

An Empirical Study on the Equity Financing Preference of Chinese Listed Companies

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Abstract This paper introduces briefly the current situation of equity financing of Chinese listed companies and analyzes empirically the factors that affect the equity financing preference of listed companies through constructing the multiple linear regression equations and using E-views—a statistical software. To make our financial market function well, it's important to strengthen regulating the behavior of listed company financing, and prompt managers' rational financing and investors' rational investing in the stock market.

Key words Equity financing; Turnover rate; Net return on assets price-to-book ratio

1 Introduction

In the context of financial crisis in 2008, statistics of Minsheng Securities indicated the stock markets of Shanghai and Shenzhen issued totally 76 A-shares, and raised 103.438 billion Yuan before the last quarter. Besides, 103 companies issued additional stock and refinanced 177.397 billion Yuan. In 2007, the initial public offering (IPO) in china's A-share market made a record in history, almost 477.1 billion Yuan was raised in the stock market of Shanghai and Shenzhen totally, exceeding the total amount in America (the main board of New York Stock Exchange, 262.9 billion Yuan; National Association of Securities Dealers Automated Quotations (Nasdaq), 139.3 billion Yuan; American Stock Exchange, 63.1 billion Yuan.), making the amount of funds raised in IPOs of China the first in global. However, with the falling in stock, not only the new shares were listed continuously, but also the amount of further issues and rights issues increased by 71.75% yearly constantly^[1]. According to Thomson Financial figures on Nov. 2007, 259.4 billion US dollars were totally raised in IPOs throughout the world. While Chinese enterprises occupy up to 19.9% of the global market, the IPO sprang out like mushroom with the scale of 257 companies and amount of 259.4 billion US dollars, which were the most of the world^[2]. Most of listed companies in China usually don't determine the limit of financing according to the investment demand. Because of equity financing preference, a direct consequence is that the amount of financing often exceeds the demand of actual capital, leading to an increase of idle funds. On the one hand, the cycle of investment project for most listed companies is relatively long; on the other hand, the real return on investment of some projects reaping profits has barely been revealed in detail. Therefore, it's very hard to carry out a comprehensive census of return on investment of refinancing.

2 Hypotheses

To find out what factors have influence on this financing behavior and how much they do, we will employ multiple linear regressions to undertake the empirical research.

Assumption 1: The PE (price/earning per share) ratio and equity financing preference are positively correlated. If the PE ratio of one company is much too high, its stock price must have bubble and its value is overestimated.

Assumption 2: Turnover rate in stock market and equity financing preference are positively correlated. A high turnover rate illustrates not only brisk trading but also sufficient exchange among traders.

Assumption 3: Net return on assets and equity financing preference are not correlated. The former reflects the profitability of a company. We assume that managers don't take the development of the companies into account in financing, and the net return on assets is not correlated to equity financing preference.

Assumption 4: The price-to-book ratio and equity financing preference are positively correlated. The higher ratio the companies get, the more added values of stocks the equity financing will produce, and the more likely for the companies will prefer equity financing.

3 Data Collection

The original data sample comes from 856 A-share listed companies in SSE (Shanghai Stock Exchange) in 2008, and some adjustments are made on it:

(1) The sample in this paper is limited to companies that have complete data from A-share listed companies in Shanghai. The reason is that the stock-exchange market is different between A-shares and B-shares, and the financial report of B-shares written according to IAS (International Accounting Standards) is obviously different from that of A-shares based on our native accounting standards. So the sample data reject to the listed companies which issue both A-shares and B-shares.

(2) In order to eliminate the effect on regression results caused by abnormal figures, we reject to companies with unreasonable capital structure, aka the companies with debts close to 0 or equal to 0.

(3) We reject to listed companies with incomplete data, mainly some ST companies.

The final sample data are from 341 companies.

4 Methodology

To judge the correlation of explanatory variables with explained variables on equity financing preference, this paper, employing the multiple linear regression method, constructed the following regression model to examine significance of each variable in order to confirm the regression equation.

$$Z = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \alpha_4 X_4 + e \tag{1}$$

- P: X_1 ----- PE ratio
- X_2 ----- Turnover rate
- X_3 ----- Net return on assets
- X_4 ----- Price-to-book-value ratio
- α_i ----- Regression coefficient ($i = 0, 1, 2, 3, 4$)
- e----- Residual

With Reviews Regression, the results below were obtained, as shown in figure 1:

(1) Significance test of the general linearity of the equation: F-test

F-test in the multiple linear regression equations aimed at testing whether the linear relationship between explained variables and explanatory variables significantly was held in general. According to the regression results, F-statistic was 42.93953. So, the general linear relationship between the explanatory variable Y and explained variable X_i was held. And in other words, the linear equation set between the equity financing preference, turnover rate, average PE ratio and the cost of equity financing was held.

Dependent Variable: Z
 Method: Least Squares
 Date: 10/31/09 Time: 09:22
 Sample: 1 341
 Included observations: 341

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	248.2384	26.03352	9.535338	0.0000
X1	0.121826	0.060112	2.026638	0.0435
X2	-0.013039	0.039058	-0.333844	0.7387
X3	-0.672957	0.361111	-1.863576	0.0633
X4	0.097429	0.053102	1.834746	0.0674
R-squared	0.338268	Mean dependent var		277.9165
Adjusted R-squared	0.330390	S.D. dependent var		305.9526
S.E. of regression	250.3601	Akaike info criterion		13.89823
Sum squared resid	21060547	Schwarz criterion		13.95442
Log likelihood	-2364.649	F-statistic		42.93953
Durbin-Watson stat	2.114476	Prob(F-statistic)		0.000000

Figure 1 The Regression Results

(2) Variables' significance test (t-test)

For the multiple linear regression model, the general linear relationship of the equation is significant, but this doesn't mean whether or not the explanatory variables remarkably affect each other. So the significance text should be carried out for every explanatory variable. According to regression results presented (Table 4-1)

Table 1 Each Factor's Regression Result

Explanatory Variables Regression Result	X ₁	X ₂	X ₃	X ₄
Regression coefficient	0.1218*	-0.0130	-0.6730**	0.0974**
T-statistics	2.0266	-0.3338	-1.8636	1.8347

* regression coefficient is remarkable at 5% confidence level

** regression coefficient is remarkable at 10% confidence level

The correlation of equity financing preference and PE ratio was firm, and remarkable while the confidence level was 5%. The relationship between equity financing preference and turnover rate didn't fit the original hypothesis (Regression coefficient was negative), and a possible reason may be the multiple co-linearity effect among explanatory variables. T-statistics of net return on assets and price-to-book-value ratio all pass the examination, and the correlation was remarkable while the confidence level was 10%, which meant assumption 3 and assumption 4 were both held.

(3) Goodness-of-fit test of regression equation

R² was used to measure the degree that the regression line was fit to the observed value of the samples. In the multiple regression model, R² was employed to ensure the fit degree of the equations. Since R² equaled 0.330390, we could draw a conclusion that goodness-of-fit in the model was good. It showed that explanatory variables could explain explained variables in a high degree, and we could deduce that the general linear relationship was successfully held and confirm the test of F-statistics.

(4) Series correlation test (D-W test)

D-W test is used to examine whether or not disturbance terms have first-order correlations, and generally measure economic problems with time series data always have order correlations. Once the order correlation occurs, the authenticity of regression results as well as significance test of variables will be meaningless. According to the regression results, D-W test value was close to 2 which meant that the first-order correlation didn't exist, neither did the order correlation of the error term, which makes ensured that the effectiveness of regression results.

5 Results

It proves empirically the equity financing preference of Chinese listed companies with quantitative factor index, arriving at the following basic conclusions:

1) Considering the empirical results of price-earning ratio and equity financing preference of the A-share listed companies, PE ratio is the direct factor that affects the equity financing preference. Chinese stock market is mainly featured with high PE ratio. Usually, the lower the PE ratio is, the higher the value of investment is, and the better the listed companies grow. Since managers of listed companies in China employ the equity financing by making use of the abnormally high PE ratio, the behavior of managers is not based on the need to companies growth.

2) The empirical research showed that in 2008 the book value ratio and equity financing preference in all listed companies were positively correlated, aka price-to-book-value ratio had a impact on the equity financing preference of listed companies. The higher price-to-book-value is, the higher profit is returned to the non-tradable share shareholders. As the listed companies in China have relatively serious internal controlling problems, which has been mentioned in the analysis of the negative impact of the equity financing preference, the managers who prefer equity financing are likely to get such high benefits.

3) The net return on assets in A-share listed companies in China is relatively low, in other words, funds collected by listed company equity financing have not been ideally utilized. This is possibly because the managers take advantages of excessive equity financing by abusing our unreasonable market and system, rather than managing the companies on the thought of their own development. The

funds are used either to repay or store in bank, or just invest blindly, eventually leading to inefficient utilization^[3].

4) Analyzing data from all listed companies in Shanghai Stock Exchange in 2008, we can find that the investors in our stock market do have irrational behaviors, and the high turnover rates are obvious here and there. However, this empirical analysis indicated that the irrational behaviors of investors doesn't directly affect the listed company equity financing preference, while it might have something to do with our imperfect securities market, and because individual investors often have speculation, frequently hand off, which is also a challenge to the share of listed companies.

6 Conclusion

The financing involves mainly a single equity financing will lead to a univocal company financing structure, imperfect constraint mechanism and defect management functions. The angle of the Government, the following work should be done.

1) Establishing an effective market regulatory and mandatory information disclosure system. Market is the last barrier to rectify managers' irrational behaviors, and only can it play the role on condition that it is effective, so an effective market regulatory system should be established.

2) The difficulty to issue stocks for the listed companies must be increased, and the re-financing qualifications should be limited, the comprehensive and integrated investment project evaluation system as well as market supervision system should be established to regulate the whole process of financing projects.

3) We should try to develop the bond market, support debt financing and gradually cultivate and improve the convertible bond market. To solve this problem, an expansion of main issue bonds, which are the large state-owned enterprises and state holding companies, to financial institutions, listed companies and private enterprise groups should be firstly taken into account.

4) Establishing effective mechanism of discipline for managers' behaviors market and mechanism of bankruptcy for listed companies. When the company's ownership is separated from the management rights, to the managers' incentives, the most important thing is to encourage competition in the managers' market^[4].

5) Guiding investors to invest rationally and develop institutional investors. In Chinese capital market, institutional investors are few in number, and the total amount of funds is still not too much, however the whole market is filled with with an air of speculation^[5]. we must consider the investors' cognitive bias, increase intensity and concentration of the "feel good" policy, which can enhance investors' confidence in the government's management of the stock market, and affect investors' psychology.

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