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**ERASMUS UNIVERSITY ROTTERDAM**

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**BSc Economie en Bedrijfseconomie**

**Underpricing and Long-Term Performance of Chinese IPOs**

**Bachelor Thesis**

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# Preface and Acknowledgements

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# Abstract

This research paper investigates the short-term underpricing and the long-term underperformance for IPOs on the Chinese financial markets during the time-frame between 1992-2004. The results show that the degree of short-term underperformance, when measured with the first day opening prices, are similar to western markets. However, stocks on the Chinese markets do not show long-term underperformance, but an increase in price instead.

Keywords: IPOs China, Short-Term Underperformance, Long-Term Underperformance

JEL Classification:

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# 1. Introduction

**Underpricing and Long Term Performance for Chinese IPOs**

Companies have different ways and priorities of attracting funds for their investment activities. The pecking order theory is a widely used theory that gives a ranking of the type of funds a company should use to acquire capital in order to finance their activities. According to the theory (Myers & Majluf, 1984), companies have a strict preference for firstly internal funds, secondly debt and lastly new equity.

The most common way for a company to raise new equity is to sell their shares on a stock exchange. This is called an Initial Public Offering (this will be addressed as IPO in the proceeding of this paper) if a firm initiates this procedure for the first time and a Seasoned Equity Offering (SEO) thereafter. However, apart from bringing in funds for investment activities there are numerous different reasons for a company to go public such as lowering the costs of funding, shareholders diversifying their portfolio’s or company prestige.

A lot of research has been conducted on IPO’s in the past for the American and European financial markets but less frequently for Asian markets. The focus of this paper will therefore lie on the Chinese market and the reason for this is that the Chinese financial market has a large potential but, at the moment, is a still relatively young market. Naturally, it can be expected that the financial markets in the Western developed countries tend to move more towards market efficiency than markets in less developed countries such as China. Some examples of market inefficiencies, or also called anomalies, are the underpricing and long-term performance of IPO’s.

Firstly, the underpricing anomaly will be addressed. In short this means that on average, there is a positive first-day return for an IPO and therefore they are structurally underpriced. With the assumption that older markets are more efficient than relatively younger markets, this would mean that the underpricing of IPO’s in China should exceed the underpricing of those IPO’s in the US and Europe. The reasoning behind this is that a more efficient market should have less information asymmetry between the issuer and the buyers of the stocks. Therefore, the underpricing of IPO’s in China should exceed the percentage of underpricing in the Western countries. Information asymmetry is not the only factor affecting the underpricing of IPO’s in China. The researches of Gu (2003), Chen et al. (2004) and Chi and Padgett (2005) find that the most significant factors are limited investment options, the portion of shares owned by the government, a long listing lag, future equity offerings and agency costs.

In contrast to the assumptions that more mature financial markets are more efficient, multiple researches show empirical evidence for an increase instead of a decrease in underpricing for IPO’s during the past decades. Loughlan and Ritter (2002) find that since the eighties there has been an increase of underpricing which can be divided in three periods, namely the periods between 1980-1989, 1990-1998 and 1999-2000 that show a respectively 7%, 15% and 65% average first-day return. Note that the latter period only covers two years as it represents the Internet bubble, thus showing a relatively high deviation of first-day returns. Ljunqvist (2004) also finds that the periods 1960s, 1970s, 1980s, 1990s and 2000-2004 show an average underpricing of respectively 21%, 12%, 16%, 21% and 40%. This again signals that the underpricing of the IPO’s is not solely due to information asymmetry and other factors might be of influence. However, this research will be limited to finding the existence of this phenomenon on the Chinese equity markets, but the factors causing it fall outside of the scope of this paper.

Lastly, this paper will also look at the differences in the degree of structural long-term underperformance of IPO’s between the Chinese and US financial markets.  The long-term underperformance states that, measuring from the first day closing price to the three-years closing price, IPO’s perform negatively in comparison to a sample of matching firms based on size and industry. This underperformance measured by Ritter & Loughlan (1991) and Brav & Gompers (1997) show that especially venture-backed IPO’s perform better than non venture-backed IPO’s, thus showing a lower degree of long-term underperformance. As will be explained in the next chapter of this paper, the Chinese Financial Markets have more restrictions on the companies applying for an IPO. One of them being that the companies applying for a listing, require a total value of at least 50 million Renminbi (RMB). A research by Loughran et al. (1994) shows that the underperformance of smaller firms is more severe than for bigger firms. Therefore, the assumption of this research paper will be that the Chinese IPO’s show a lower magnitude of underperformance in comparison to the listings on the American stock markets.

**Research question:**

Do IPO’s in China exhibit the same measure of underpricing and long-term performance as in the US?

The purpose of this thesis is to find out if these irregularities for IPO’s in the US also appear on the Chinese equity markets and to what extent they occur.

The proceedings of this paper are structured as follow: Section 2 introduces the history of the Chinese equity markets, its developments and the IPO listing requirements set by the China Securities Regulatory Commission (CSRC) in order to distinguish what sets the Chinese markets apart from the Western markets. Section 3 describes previous studies on the underpricing and long-term performance of IPO’s in the US and China. Section 4 presents the data and the methodology (research design) used. Section 5 reports the results and analyses of the findings. Section 6 draws the conclusions of this paper.

# 2. History of the Chinese Equity Market

## 2.1 China’s Equity Markets

### 2.1.1 Separated equity markets

Starting in the late 70s, China commenced the reform of their economy to move from a centrally planned economy to a more socialist economy. The goal was to create a more capitalistic economy and the state-owned enterprises (SEO) had an important role to play in this reform by privatizing them more and more. A logical next step was therefore, the founding of China’s Equity Markets, resulting in the opening of the Shanghai Stock Exchange (SHSE) in December 1990 with the listing of four “A”-shares. The offering of “B”-shares in February 1992 on the same stock exchange brought it one step closer to global standards (Gu, 2003). The current state of China’s equity markets was then completed with the opening of the Shenzhen Stock exchange (SZSE) in July 1991 (Chen, Firth and Kim, 2003).

### 2.1.2 Stock types

At the moment, the market consists of six stock types of which four are tradable and two are non-tradable. The two non-tradable stocks are state owned and legal person stocks. Neither of these two shares can be traded on the SHSE nor on the SZSE. However, they are allowed to transfer to other domestic companies provided that the China Securities Regulatory Commission (CSRC) approves of it. The other four types of shares are all tradable, namely: A-shares, B-shares, H-shares and N-shares. A-shares are traded on both the SHSE and the SZSE in Chinese Renminbi (RMB), and are only available to domestic investors. Starting from 2003, these shares were also made accessible to foreign investors (Wan and Juce, 2007). B-shares were compared to A-shares initially only attainable to foreign investors and inhabitants of Hong Kong, Macau and Taiwan; they are traded on the SHSE in US Dollars and on the SZSE in Hong Kong Dollars (HKD). However, from 2001 onwards these shares are now also open to domestic investors who have foreign currencies at their disposal (Sun et al., 2002). The remaining two share types are not traded on the domestic stock markets. H-shares are shares belonging to companies listed on the Hong Kong Stock Exchange and N-shares are those that are listed on foreign stock markets, such as London and New York. The attention of this paper will be narrowed down to only A-shares and B-shares because these are the only stocks traded on the Chinese mainland equity markets.

### 2.1.3 Role of Government in Chinese equity markets

One of the most significant characteristics of the Chinese equity market compared to other equity markets in the world is the high amount of government control. The share AB share category system distinguishes clearly between the stocks to be purchased by local Chinese citizens only and foreign investors. But the amount of A-classed shares that are only to be purchased by domestic citizens is significantly larger than B-classed shares. According to the study conducted by Gao (2002) Government ownership is slowly decreasing in other stock markets in the world. In 2000 government ownership within stock markets in Japan and the US has been measured to be 0.12% and 0.83%, respectively. China’s government ownership measured in 2002 amounts to a total of at least 45% to 89% suggests that shareholders in China have very limited influence on the companies they decide to invest in (Gao, 2002). The reason for this booming number is that Chinese government has a tight grip on the number of IPO’s to be issued every year and only one third of all the stocks on the stock market are actually released to the public while the remaining two third are still under government control or are non-tradable on the account of the business itself. This implies that the government has control over the current size of the stock market, the speed of new issues.

Another example discussed by Gao in his paper that is able to show the immense governmental power in China compared to other countries is the free float ratio. This ratio indicates what proportion of shares in the market is freely tradable and accessible for investors. For a more holistic view, the free float ratio in the US is on average 93.9% and emerging markets have on average a free float ratio of 77.5%. China is a complete outlier by displaying a ratio of only on average 30%. Even though, one must take into account that the float rate for Asian countries is in general quite low due to cultural and macro-economical factors, China is still an extreme case.

China tried to implement a policy in 2001 to counteract against destructive power of large government control, but the policy failed as the whole market experienced a 45% market crash (Gao, 2002). Nonetheless, China is currently still working very hard to implement other policies by aligning increasing aligning the three share classes and integrate the stock market with other stock markets in the world in order to stay more competitive and become less isolated (Johansson, 2010 and Lean 2010).

### 2.1.4. Structure of Chinese equity markets

The structure of Chinese equity market makes it difficult for foreign investors to invest well-informed due to its complexity. Apart from the different share classes discussed earlier, one has to understand that China’s blue-chip companies are all listed on foreign exchanges and are not accessible by domestic investors. Local Chinese citizens are not able to invest in e.g. renowned Chinese mobile companies. Due to this peculiarity, the Chinese equity market is dominated by small-cap companies as all big companies are mainly listed abroad. According to the Dow Jones Emerging Market Index the cut-off line for large cap and mid cap and mid cap and small cap are 1.3 billion and 210 million respectively. Only a handful of companies can then be considered as large cap in the Chinese equity market. As Gao (2002) points out the small cap problem in his research paper, China at that time had 521.8 billion shares outstanding with a market value of 525.6 billion dollars, hence approximately on average 1.007 dollar per share compared the US standard of approximately 34 dollars on the NYSE on average per share.

While other equity markets have a funnel shaped structure due to a couple of dominating blue-chip companies, the structure of the Chinese equity market is pyramid shaped due to the lack of blue-chip companies and the massive amount of small and micro cap companies. One of the many drawbacks of the pyramid structure is that it does not protect against market manipulation (Gao, 2002). Usually big blue-chip companies in an equity market make it impossible for them to be manipulated and small companies do not have enough impact, hence are not significant for manipulation. But it is a whole different story for China, market manipulation could take place by focusing on a couple of small cap stocks with no protection from blue-chip companies.

## 2.2 Requirements and limitations of IPO listings.

There are three important requirements and limitations to the listing of IPOs in China. Primarily, the strict limitations regarding the amount of IPO listings. Between 1993 and 2000 there was an annual quota that applied to either the number of IPO listings per year or the amount of total shares being offered each year. These quotas were being balanced and distributed between the provinces, which then divide the shares among the different industries with the development objectives of these industries in mind. These selected firms are thereafter being forwarded to the CSRC for a final approval. In 2001 this quota system was altered to a verification system (Chi and Padgett, 2005). From that point onwards, investment banks were also able to recommend IPO listings to the CSRS.

Secondly, the calculations of the offering prices are set by the CSRS. Before 2000, they were calculated using the earnings per share (EPS), together with the price-to-earnings ratio (P/E-ratio). After the turn of the millennium the CSRC loosened the requirements of IPO pricing, resulting in a regulation, which allowed investment banks to price IPOs according to the feedback of investors and the market alike.

Thirdly, the requirements for companies that have aspirations of applying for a stock listing. The main requirements are: 1) the shares have to be approved by the CSRC and are publicly issued, 2) the total capital of the company is more than 50 million RMB, 3) the company can be no younger than 3 years and must have made positive profit over the last 3 years, 4) more than a thousand shareholders hold stocks which have a face value of at least 1000 RMB; the tradable shares must amount for 25% of the company’s worth; in case this value is above 400 million RMB, the shares must account for 15% the company’s worth, 5) the company can not have been related to illegal corporate activities in the past three years (Wan and Juce, 2007).

As stated in the introduction of this paper, the main goal of the research is to investigate if the Chinese equity markets show a significant underpricing and in case it does, is there an increase of efficiency as the markets mature throughout time. Albeit the more binding restrictions of the Chinese government on the IPO listing, these differences with Western stock markets will not form any constraints to the analyses or conclusions of this paper.

# 3. Previous studies on IPOs

## 3.1 Underpricing and Long Term Performance of IPOs in the United States

In the last decades, a vast number of studies have been conducted on both the underpricing, as well as the long-term performance of IPOs in not only the Western stock markets but also on the stock markets of emerging economies alike. In almost all of these markets, these studies found significant proof for the existence of the two anomalies. Preeminently, the equity markets of emerging countries show a higher degree of average initial return in comparison to the more mature western equity markets.

Ritter (1991) examined the existence of long-term underperformance for 1526 IPOs that listed in the period of 1975-1984. The underperformance was measured by comparing the average return of holding the stock from the first day closing price to the three years closing price between the IPOs and a set of comparable firms, selected for size and industry. He finds that the IPOs show an average return of 34.47% compared to an average return of 61.68% for the matching companies when holding for a three-year period. Analyzing this data, leads to an IPO underperformance of 0.831 in comparison to the matching firms.

Furthermore, firms with higher initial returns have a tendency to show a long-term performance more negative than firms with lower initial returns, and in particular smaller rather than larger issues display this behavior.

Loughran, Ritter and Rydqvist (1994) compare the underpricing of IPO of 25 countries and find that the highest initial returns are found in Malaysia, Korea and Brazil showing a respectively 80.3%, 78.1% and 78.5% return, whereas the lowest returns can be found in the Netherlands, Canada and France showing a return of 7.2%, 5.4% and 4.2% respectively. They correlate the high average initial returns to the countries that have a higher degree of institutional restrictions.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Literature | Indicators used | Sample size | Methods to evaluate long-run performance | Degree of underpricing |
| “*The Long-Run Performance of Initial Public Offerings”*  Ritter J. (1991) | IPO’s listed in 1975-1984 with offer price > 1$ per share | 1526 companies | 1. Cumulative average adjusted returns (CAR)  2. 3-year buy and hold returns for both IPO’s and set of matching firms | 0.831% |
| *“Initial public offerings: International insights”*  Loughran T., Ritter J. & Rydqvist K. (1994) | Average initial return of IPO’s from previous studies | 25 countries (including Europe, Asia, US, Canada etc. ) | Equally-weighted percentage price change from offering price to market price | Highest degree of underpricing: Malaysia (80.3%), Korea (78.1%), Brazil (78.5)  Lowest degree of underpricing:  Netherlands (7.2%), Canada (5.4%) France (4.2%) |

**Table 1: Literature Table for studies regarding United States**

## 3.2 Underpricing and Long Term Performance of IPOs in China

Since the opening of the Chinese stock markets in 1990 there have been a number of studies on the underpricing and long-term performance of IPOs in China. Multiple studies find that China has the highest percentage of underpricing measured in the history of any equity market and derive a couple of identical factors leading to this underpricing. Looking at the long-term performance, there are inconsistent results between papers.

Gu (2003) researched 68 A-shares of companies that are listed on the SHSE in 1994 and finds that after correcting for market-adjusted returns the average initial return for IPOs is 222% with the largest initial return being 1873%. This suggests that the market movements do not induce the high returns. Looking at the short-term performance, Gu finds a discernible decrease of average returns, although this decrease does not lead to negative values. The average first month, three-months and six-months returns are respectively, 194%, 159% and 126%. The main factors causing these high returns are: 1) the lack of investment opportunities driving up the demand for stocks, 2) the bandwagon hypothesis used by Ritter (1997)[[1]](#footnote-1) and 3) agency costs[[2]](#footnote-2). Additionally, Gu examined the long-term performance and finds somewhat different results. The average returns compared to issue price for the first, second, third, fourth and fifth year show a positive return of respectively, 72%, 130%, 171%, 143% and 151%. However, comparing the average returns to the first closing price adjusted for market movements they show a negative -27%, -43%, -53%, -52% and -57% result. Lastly, with short-term returns of IPOs as the dependent variable, he finds significant values for a negative relationship with the proportion of state ownership and a positive relationship for firm size.

Chen, Firth and Kim (2004) conducted a study for the period 1991-1997 of 734 A-shares and 117 B-shares listings on both the SHSE and the SZSE. They find a median (mean) of 145% (298%) and 10% (25%) for A-shares and B-shares respectively, showing that B-shares approximate the underpricing found in Western stock markets considerably better. Chen et al. find three major significant factors for the underpricing of IPOs in China: 1) a positive relationship with a long listing lag, 2) future equity offerings and 3) a positive relationship with proportion of shares owned by the government. For B-shares, only the latter two factors are of significant influence on the underpricing.

Chi and Padgett (2005) examined the average initial and long-term returns for listings of 409 A-share IPOs between 1996 and 1997. They find an average market-adjusted initial return of 122.49% for the SHSE and 131.40% SZSE[[3]](#footnote-3). The main factor contributing to this large underpricing are attributed to the restricted amount of out coming shares, worsening the scarcity of investment options on the Chinese financial markets[[4]](#footnote-4).

Studying the long-term performance they find that the three year average cumulative return adjusted for the market is 10.3%, showing the highest return in the sixth month after the listing and on average positive returns until the 23rd month before turning negative. Through a regression analyses with the market-adjusted returns as dependent variable, they find four significant independent variables: 1) a negative relationship to the proportion of shares owned by the government, 2) a negative relationship to the offer size of the listing, 3) a negative relationship to initial returns and 4) a positive relationship to companies performing in the high-tech industry.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Literature | Indicators used | Sample size | Methods to evaluate long-run performance | Degree of underpricing |
| “*State Ownership, Firm Size, and IPO Performance: Evidence from Chinese ”A” Share Issues”*  Gu A.Y. (2003) | - Initial return  - First day return  - First six months return  of “A” shares companies that went public in 1994 | 68 companies | Equally-weighted price changes from the issue price | Average initial return: 222% |
| *“IPO underpricing in China’s new stock markets”*  Chen G., Firth M. & Kim JB. (2003) | Stock prices for IPO’s in the period 1991-1997 | - 734 A-share companies  -117 B-share companies | - Relative net asset value per share  -Prospective price-earning ratio | Average initial return A-shares: 145%  Average initial return B-shares: 10% |
| *“The Performance and long-run characteristics of the Chinese IPO market”*  Chi J. & Padgett C. (2005) | Stock prices of A-share IPOs in Shanghai or Shenzhen Stock Exchange from 1996 to 1997 | 409 companies | Market-adjusted long-run returns for a period of 36 months following the first trading month | Average initial return SHSE: 122.49%  Average initial return SZSE: 131.40% |

**Table 2: Literature table China**

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# 4. Data & Methodology

## 4.1 Data

The total data sample collected from Datastream and Thomson One Banker consists of 1285 company listings on both the Shanghai and Shenzhen Stock Exchange during the period between February 1992 and October 2004. This period was chosen because of the IPO freeze, which starting in June 2005 and lasted until May 2006, that could potential have let to biased IPO pricing. As suggested by Gu (2003) that the lack of investments opportunities is one of the driving factors behind the short-term underpricing, there is reason to believe that an eleven months IPO freeze would either increase this underperformance or bias the data in a different way for the data after 2006. Eventually, due to missing data, the sample used for the short-term underperformance of this research consists of 649 listings, of which 616 companies are A-share listings and 33 companies are B-share listings. The sample data for the long-term performance are marginally larger, consisting out of 654 listings. of which 618 companies are A-shares and only 36 are B-shares.

In order to find the required data, Microsoft Excel is being used. From the first day the companies enter the Stock Exchange, the companies’ stock prices on the stock market can be analysed. To be able to find the prices of the specific companies on specific data, a table is created in which every data point (e.g. the day at the end of the first week for company x) a unique value is being appointed (e.g. C2, the price of a company-C-share for the second day the company entered the exchange). With a Vlookup-function, all the prices for each company and day, from the day the company entered the market, can be extracted.

The data being extracted for all IPOs are the first day, week, month, 3 months, 6 months, year and 3 years closing rate returns after the initial IPO., An assumption needs to be made regarding the periods of time as each month, for example, is not perfectly divided in 28 days (4 weeks). Therefore, the first day is day 1, the first week ends at day 5 (Saturday and Sunday the Stock Exchanged is closed), the month after 20 days, 3 months after 65 days, 6 months after 130 days, a year after 260 days, and year 3 ends at 780 days.

## 4.2 Methodology

In this research paper, the focus will lay on two main anomalies, being, the short-term underpricing and the long-term underperformance. Both these anomalies will be researched with the use of absolute average returns and relative returns in comparison to a base case, either the first day closing price or the closing price of one month after the IPO. The use of absolute returns shows how the total market returns of all IPOs change during the three years after listing. However, one disadvantage of this method is that firms that list their stocks for higher prices have more influence than the firms that have lower stock prices. For example, if three smaller firms with stock prices of 1 RMB have increased returns of 10%, this leads to an 0.3 RMB increase of absolute returns. If then one large firm with a stock price of 10 RMB loses 5%, this will account for a decrease of 0.5 RMB of absolute returns. In total this would result in a decrease in absolute prices.

That is why this paper will also calculate the relative returns on the stock price, to assure that bigger stock prices do not disproportionally influence the smaller stock prices. This is done by taking the starting value as the base case, equaling a value of 1, and monitoring the percentual increase or decrease after the required period in comparison to this base case.

The last step is to compare the results between these two methods to see if there are any differences of significance and what could be the reasons for these dissimilarities.

### 4.2.1 Short-Term Underpricing

To investigate the short-term underpricing of IPOs on the Chinese stock market, three steps will be taken. Firstly, the average absolute returns will be calculated by comparing the first day opening prices of the 654 companies to the first day closing prices. Secondly, this will also be done for the average relative returns, by using the first day opening price as the base case and comparing the returns at the end of the first day. Eventually, the results will be compared and discussed.

### 4.2.2 Long-Term Performance

For the purpose of this research, assumptions regarding the number of trading days must be made. Since one year consists of 260 trading days and one week contains 5 trading days, this paper will regard a period of one month, three months, half year and 3 years as respectively 20, 65, 130 and 780 days.

Firstly looking at the A-shares, this paper will compare the difference between returns of the first trading day to the closing price after three years to measure the degree and significance of the long-term performance. Additionally, a second test will be conducted in accordance to the methodology used by Chi and Padgett (2005), who adjusted for the severe short term underpricing by excluding the first month after the IPO. Also here, both these two steps will be calculated for the average absolute and relative prices, and compared with each other.

# 5.0 Results

## 5.1 Short-Term Underpricing

### 5.1.1 Absolute Short-Term Underpricing

#### 5.1.1.1 A-shares

Table 3 presents the statistics for the short-term underpricing by comparing the average first day opening prices to the average first day closing prices. The table shows the calculated variance and average, which are found using the standard MS Excel formulas. Then the Variance/N is calculated manually. Concluding with the T-statistic, which can by deducted from the formula:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Variance** | **Average** | **Variance/N** | **T-Statistic** |
| **Opening** | 18.9561 | 5.9357 | 0.0308 | -0.5467 |
| **Closing** | 20.6068 | 6.0743 | 0.0335 |  |

**Table 3: A-shares absolute underpricing**

The results show a marginal average increase of 6.07-5.94= 0.13 RMB in prices between the first day opening prices and the first day closing prices. This is in contrast to earlier articles that find a larger amount of short-term underpricing on the Chinese stock markets than anywhere else in the world. Also, the T-statistic is not significantly large enough to reject the null hypothesis of the average opening price being equal to the average closing price. The conclusion that can be drawn is that there does not seem to be a significant short-term underpricing for the Chinese stock markets when using average absolute prices.

#### 5.1.1.2 B-shares

Table 3 shows the results of the short-term underpricing for B-shares, calculated using average absolute prices. In comparison to the A-shares, the B-shares even show an average lower first day closing price than the first day opening price. Again here, the T-statistic is not significant with a value of 0.67. The conclusion is that the results show that there is no short-term underpricing for B-shares with values determined by the average absolute prices. There even seems to be an average negative first day return. However, it has to be kept in mind that the T-statistic is not large enough to reject the null hypothesis. Thus, there is no significant proof for the findings.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Variance** | **Average** | **Variance/N** | **T-Statistic** |
| **Opening** | 0.0728 | 0.3133 | 0.0022 | 0.6659 |
| **Closing** | 0.0306 | 0.2761 | 0.0009 |  |

**Table 4: B-shares absolute underpricing**

### 5.1.2 Relative Short-Term Underpricing

#### 5.1.2.1 A-shares

Apart from researching average absolute prices, this paper will also calculate and discuss the average relative prices. This is done by taking the first day opening prices as the base case, being 1, and comparing them to the first day closing price to determine the percentage change. Table 5 below finds that the closing prices are on average 2.31% higher than the opening prices, while having a T-statistic of -4.52. The conclusion can therefore be drawn that there is significant proof of a 2.31% underpricing on A-shares traded on the Chinese financial markets. Again, this is very low in comparison to previous literature published on Chinese IPOs. One reason could be that, for this paper, the difference between the offer price and the first day closing price is not calculated. This would point at a possibly large short-term underpricing of the offer price. However, according to these results there is only a small degree of short-term underpricing of the initial day return.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Variance** | **Average** | **Variance/N** | **T-Statistic** |
| **Opening** | 0.0000 | 1.0000 | 0.0000 | -4.5219 |
| **Closing** | 0.0161 | 1.0231 | 0.0000 |  |

**Table 5: A-shares relative underpricing**

#### 5.1.2.2 B-shares

Table 6 below, shows that also for the relative underpricing the B-share prices are lower at the closing than at the opening of the first trading day. On average, the closing price will be 1-0.99=0.01% lower than the opening price. Again, the T-statistic is not large enough to reject the null hypothesis.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Variance** | **Average** | **Variance/N** | **T-Statistic** |
| **Opening** | 0.0000 | 1.0000 | 0.0000 | 0.4263 |
| **Closing** | 0.0348 | 0.9862 | 0.0011 |  |

**Table 6: B-shares relative underpricing**

### 5.1.3 Comparing Absolute and Relative Short-Term Underpricing

Both absolute, and relative short-term underpricing for A- and B-shares show similar results. The A-shares show in both cases a slight underperformance, of which only the relative short-term pricing is significant with a T-statistic of -4.52, whereas the B-shares show a slight overpricing over the first trading day. However, neither of the t-statistics are close to significance, that is why the results can not completely be considered as useful for any further research.

## 5.2 Long-Term Performance

## 5.2.1 Absolute Long-Term Performance

#### 5.2.1.1 A-Shares

Table 7 presents statistics for the long-term performance, comparing the first day closing price with the three years closing price. The table calculates the averages and variances for all companies in the data sample for the first day opening price until the three years closing price, in order to find the corresponding T-statistic between the two dates, which test for the **H0**: Averages of two dates are equal.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Variance** | **Average** | **Variance/N** | **T-Statistic** |
| **1 DAY** | 20.5988 | 6.0617 | 0.0333 | 3.9699 |
| **3 YEARS** | 11.8875 | 5.1515 | 0.0192 |  |

**Table 7: A-shares absolute 1 day long**

Comparing the first day closing average with the three years closing average, the results show that the three years closing price is on average 6.06-5.15 =0.91 RMB lower than the first day closing price with a T-statistic of 3.97. This means that looking at the absolute values, there is a significant long-term underperformance on the Chinese stock markets for A-shares.

Table 8 shows the long-term performance, comparing the closing price after one month with the closing price after 3 years, in order to take large short-term underperformance into account.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Variance** | **Average** | **Variance/N** | **T-Statistic** |
| **1 MONTH** | 19.9391 | 6.0321 | 0.0323 | 3.8805 |
| **3 YEARS** | 11.8875 | 5.1515 | 0.0192 |  |

**Table 8: A-shares absolute 1 month long**

The table shows that the three years closing price is on average 6.03-5.15=0.88 RMB lower than the first month closing price with a T-statistic of 3.88. Thus, also accounting for possible severe short-term underperformance, there is a significant three years underperformance, which is nearly of the same magnitude as the long-term performance between the first and three years closing price.

#### 5.2.1.2 B-shares

Table 9&10 below show the average absolute statistics for the B-shares and have nearly the same statistics. Both the first day closing price and the one month closing price are lower compared to the three years closing price, 0.27-0.21=0.06 USD. This means that on average, the stock prices are 0.06 USD lower than the initial opening price. However, neither of the t-statistics are big enough to reject the null hypothesis of the average price having the same values.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Variance** | **Average** | **Variance/N** | **T-Statistic** |
| **1 DAY** | 0.0288 | 0.2733 | 0.0008 | 1.5494 |
| **3 YEARS** | 0.0319 | 0.2097 | 0.0009 |  |

**Table 9: B-shares absolute 1 day long**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Variance** | **Average** | **Variance/N** | **T-Statistic** |
| **1 MONTH** | 0.0244 | 0.2686 | 0.0007 | 1.4891 |
| **3 YEARS** | 0.0319 | 0.2097 | 0.0009 |  |

**Table 10: B-shares absolute 1 month long**

### 5.2.2 Relative Long-Term Performance

This paper also looks at the relative long-term performance in order to research if company size could be a factor affecting the degree of long-term underperformance. For the calculation of the relative prices, the closing price of the first day is taken as the base case and is calculated by the formula: A1= p1/p1, hence showing the variance of zero. Then the three year relative price is being calculated using the formula: A720=1+(P720-P1)/P1.

Table 11 shows that the average long-term return for Chinese stocks is 19,38% higher than the first day closing price, with a T-statistic of -4.31. This leads to the conclusion that there is significant evidence that, on average, three years after their IPO, Chinese stocks rise 19,38% in value.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Variance** | **Average** | **Variance/N** | **T-Statistic** |
| **1 DAY** | 0.0000 | 1.0000 | 0.0000 | -4.3069 |
| **3 YEARS** | 1.2519 | 1.1938 | 0.0020 |  |

**Table 11: A-shares relative 1 day long**

Table 12 looks at the long-term performance of Chinese stocks calculated starting at the closing price of one month after the IPO. Just as with the absolute long-term performance, the prices after one month are not having a strong impact on neither the average chance after three years, nor the T-statistic. Therefore, comparing the first month closing price with the three-year closing price, there is significant evidence that, on average, Chinese stocks rise 21.56%, three years after their IPO.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Variance** | **Average** | **Variance/N** | **T-Statistic** |
| **1 MONTH** | 0.0000 | 1.0000 | 0.0000 | -4.3375 |
| **3 YEARS** | 1.5269 | 1.2156 | 0.0025 |  |

**Table 12: A-shares relative 1 month long**

#### 5.2.2.2 B-shares

The tables 13& 14 below show the statistics for the average relative prices for B-shares. Just as with the absolute values, they are rather identical. The average three year return is near zero, which means that the average B-share does not increase or decrease in value after three years in comparison to the initial opening prices. Also here, the T-statistics are very low, which points out that the test being done are not too reliable. This could be attributed to the small available data sample for the B-shares.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Variance** | **Average** | **Variance/N** | **T-Statistic** |
| **1 DAY** | 0.0000 | 1.0000 | 0.0000 | 0.0227 |
| **3 YEARS** | 1.1492 | 0.9959 | 0.0319 |  |

**Table 13: B-shares relative 1 day long**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Variance** | **Average** | **Variance/N** | **T-Statistic** |
| **1 DAY** | 0.0000 | 1.0000 | 0.0000 | 0.0379 |
| **3 YEARS** | 1.2759 | 0.9929 | 0.0354 |  |

**Table 14: B-shares relative 1 month long**

### 5.2.3 Comparing Absolute and Relative Long-Term Performance

#### 5.2.3.1 A-shares

Figures 1 and 2 below, show the difference between stock prices calculated using absolute and relative prices. Each graph is constructed using the closing prices of the first day, first week, first month, first three months, half a year, one year and three years for all companies of the data sample. The graphs show clear inverting paths.

It can be concluded that stocks measured in absolute prices perform worse in comparison with the first day closing price, three years after the IPO and that stocks measured in relative prices perform better. This difference can be attributed to the different pricing levels of the stocks being offered, which means that more expensive stocks have a larger impact on the average absolute price movements than the smaller stocks. In theory, this means that the smaller stocks outperform the bigger stocks.

**Figure 1: Average Absolute Prices**

**Figure 2: Average Prices compared to Base Case**

#### 5.2.3.2 B-shares

However, the graphs of the B-shares do not show significant different paths. Both the average absolute prices and the average relative prices are close to the first day offering price. Also, the prices in the first 3 months are nearly flat, which explains why the differences between prices starting on the first day and prices starting at one month after the initial offering were not significantly observable.

**Figure 3: Average Absolute Prices**

**Figure 4: Average Prices compared to Base Case**

# Conclusion

In summary, the short-term absolute underpricing show, on average, for the A-shares a slight underpricing and for the B-shares a slight overpricing. When looking at the relative short-term underpricing, the results show the same signs as with the absolute underpricing, meaning that the A-shares exhibit short-term underpricing and the B-shares an overpricing. It has to be noted that only the average relative short-term underpricing, is significant with an underpricing of 2.31%. This is not as much as would be expected, with regards to previous studies conducted in this field. The reason behind these indifferences could lie in the fact that the offer prices were not included in the framework of this thesis. For further research, a distinction could be made between the offer price and the opening price in order to investigate the short-term underperformance.

Furthermore, the long-term underperformance showed more significant T-statistics. In particular, all the A-shares show significant values, whereas neither of the B-shares show T-statistics larger than two. This difference could be attributed to the small data sample available for the B-shares. It must be noted that there is no noticeable difference in long-term performance between using the first day closing price or the closing price after one month when comparing to the closing price after three years. Also, there seems to be a clear contradiction between the findings of the absolute and relative prices. The average absolute prices show a decrease in value of approximately 0.9 RMB after three years, whereas the average relative prices increase by approximately 20%.

These findings point to the existence of the phenomenon that smaller stocks outperform bigger stocks. This could be an interesting variable for future research. That is why in this research, the conclusion is that there is a significant increase in price while looking at the long-term performance of stocks on the Chinese financial markets. Lastly, the B-shares show for both the absolute and the relative pricing a small decrease in average prices after three years.

To conclude, the stock markets of China show the same low measure of short-term underpricing when only comparing the first day opening price to the first day closing price. But, the long-term performance of Chinese stocks outperform the stocks listing on the US market.

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1. The bandwagon hypothesis suggests that investors do not only base their investments decisions on their own information but also on other investors sentiments. [↑](#footnote-ref-1)
2. Agency costs here, refer to the fact that managers and employees are allowed to buy a percentage of the new issues, thus leading to an increase of the underpricing of new offerings for personal gain. [↑](#footnote-ref-2)
3. During this period the returns between the two Chinese stock markets were not significantly different. [↑](#footnote-ref-3)
4. The allocation of shares on the Chinese stock markets happen through a lottery system. Chi and Padgett (2005) find that between 1996 and 2000, the average chance of allotment was a mere 1.97%. [↑](#footnote-ref-4)