An Empirical Study on IPO Underpricing

Under Full Circulation in China

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Abstract

A serious IPO underpricing phenomenon has been existing in China's stock market for a long time. Many studies show that the splitting- stock problem is the main reason for the abnormally high IPO underpricing. Today, the reform of stock right splitting has basically been completed, this paper conducted an empirical analysis on IPO underpricing in the context of full circulation. Estimation results show that: after the reform of stock right splitting, a clear phenomenon of the IPO underpricing still exists in China's stock market, but there is a relatively big margin decline compared with the pre-reformed market. And the Shenzhen market's average is higher than the Shanghai stock market's. Meanwhile, the multi-factor regression analysis shows that as for the new shares issued in china's special bull market ,the relationship between the scale of the issuance of IPO, the gap between the listed day and the issued day, the issue price, he net assets per share, the success rate and the IPO underpricing is Unlike traditional research-minded.

Keywords: IPO, Underpricing , Splitting stock right

1. Introduction

IPO underpricing refers to the initial public offering of stock prices significantly lower than the first day of the stock market price of the deal. Almost all the stock markets in the world have different levels of IPO underpricing phenomenon. Since China's stock market is still a nascent market with the splitting- stock problem, Studies both at home and abroad show that the problem of stock right splitting is the main reason for China's high IPO underpricing. Because of the lack of studies against the full circulation market, this paper's findings have the considerable significance. During the reform of stock right splitting, "Old and new zoned out" initiatives lead to the prolonged interruption of the issue of new shares to ensure the smooth progress of this reform. However, CHINA CAMC ENGINEERING CO., LTD (002051) held the public subscription On June 5, 2006, which marked the starting of issuing new shares officially in an environment of full circulation, and then more than 100 new-issued stocks also provided a relative abundance of samples for this paper.

The structure of the paper is as follows: the first section is about the introduction; the second part notes the research methods and data sources; the third part details the empirical findings of the study and a brief analysis of the results; finally, i n section 4, we make a conclusion.

2. Research Methods & Data Description

2.1 IPO Underpricing Rate

In this paper, we take the following method to measure IPO Underpricing Rate:

$$IR=P1/P0-I1/I0$$

Where IR for the IPO Underpricing Rate; P0 for the issue price of new shares; P1 for the first day's closing price of new shares; I0 for the closing market index for the previous day of new shares; I1 for the market's closing price index for The first day of listing.

2.2 Regression Model

In this paper, we use the linear regression method with considering IR as the interpreted variables and the scale of the issuance of IPO,the gap between the listed day and the issued day,the issue price,the net assets per share,the success rate as the explanatory variables. Involved in the linear model to the following:

$$IR = \beta_0 + \beta_1 P0 + \beta_2 GAP + \beta_3 ZQL + \beta_4 LVON + \beta_5 NAPs + \beta_6 EPS + \varepsilon$$

Where IR for the IPO Underpricing Rate; P0 for the issue price of new shares;GAP for the gap between the listed day and the issued day; ZQL for the success rate; LVON for the natural logarithm of the amount of funding; NAPs for Net assets per

share; EPS for earnings per share.

The model has the following assumptions:

Assumption 1:

With the other conditions unchanged, the gap between the listed day and the issued day (GAP) is positive correlation with IPO underpricing(IR).

Assumption 2:

With the other conditions unchanged, Success rate (ZQL), funding amount (CZJE) , net assets per share (NAPs) and earnings per share (EPS) are negative correlation with IPO underpricing(IR).

2.3 Sample Selection and Data Processing

This paper covers 154 new-issued stocks from June 5, 2006 to Dec 25,2007 (detailed in Table 1), The data used in this paper comes from the company's prospectus , listed on the notice , success rate Notice ,ShengLong- software and some financial website.

As usual,we adopt Shanghai Securities Exchange Integration Index in selecting index.

3. Empirical Findings and Brief Analysis

3.1 Statistical description of the IPO underpricing(IR)

According to table 3 we find that the average underpricing for A-share IPO's after the reform of stock right splitting is 148. 03%.it is much lower than those research findings(Mok and Hui (1998): 956%; Gongmeng Chen(2000): 335%;) based on the environment of stock right splitting ,however, compared with the international double-digit rate markets in many developed countries(Table 2), China's securities market still exists much higher degree of new issue shares underpricing. Besides, 30 new shares listed in Shanghai Stock Exchange with a average of 72.57% is much lower than those 124 new shares of average 166.28% listed in Shenzhen Stock Exchange, which shows that the first day of the Shenzhen market's Municipal excess receipts seems to be much larger than the Shanghai stock market's. The phenomenon is reflected in the papers(Li Liu and Wende LI(2000),which argued that the reasons for it were the scales and the Shenzhen market's lately opening, however, according to the time span and the number of the samples in this paper, we know that the reasons for the occurrence of this phenomenon is not the case, there may be a deeper level systemic factors leading to the occurrence of this phenomenon.

In addition, Skewness to 1.1279 greater than zero,shows a deviation of right side and because of the Shenzhen stock market for 1.256, greater than the Shanghai stock market's 0.98, it notes that the Shenzhen stock market in the right-side greater degree of deviation.

3.2 Industrial analysis of the IPO underpricing of the samples

Because of the peculiarities of the Samples' time span, the number scattered in various sectors of stocks is too few and this data is not suitable for the discount on new stock issues related industries phenomenon test.however, it is apparent that industrial factor has much influence on IPO underpricing.for exemple, real-estate, electronics and food industries have higher degree of IPO underpricing than banking, electricity and gas and metallurgical industries, In the nine banks in the sub-samples, the average underpricing is only 0.63, well below the sample mean and These nine banks belong to the Shanghai stock market, which may be one of the reasons why the first day of the Shenzhen market's Municipal excess receipts seems to be much larger than the Shanghai stock market's.

3.3 Multiple regression results

The variables related to the regression model above can explain to some extent the reasons for IPO underpricing. To further explain the phenomenon of IPO Underpricing ,we will set out the multiple regression model results and make a brief analysis.

Regression results as shown in table 6, from the single-variable coefficient analysis, the correlation coefficient between P0 and IR is 0.109,showing that the issue price of new shares(P0) is slightly positive correlated with IPO underpricing (IR), which is different from the traditional research results, but from the sub-sample analysis of the Shanghai stock market, it is consistent with the assumptions that IR is negatively correlated with P0 and the significant probabilities value of T is 0.001, thereby the issue price of new shares(P0) variable does pass the test of significance, which indicates that P0 variable does explain IR very well.

The correlation coefficient between the gap between the listed day and the issued day(GAP) and IPO underpricing (IR) is negative and strongly significant, which is not consistent with our assumptions.however, it does not mean that the traditional conclusion was wrong, because the result that the longer the gap between the listed day and the issued day (GAP), the greater the risk and the higher is IPO underpricing has experienced long-term testing. the reasons for this paper's conclusion unconsistent with the tradition may be the environment of the bull market . To curb excessive expansion of the stock market, the government must speed up the issuance of new shares, which often gives investors an expectation that no matter which stock goes to public, its GAP will not be too long. As a result,the GAP variable is weak to explain the phenomenon of IPO underpricing and also shows that risk factors in the stock has not been well reflected in china's stock market.

The finding that the correlation coefficient between success rate (ZQL) and IPO underpricing (IR) is negative and strongly significant is consistent with the above assumptions. This shows that the success rate (ZQL) can indeed reflect the needs of the new shares' investors. In other words, the higher success rate is,the smaller demand for the investors is and the lower the degree of IPO underpricing (IR) is.

The correlation coefficient between net assets per share NAPs and IPO underpricing (IR) is positive and more significant, which is also inconsistent with the above assumptions. Under normal circumstances, the higher the net assets per share NAPs, the better the company's fundamentals are.because of that,this kind of company would choose a issue price of new shares(P0) as high as possible to lower IPO underpricing (IR). This abnormal phenomenon in China's stock market show that shares' prices can not fully reflect the companies' fundamentals and the stock market is still a seriously speculative places.in addition, earnings per share EPS and IPO underpricing (IR) is negative correlation, but it is not significant under 5% statistical level.

In addition, the natural logarithm of the amount of funding (LVON) is negatively correlated with IPO underpricing (IR) and it is consistent with the above assumptions. The amount of funding can reflect the size of the company to some extent. a big company is bound to bring a sound development expected and a relatively small risk. Therefore, when determining the price of the issue price, they will narrow the difference between the market price and the issue price that is, making a lower IPO underpricing (IR). However, the variables is not strongly significant and to some extent it also shows that China's stock markets do not adequately reflect companies fundamentals from the finding.

Finally, the regression analysis results show that the value of R^2 is only 0.276 and even the Adj - R^2 is only 0.246, which notes that the regression equation is not exactly fitting for the samples. As for the Chinese stock market, which just gained full circulation, the factors that were promoted by the traditional view do not adequately explain the degree of IPO underpricing.

4. Conclusions

This paper makes a empirical test about the phenomenon of IPO underpricing in China's stock market after the reform of stock right splitting. The results show that: First, the degree of IPO underpricing is much lower than before and the reform is very effective. However, compared with other developed stock markets, the issuing of new shares still exist higher IPO underpricing. The reform of stock right splitting is just one of the measures to low the degree of IPO underpricing; Second, with previous research findings consistent, this paper also argues that the first day of the Shenzhen market's Municipal excess receipts seems to be much larger than the Shanghai stock market's, but its causes are still unknown, perhaps the size and the nature of the companies are the key factors; Third, the findings in this paper show that some traditional factors that affect the degree of IPO underpricing are not very good to explain the phenomenon of IPO underpricing, such as the issue price of new shares(P0),the gap between the listed day and the issued day(GAP),net assets per share NAPs. The reasons may be found in the following areas:

First, China's bull market background changed the investors' price expectation. The stock market which has been depressed for many years spurred by the outbreak of the rising and kept the making money effect going on.However, with the deepening of the reform and the higher index, shares gradually detached from the supports of the companies' fundamentals, the new- issued shares issued in such an atmosphere no doubt will be impacted by this type of thought.

Second, the realization of full circulation can only improve the efficiency of the allocation of resources in china's stock market and will not necessarily guarantee the long-term and healthy development of this market. According to the results of the empirical research, many investors did not realize the nature of the stock market and china's stock market is still a serious speculative place.

References

Chen, Gongmeng & Gao, Ning. (2000).The Degree of IPO Underpricing and The Reasons in China's Stock Market. *Financial Research*. (8)

Chen, Gongmeng. (2002). An Empirical Research on Long-term Return of China's IPO Market. *Economic Science*. (1)

Liu, Li, & LI, Wende. (2000). The Research on The First Day of Excess Receipts of China's IPO Market. *China's Accounting and Financial Studies*. (12)

Lu, Junrong & Lin, Jingjun. (2005). Measurements of The Systematic Efficiency of IPO. *International Business*. (1)

Xiong, Hu & Meng, Weidong. (2007). An Empirical Research about Investors' Bias of Acts and IPO Underpricing under The System of Examination and Approval in China. *Soft Science*. (4)

Table 1. Sample's statistical description

Year	A-shares		
	SH	SZ	Total
2006	15	68	83
2007	15	56	71
Total	30	124	154

SH:Shanghai Stock Exchange   SZ:Shenzhen Stock Exchange

Table 2. The IPO underpricing rate of some more developed securities markets

Countries and regions	The authors	Sample interval	Number of samples	IR
The United States	Ibbotson	1960-1992	10626	15.3%
England	Dimson;Levis	1959-1990	2133	12.0%
Singapore	Koh & Walter	1973-1987	66	27.0%
Japan	Fukuda;Hebne & Hiraki	1970-1991	472	32.5%
Hong Kong	McGuinness	1980-1990	80	17.6%

Sources: Gongmeng Chen(2000)

Table 3. The statistical description of the IPO underpricing of the samples

	IR		
	ALL	SH	SZ
Mean(%)	148.03	72.57	166.28
Std. Deviation (%)	112.79	55.16	115.68
Skewness	1.1279	0.981.256	
Maximum (%)	535	214	535
Minimum (%)	0	0	22
N	154	30	124

Note: ALL: all samples   SH: the Shanghai stock market   SZ: the Shenzhen Stock Exchange

Table 4. statistical description of the variables

Variables	ALL		SH		SZ	
	Mean	Std.Deviation	Mean	Std.Deviation	Mean	Std.Deviation
IR	1.4803	1.1279	.7257	.5516	1.6628	1.1568
P0	9.6162	5.0772	8.2013	6.4655	9.9585	4.6479
GAP	13.78	4.27	12.50	4.78	14.09	4.10
ZQL	.42081	.62652	1.16460	1.09409	.24085	.19612
NAPs	4.1000	1.5921	3.4832	1.8000	4.2493	1.5079
LVON	6.10315	1.57138	8.63960	1.34072	5.48950	.83599
EPS	.39471	.26197	.35193	.27677	.40506	.25836

Note:the uncertainties represented for all variables referred to the former model

Table 5. Pearson correlation matrix

		IR	P0	GAP	ZQL	NAPS	LONV	EPS
Pearson Correlation	IR	1.000	.109	-.184	-.389	.020	-.284	-.017
	P0	.109	1.000	.018	-.055	.866	.081	.718
	GAP	-.184	.018	1.000	-.138	.107	-.177	.170
	ZQL	-.389	-.055	-.138	1.000	-.158	.623	-.111
	NAPS	.020	.866	.107	-.158	1.000	-.049	.736
	LVON	-.284	.081	-.177	.623	-.049	1.000	.083
	EPS	-.017	.718	.170	-.111	.736	.083	1.000

Table 6. multivariate regression test results

Coefficients

Model		Standardized Coefficients	t	Sig.	95% Confidence Interval for B		Collinearity Statistics	
		Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)		6.334	.000	2.342	4.466		
	P0	.524	3.487	.001	.050	.182	.219	4.576
	GAP	-.212	-2.879	.005	-.094	-.018	.909	1.101
	ZQL	-.375	-4.082	.000	-1.001	-.348	.584	1.711
	NAPS	-.421	-2.717	.007	-.515	-.081	.205	4.868
	LVON	-.145	-1.538	.126	-.237	.030	.558	1.792
	EPS	-.077	-.696	.487	-1.275	.611	.401	2.494

Dependent Variable: IR

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.525	.276	.246	.9792