IPO firm's BHR minus matched firm's BHR. The entire sample consists of 447 firms that went public on the Shanghai Stock Exchange (SHSE) and Shenzhen Stock Exchange (SZSE) between 2001 and 2004. Matched firms are selected by three procedures. In size matching, the non-IPO firm that is closest in the market value of tradable shares to the IPO firm is selected as a matched company. In B/M matching, the non-IPO firm that is closest in book-to-market ratio to the IPO firm is selected as a matched company. In size and B/M-matching, the non-IPO firm in the same B/M group that is closest in the market value of tradable shares to the IPO firm is selected as a matched company. In each regression, we delete observations for which the dependent variable takes a value greater (lower) than its 99% (1%) percentile value. When necessary independent variables are not available, the observation is also deleted from the analysis. See Table 1 for definitions of variables.

Dependent variable	$AD\text{-}BHR_{36}$				$AD\text{-}BHR_{60}$			
	Model 1		Model 2		Model 3		Model 4	
	Coefficient	t-statistics	Coefficient	t-statistics	Coefficient	t-statistics	Coefficient	t-statistics
Panel A: Size-matching								
D_SOE	0.291***	2.99	0.199**	2.12	0.342***	3.20	0.274**	2.33
Ch_MANAGEROWN			1.101	1.04			0.716	0.69
TOPONE			0.164	0.76			0.159	0.61
BANKL			0.340	1.49			0.236	0.73
DCA			-0.038	-0.45			-0.112	-1.09
LEVERAGE	-0.636*	-1.92	-0.670**	-2.03	-0.386	-1.01	-0.390	-0.97
AGE	-0.020	-1.63	-0.020	-1.48	-0.010	-0.63	-0.008	-0.50
LNASSET	0.251***	2.84	0.239***	2.68	0.335**	2.55	0.320**	2.37
LNOFFERSIZE	-0.151	-1.41	-0.163	-1.51	-0.165	-1.14	-0.169	-1.15
Constant	-2.339**	-2.51	-1.868**	-1.98	-3.805***	-3.12	-3.454***	-2.79
Adjusted R^2	0.076		0.089		0.086		0.092	
N	435		434		435		434	
Panel B: B/M-matching								
D_SOE	0.268***	3.06	0.219**	2.30	0.199**	2.25	0.187**	1.97
Ch_MANAGEROWN			0.344	0.49			-0.142	-0.18
TOPONE			0.315	1.50			0.103	0.43
BANKL			-0.373	-1.35			-0.165	-0.58
DCA			-0.099	-1.08			-0.238**	-2.05
LEVERAGE	-1.022***	-3.03	-0.919***	-2.74	-0.486	-1.28	-0.391	-1.00
AGE	0.016	1.03	0.020	1.24	-0.020	-1.54	-0.019	-1.27
LNASSET	0.203**	2.43	0.192**	2.10	0.389***	3.12	0.377***	2.89
LNOFFERSIZE	-0.023	-0.24	-0.020	-0.20	-0.128	-1.00	-0.116	-0.87
Constant	-3.818***	-4.49	-3.752***	-4.33	-5.556***	-5.01	-5.595***	-4.88
Adjusted R^2	0.097		0.108		0.110		0.117	
N	435		434		435		434	
Panel C: Size-and-B/M matching								
D_SOE	0.281***	2.64	0.186*	1.67	0.196**	2.24	0.094	0.99
Ch_MANAGEROWN			1.626	1.39			1.459*	1.74
TOPONE			-0.119	-0.40			0.059	0.24
BANKL			0.092	0.39			0.031	0.11
DCA			0.003	0.04			-0.028	-0.26
LEVERAGE	-1.017***	-3.39	-1.052***	-3.51	-0.475	-1.46	-0.475	-1.38
AGE	-0.027**	-2.05	-0.031**	-2.04	-0.044***	-2.98	-0.044***	-2.77
LNASSET	0.333***	4.42	0.352***	4.53	0.368***	3.15	0.374***	3.06
LNOFFERSIZE	-0.199**	-2.05	-0.225**	-2.30	-0.152	-1.16	-0.171	-1.27

Table 8 (Continued)

Constant	-2.903***	-3.06	-2.602***	-2.86	-4.569***	-3.87	-4.231***	-3.63
Adjusted R^2	0.093		0.104		0.104		0.113	
N	435		434		435		434	

***: Significant at the 1% level
**: Significant at the 5% level
*: Significant at the 10% level