

Performance Change and Its Influence Factors in IPO- An Empirical Study on China Growth Enterprise Market

¹Xi Zhao, ²Ying-Jun Sun

¹ Xi Zhao, Business School, University of Shanghai for Science and Technology, Shanghai, China

² Ying-Jun Sun, Business School, University of Shanghai for Science and Technology, Shanghai, China

Email: vivianzhaoxi@163.com

Abstract –This paper examines the relationship between pre-IPO earnings management and post-IPO performance under the background of venture capital investment which using a sample of 148 IPO companies in China GEM market during 2009 and 2010. The Empirical research indicates that venture capital investment plays a positive role on GEM listed company with short-term and long-term. The pre-IPO earnings management has certain predictability in the results of operations on the post-IPO. The positive earnings management of pre-IPO will result in declining about operation of post-IPO. The greater of the extent about positive earnings management of pre-IPO, the greater in the operations results of post-IPO decline.

Keywords –GEM; IPO; Venture capital investment; Earnings management; Market performance

1. Introduction

China's GEM open board ceremony was held which indicates that China GEM was formally established on October 23, 2009. The first listing of the 28 GEM companies has an average P/E ratio of 56.7 times, which is well above the average P/E ratio of China's A shares and the small plates. With high growth, high-tech, high value-added aura, China GEM's shining debut was well received by domestic and foreign investors. Since then the data disclosed in the annual report, and the GEM Company's growth, profit growth, venture capital inflow a few months before the GEM Listing caused widely discussion. We do not rule out the possibility that these companies have done a certain degree of modification to their financial data. By the mean of modification, these companies got the chance to be listed in China GEM. However, the core is whether the GEM companies have earnings management behavior or not, as well as what kind of relationship exists among the market performance of companies listed on GEM and earnings management behavior and venture capital investment.

Jain and Kini (1994) studied the inhibitory effect of venture capital using North American securities market as sample. Their empirical analysis found that, before the IPO, the venture holding company's capital cost is higher than the non-venture holding one. It illustrates that venture capital has the supervisory ability to the behavior of companies, which is attempting to whitewash profits to reduce capital costs. At the same time, by the way of participating the holding, venture capital positively improves the companies' management and performance.

Morsfield and Tan (2006) found that IPO years' controllable profit margin of venture capital backed company is low, and a venture backed companies'

earning management is lower than non-venture capital one and had a good performance after the listing.

Luo (2006) found that IPO earnings management impacts on the honorary degree of venture capitalists. There is a relationship between earnings management of IPO firm and the other number of enterprises invested by the same venture capital. Lee and Masulis (2011) investigated whether the financial intermediaries play an important role on the suppression of earnings management or not. The study found that: there is less earnings management when the IPO was underwrote by reputable investment bank, and there is internal consistency in the quality between the disclosure information and companies' financial reports.

Aharony (1993) found that listed companies IPO year controllable accrued profit was the highest, and the pre-IPO earnings management did affect share prices. Dechow, etc. (1995) found that the firms' share price will decline when had used earnings management to improve the operating performance, and rise when had employed earning management to lower company profits. Lin Shu and Wei Ming Hai (2000) found that firms used earnings management to package profit in the pre-IPO through the study of China's A-share market listed companies. Chen Xiang You (2010) studied the pre-IPO earnings management and post-IPO performance of China's A-share market, developed empirical studies found that between market performance in China's A shares of the issuing company after the IPO and pre-IPO earnings management level, there was significant negative correlation.

2. Theoretical Analysis

2.1. Venture Capital Investment

Venture capital investment refers to the investors subsidize firms those with the financial strength and with the expertise and with good market prospects, but lack of entrepreneurial start-up capital to fulfill their dreams, and bear the risk of investment failure. Investors invest fund and exchange corporate stake for the purpose of future dividends or the sale of the shares to obtain a return on investment. The characteristic of venture capital is willing to take high risks in pursuit of maximum return on investment, and continue to invest in "high-risk, high-tech, high growth potential" which similar to the high-risk enterprises using the exit fund recovered by ex-investment.

High-tech venture capital industry originated in United States, the prosperity of the U.S. high-tech venture capital industry will not only make it to maintain the worldwide leadership in the development of high-tech, but also bring the development of related domestic industries, and do a great contribution to the development of the U.S. economy.

After 40 years development, high-tech venture capital business activities exist throughout all advanced countries and newly industrialized countries, and some developing countries, formed a great driving force to promote the development of the global high-tech industry. In general, the development of high-tech venture capital is supported by the local government policy, and closely integrated with the country's technology industry development strategy. Governments often give preferential tax breaks to encourage capital flowing to high-tech venture capital industry, at the same time, there will be a lot of supporting measures both is software and hardware investment environment.

2.2. Earnings Management

Scott, an American Accounting scholar, in his book "Theory of Financial Accounting," considers that earnings management is the choice of accounting policies with the economic consequences of a specific performance. He believes that as long as corporate managers have the freedom to choose different accounting policies, they will certainly choose to utility maximization, or maximize the market value of accounting policies, which is the so-called earnings management. Accounting scholars Schipper, in 1989, said that earnings management is to obtain some private interests then interfere the external financial reporting.

Widely recognized is Hedy and Wahlen's view on earnings management in 1999, which explained: When the managers prepare financial reports and build economic transactions, by using judgment to change the financial reporting, and thereby mislead some stakeholders on the understanding of firm's fundamental economic benefits, or influence the contract formed by the accounting data in the report results. In the process of earnings management, enterprise management authorities are with purpose and intention to choose accounting policies or trading

arrangements for their own benefit, that's mean, the management authority is intentional.

3. Research Design

3.1. Research Year Selection

There are lots of researches on earnings management about IPO companies both in China and abroad. The author believes that it is flawed to study the IPO year as the study object because, according to the relevant provisions of China's securities regulatory authorities, the IPO companies need to submit three years and a period of the financial statements to the securities regulatory authorities. The financial statement listed in the preliminary prospectus is just the IPO period's data, not contains the whole year's earnings management.

In addition, it is a must to use the amount change of the main business income between research year and the last year, and then the IPO year and the pre-IPO year's yearly main business incomes are not comparable. Furthermore, earnings per share (EPS) and IPO P/E ratio were calculated on the basis of net profit in the pre-IPO year. IPO firms have the motivation and willing to manage earnings of the pre-IPO year, in order to obtain a higher issue price in the inquiry process. Based on various reasons above, we should choose the pre-IPO year earning management as the research object but not the IPO year, and this is an innovation of this article.

3.2. Market Performance Measures

Taking into account the GEM Listed for just few years, this article adopts r_{it} to represent the market performance.

$$r_{it} = (p_{it} - p_{it-1})/p_{it-1}$$

r_{it} : The proceeds of the stock i in period t

p_{it}, p_{it-1} : IPO stock's closing price at the end and the beginning of the period

p_{it}/p_{it-1} be adjusted accordingly when there are ex-right, ex-dividend, bonus happened to stock i in period t .

$$(\square\square\square p_{it}/p_{it-1})' = p_{it}/p_{it-1} \times (1 + \frac{bs}{10}) \times [(1 + \frac{am}{10}) - am \times \frac{p_{am}}{10} \times p'] \times (1 + \frac{cd}{10} \times p')$$

bs and am are separately the proportion of bonus shares and allotment for every 10 shares. cd is the cash dividend for every 10 shares. p_{am} is the allotment price, and p' is closing price of the ex-right day.

3.3. Earnings Management Methods

Total accruals method study is the most commonly used method on Earnings Management. There are many models in aggregate accruals method, such as healy model, DeAngelo model, Jones model, Jones sectional model, Jones modified model and so on. McNichols (2000) made a statistic on the 55 Research literatures about earnings management published in the American eight top accounting journals during 1993 to 1999. His research found that 45.5% of the articles employed total accruals method, and concluded that the total accruals method is currently the one of the most frequently used method on earning management. This article also uses total accruals method, and in order to reflect the income manipulation select the modified Jones model:

Using the least squares method to find the estimated regression parameters β_1 , β_2 , and β_3 :

$$\frac{TA_{ccit}}{TA_{it-1}} = \beta_1 \times \frac{1}{TA_{it-1}} + \beta_2 \times \left[\frac{\Delta REV_{it} - \Delta REC_{it}}{TA_{it-1}} \right] + \beta_3 \times \frac{PPE_{it}}{TA_{it-1}} + U_{it}$$

TA_{ccit} : Total accruals of the estimated period equate operating profit minus the operating cash flow in year t

TA_{it-1} : The total assets of year $t-1$

ΔREV_{it} : The main business income of year t minus the main business income of year $t-1$

ΔREC_{it} : The accounts receivable of year t minus the accounts receivable of year $t-1$

PPE_{it} : The book value of the fixed assets in year t

Using β_1 , β_2 , β_3 substituted into the following equation to calculate the non-operational accruals profits of the event duration:

$$\frac{NDA_{ccit}}{TA_{it-1}}$$

$$= \alpha_1 \times \frac{1}{TA_{it-1}} + \alpha_2 \times \left[\frac{\Delta REV_{it} - \Delta REC_{it}}{TA_{it-1}} \right] + \alpha_3 \times \frac{PPE_{it}}{TA_{it-1}}$$

The calculation of operational accruals, namely the extent of earnings management:

$$\frac{NDA_{ccit}}{TA_{it-1}} = \frac{TA_{ccit}}{TA_{it-1}} - \frac{NDA_{ccit}}{TA_{it-1}}$$

3.4. Sample Selection and Data Sources

The prospectus GEM IPO firm contains one period financial statement, but not the whole year data. The financial statement of pre-IPO year was used when calculate controllable accruals. During 2009 to 2012 there are 148 companies listed in GEM with sufficient data and information disclosure. In this article, 148 samples came from Shenzhen Stock Exchange and Wind database, and data processing used SPSS and EVIEWS.

In consideration of the short time of the GEM, the article chose the first day, short-term (7 days after the listing), and the medium term (30, 60 days after the listing) to study the performance of post-IPO. Data is from the wind database.

4. Empirical analysis

4.1. Venture Capital Background and the Maneuverability Accrued Profits

According to the venture capital backed company of the pre-IPO, these companies were divided into two groups. Two groups were compared with median difference of the maneuverability accrued profits (see Table 1).

Table 1. The median difference of the maneuverability accrued profits

Sample group	Sample amount	Percentage	DAC Median	DAC Mean value
Venture capital backed	104	70.27%	0.0798	0.0768
Non-venture capital backed	44	29.73	0.0912	0.0912

It can be perceived from table 1 that 104 firms have the background of venture capital investment and they are accounted for the majority. No matter from the mean value or the median of the maneuverability accrued profits; we can get the conclusion that venture-backed companies' extent of earnings management is less than non-venture-backed companies.

4.2 . Venture Capital Background and Market Performance

Table 2. Venture capital background and market performance

Sample Group	DAC Median (%)			
	1 st day	7 th day	30 th day	60 th day
Venture capital	-1.75	-4.77	-6.12	-8.43
Non-venture capital	-2.52	-4.78	-5.97	-3.38

Shown in Table 2, according to the adjusted rate of return, we calculate the market performance of the first day, 7th day, 30th day and 60th day after listing on the GEM. The return rates were all negative regardless of short-term market performance or medium-term, and the yield is getting smaller and smaller. In short-term, the venture capital backed companies' performance are better than non-venture capital, but contrast in the mid.

4.3. Earnings Management and Market Performance

On the basis of the sample companies' earnings management level, we divided the sample into two groups of positive earnings management and non-positive earnings management (table 3). It is showed in table 3 that 113 positive earnings management companies, accounting for 76.35% of the total, which state that China's GEM exists positive earnings management and it negatively correlates with the market performance. Mann-Whitney non-parametric test shows in table 4, the result is the two groups of market performances have significant differences at a significant level of 0.05.

Table 3. Earnings management and market performance

Sample Group	Sample amount	Percentage	DAC Median(%)			
			1 st day	7 th day	30 th day	60 th day
positive earnings management	113	76.35%	2.15	-4.78	-11.15	-11.45
non-positive earnings management	35	23.64%	-1.95	-3.41	-5.49	-6.78

Table 4. Significance test

Item	Median							
	Difference				Z-value (0.001)			
	-0.0114				-0.688			
VC or Non-VC	1 st day	7 th day	30 th day	60 th day	1 st day	7 th day	30 th day	60 th day
VC	0.77	0.01	-0.15	-5.05	-1.053	-0.659	-0.239	-1.334
Non-VC	-0.2	-4.78	-5.97	-3.38	-0.444	-0.354	-0.959	-1.216

5. Conclusions and Discussions

5.1. Conclusions

More than 70% of the companies listed on GEM have venture capital background, indicating that GEM is very popular within venture capitalists. Firstly, the GEM has tremendous ability to create value, which is very attractive to the venture capitalists; secondly, the listed threshold was reduced followed by the launch of the GEM and the lock-up period was shortened, both of them decreased the difficulty of the VCs' exit. Therefore, a large number of venture capital stationed in the GEM, GEM has become an important exit channel for venture capital institutions.

On the one hand, GEM created lots of wealth legendary for venture capitals; on the other hand, the venture capital investment has also brought huge importance to IPO firms. Empirical results show that the earnings management of venture capital backed companies listed on GEM is lower than the non-venture capital backed companies, and the differences are significant. This shows that venture capital investment is able to supervise and constrain the IPO firms' artificial behavior to accrued profits, and then help to improve the IPO firms.

China GEM listed companies' median rate of return has been negative after the IPO, and the market performance has a falling trend. There is the behavior of the IPO premium, leading the market to worry the prospect of GEM. Venture capital backed companies'

short-term market performance is better than non-venture capital backed company, but is in contrast to the mid-market performance.

76.35% of the 148 sample companies have a positive earning management, indicating that the Shenzhen GEM has serious manipulation acts of the accrued profits to beautify their financial statements. CSRC has received over 300 complaint letters which involved more than 100 companies since GEM's open, including profits excessive packaging, such as large associated business leads to financial date distortion; profit operation trace is too obvious, such as violate the accounting standard to reverse the long-term assets impairment losses which are previously recognized, directly sent profits by denoting to listed firms. Positive earnings management and market performance have a negative correlation, the greater the degree of positive earnings management, the greater the decrease of market performance.

5.1. Suggestions

Since the GEM went public, from the time of release with "three high", venture capital emergence, super funds raised to hidden issues such as the performance degradation and executives resign, the development of China GEM has attracted many people's attention.

Firstly, venture capital plays a positive role on earnings management of listed companies in market performance after the companies listed on GEM, but the supervisory role just takes effect in short-term and may appear opposite effect in medium-term. A mature mechanism must be launched to match the development

of venture capital. The mechanism is not limited to GEM but also to different levels of capital market. The long the venture capital takes, the more difficult to control risk. So we should construct different stages of exit market, only do this can the venture capital get real blossom.

In turn, the successful experience of the United States told us there is less earning management in the IPO when the IPO firm's stock was underwrote by a prestigious investment bank. And inner quality consistent exists between the disclosure and financial statement. It's impossible to take the lead on strategic high-tech industrialization, pioneered the development of strategic industries without a mature and valuable venture capital. Secondly, positive earnings management affects the market performance too. The greater degree of the earnings management in the pre-IPO, the greater range decline will happen to market performance in the post-IPO period. In order to increase the strength and depth of GEM firms' disclosure, especially the internal control system, we should find a solution to improve the quality of information disclosure. Although there are many problems in the GEM, it is still the most active and fastest growing market in China's capital market. With the passage of time, establish the GEM exit system, improve the GEM publish process and audit system, strengthen the regulation, treat the GEM rationally, the GEM will mature to play its due role. Our method can be applied to other industrial fields [22-30].

Acknowledgements

This research is supported by Shanghai municipal education commission's key discipline construction project (Project No. J50504) and the social science project of Shanghai (Project No. 2009BJB031).

References

- [1] B.A. Jain, O. Kini, The post-issue operating performance of IPO firms. *The Journal of Finance*, 49(5)(1994), 1699-1726.
- [2] S.G. Morsfield, C.E.L. Tan, Do venture capitalists influence the decision to manage earnings in initial public offerings? *The Accounting Review*, 81 (5)(2006), 963-1206.
- [3] Mc Nichols, M.F. Research design issues in earnings management studies. *Journal of Accounting and Public Policy*, 19(4/5) (2000), 313-345.
- [4] H Xie .The mispricing of abnormal accruals *The Accounting Review*, 76(2001), 357- 373.
- [5] Chongyan, Cao, Hanjie Wu, Hui Wang. Research on the Relationship between Pre-IPO Earnings Management and Post-IPO Performance for China Gem. *Value Engineering*, 2012(13): 125-126.
- [6] Xiang-you Chen. Empirical Research on the Relationship between Pre-IPO Earnings Management and Post-IPO Performance for China Firm. *The Theory and Practice of Finance and Economics*, 1(2010), 62-65.
- [7] Y.D. Luo, Opportunism in inter-firm exchanges in emerging markets. *Management and Organization Review*, 2(1)(2006), 121-147.
- [8] G. Lee, R.W. Masulis, Do More Reputable Financial Institutions Reduce Earnings Management by IPO Issuers? *Journal of Corporate Finance*, 17(4)(2011), 982-1000.
- [9] J. Aharony, C.J. Lin, and M.P. Loeb, Initial public offerings, accounting choices, and earnings management. *Contemporary Accounting Research*, 10(1)(1993), 61-81.
- [10] P.M. Dechow, R.G. Sloan, and A.P. Sweeney, Detecting Earnings Management. *The Accounting Review*, 70(2)(1999), 193-225.
- [11] S.H. Teon, I. Welch, and T.J. Wong, Earning management and the long-run market performance of initial public offerings. *Journal of Finance*, 53(6)(1998), 1935 -1974.
- [12] Xian Li, Lijie. Nie. Audit quality and earnings management for China IPO firms. *Auditing Research*, 06(2006), 67- 72.
- [13] Cheng-xiang. Huang, Analysis of Earnings Management in IPO. *Journal of Xi'an University of Finance and Economics*, 3(2010) , : 63-65.
- [14] Lianghua. Chen, Jiang. Sun, Han Zhang. Performance Change and Its Influence Factors in Initial Public Offerings: An Empirical Study on Hong Kong Growth Enterprise Market. *Economy & Audit Study*, 4(2005): 84-88.
- [15] Huiping Liu. The Difference of IPO Sponsor Model of GEM in China and the Role Response of the Supervisory Board. *Reform*, 5(2011): 115-119.
- [16] Shufang Xiao, Chenyu Zhang, Chao Zhang, Ran Xuan. Earnings Management prior to the Public Disclosure of an Equity Incentive Plan: Empirical Evidence from Listed Companies in China. *Nankai Business Review*, 4(2009), 113 -119.
- [17] S. Sung, Kwon, Qin Jennifer Yin. Executive Compensation, Investment Opportunities, and Earnings Management High-Tech Versus Low-Tech Firm. *Journal of Accounting, Auditing & Finance*, 2006: 119-148.
- [18] Paul, Hribar, W. Collins Daniel. Errors in Estimating Accruals Implications for Empirical Research. *Journal of Accounting Research*, 40(1)(2002), 105-134.
- [19] Daniel Bergstresser, Thomas Philippon. CEO Incentives and Earnings Management. *Journal of Financial Economics*, 80(3)2006, 511-529.
- [20] Terry Baker, Denton Collins, Austin Reitenga. Stock-Option Compensation and Earnings Management Incentives. *Journal of Accounting, Auditing and Finance*, 18(4)(2003), 556-582.
- [21] LEI GAO, SHUNLIN SONG. Related Party Transactions, Below-the-Line Items and Earnings Management—Empirical Evidence from Chinese Listed Companies. *China Accounting Review*, 1(2008), 61-78.
- [22] Yudong Zhang, Lenan Wu, A Novel Method for Rigid Image Registration based on Firefly Algorithm, *International Journal of Research and Reviews in Soft and Intelligent Computing*, 2(2) (2012) 141-146.
- [23] Yudong Zhang, Shuihua Wang, Lenan Wu, Spam detection via feature selection and decision tree, *Advanced Science Letters*, 5 (2012) 726-730.
- [24] Yudong Zhang, Lenan Wu, A Genetic Ant Colony Classifier System, in: *Computer Science and Information Engineering*, 2009 WRI World Congress on, 2009, pp. 744-748.
- [25] Yudong Zhang, Lenan Wu, Shuihua Wang, Bacterial foraging optimization based neural network for short-term load forecasting, *Journal of Computational Information Systems*, 6(7) (2010) 2099-2105.
- [26] Yudong Zhang, Shuihua Wang, Yuankai Huo, Lenan Wu, Feature Extraction of Brain MRI by Stationary Wavelet Transform and its Applications, *Journal of Biological Systems*, 18(s) (2010) 115-132.
- [27] Yudong Zhang, Lenan WU, A Fast Document Image Denoising Method based on Packed Binary format and Source Word Accumulation, *Journal of Convergence Information Technology*, 6(2) (2011) 131-137.
- [28] Yudong Zhang, Shuihua Wang, Lenan Wu, Yuankai Huo, PSNN used for Remote-Sensing Image Classification, *Journal of Computational Information Systems*, 6(13) (2010) 4417- 4425.
- [29] Yudong Zhang, Lenan Wu, Fast Document Image Binarization based on an improved adaptive Otsu's method and destination word accumulation, *Journal of Computational Information Systems*, 7(6) (2011) 1886-1892.
- [30] Yudong Zhang, Lenan Wu, Recursive Structure Element Decomposition Using Migration Fitness Scaling Genetic Algorithm, *Springer Berlin / Heidelberg*, 2011, pp. 514-521.