



The Impact of Private Equity Financing in Chinese Market

Zhiyao Lin

*School of business and management
The Chinese University of Hong Kong, Shen Zhen
Shen Zhen, China
Zhiyaolin@link.cuhk.edu.cn*

Abstract

This paper uses A-share listed companies' private equity financing events in Shanghai and Shenzhen stock exchanges from January 2010 to December 2019 as a research sample. It calculates the cumulative excess return of the corresponding stocks. Combined with the method of event research, this paper explores the impact of private equity financing events on excess returns. Overall, the cumulative excess return rises during the ten trading days before and after the event. The increase is particularly pronounced. This result also shows that the announcement of a private equity financing of such information can be quickly reflected in the price of the listed company's stock, thus reflecting the semi-strong market effectiveness of China's securities market to a certain extent. In addition, this article will also divide companies by industry type, ROE, book-to-market value ratio and research these multiple possible factors that may affect the cumulative excess return. The research may contribute to stock selection for investors and portfolio construction for managers.

Keywords: *event study; alpha return; private equity financing; market efficiency; behavioural finance*

1. INTRODUCTION

With the Chinese stock market booming, companies tend to issue more stocks to raise funds. Private equity financing has become the primary tool for equity refinancing of Chinese listed companies. Most studies show that the event will raise the stock price in the short term, and the market effect after the announcement showed a downward trend.

However, the previous studies only focus on particular events. This research will extend to Effective Market Hypothesis (EMH). On the other hand, though the academic research on EMH is mature, the studies on Private equity financing in the Chinese market are not enough.

In this regard, based on the market model, this paper calculates the cumulative excess return of listed companies in the ten trading days before and after the private placement. This paper uses the private equity financing of A-share listed companies in Shanghai and Shenzhen stock exchanges from January 2010 to December 2019 as a research sample. It calculates the

cumulative excess return of the corresponding stocks. Moreover, the effect of the industry type, profitability, company size, book-to-market value ratio will be explored by dividing all the companies into different groups. We will combine the event with EMH and conduct the analysis.

The result shows that the cumulative excess rate of return increases rapidly and is significantly positive during the short time before and after the event. It indicates that the release of this information can promote the rise of stock prices and improve its performance. The result also shows that the company's stock price did not increase or decrease suddenly on the day the information was announced but started to rise gradually three to five days before the announcement. It turns out that some investors in the Chinese stock market used inside information to obtain excess returns.

The study will benefit for government, enterprises, and individual investors. EMH will enhance the government's ability of macroeconomic control and improve the efficiency of national financial supervision. It also advises enterprises to make a strategic decision and securities-

supplied decision. For individual investors, the study will contribute to stock selection.

2. RELATED WORKS

There are lots of studies about private equity financing. Wruck [1] found that when US-listed companies announce private placement, the stock price of listed companies will positively affect the short term. Kato & Schallheim [2] found that the excess return of Japanese companies on the day of the private equity financing announcement was 4.98%, and the market effect after the announcement showed a downward trend.

Osborne [3] claimed that the change of stock price is similar to the Brown motion in Chemistry. The price change randomly, and people cannot predict that. Fama [4] also agree that The stock price return series is not statistically “memory”, so investors cannot predict its future trend based on historical prices.

On the other hand, some studies hold opposite opinions. Samuelson’s [5] view is that the financial market does not operate by economic laws. On the contrary, it is an efficient market formed by economic laws. Fama [6] first figured out the EMH theory. In that article, an efficient market is defined as a market in which many rational investors pursue profit maximization and actively participate in the competition. Everyone is trying to predict the future market price of a single stock by assessing all market information. If the stock price reflects all the information, the market is efficient. The rational behaviour of investors is an essential premise of efficient market theory. Shleifer [7] concluded that even investors are irrational, the randomness of their transactions can offset each other's impact on price. If some investors have irrational behaviour, the market can use arbitrage to restore the price to rationality.

Most studies in China indicate that the Chinese stock market is Weak-Form Market Efficiency. Zhu [8] used a random walk model to conduct an empirical study on the stock indices of Shanghai and Shenzhen stock markets, and the results showed that both my country’s Shanghai and Shenzhen markets passed the weak-form efficient test. Qi [9] constructed the portfolio to observe if the market is efficient. In this study, we will consider all the company, which conduct private equity financing as a portfolio to test the EMH [6].

3. METHOD

3.1. Overall

This study takes the event announcement day as $t=0$ and collects the data of 40 trading days before and 10 trading days after the announcement day, and the time

range is recorded as $[-40,10]$. Based on the market model, the market premium is taken as the independent variable and the daily rate of return data in the $[-40, -11]$ as the dependent variable and regresses to obtain each stock’s expected rate of return. Then, the corresponding excess return of each stock will be calculated. We considered the arithmetic average of all the excess as a result.

3.2. Data Selection

To avoid the effect of COVID-19, this research selected more than 7,000 A-share listed companies in Shanghai and Shenzhen stock exchanges from January 2010 to December 2019.

The private equity financing from January 2010 to December 2019 was taken as the research sample. The daily returns of all A-shares (4,047 shares in total) in the same research period were selected as the original data. Moreover, the samples were eliminated according to the following three principles:

- (1) Exclude ST stocks.
- (2) Exclude financial listed companies.
- (3) Exclude stocks with incomplete trading day data within the research range $[-40, 10]$.

A total of 1437 valid research samples were obtained. The data in this paper are all from the Cathay Pacific Database (CSMAR).

3.3. Data Description

We counted the intra-week distribution of the 1437 targeted additional issuance events and plotted the weekly distribution. Judging from all valid samples, the release days of events are distributed evenly within a week. The number of listed companies that choose to release information on Sunday is 0. The companies that release information on Tuesday and Saturday are higher than other days in the week.

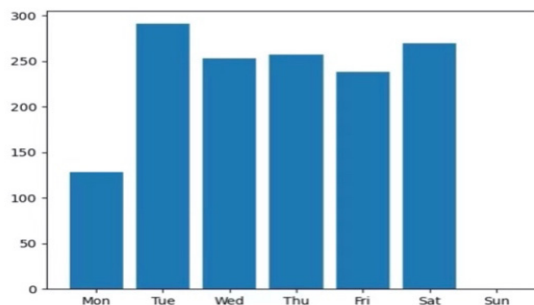


Figure 1. The distribution of Issuance date

The companies can be divided into 18 industries, and we can figure out how many companies conduct private equity financing.

TABLE I THE DISTRIBUTION OF INDUSTRIES

ID	Amount	ID	Amount	ID	Amount
A Agriculture	23	G Transportation	26	N Environment	26
B Mining	37	H Food	5	O Service	6
C Manufacturing	889	I Technology	85	P Education	4
D Electricity	49	K Real estate	78	Q Social work	5
E Construction	54	L Leasing	27	R Entertainment and culture	15
F Wholesale and retail	74	M Scientific research	11	S Comprehensive	23

3.4. Calculation

The exceeded return (alpha return) is used to measure the stock's performance. The market model is adopted to get the return if nothing happens, where R_{it} represents the daily rate of return of stock i on day t , R_{mt} represents the daily return of the market portfolio on day t , R_{ft} represents the risk-free rate at day t .

$$R_{it} = \alpha_i + \beta_i(R_{mt} - R_{ft}) + \varepsilon_{it} \quad (1)$$

We will conduct the regression to get R_{it} and calculate the excess return ε_{it} .

$$\begin{aligned} \varepsilon_{it} &= R_{it} - E(R_{it}) \\ &= R_{it} - [\alpha_i + \beta_i(R_{mt} - R_{ft})] \end{aligned} \quad (2)$$

The average excess return is,

$$\bar{\varepsilon}_t = \frac{1}{N} \sum_t^N \varepsilon_{it}, t = -10, \dots, 10 \quad (3)$$

The accumulated excess return is,

$$\overline{CAR}_t = \bar{\varepsilon}_t + \overline{CAR}_{t-1} \quad (4)$$

3.5. Results

3.5.1. Overall

Through the calculation, the plot of accumulated return is as follows.

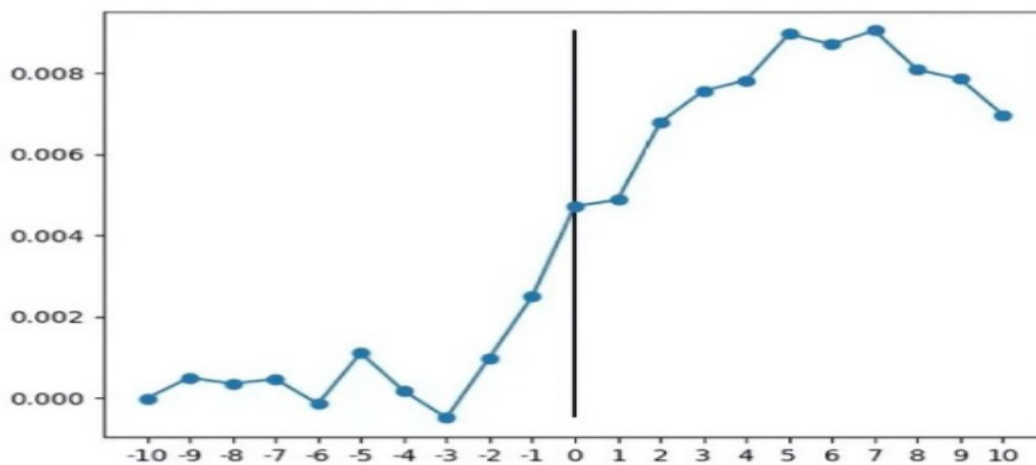


Figure 2. Accumulated return change

This result shows that the announcement of the private placement event will make the excess return positive, which will raise the stock price. This result shows that the announcement of the private equity financing will make the excess return positive, which will raise the stock price. However, the excess returns did not

disappear quickly after the news was announced, and the accumulated excess returns continued to raise in the following five trading days. Therefore, changes in stock prices did not reflect this information timely. According to EMH, the Chinese stock market has not reached semi-strong form efficiency.

3.5.2. The industry

The industry may have influence. Hence, we calculate the accumulated excess return and plot.

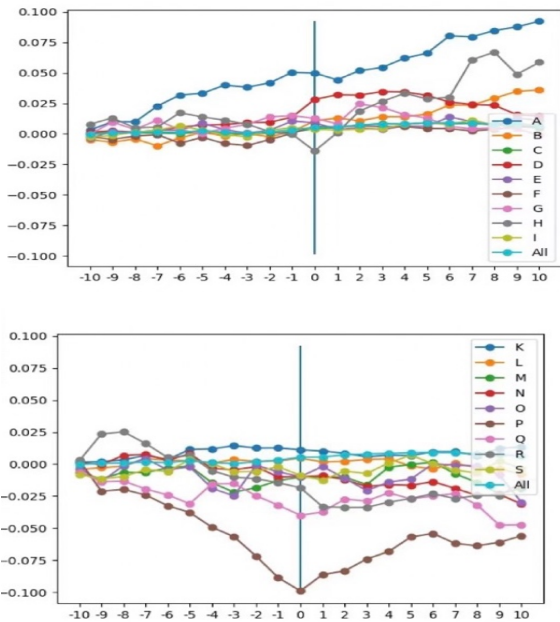


Figure 3. Different industries' accumulated return change

The result shows that the release of private equity financing in industries A, D, and G will increase the stock returns of the companies in which they are located. These three types of companies have significantly positive excess returns. While the release of private equity financing events in the P, Q, and R industries caused the stock returns of the companies to decrease, these three types of companies had significantly negative returns.

3.5.3. ROE

Investors always make their decision based on the profitability of companies. ROE (return on equity) is an indicator to measure a company's long-term profitability. Hence, this paper divides the companies into low ROE (lower than 30%), medium ROE (higher than 30% quantile, lower than 70%), High ROE (higher than 70%).

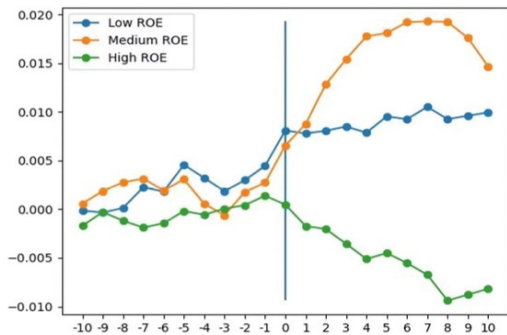


Figure 4. The accumulated return for different ROE companies

The low ROE group's cumulative excess rate of return increased rapidly within three trading days before the event day and was higher than that of the other two groups. After the event day, it stabilized and was significantly positive, reflecting investors' investment preference for companies with more enormous profit potential.

3.5.4. The Book to Market ratio (BM ratio)

According to Fama and French [10], stocks with higher book-to-market ratios (value stocks) have higher average monthly returns than stocks with lower book-to-market ratios (growth stocks). We study the impact of book-to-market ratio on cumulative excess returns, divides the samples according to book-to-market ratio, and divides the samples explicitly into low BM group (lower than 30%), medium BM group (higher than 30%, lower than 70%), high BM group (above 70%).

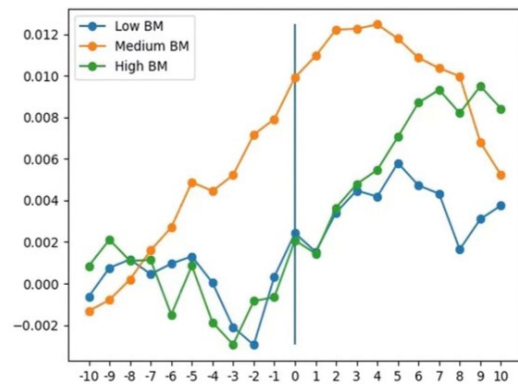


Figure 5. The accumulated return of companies with different BM ratio

The cumulative excess return of the middle BM value group has the largest increase, indicating that most investors believe that companies with medium book-to-market value ratios have room for growth and are more suitable for investment.

4. DISCUSSION

Though there is much research about EMH theory and event study conducted, this paper considers more aspects, such as industry type, ROE, book-to-market value ratio. The cumulative excess return has been calculated. We observe the curve and come to the result.

During the three trading days before and the following two trading days of the private equity financing, the cumulative excess return increased rapidly. It was significantly positive, thus indicating that the release of this information can promote the rise of stock prices and promote companies' performance. The result also shows that the event's announcement is reflected in the stock price changes. However, the stock price did not increase or decrease suddenly on the declared date but started to rise gradually three to five days before the announcement.

In other words, some investors in the Chinese stock market may use inside information to trade to obtain excess returns.

In addition, within five trading days after the announcement, the cumulative excess return rate rose, and the excess return did not disappear quickly. Therefore, changes in stock prices did not reflect this information timely. According to the EMH theory, the results of this study show that China's securities market has not yet reached a semi-strong efficient market.

In addition, this paper analyzes three potential influencing factors of excess returns: industry, profitability, and book-to-market value ratio. The result shows that:

1) There is a particular relationship between excess returns and industries: A, D, G industries get additional returns due to the issuance, while the event harms P, Q, R industries.

2) Corporate profitability affects excess returns: Investors prefer stocks with profitability and more tremendous development potential. High-yield companies are considered as having less room for profit growth and are not suitable for investment.

3) The book-to-market ratio also impacts excess returns: the cumulative excess returns of stocks with medium book-to-market ratios continue to rise, and the magnitude is large, which indicates that these stocks are investors' preferences. Stocks with high book-to-market ratios also have better performance.

In general, enterprises in the P, Q, R industry with medium profitability and relatively high BM ratio are easy to get additional profit by private equity financing. However, those companies with low BM ratios high profitability in the P, Q, R industries are likely to get a negative return.

This paper still has the following shortcomings. The number of samples taken is limited, and the number of samples in some industries is only dozens or even a few. The model considered is under perfect assumptions with only one factor. Thus, the accumulated excess rate of return has deviation. There could be a more proper time window. If the estimation period is too long, the yield may be affected by other periods; if the estimation period is too short, the estimated market model may be inaccurate.

5. CONCLUSION

This paper researched private equity financing and EMH theory in Chinese Market. The results show that the Chinese stock market has not reached semi-strong yet. The enterprises in the P, Q, R industry with medium ROE and medium BM ratios can easily get additional profit. The research may contribute to investment decisions and portfolio construction. Further studies are expected to improve the model by adding the regressors. The selection of time period is left as a future work as well.

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