Available online www.jocpr.com

Journal of Chemical and Pharmaceutical Research, 2013, 5(12):237-242

Research Article

ISSN : 0975-7384
CODEN(USA) : JCPRC5

Private placement discount of Chinese listed companies based on the perspective of the investors' sentiment

[1,2]Jun Yu, [2]Zhu-bao Wei, [3]Pin.Ng and [2]Jing Tang

[1]School of Business, Hohai University, Nanjing, Jiangsu, China
[2]Department of Management, Hefei University, Hefei, Anhui, China
[3]The W. A. Franke College of Business, Northern Arizona University, Flagstaff, AZ, USA

ABSTRACT

This paper explored the main driving force of private placement discount based on the perspective of the investors' sentiment. The results show that: (1) the private placement discount has been influenced by the dual effects of rational and irrational factors, but the irrational factors are the main driving force. Also, there is a significant positive correlation between investors' sentiment and private placement discount: the more optimistic (pessimistic) the investors' sentiment is, the greater (smaller) the private placement discounts are. (2) Short-term excessive optimism of investors led to the phenomenon of the long-term vulnerable private placement market.

Keywords: Investors' Sentiment, Market Effect, Overreaction, Private Placement

---

INTRODUCTION

May 8, 2006, China promulgated "Administrative Measures for the Issuance of Securities of the Listed Companies", for the first time by private placement into the legal constraints category. According to WIND database, From 2006 to 2011, the number of listed companies through the private placement financing reached 93.84, 267.10,175.99,274.08,313.32,358.59 billion, accounting for the corresponding total equity refinancing was 89.18%,74.64% , 72.79%, 88.17%, 63.43%, 83.56%, and the number of successful private placement of listed companies is 50,133,102,118,158,176, accounting for corresponding equity refinancing was 84.75%, 78.24%, 73.91%, 83.10%, 83.60%, 88.89%. Private placement has become a major measure for the listed companies to collect capital after China's share reform. This has caused extensive attention from scholars.

The structure of the rest is organized as follows: the second part describes the study design and the introduction of relevant models; the third section is the empirical test results and analysis; The last part is summarized in this paper.

EXPERIMENTAL SECTION

STUDY DESIGN

A. Sample Selection and Data Sources

This paper takes A-share listed companies, whose successful private placements from May 8, 2006 to December 31, 2011, as our samples. Based on the research needs, this paper is handled as follows: (1) Remove the sample companies belonging to the finance and insurance industry, for 22 observations; (2) Exclude the sample companies carried out allotment, for 17 observations; (3) Remove the sample companies, which had public issuance of shares during event period, for 33 observations; (4) Exclude the sample companies lack of market data, for 103 observations. Finally, we get to meet the requirements of 582 observations. The private placement data is from WIND database and other data is from the RESET Database and Eastern wealth network.

B. Variable Definition

(1) Discount rate of Private placement

According to Wruck and Wu, Barclay, Hao Wang, Bibo Liu, Bin, X. and Yu J., we describe discount by $(P_1-P_0)/P_1\times100\%$ [1-4] . P_0 represents issue price of the private placement and P_1 is on behalf of the closing price of the last day of private placement issue. If Discount is greater than 0, it means allowance. If Discount is less than 0, it means premium. Discount farther deviation from 0, the greater the extent of the discount or premium.

(2) Composite index of investor sentiment

A single investors' sentiment index can only reflect some aspect of investor psychology, but it can lead to inaccurate measurements for more accurate and comprehensive measure of investors' sentiment. According to Baker and Wurgler[5], this paper select the closed-end fund discount (DCEF), number of shares of IPO (IOPN), the rate of return on the first day of IPO (IPOR), the consumer confidence index (CCI) to build the monthly index of the composite index of China's stock market investors' sentiment (CICSI).

1) Closed-end fund discount

Zweig (1973) found that the closed-end fund discounts can reflect investors' sentiment. Closed-end fund discount is rate of the difference between the net value of fund share and its market price divided by the net value of fund share [6]. If the discount rate decline, it means that investors are optimistic about the earnings prospects of listed companies and have positive assessment of asset prices. Therefore, investors' sentiment tends to optimism. If the discount rate rises, it means that investors' underweight earnings prospects of listed companies and have conservative assessment of asset prices. Therefore, investors' sentiment tends to pessimism.

2) The number of IPO (IPON), The market yield of IPO on the first day (IPOR)

L jungqvist, Nanda and Singh (2006), Barberis, Nicholas, Andrei Shleifer and Robert think that IPON and IPOR can be used to measure investors' sentiment[7-8]. IPON and IPOR are greater, which means that investors' sentiment is higher. We select the IPON as natural logarithm and select IPOR as the mean of the yield.

3) Consumer confidence index (CCI)

Yi, Z.G., Mao, N.(2009) think that the index of consumer confidence is high, consumers will have full confidence in the current and future economic situation, investors' sentiment will rise[9]. Therefore, the consumer confidence index reflects in part the level of investors' sentiment.

4) Investor sentiment composite index constructed

This paper selects DCEF, IPON, IIPOR, CCI investors' sentiment as proxy variables for 68 months, and uses principal component analysis method to construct the composite index of investor sentiment (CICSI) monthly to measure investor sentiment, while assuming investor sentiment is the same during the same month. In order to eliminate dimensionless influence, This paper first standardized DCEF, IPON, IPOR, CCI, each variable with mean 0 and standard deviation of 1, then principal component analysis of variables. We select the eigenvalue greater than one of the main ingredients , labeled F_1, F_2, as weights to the variance contribution rate, with the corresponding principal component score by multiplying the sum of the resulting aggregates is the composite index of investor sentiment (CICSI), and thus to define the state of investor sentiment. If CICSI is greater than 0, it indicate that investor sentiment is in high stage, denoted by CICSI (up), if CICSI is less than or equal to 0, it indicate that investor sentiment is in low stage, as CICSI (down).

The investor sentiment index formula is as follows:

$$CICSI=39.44\%F_1+37.70\%F_2 \quad (1)$$

(3) Other variables

Motivation for tunnel: according to Wang, H., Liu, B. B. (2011) approach, the variable is defined as the ratio of the private placement of shares with controlling shareholders to purchase, reflecting the intensity of controlling shareholders conveying (Tunnel) [3]. The controlling shareholders buy the greater proportion of the private placement of stock, it indicates the greater motivation of the interests of shareholders output, there is a transfer of wealth is also higher.

Information asymmetry factors: The scale of private placement (Proceeds) is used as an alternative variable for asymmetric information (Zhu, H. J., 2009) [10]. If the scale is larger, the unit cost of the information will be lower. We use the natural logarithm of the raising funds of private placement (million) to represent the scale.

Monitoring factors: We choose the size of the company (Assets) on behalf of the monitoring hypothesis. The larger the size of the company is, the more information about the company on the market will be, the lower degree of information asymmetry will be, then private placement identity will pay less cost in determining the placement price[11]. Therefore, the required level of discount may be lower. We use the natural logarithm of total assets on behalf of the company size.

IPO liquidity: IPO liquidity (Liquidity) is used as alternative indicators of liquidity compensation hypothesis. If the lock-up period is the longer, the new shares of liquidity will be the lower, and it will increase the shareholders risk. Investors will demand a greater discount. According to Zhang, Z.W., Zhang, M. and Guo, S.Y. , the new shares liquidity is defined as the natural logarithm for locked month multiplied by the retail portion [12-13].

C. Model design

(1) Multiple regression models

This paper introduces the multiple regression model to test what extent private placement discount is affected by investor sentiment, motivation for tunnel, information asymmetry factors, monitoring factors and IPO liquidity.

$$Discount_t = \beta_0 + \beta_1 CICSI_t + \beta_2 Tunnel_t + \beta_3 Proceeds_t + \beta_4 Assets_t + \beta_5 Liquitidy_t + \varepsilon \quad (2)$$

$Discount_t$ represent discount rate of private placement in the t period. $CICSI_t$ represent investor sentiment ccomposite index. $Tunnel_t$ represent retail portion of controlling shareholders for tunnel； $Proceeds_t$ represent the scale of private placement in t period, for information asymmetry factors; $Assets_t$ represent the size of the company in t period ,for monitoring factors； $Liquitidy_t$ represent IPO liquidity； β_0、β_1、β_2、β_3、β_4、β_5 represent each variable's regression coefficient； ε represent then error.

(2) Buy-and-hold abnormal return, BHAR

In the methods based on Tan, Chng and Tong, Teoh, Welth and Wong [14-15], we use the buy-and-hold abnormal return for private placement issue in the future for some time on behalf of the listed company's long-term market gains. The formula is as follows:

$$BHAR_i = BHR_{i,t} - BHR_{bmk,t} = \prod_{t=1}^{T}(1+R_{i,t}) - \prod_{t=1}^{T}(1+R_{bmk,t}) \quad (3)$$

$BHAR_I$ represent buy-and-hold abnormal return for sample companies in the holding period; $BHR_{i,t}$ represent buy-and-hold return for sample companies in the holding period; $BHR_{bmk,t}$ represent buy-and-hold return for matching company in the holding period; $R_{i,t}$ represent stock monthly returns for sample companies in t period; $R_{bmk,t}$ represent stock monthly returns for matching company in t period.

The average buy-and-hold abnormal return for all sample companies is calculated as:

$$BHAR = \frac{1}{N}\sum_{i=1}^{N} BHAR_i \quad (4)$$

N is the number of sample companies.

RESULTS

A. The initial proceeds of the private placement of listed companies

(1) The descriptive statistical analysis

As can be seen from Table 1, the private placement discount rate mean of China's listed companies is 24.59%, with a median of 24.00%, indicating that the private placement issue price is far lower than the closing price of the last day, and more than the private placement discount rate 15 % to 20% of foreign listed companies. Among all sample, 520 listed companies issued at a discount, whose mean reach 31.73% and whose median reach 26.50%. 62 listed companies issued at a premium, accounting for the proportion of the total sample was 10.65%. The frequency is small.

Table 1 Descriptive statistical analysis of private placement discount

	N	Mean	Median	Minimum	Maximum
Discount	582	0.2459	0.2400	-1.8600	0.9000
Include: allowance	520	0.3173	0.2650	0.0000	0.9000
premium	62	-0.3553	-0.1900	-1.8600	0.0000
CICSI	582	0.1049	0.0700	-1.0500	1.0700
Tunnel	582	27.9187	0.0000	0.0000	100.0000
Proceeds	582	11.3754	11.1850	8.8300	14.8800
Assets	582	12.4313	12.3050	3.8700	16.9500
Liquidity	582	21.9673	16.3700	12.0000	36.0000

(2) Multiple regression analysis

From Table 2, we can find that the correlation coefficients between the private placement discount rate and investor sentiment composite index, motivation for tunnel, information asymmetry factors, monitoring factors and IPO liquidity are 0.2470,0.0530, -0.0340, -0.1410,0.1180, which shows these five variables associated with the former. That is, the private placement discount is affected not only by rational factors, such as transportation motivation of the largest shareholder, information asymmetry compensation, monitoring compensation, the impact of liquidity-constrained compensation, but also by the market irrational factors, such as investor sentiment. In five variables, the relationship between investor sentiment composite index and private placement discount is most closely related, whose coefficient is 0.2470, in the 5% level of statistical significant positive correlation. It is consistent with Xu, B., Yu, J. (2010) findings, namely, the private placement discount in secondary market is up (down) with optimistic (pessimistic) sentiment. Motivation for tunnel is not significant on the private placement discount, may be due to the lock-up period existence.This increases the risk for the holding, forcing the large shareholders of listed companies to invest in accordance with the intrinsic value of the stock, and inhibited the controlling shareholders transportation behavior.

Table 2 Pearson correlation

	CICSI	Tunnel	Proceeds	Assets	Liquidity
Discount	0.2470***	0.0530*	-0.0340	-0.1410***	0.1180***
Sig.	0.000	0.0990	0.2070	0.0000	0.0020

*Note: ***, **, * denote significant level of 1%, 5% and 10%.*

Table 3 is about F-test on the regression equation. We can see the equation is meaningful in the 1% significance level. From Table 4, we can seeβ_1、β_4、β_5 is significant in 1% level studies. So, the regression equation as follows:

Discount=47.70%+17.10%CICSI-3.90%Assets+0.50%Liquitidy (5)

From the above, we can see regression coefficient between investor sentiment ccomposite index and private placement discount rate is 0.1710, greater than those of the monitoring hypothesis variables and flow compensation hypothesis variable. It indicates that investor sentiment is the main driver of private placement discount. Namely, high investor sentiment will push the high discount, low investor sentiment also pulled down the discount. The regression coefficient for monitoring factors is -0.0390, indicating that the larger company is, the smaller the unit monitoring cost is and the discount required by the investors will accordingly smaller. Regression coefficient for mobility compensation factor is 0.005, indicating that the longer the lock-up period, the greater the degree of liquidity-constrained will be and the greater private placement discount will be. The above conclusions match previous expectations. Although the private placement discount is affected by the enterprise internal factors and market irrational factors, investor sentiment is the orientation of the main driving force.

Table 3 F-Test

Anova					
	Sum of squares	df	Mean square	F	Sig.
Regression	5.7680	5	1.1540	12.8500***	0.0000[a]
Residuals	51.7990	577	0.0900		
Total	57.5670	582			

*Note: ***, **, * denote significant level of 1%, 5% and 10%.*

Table 4 Multiple regression analysis

	DIS(β)	T	Sig.
Constant	0.4770	3.2020***	0.0010
CICSI	0.1710	6.4550***	0.0000
Tunnel	0.0000	-1.4620	0.1440
Proceeds	0.0130	0.8670	0.3860
Assets	-0.0390	-3.3430***	0.0010
Liquidity	0.0050	2.7720***	0.0060

*Note: ***, **, * denote significant level of 1%, 5% and 10%.*

B. Long-term market effects in the private placement of listed companies

(1) Descriptive statistics of investors' sentiment

In accordance with the foregoing investors composite index constructed, we can find that investor sentiment index is relatively high during 43 months and is relatively low during 23 months.

Table 5 Descriptive statistics of investors' sentiment variable

	N	Mean	Plural	Median	Minimum	Maximum
DCEF	67	-0.1769	-0.1200	-0.1800	-0.340	-0.0700
IPON	59□	9.5068	8.2700	9.2300	7.940	12.4400
IPOR	59□	0.8805	0.1500	0.7000	0.020	3.3500
CCI	68	98.3235	94.0000	97.1000	90.200	108.100
CICSI	68	0.0551	-0.1100	0.0750	-1.050	1.0700
CICSI(up)	43	0.3363	0.0700	0.2600	0.000	1.0700
CICSI(down)	25	-0.4284	-0.1100	-0.1900	-1.050	0.0000

□ *Note: There is no issuance of new shares in nine months. In principal component analysis, we have them as missing values.*

(2) Long-term market performance after the private placement of listed companies

This paper lists BHR and BHAR between the sample companies and the Shanghai Composite Index in 6 months, 12 months, 24 months, 48 months, 68 months holding period. Firstly, we removed the sample which had more than twice the private placement. Second*ly*, we calculated BHR and BHR of the sample companies and the Shanghai Composite Index. Thirdly, we used Wald-Wolfowitz test and Kolmogorov-Smirnov test for independent samples test. Finally, we calculated the BHAR of different holding period. From Table 6, we can find the BHAR value is 187.27%、41.96%、53.00%、20.00%、-5.00% in five different holding period and at least significant at 5% level. Thus, there will be a positive return in the short term after private placement of listed companies, mainly because of overconfident investors. They overreact easily in the state of sentiment and overestimate the value of the stock, which push stock prices constantly higher.In the long run, as investor enthusiasm subsided, investors will gradually correct the cognitive bias, stock prices have been in an adjustment process. The share price eventually returns to intrinsic value and may even lower than the intrinsic value. That is, the private placement market of listed companies will appear a share price improved significantly in the short term and a continuous weak phenomenon in the long term.

Table 6: Buy-and-hold abnormal return of private placement (Wald-Wolfowitz Test)

	（1,6）	（1,12）	（1,24）	（1,48）	（1,68）
BHRi（%）	292.07	150.80	157.00	122.00	97.00
BHRbmk（%）	104.81	108.83	104.00	103.00	102.00
Wald-Wolfowitz test	0.002	0.000	0.000	0.000	0.000
BHAR(%)	187.27***	41.96***	53.00***	20.00***	-5.00***

*Note: ***, **, * denote significant level of 1%, 5% and 10%.*

Table 7: Buy-and-hold abnormal return of private placement (Kolmogorov-smirnov Test)

	（1,6）	（1,12）	（1,24）	（1,48）	（1,68）
BHRi（%）	292.07	150.80	1.57	1.22	0.97
BHRbmk（%）	104.81	108.83	1.04	1.03	1.02
Kolmogorov-Smirnov test	0.005	0.034	0.002	0.000	0.000
BHAR（%）	187.27***	41.96**	0.53***	0.20***	-0.05***

*Note: ***, **, * denote significant level of 1%, 5% and 10%.*

CONCLUSION

This paper takes successful private placements of A-share listed companies as our samples from May 8, 2006 to December 31, 2011. It explored the main driving force of private placement discount based on the perspective of the investors' sentiment. The results show that: (1) the private placement discount has been influenced by the dual

effects of rational and irrational factors, but the irrational factors are the main driving force. Also, there is a significant positive correlation between investors' sentiment and private placement discount: the more optimistic (pessimistic) the investors' sentiment is the greater (smaller) the private placement discounts will be. (2) Short-term excessive Over-optimistic mood of investors led to the phenomenon of the long-term vulnerable private placement market.

The innovation in this paper may be: We have studied the short-term and long-term market effects in the private placement of China's listed companies from a new perspective, that is, from the irrational investors' sentiment perspective. In addition, we have used the principal component analysis to build investors' sentiment composite index in order to measure investors' sentiment.

Acknowledgment
This work was supported by A high-quality curriculum "Advanced Financial Management" in the Education Department of Anhui province, the key project of Anhui Humanities and Social Sciences of Education Department (grant numbers AHSK11-12D268), "Research on managers heterogeneity, financial structure and internal control" (The key project of Anhui province college fund for outstanding young talent).

RERFERENCES

[1] Wruck,K.H.,Wu,Y.L, *Journal of Corporate Finance*. **2009**, (15) 30-47
[2] Barclay, M.J., Holderness,C.G., Sheehan,D.P. , *Journal of Corporate Finance*. **2007**,(4) 61-484.
[3] Hao Wang, Bibo Liu, *China Industrial Economy*. **2011**, (10) 119-129
[4] Bin Xu, and Jing Yu, *Finance & Trade Economics*. **2010**, (4) 40–46
[5] Baker, Malcolm, Jeffery Wurgler, *Journal of Finance*. **2006**, (61) 1645-1680
[6] Zweig, Martin E, *Journal of Finance*. **1973**, (28) 67-87.
[7] L jungqvist, A lexander, Vikram Nanda, Rajdeep Singh, "Hot markets, investor sentiment, and IPO pricing, Journal of Business," Forthcoming, **2006**.
[8] Barberis, Nicholas, Andrei Shleifer, and Robert Vishny, *Journal of Financial Economics*. **1998**, (49) 307-345.
[9] Zhigao Yi, Ning Mao, *Finance research*. **2009**, (11) 174-184.
[10] Hongjun Zhu, *China Accounting Review*. **2009**, (3)283-298
[11] Baek, Jae-seung, Jun-koo Kang, Inmoo Lee, *Journal of Finance*. **2006**, (5) 2415-2449
[12] Zhang Weidong, *Accounting Research*. **2007**, (12) 63-68.
[13] Ming Zhang and Si yong Guo, *Accounting Research*. **2009**, (5) 78-86
[14] Tan, R.S.K., P.L. Chng, and Y.H. Tong, *Pacific-Basin Finance Journal*. **2002**, (10) 29-54
[15] Teoh, S.H.I. Welch and T.J.Wong, *Journal of Financial Economics*. **1998**, (50) 63-99