The Performance And Long-Run Characteristics Of The Chinese IPO Market

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Abstract

We study the short-run and long-run performance of Chinese privatization initial public offerings (PIPOs), using data for 340 and 409 new issues on the Shanghai and Shenzhen Stock Exchanges respectively, from 1 January 1996 through 31 December 1997. The average market-adjusted initial return is found to be 127.31%, and the initial returns on both stock exchanges are not significantly different from each other. The average market-adjusted buy and hold return over the three years after listing is 10.26%, which is significantly different from zero at the 1% level. We then use cross-sectional analysis to explain the long-run supernormal performance of Chinese PIPOs, and find that government ownership, the offering size and the feature of belonging to a high-tech industry are the main determinants of the long-run performance. In addition, firms that perform better in the long-run tend to make more Seasoned Equity Offerings (SEOs), and the underpricing of IPOs is negatively related to their long-run performance.

JEL Classification: G32, G15, P21

Keywords: IPO; underpricing; long-run performance; government ownership; offering size; high-tech industry; China

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1. Introduction

China has been undertaking a series of economic reforms during the past two decades, gradually moving from a centrally planned economy towards a market economy. The formation of the two stock markets in Shanghai and Shenzhen in 1990 was one of the key developments. Besides allowing enterprises to raise funds by issuing corporate bonds and stocks to the public, one of the main tasks for the government is to seek efficiency and productivity transformation in state-owned enterprises (SOEs) through economic and shareholding reforms. The privatization of state-owned enterprises in China provides an interesting case study of initial public offerings (IPOs) because of its importance in the transition from socialism to a modern market economy. In addition, in November 2001, China joined the World Trade Organization (WTO). Opening up its securities markets has been put into the government’s schedule, so an understanding of the performance and the characteristics of the Chinese IPO markets becomes the focus of attention for investors at home and abroad.

Empirical evidence shows that there are two main patterns associated with IPOs: the short-run underpricing of IPOs and their poor stock price performance in the long run. The study of Loughran et al. (1994) found that the IPO underpricing phenomenon existed in 25 countries, with higher IPO underpricing in developing markets than that in developed markets. The extent of IPO underpricing ranged from a few percent (Muscarella and Vetsuypens, 1989) for 38 US investment bank issues to an astounding 149.3% in the developing Malaysian market (see the summary table by Hanley and Ritter, 1992). Kunz and Aggarwal (1994) and Loughran et al. (1994) examined the returns on IPOs during the three years after going public for a number of countries. They equally-weighted the IPOs in their respective samples and all found poor performance.

In terms of Privatization Initial Public Offerings (PIPOs), for a 7-country sample (Canada, France, Hungary, Japan, Malaysia, Thailand, and the UK) Dewenter and
Malatesta (1997) found no general tendency for privatizations to be underpriced more than private sector IPOs. In contrast, Paudyal et al. (1998) found that Malaysian PIPOs offered significantly higher initial returns (103.5%) than other IPOs (52.5%). However, researchers find very different pictures for the long-run performance of PIPOs. Menyah et al. (1995) examined the British experience and documented significantly positive long-run abnormal returns for Share Issue Privatization (SIP) investors. Choi et al. (2000) compared long-run buy-and-hold returns of PIPOs offerings to those of domestic stock markets of respective countries using a sample of 204 PIPOs from 37 countries. Their evidence indicated that the privatization IPOs significantly outperformed their domestic stock markets.

Turning to the study of the Chinese IPO market, Datar and Mao (1998) studied 226 sample firms that went public in 1990-96 and found underpricing of 388%. Liu and Li (2000) studied 781 stocks listed on the Shanghai and Shenzhen Stock Exchanges from 1991 to 1999 and found the average market-adjusted return of 139.4%. However, there is little research on long-run performance due to data shortages. Gu (2000) studied the long-term, up to five-year returns on the 68 companies that went public in 1994 and were traded on the Shanghai Stock Exchange, and found that the returns were generally negative. However, the long-run returns in his research did not incorporate dividend payments and were not adjusted for rights and scrip issues, which therefore, would not present a clear picture of the long-run performance of the Chinese IPOs.

In this paper, we first discuss the features of China’s emerging stock markets and certain unique ‘Chinese Characteristics’ that may affect IPO performance. Second, we estimate the extent of underpricing and the long-run returns of 340 and 409 A-share IPOs that went public on the Shanghai and Shenzhen Stock Exchanges respectively, from 1 January 1996 to 31 December 1997. We find that the average market-adjusted initial returns on the first trading day is 127.31%, and the initial returns on the two stock exchanges are not significantly different from each other. The average market-
adjusted buy and hold returns over the three years after listing is 10.26%, which is significantly positive at the 1% level. This result is similar to other research (Jelic and Briston, 2000) on the PIPO’s long-run performance. Thirdly, using a regression approach, we identify that government ownership, offering size and the feature of belonging to the “high-tech” industry are the key reasons for the long-run outperformance of IPOs in China. In addition, firms that perform better in the long-run tend to make more Seasoned Equity Offerings (SEOs), and the underpricing of IPOs is negatively related to their long-run performance.

The rest of the paper is organized as follows: Section 2 introduces the features of China’s stock markets and IPOs; Section 3 presents the data, the methodology for calculating the short-run and long-run returns and the results; Section 4 explains the long-run outperformance by some managerial factors; The results for the cross sectional analysis are reported in Section 5; Summary and conclusions appear in Section 6.

2. Features of the Chinese Stock Market and IPOs

The following characteristics of the offering and listing processes during the study period distinguish the Chinese IPO markets from those in other countries. (Chi and Padgett, 2001)

- The China Securities Regulatory Committee (CSRC) determines an annual quota\(^1\) for new shares to be issued each year. The quota is allocated among the provinces and state-industrial commissions according to criteria that support regional or industrial development goals, in consideration of the balance among provinces and industries (Su and Fleisher, 1999). In theory, business strength is the criterion for enterprises to be chosen. Seasoned Equity Offerings (SEOs\(^2\)) also need the permission of the CSRC.

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\(^1\) This quota system started to change in 2001. Investment banks can recommend companies to the CSRC for listing, but it is still the CSRC which makes the final decision.

\(^2\) All the SEOs we mention in the paper refer to SEOs to the existing shareholders.
• After a firm is permitted to go public, shares not retained by the government, other enterprises or employees are sold to outside investors through IPOs and SEOs. In China, stocks are classified by ownership into eight categories: Non-negotiable stocks: State-owned Stocks, Founder Stocks (Local), Founder Stocks (Foreign), Legal-Entity Stocks, Employee Stocks; Negotiable stocks: A Shares, B shares, and H shares (shares of Chinese companies traded in Hong Kong stock exchange) (Mok and Hui, 1998). According to the CSRC statistics, at the end of 2000, negotiable (tradable) shares comprised around 35.7% of the total shares.

• In China, there are two stock exchanges—the Shanghai Stock Exchange and the Shenzhen Stock Exchange. Shanghai is the financial centre in China. Shenzhen is a city in the southern China and next to Hong Kong. Although it does not have the same financial traditions as Shanghai, it was the first city to carry out economic reforms from the beginning of the 1980s.

• The two types of stocks tradable on the two exchanges in China are ‘A’ shares and ‘B’ shares. The ‘A’ shares, traded in domestic currency (Yuan), are exclusively for domestic Chinese. The B shares, traded in US dollars on the Shanghai Stock Exchange and in Hong Kong dollars on the Shenzhen Stock Exchange, are exclusively for foreign investors and allocated primarily by private placements. The A- and B-share markets are segmented.

• The offering price is chosen by the CSRC a few days sometimes months before market trading starts, and in most cases there is no feedback mechanism working through market demand that allows adjustment in the offer price (Su and Fleisher, 1999). The CSRC also takes charge of the timing of IPOs due to the market situation and capacity.

• The offering mechanism adopted by most Chinese firms is different from that in mature stock markets. As a result of the serious imbalance of supply and demand, the offering price is chosen by the CSRC a few days sometimes months before market trading starts, and in most cases there is no feedback mechanism working through market demand that allows adjustment in the offer price (Su and Fleisher, 1999). The CSRC also takes charge of the timing of IPOs due to the market situation and capacity.

3 Companies that went public before November 1998 can issue 10% share out of the total public offerings to their employees. The employee stocks could be traded 6 months after listing in the stock exchange. Since the underpricing of Chinese IPOs is very severe, the employee stocks were treated as a form of bonus to employees.

4 From February 2001 domestic Chinese could invest in B shares in foreign currencies.
demand, the A-shares are distributed through a lottery system, in which there is a fixed price offer with investors bidding for quantities. The odds of winning the lottery depend on how much money joins the lottery. Winners are selected via a random number generating scheme and are entitled to purchase shares (usually one thousand shares) at the issue price (Gu, 2000). As the demand for the new shares far exceeds the supply, only a small percentage of the subscriptions win the lottery.

- It is also noteworthy that SEOs are very frequently observed among Chinese issuers and that SEOs account for a substantial portion of shares issued. About 91% of the Chinese firms that went public before 1 July 1994 issued seasoned equities before 1 January 1996 (Su and Fleisher, 1999), because IPOs and SEOs are the most cost-efficient way for Chinese enterprises to raise capital.

3. Data, Methodology and Results on the Short-run and Long-run Performance

There are 409 companies that issued and listed their A-shares in either the Shanghai Stock Exchange or the Shenzhen Stock Exchange from 1 January 1996 to 31 December 1997. To be able to compare the aftermarket performance within the first three years after the first trading day for the sample firms, only issues with a first trading day earlier than 31 December 1997 are used. Initial trading prices (the closing price on the first trading day), and monthly closing prices over three years after listing were obtained from the GTA’s China’s Trading Database. Information concerning the particulars of offerings, including the offering price, the government ownership, the offering size, the average earnings per share over three years before the firm’s listing, whether the listed company was “high-tech” etc., was obtained from the GTA China’s IPO Database. In the study of long-run returns, the sample consists of all 409 listed companies, while in the study of initial returns, the sample size is reduced to 340 due to missing data on the issuance.

5 The database is offered by Shenzhen GTA (Guo Tai An) Information Technology Co., Ltd.
Table 1 gives the IPOs on the Chinese markets by the year of issue from January 1996 to December 1997. The numbers of issues in both years were very close, with 203 in 1996 and 206 in 1997. The issues were equally divided between the Shanghai Stock Exchange and the Shenzhen Stock Exchange in 1996, while in 1997, 121 companies were listed on the Shenzhen Stock Exchange, and only 85 on the Shanghai Stock Exchange. Figure 1 shows the number of companies coming to the official list during the sample period.

To facilitate direct comparisons with existing empirical evidence, the measures of performance for each IPO and for groups of IPOs are calculated using the methodology used by Aggarwal, Leal and Hernandez (1993).

The total return for stock ‘i’ at the end of the first trading day is calculated as:

\[ R_{i1} = (P_{i1} / P_{i0}) - 1 \]  \hspace{1cm} (1)

where \( P_{i1} \) is the price of the stock ‘i’ at the close of the first trading day, and \( P_{i0} \) is the offer price and \( R_{i1} \) is the total first-day return on the stock.

The return on the market index during the same time period is:

\[ R_{m1} = (P_{m1} / P_{m0}) - 1 \]  \hspace{1cm} (2)

where \( P_{m1} \) is the market index value at the close of first trading day and \( P_{m0} \) is the market index value on the offer day of the appropriate stock, while \( R_{m1} \) is the first day’s comparable market return.

Using these two returns, the market-adjusted abnormal return for each IPO on the first day of trading is computed as:

\[ MAAR_{i1} = 100 \times \left\{ \frac{(1 + R_{i1})}{(1 + R_{m1})} \right\} - 1 \]  \hspace{1cm} (3)

When \( MAAR_{i1} \) is interpreted as an abnormal return, it is assumed that the systematic risk of the IPOs under consideration is the same as that of the index, i.e., the betas of the IPOs average to unity. A number of studies, both in the US (Ibbotson, 1975 and Affleck et al., 1991) and in the UK (Sudarsanam, 1992), have demonstrated that the
average beta of newly listed firms is higher than one. Thus, the abnormal return $MAAR_{i1}$ calculated in (3) provides a somewhat upwardly-biased estimate of the initial performance of the IPO relative to the market.

The sample mean abnormal return for the first trading day, $\overline{MAAR}_1$, may be viewed as a performance index which reflects the return, in excess of the market return, on a investment divided equally among $N$ new issues in a sample:

$$\overline{MAAR}_1 = \frac{1}{N} \sum_{i=1}^{N} MAAR_{i1}$$

(4)

To test the hypothesis that $\overline{MAAR}_1$ equals zero, we compute the associated $t$ statistic:

$$t = \left[ \overline{MAAR}_1 \right] \frac{S}{\sqrt{N}}$$

(5)

where $S$ is the standard deviation of $MAAR_{i1}$ across the companies.

Following other studies of the Chinese securities markets, we use the Shanghai A-share Index and the Shenzhen A-share Index as corresponding benchmarks. They are capitalization-weighted indices, using all A-shares listed on the stock exchange.

Table 2 gives the average first day returns for the IPOs for the entire sample and for those on the Shanghai and Shenzhen Stock Exchange separately. Figure 2 shows the frequency of the market-adjusted initial returns of IPOs for the whole sample. For the entire sample, the $\overline{MAAR}_1$ is found to be 127.31% with an associated $t$-statistic of 31.216, which is significantly different from zero at the 1% level. The $MAAR_{i1}$ has a median of 118.34% and a standard deviation of 75.21. Although the average market-adjusted initial return for IPOs on the Shanghai Stock Exchange (122.49%) is lower than that on the Shenzhen Stock Exchange (131.40%) during the sample period, they are not significantly different from each other. The Shanghai Stock Exchange and the Shenzhen Stock Exchange are both non-profitable membership organizations under the supervision of the CSRC. After getting permission to go public, issuers can

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6 The $t$-statistics on the initial returns must be interpreted with caution since the distribution of initial returns is positively skewed.
choose to be listed on either stock exchange, and therefore it is understandable that there is not much difference between the initial returns of IPOs in these two stock exchanges.

Like other research (Mok and Hui, 1998, and Su and Fleisher, 1999), we find an abnormally high degree of underpricing of IPOs in China. As for the reasons, Chau et al. (1994) and Gu (2000) both mentioned that the lack of attractive investment opportunities caused the high demand for stocks and high initial returns of IPOs. Besides this, we think the most important point is the high demand that comes from the quota system. For the Chinese government, the stock market is an important channel to raise capital for SOEs. To keep the stock market growing and to raise more money in the future, the government has to control the ‘supply’, that is the quota of new issues. In privatization, the success of any IPO not only affects the individual company’s reputation, but also the government’s credibility, and hence the government cannot afford any possible failure in the IPO markets. That is why the government has to make the supply much less than the demand, even at the cost of underpricing.

The market-adjusted long-run returns are calculated for a period of 36 months following the first month of trading. The monthly returns are measured by the closing prices on the last trading day of the month on which the stock is traded. These returns incorporate dividend payments and are adjusted for rights and scrip issues. Allowing for the initial underpricing and the possibility of price support in the first few trading days and the time these prices will take to adjust downwards to the true market equilibrium after the support has been withdrawn, the first month of trading is excluded from the study of long-run returns. The following methodology is used to calculate the long-run returns:

\[ MABHR = \sum_{t=2}^{37} \left[ \ln\left( \frac{P_{1,t}}{P_{1,t-1}} \right) - \ln\left( \frac{I_{m,t}}{I_{m,t-1}} \right) \right] \]  

(6)

where \( MABHR \) denotes the market-adjusted buy and hold return for firm ‘\( i \)’ over a 36 month period and \( P_{1,t} \) and \( I_{m,t} \) denote the end of the \( t \) month share price for the firm.
‘i’ and the corresponding end of the month index respectively. These returns exclude initial under-pricing.

This methodology is comparable to Ritter (1991). While Ritter used wealth relatives to interpret the 3-year total return, we use equally weighted market adjusted returns as an abnormal performance measure.

Buy and hold returns are preferred to Cumulative Abnormal Returns (CARs). Conrad and Kaul (1993) showed that cumulative abnormal returns are biased because they not only process true returns but also the upward bias in single period returns induced by errors in measurement. In contrast buy and hold returns do not suffer from this bias. Moreover, CARs implicitly assume frequent and thus costly portfolio rebalancing. Brav et al. (1998) have asserted that buy and hold returns are the generic choice of a naïve investor. This is in contrast to informed investors who prefer monthly portfolio rebalancing. Since in China, over 90% investors are individuals, we take the point of view of an individual investor and hence choose buy and hold returns. As in the case of calculating short-run returns, we have not adjusted the monthly abnormal returns for systematic risk. Ibbotson (1975) and Ritter (1991) among others demonstrated that the average betas decline with the length of time after the IPO and the average difference in betas between the IPOs and matching firms becomes too small to have any significant effect on the results.

A simple cross sectional $t$-test for the significance of the MABHR using Ritter (1991) was computed as follows:

\[
t-test = \frac{MABHR_t \times (\sqrt{N} / SD_t)}{SD_t}
\]

(7)

where $MABHR_t$ is the cross sectional market-adjusted buy and hold returns for the sample at time $t$, $N$ is the number of firms in the sample at time $t$ and $SD_t$ is the cross

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7 A number of studies including Ritter (1991), Aggarwal et al. (1993), and Levis (1993) have calculated the $t$ statistics using this equation. Though we acknowledge that due to a loss of a degree of freedom, the number of firms in the sample should be reduced by one (so it should be $N-1$ and not $N$), the sample size is large enough to ignore the small difference in calculations that would arise.
sectional standard deviation of the market-adjusted buy and hold returns at time $t$.

The benchmarks used are the Shanghai A-share Index and Shenzhen A-share Index, the same as the ones in the study of the short-run performance.

Table 3 gives the average monthly MABHR returns with the associated $t$-statistics for the 37 months after going public. Since in the Chinese securities markets there is no formal delisting system, the sample size has been the same throughout the sample period. The average market-adjusted buy and hold returns over three years after listing for the entire sample is found to be 10.26% with a $t$-statistic of 3.962. As with most PIPO’s long-run performance, the three-year excess buy and hold returns in the Chinese IPO markets are significantly positive. Among monthly average market-adjusted returns, only 11 of 36 are found to be negative with 3 of them having $t$-statistics lower than -2.0, while 25 are positive with 9 of them having $t$-statistics higher than 2.0.

Figure 3 shows the plot of market-adjusted (A-share Index adjusted) monthly returns for the sample. The returns vary between -2.9% and 1.9% over the study period. The return peaks at 1.9% in the 6th month of trading. A minimum return of -2.9% is recorded in the 2nd month after listing. The returns in the 2nd and 3rd trading months are very low. This may be caused by the severe underpricing of IPOs, since it takes some time for the share prices to adjust downwards to the true market equilibrium. Apart from returns for these two months, returns until the 23rd trading month are all positive, with the 6th month enjoying the highest return. Companies that went public before November 1998 could issue 10% of shares from the total public offerings to their employees. The employees could buy shares at the offering price and the employee stocks could be traded starting from the 6th month after listing in the stock exchange. Since employee shares are treated as a kind of bonus for employees, the share price around the 6th trading month should determine the returns of their investment. To make employees happy and loyal to their own company, managers
often try to push the share price up around the 6th trading month by working with institutional investors. As all sample firms were listed before November 1998, companies could possibly issue employee shares and therefore have this influence on the share price performance. In addition, in comparison with returns in the first two years after listing, returns in the third year of trading are much lower and most of them are negative. Figure 4 shows the monthly MABHR cumulative returns for the sample.

Figure 5 gives the frequency of the three-year buy and hold market-adjusted returns of the sample firms.

4. Explaining the Long-run Performance

The empirical evidence of the long-run performance of firms going public indicates that the PIPOs and private sector IPOs do not perform in quite the same way. Like other research (Menyah and Paudyal, 1996, Jelic and Briston, 2000, and Megginson et al., 2000), we find significantly positive three-year buy and hold market-adjusted returns for 409 PIPOs that went public in 1996 and 1997 in China.

A non-negative long-run abnormal performance for PIPOs coincides with the objectives of a market-oriented government, since a committed government will be interested in building up a reputation for its privatization programme over time by establishing a market-oriented economic environment. To better understand the positive long-run returns of IPOs, we look at the relationship between the three-year buy and hold after-market returns and some managerial characteristics of listed companies to see what elements actually affect the long-run performance of IPOs in China.

4.1 The Long-run Performance and Government Ownership

Boycko, Shleifer and Vishny (1996) show in their model that the fraction of shares a
government sells at the initial offer is an important factor for the restructuring efforts of state enterprises. The higher is the fraction sold, the lower is the possibility that politicians interfere directly. They conclude that the relationship between restructuring activities and the fraction of the state enterprise sold at the initial offer should be positive. Provided that a lower state holding leads to a better restructuring, the long-run abnormal performance should be negatively associated with the fraction owned by the government. In a study of the Chinese IPO markets, Mok and Hui (1998) mentioned that there could be two different effects of the proportion of shares owned by the government on the short-run performance of IPOs. On the one hand, since shares owned by the government may act as a guarantee of the performance of the company by the state, the more shares owned by the state, the higher the initial returns would be, due to the public’s greater confidence in the company. On the other hand, the more shares offered to the public, that is to say, the fewer shares owned by the state, the better initial returns would be, because of the possible improvement of management in the future. As for its effect on the long-run performance, it is believed that with more shares in public hands, outside investors will monitor and put pressure on the management of SOEs, which would improve the corporate governance of the companies. This is one of the goals of privatization. We would expect if the government is willing to improve the efficiency of the management of SOEs and the efficiency of the securities markets, in the long-run, the IPO’s performance would be negatively related to the fraction of shares owned by the government and government-owned companies.

Hypothesis 1:

H₀ : There is no relationship between the percentage of shares owned by the government and government-owned companies and the three-year buy and hold market-adjusted returns of IPOs.
H₁ : There is a negative relationship between the percentage of shares owned by the government and government-owned companies and the three-year buy and hold market-adjusted returns of IPOs.
4.2 The Long-run Performance and Risk of the Companies

Although both Levis (1993) and Khurshed (1999) suggested that bigger firms are better quality firms and are expected to have better long-term performance, since all the listed companies in China belong to the government, the size of the company does not really matter due to the government support. However, the offering size of the company can be treated as a proxy for risk. As the Chinese securities markets are not very closely regulated, one of the factors driving the share prices’ increase in the long-run could be insider trading and price manipulation by institutional investors. Institutional investors have a large amount of money in comparison with individual shareholders, and what they often do is to buy a high proportion of the outstanding shares of one company, controlling and increasing the price to earn abnormal returns. Although this kind of market manipulation is illegal, it exists in the Chinese markets. Since the smaller the offering size of a listed company has, the easier it is for institutional shareholders to control the price of the stocks; and the higher risk investors would face. Thus the higher long-run returns will be expected to be.

Hypothesis 2:

$H_0$: There is no relationship between the offering size of IPOs and the three-year buy and hold market-adjusted returns of IPOs.

$H_1$: There is a negative relationship between the offering size of IPOs and the three-year buy and hold market-adjusted returns of IPOs.

The second variable we defined is the high-tech dummy that measures whether the company has some high-tech products as defined by the Science and Technology Ministry. High technology is one of main factors that drive the development of a company. If a company produces high-tech products, it is supposed to enjoy high growth in the near future. However at the same time, companies with high-tech features will face more risk, which could be rewarded by its positive long-run performance. Therefore, we expect a positive coefficient for high-tech dummy.
Hypothesis 3:

H$_{0}$: There is no relationship between the feature of belonging to a high-tech industry and the three-year buy and hold market-adjusted returns of IPOs.

H$_{1}$: There is a positive relationship between the feature of belonging to a high-tech industry and the three-year buy and hold market-adjusted returns of IPOs.

4.3 The Long-run Performance and the Fundamental Factor of the Companies

If the securities markets are efficient, the long-run performance of IPOs should reflect the business strength of listed companies (Khurshed, 1999). As Khurshed (1999), the proxies showing the quality of the company here are EPS$^8$, which shows the profitability of the company. The variable EPS measures the average earnings per share for the last three years before the firm’s listing. A firm which is profitable before flotation should continue to be so after IPOs. This is based on the empirical results on profit consistency found by Geroski and Jacquemin (1988), and Machin and Van Reenen (1993). These authors have found that profit in period $t$ is normally highly correlated with profit in period $t-1$. This suggests that the more profitable a company is before its listing, the better its long-run performance will be. So we expect a positive coefficient for EPS.

Hypothesis 4:

H$_{0}$: There is no relationship between the average earnings per share for the last three years before the firm’s listing and the three-year buy and hold market-adjusted returns of IPOs.

H$_{1}$: There is a positive relationship between the average earnings per share for the last three years before the firm’s listing and the three-year buy and hold market-adjusted returns of IPOs.

$^8$ As listed companies in China only started to offer cash flow statements after 1998 according to the regulation and our sample is the companies that went public in 1996 and 1997, here we choose earnings per share figures as the proxy for the fundamental factors.
4.4 The Long-run Performance and the Further Capital-raising of Listed Companies

Besides the improvement of the corporate governance of SOEs, the other purpose for the Chinese government to develop the securities market is to raise capital for SOEs. Therefore looking at the relationship between a company’s long-run performance and its further capital raising is useful to understand the role of the stock market. We have the following reasoning and understanding of their relationships. First, when a company enjoys efficient management and high growth, it would be reflected in an increase of its share price. At the same time, good management would bring more development opportunities to a company, so it needs further capital to invest. Therefore, the long-run performance of a listed company would be positively related to its further capital raising. Second in China, sometimes an increase in the share price results from manipulation by institutional investors rather because of efficient management, and the company does not have good projects in which to invest. For many companies, a stock issue is made simply in order to get money from the investors, rather than for investment in good projects or the implementation of corporate governance practices. In this case, when share prices rise, it is the ‘right’ time for companies to get more money from the stock market, since with higher prices, issuing the same number of shares can raise more money. The variable defined here is SEOtimes, which counts the number of SEOs that a listed company makes within three years after its IPO. Following the reasoning of the both situations, the SEOtimes variable is expected to be positively related to the long-run performance of IPOs.

Hypothesis 5:

\( H_0: \) There is no relationship between the number of SEOs within three years after IPO and the three-year buy and hold market-adjusted returns of IPOs.

\( H_1: \) There is a positive relationship between the number of SEOs within three years after IPO and the three-year buy and hold market-adjusted returns of IPOs.

\(^9\) Instead of looking at the sizes or prices of SEOs, we use the number of SEOs within the three years after IPO. According to the security regulation in China, the size of SEOs at each point in time cannot exceed 30% of outstanding shares. Since as long as the listed companies get the chance to carry out SEOs, they would like to raise as much capital as possible, the sizes of SEOs can be expected if the numbers of SEOs are known.
after IPOs and the three-year buy and hold market-adjusted returns of IPOs.

4.5 The Long-run Performance and the Underpricing of IPOs

As for the relationship between the initial returns of IPOs and their long-run price performance, the ‘impresario’ hypothesis argues that IPOs are underpriced by investment bankers (in our case, the government) to create the appearance of excess demand to make it an ‘event’. This hypothesis predicts that companies with the highest initial returns should have the lowest subsequent returns. Carter and Dark (1990) examined the correlation between initial returns and 18 month aftermarket returns and found that firms having higher initial returns tended to provide slightly lower long-run returns than firms having lower initial returns. Ritter (1991) found that firms that were more underpriced than others performed worse in the long-run.

Hypothesis 6:

\[ H_0: \text{There is no relationship between the market-adjusted initial returns and the three-year buy and hold market-adjusted returns of IPOs.} \]

\[ H_1: \text{There is a negative relationship between the market-adjusted initial returns and the three-year buy and hold market-adjusted returns of IPOs.} \]

We also use a year dummy to test whether there is any difference between the long-run performance of IPOs in 1996 and 1997.

We use the market-adjusted buy and hold return over three years after IPOs (MABHR36) as the dependent variable in the regression analysis. The empirical model is estimated using OLS and is displayed as follows:

\[ MABHR36_i = \alpha + \beta_1 \text{Govshare}_i + \beta_2 \text{Log (Offersize)}_i + \beta_3 \text{Hightech Dummy}_i + \beta_4 \text{EPS}_i + \beta_5 \text{SEOtimes}_i + \beta_6 \text{MAAR}_i + \beta_7 \text{Year2}_i + u_i \]

Table 4 gives a description of the variables used in the study. Table 5 reports the
characteristic values of the variables in the study.

5. Results for the Cross Sectional Analysis

In the regression analysis, the sample consists of 340 companies out of the total 409 that listed their A-shares on the Shanghai and Shenzhen Stock Exchanges from 1 January 1996 to 31 December 1997. The reduced sample size is due to missing data on the estimated independent variables. Correlation coefficients are estimated as a preliminary examination of the pair-wise relationships among the variables in the study. The results of these estimations are provided in Table 6. The results of the regressions on the market-adjusted buy and hold return over three years after IPOs are presented in Table 7.

Like Boycko, Shleifer and Vishny (1996), we find an extremely significantly negative relationship between the government ownership and the market-adjusted buy and hold returns over three years after IPOs and the null of hypothesis 1 can be rejected. With smaller fraction of shares owned by the government and government-owned companies, listed companies have less political risk and can improve the corporate governance by monitoring from outsider shareholders. Therefore, the companies can develop better after IPO and their share prices will increase. The negative impact of the government ownership on the long-run performance shows that privatization is good for the companies’ development, and can also encourage the government to reinforce economic reforms in China.

Turning to the two variables related to the company’s risk, both are significant with the expected signs. Therefore we can reject the null of hypothesis 2 and 3. Unlike Levis (1993), our estimation results indicate a significantly negative coefficient on the offering size of IPOs. Chinese securities markets are not efficient. Price control and manipulation by institutional investors are rife. The smaller the offering size is, the easier it is for institutional investors to control the share prices of certain stocks and
the higher risk the investors face. Thus the higher long-run returns will be. This result indicates that the government should reinforce the regulation of the securities markets to improve market efficiency. The variable that measures the feature of a company belonging to a high-tech industry is significantly positive at the 1% level. When a company has certain high-tech products, investors would expect the company to enjoy high growth in the future. However, companies using high technology will face higher risk. When investors take higher risk, they would expect positive returns in the long-run.

As for the company’s business strength, the variable on the average earnings per share over the three years before the firm’s listing shows a positive relationship with the long-run performance, but it is statistically insignificant. Thus we cannot reject hypothesis 4. In an efficient market, the share price should reflect the business strength of a company, and with higher profitability, the company should have higher long-run returns (Khurshed, 1999). However the estimation results are against our expectation\(^\text{10}\). The estimation result shows that in the Chinese securities markets, there are many other issues rather than a company’s business strength that affect the share price performance.

In terms of the relationship between the long-term performance and further capital-raising, results indicate that the number of SEOs within three years after IPOs and their long-run returns are significantly positively related to each other. Thus the null of hypothesis 5 can be rejected. For either the government or the issuers, the opportunities to raise money from the securities markets are very valuable. Any positive information about companies or their share price movements will be used as indicators that this is a good time to raise capital.

The results for the relation between initial and long-run performance are similar to,

\(^{10}\) Our expectation is based on the assumption that the profit of a company in period \(t\) is normally highly correlated with profit in period \(t-1\).
but not as strong as those of previous research. A cross-sectional study shows that they are negatively related to each other at the 10% significance level. The higher the return on the first trading day, the worse the performance in the long-run will be. These results are consistent with those of Ritter (1991) and Levis (1993).

6. Conclusion

This study attempts to satisfy the great interest in Chinese evidence on the performance, especially the long-run performance of IPOs. Our study not only confirms the high degree of underpricing of PIPOs in China (Mok and Hui, 1998, Gu, 2000), but also finds a positive long-run performance, and offers some explanations for this economic phenomenon and the description of the characteristics of the Chinese IPO markets.

We study the short-run and the long-run performance of IPOs using the sample of 340 and 409 companies that listed A-shares on the Shanghai and Shenzhen Stock Exchanges in 1996 and 1997. We find the average market-adjusted initial return is 127.31% and the initial returns on both stock exchanges are not significantly different from each other. We raise the argument that the quota system for new issues in China is the main reason for the extraordinarily high degree of underpricing. The average market-adjusted buy and hold return over three years after IPO is 10.26%, which is significantly positive at the 1% level. Like many other studies of PIPOs (Menyah and Paudyal, 1996, and Megginson et al., 2000), we find long-run outperformance of Chinese PIPOs, which validates the view that the Chinese government is market-oriented and wants to improve the economic prospects of the securities markets and to encourage their further development. Within the three years after IPO, it takes about three months for the share prices to adjust downwards to the market equilibrium due to the severe underpricing of IPOs. Then the return reaches its highest in the 6th trading month after IPOs since employee stocks can begin trading at this time. This phenomenon shows the inefficiency and price manipulation of the Chinese securities markets. We also notice that most returns in the first two years are positive and are much higher than those in the third year.

Using cross sectional analysis, we test the relationship between the market-adjusted buy and hold returns over three years after IPOs and some managerial factors on the
sample of 340 IPOs that went public in 1996 and 1997. The results show that the
government ownership and the offering size are significantly negatively related to the
long-run returns of IPOs; the high-tech feature of the company is significantly
positively related to the long-run performance; while the company’s profitability does
not matter. Results also indicate that further capital-raising of a company is
significantly positively related to its long-run performance, and that the higher initial
return an IPO has, the worse long-run performance is followed, although the
estimation is significant at the 10% level.

This study answers the question that most investors are interested in—whether it is
worth investing and holding IPOs in China. The answer is yes. And it is even better if
investors can buy shares in the third month after listing and try to sell before the end
of the second year. Among different companies, the ones with less government
ownership, smaller offering sizes, high-tech features and lower initial returns are big
winners. However, when share prices rise, investors have to be careful of the further
issuing of shares by the companies, which will dilute their ownership.
References:


School.

Table 1: IPOs in the Chinese Markets by the Year of Issuing

<table>
<thead>
<tr>
<th>Year</th>
<th>All IPOs (sample in study of long-run returns)</th>
<th>Sample In Study of Cross Sectional Analysis</th>
<th>Sample Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total (No.)</td>
<td>SH* (No.)</td>
<td>SZ* (No.)</td>
</tr>
<tr>
<td>1996</td>
<td>203</td>
<td>103</td>
<td>100</td>
</tr>
<tr>
<td>1997</td>
<td>206</td>
<td>85</td>
<td>121</td>
</tr>
<tr>
<td>Total Mean</td>
<td>409</td>
<td>188</td>
<td>221</td>
</tr>
<tr>
<td>S.D.</td>
<td>204.5</td>
<td>94</td>
<td>110.5</td>
</tr>
</tbody>
</table>

Note: *SH stands for the Shanghai Stock Exchange; and SZ stands for the Shenzhen Stock Exchange.
Figure 1: A Diagrammatic Representation of the Distribution of IPOs on the Chinese Markets by the Year of Issue (1996-1997)
Table 2: First Day Market-adjusted Returns (in Percentage) for the IPOs (1996-1997)

<table>
<thead>
<tr>
<th></th>
<th>Total Sample</th>
<th>Shanghai</th>
<th>Shenzhen</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean</strong></td>
<td>127.31</td>
<td>122.49</td>
<td>131.40</td>
</tr>
<tr>
<td><strong>Standard Deviation</strong></td>
<td>75.21</td>
<td>69.86</td>
<td>79.43</td>
</tr>
<tr>
<td><strong>t-statistics</strong></td>
<td>31.21</td>
<td>21.90</td>
<td>22.44</td>
</tr>
<tr>
<td><strong>Median</strong></td>
<td>118.34</td>
<td>114.25</td>
<td>121.07</td>
</tr>
<tr>
<td><strong>Minimum</strong></td>
<td>-14.33</td>
<td>-14.33</td>
<td>-8.15</td>
</tr>
<tr>
<td><strong>Maximum</strong></td>
<td>441.26</td>
<td>401.25</td>
<td>441.26</td>
</tr>
<tr>
<td><strong>Total Number of Issues</strong></td>
<td>340</td>
<td>156</td>
<td>184</td>
</tr>
<tr>
<td><strong>t-statistic</strong>*</td>
<td>1.101</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: * Difference between the market-adjusted initial returns of IPOs on the Shanghai Stock Exchange and the Shenzhen Stock Exchange.
Figure 2: Frequency of Market-adjusted Initial Returns of IPOs in Percentage (1996-1997)
Table 3: The Average Monthly MABHR Returns for the 37 Months after Going Public

<table>
<thead>
<tr>
<th>Month of Seasoning</th>
<th>MABHR</th>
<th>S.D. of MABHR</th>
<th>t-stat</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>-0.029</td>
<td>0.137</td>
<td>-4.250</td>
</tr>
<tr>
<td>3</td>
<td>-0.009</td>
<td>0.124</td>
<td>-1.416</td>
</tr>
<tr>
<td>4</td>
<td>0.005</td>
<td>0.123</td>
<td>0.775</td>
</tr>
<tr>
<td>5</td>
<td>0.006</td>
<td>0.113</td>
<td>1.135</td>
</tr>
<tr>
<td>6</td>
<td>0.019</td>
<td>0.122</td>
<td>3.111</td>
</tr>
<tr>
<td>7</td>
<td>0.012</td>
<td>0.108</td>
<td>2.227</td>
</tr>
<tr>
<td>8</td>
<td>0.000</td>
<td>0.107</td>
<td>0.023</td>
</tr>
<tr>
<td>9</td>
<td>0.002</td>
<td>0.105</td>
<td>0.420</td>
</tr>
<tr>
<td>10</td>
<td>0.007</td>
<td>0.106</td>
<td>1.297</td>
</tr>
<tr>
<td>11</td>
<td>0.003</td>
<td>0.101</td>
<td>0.536</td>
</tr>
<tr>
<td>12</td>
<td>0.016</td>
<td>0.109</td>
<td>2.969</td>
</tr>
<tr>
<td>13</td>
<td>0.016</td>
<td>0.095</td>
<td>3.436</td>
</tr>
<tr>
<td>14</td>
<td>0.007</td>
<td>0.095</td>
<td>1.457</td>
</tr>
<tr>
<td>15</td>
<td>0.004</td>
<td>0.094</td>
<td>0.930</td>
</tr>
<tr>
<td>16</td>
<td>0.008</td>
<td>0.095</td>
<td>1.683</td>
</tr>
<tr>
<td>17</td>
<td>0.015</td>
<td>0.093</td>
<td>3.243</td>
</tr>
<tr>
<td>18</td>
<td>0.007</td>
<td>0.082</td>
<td>1.745</td>
</tr>
<tr>
<td>19</td>
<td>0.009</td>
<td>0.086</td>
<td>2.062</td>
</tr>
<tr>
<td>20</td>
<td>0.016</td>
<td>0.093</td>
<td>3.405</td>
</tr>
<tr>
<td>21</td>
<td>0.011</td>
<td>0.093</td>
<td>2.450</td>
</tr>
<tr>
<td>22</td>
<td>0.003</td>
<td>0.102</td>
<td>0.664</td>
</tr>
<tr>
<td>23</td>
<td>0.014</td>
<td>0.095</td>
<td>2.922</td>
</tr>
<tr>
<td>24</td>
<td>-0.004</td>
<td>0.100</td>
<td>-0.816</td>
</tr>
<tr>
<td>25</td>
<td>-0.006</td>
<td>0.096</td>
<td>-1.232</td>
</tr>
<tr>
<td>26</td>
<td>-0.001</td>
<td>0.098</td>
<td>-0.151</td>
</tr>
<tr>
<td>27</td>
<td>0.003</td>
<td>0.086</td>
<td>0.792</td>
</tr>
<tr>
<td>28</td>
<td>0.000</td>
<td>0.096</td>
<td>-0.073</td>
</tr>
<tr>
<td>29</td>
<td>-0.013</td>
<td>0.085</td>
<td>-3.182</td>
</tr>
<tr>
<td>30</td>
<td>0.002</td>
<td>0.093</td>
<td>0.456</td>
</tr>
<tr>
<td>31</td>
<td>0.005</td>
<td>0.113</td>
<td>0.821</td>
</tr>
<tr>
<td>32</td>
<td>-0.009</td>
<td>0.097</td>
<td>-1.890</td>
</tr>
<tr>
<td>33</td>
<td>-0.002</td>
<td>0.106</td>
<td>-0.303</td>
</tr>
<tr>
<td>34</td>
<td>0.001</td>
<td>0.106</td>
<td>0.204</td>
</tr>
<tr>
<td>35</td>
<td>-0.001</td>
<td>0.101</td>
<td>-0.227</td>
</tr>
<tr>
<td>36</td>
<td>-0.011</td>
<td>0.090</td>
<td>-2.390</td>
</tr>
<tr>
<td>37</td>
<td>-0.004</td>
<td>0.105</td>
<td>-0.707</td>
</tr>
<tr>
<td>Total</td>
<td>0.103</td>
<td>0.524</td>
<td>3.962</td>
</tr>
</tbody>
</table>

Note: *The first month of seasoning is not included in the study to ignore the initial underpricing.
Figure 3-4: Monthly MABHR and MABHR Cumulative Returns for IPOs in 1996-1997
Figure 5: Frequency of the Three-year Buy and Hold Market-adjusted Returns in Percentage after IPOs (1996-1997)
### Table 4: Description of the Variables Used in the Study of the Long-run Performance

<table>
<thead>
<tr>
<th>Year Dummies:</th>
<th>These are based on the 2 different years of the IPOs. (1996-1997)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 2:</td>
<td>IPOs listed in 1997</td>
</tr>
</tbody>
</table>

**Proxies for the Government Ownership**

- **Govshare**: Percentage of shares owned by the government and government-owned companies on the issuing.

**Proxies for Risk**

- **Offersize**: The market capitalization of the listed company on the first day of trading, i.e. the offering shares multiply the offering prices.
- **High-tech dummy**: The dummy to show whether a company has some high-tech products as defined by Science and Technology Ministry; 1=yes, 0=no.

**Proxies for the Fundamental Factor of the Company**

- **EPS**: The average earning per share of the issuer for the last three years before the firm’s listing.

**Proxies for the Further Capital Raising**

- **SEOtimes**: The number of SEOs the issuer has within the three years after IPOs.

**Proxies for Underpricing Degree**

- **Underpricing**: The market-adjusted initial return of the corresponding stock.
Table 5: Characteristics of Sample Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Median</th>
<th>Min</th>
<th>Max</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three-year Buy and Hold Market-adjusted Returns</td>
<td>0.0934</td>
<td>0.0956</td>
<td>-1.0772</td>
<td>2.4318</td>
<td>0.5109</td>
</tr>
<tr>
<td>Govshare</td>
<td>0.7213</td>
<td>0.74</td>
<td>0.4161</td>
<td>0.8492</td>
<td>0.0788</td>
</tr>
<tr>
<td>Offersize (Million Yuan)</td>
<td>235.12</td>
<td>163.87</td>
<td>12.60</td>
<td>2106.00</td>
<td>233.28</td>
</tr>
<tr>
<td>EPS (Yuan)</td>
<td>0.4203</td>
<td>0.4001</td>
<td>0.1361</td>
<td>1.2098</td>
<td>0.1478</td>
</tr>
<tr>
<td>Market-adjusted Initial Returns</td>
<td>1.2731</td>
<td>1.1834</td>
<td>-0.1433</td>
<td>4.4126</td>
<td>0.7521</td>
</tr>
<tr>
<td>High-tech Dummy</td>
<td>Yes</td>
<td>No</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SEOtimes</td>
<td>102</td>
<td>216</td>
<td>22</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Year Dummy</td>
<td>155</td>
<td>185</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 6: Correlation Coefficients of the Independent Variables in the Cross-sectional Analysis of the Long-run Performance of IPOs

<table>
<thead>
<tr>
<th></th>
<th>Govshare</th>
<th>Offer size</th>
<th>EPS</th>
<th>SEOtimes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offer size</td>
<td>-0.074</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPS</td>
<td>0.027</td>
<td>0.217</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SEOtimes</td>
<td>-0.213</td>
<td>-0.014</td>
<td>0.064</td>
<td></td>
</tr>
<tr>
<td>Underpricing</td>
<td>-0.075</td>
<td>-0.116</td>
<td>-0.228</td>
<td>-0.046</td>
</tr>
</tbody>
</table>
Table 7: Estimating the Long-run Performance of IPOs\textsuperscript{11}

Dependent Variable: Three-year Buy and Hold Market-adjusted Returns
Method: Least Squares
Included observations: 340

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>t-Statistic</th>
<th>Prob.</th>
<th>Hypothesis (expected sign)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>2.456426</td>
<td>7.433302</td>
<td>0.0000</td>
<td></td>
</tr>
<tr>
<td>Govshare</td>
<td>-1.295468</td>
<td>-4.402754</td>
<td>0.0000</td>
<td>1 (-)</td>
</tr>
<tr>
<td>LOG(Offsize)</td>
<td>-0.321504</td>
<td>-7.615403</td>
<td>0.0000</td>
<td>2 (-)</td>
</tr>
<tr>
<td>Hightech</td>
<td>0.327583</td>
<td>5.043079</td>
<td>0.0000</td>
<td>3 (+)</td>
</tr>
<tr>
<td>EPS</td>
<td>0.188201</td>
<td>1.073856</td>
<td>0.2837</td>
<td>4 (+)</td>
</tr>
<tr>
<td>SEOtimes</td>
<td>0.117988</td>
<td>2.674325</td>
<td>0.0079</td>
<td>5 (+)</td>
</tr>
<tr>
<td>Underpricing</td>
<td>-0.066322</td>
<td>-1.802583</td>
<td>0.0724</td>
<td>6 (-)</td>
</tr>
<tr>
<td>YEAR2</td>
<td>0.184701</td>
<td>2.846061</td>
<td>0.0047</td>
<td></td>
</tr>
</tbody>
</table>

R-squared      0.286820
Adjusted R-squared 0.271783
F-statistic     19.07436
Prob (F-statistic) 0.000000

\textsuperscript{11} The results for diagnostic tests are as follows:
- White heteroskedasticity test: No heteroskedasticity;
- Jarque-bera normality test: Not normal with skewness of 0.71 and kurtosis of 4.59;
- Ramsey RESET Test: No nonlinear relationship between dependent and independent variables.