

# Impacts of “Stock Split” on Rate of Stock Return in China A-share Market

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**Abstract.** As a decision crucial to every public company, dividend payout policy affects the confidence of investors in a company. At present, “stock split” has been a popular topic regarding the distribution of dividends, and has attracted much attention from investors and researchers whether it is taken as a driver to corporate finance or a way for managers and major shareholders to cash out at high prices. However, it has been often criticized for the frequent “unhealthy” practice, and subjected to the stringent supervision of China Securities Regulatory Commission recently. With reference to the SZSE Component Index, this paper presents an empirical study on the public companies in the sector of “stock split” in 2016. As revealed in the results of this empirical study, the announcement on the “stock split” preplan released by public companies in China A-share market has never exerted any effect on their share prices, but the “stock split” execution announcement can affect their share prices for a short period. However, excess return is positive before the execution announcement is released, but turns negative after it is released. By analyzing the causes for such phenomenon, this paper intends to provide advices for investors in their decisions and for securities regulatory authority in its regulatory practice.

**Keywords:** dividend payout, stock split, excess return, A-share public companies.

## 1. Background

“Stock split” means to issue a large amount of bonus shares or convert a large amount of capital reserve into share capital. Normally, ten bonus shares are issued for every ten shares, or ten shares or more are granted for every ten shares through conversion, or five bonus shares and five shares through conversion are obtained for every ten shares. Stock split is often featured by high capital reserve, high undistributed profit and high growth rate, and low share capital.

In the Chinese market, a soaring number of enterprises are practicing stock split, and constantly expanding it. According to the statistics, there were 19 stocks that “split” in the middle of 2012, and 154 stocks of such kind in the whole year; 18 stocks that “split” in the middle of 2013, and 170 stocks of such kind in the whole year; 35 stocks that “split” in the middle of 2014, and 302 stocks of such kind in the whole year; 150 stocks that “split” in the middle of 2015, and 334 stocks of such kind in the whole year; 22 stocks that split in the middle of 2016, and 323 stocks of such kind in the whole year. The number of stocks that “split” under the semiannual and annual reports in the A-share market of China in the past decade is shown in Fig. 1 and Fig. 2.

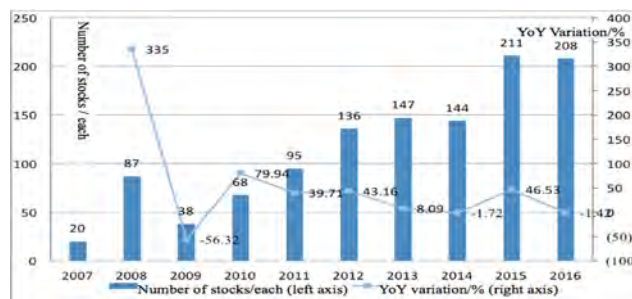


Fig. 1 Number of stocks that “split” under the annual report in the stock market of China from 2007 to 2016 and its variation

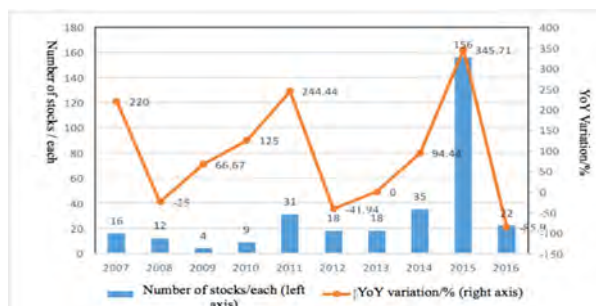


Fig. 2 Stocks that “split” under the semi-annual report in China in the past decade and its variation  
Data source: Resset’s database

Sub-new stocks play a significant role in the “stock split” sector. As we know, sub-new stocks are often underestimated, and have relatively higher capital reserve, so that they can attract more investments and enjoy less pressure on price increase and flexible variation of share price. For this reason, these companies show the value for investment and contribute a great number of valuable stocks to the “stock split” sector. Meanwhile, small and medium-sized innovative enterprises take up a major proportion of this sector, up to 70%, since they have great development and growth potentials. In this case, “stock split” must be a policy beneficial to investors. The statistics of returns on shares in the “stock split sector” in the past decade are presented in Fig. 3:

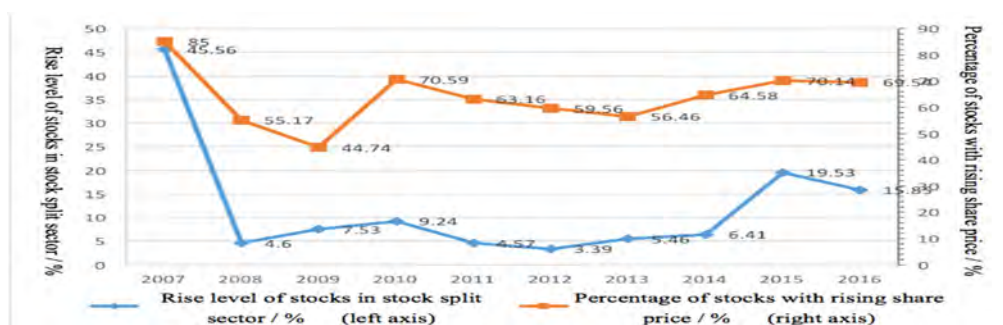


Fig. 3 Percentage of stocks that “split” with rising share price and the price rise level of the “stock split” sector in the past decade  
Data source: Resset’s database

## 2. Literature Review

In their research, Lambert and Lanen (1989) found the connection of a company’s dividend policy with the interests of its management level [1]. If the issue of agent cost in the behavioral economics exists noticeably, it will severely damage the interests of investors as the company does not achieve the optimal operation management.

Fama et al. (1969) noticed the considerable excess returns prior to stock split in their study, and found no return from price difference after stock split. In the meanwhile, they also realized that stock investors put an emphasis on rate of stock return, an indicator significantly correlated with stock returns, so that they took an unprecedented approach to this correlation by removing profit, a variable affecting the fluctuation of returns, in their research.

Brown (1968) studied and claimed that a stock’s cumulative average excess returns are positively correlated with the company’s surplus symbol (positive or negative), which also proves the existence of excess returns.

McNichols (1990) believed that mixed dividends and stock dividends can bring excess returns, but public companies cannot effectively transmit their information to investors if embracing cash dividend policy [4]. Especially, stock dividend policy is highly attractive to the developing companies.

In an empirical study, Grinblatt (1984) noticed that share price generates remarkably positive excess returns on the announcement date of stock split and the ex-dividend date of stock dividend. It

implies that stock dividend policy can be good news to investors and stimulate their purchase, while a developing company can realize internal financing at a low cost for self-development. Hence, it is beneficial to both parties.

In their study, Miller and Rock (1985) pointed out that financing by issuing new shares or debts reveal the unfavorable development potential of a company, so that internal financing by announcing high dividend is a better sign for a powerful company with great development potential. In other words, high dividend will lead to the expectation for a company's good returns in the market, resulting in the rise of its share price.

### 3. Empirical Study

#### 3.1 Data Sampling

This paper studied the impacts of "stock split" on the share price of A-share public companies. According to their annual report 2015 that announced "stock split" in 2016, 323 companies were selected. As this study focused on the response of the A-share market, 208 companies were kept after removing those in the B-share and H-share markets. After all, the sample included 159 companies listed on the Shenzhen Stock Exchange, and 49 companies listed on the Shanghai Stock Exchange. The data source was Resset's database.

#### 3.2 Model Design

Considering the research focus and actual condition, this paper chose the event analysis method. By applying the CAPM model to the stocks of 159 companies, and consulting with the SZSE Component Index, the excess return of each company was calculated before and after they released the announcement on the "stock split" in 2016, and used to verify whether "stock split" could affect their share price.

##### 3.2.1 Determination of Event and Window

"Stock split" dividend policy preplans and execution announcements were taken as the events to be studied in this paper.

To reduce the influence of other information and factors, the duration should not be extended too much, so that the factors with short-term impacts were only taken into account. Hence, the time windows were five days before and after the "stock split" dividend policy preplan announcement date, and five days before and after the "stock split" dividend policy execution announcement date.

##### 3.2.2 Model Design and Formulas

Rate of stock return is used in place of share price, while the closing price of shares is used to calculate the rate of return from shares with the following formula:

$$R_t = \ln(P_t / P_{t-1}) \quad (1)$$

Where  $R_t$  stands for the rate of stock return in the  $t^{\text{th}}$  issue;  $P_t$  is the share price at the time  $t$ ; and  $P_{t-1}$  is the share price at the time  $t-1$ .

CAPM model can be used to estimate expected normal returns with the following formula:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \quad (2)$$

Where  $R_{it}$  represents the actual rate of return for the  $i^{\text{th}}$  stock at the time  $t$ ;  $R_{mt}$  is the rate of stock return in the market at the time  $t$ ;  $\varepsilon_{it}$  is the error;  $\alpha_i$  stands for the fixed constant of the rate of return for the  $i^{\text{th}}$  stock; and  $\beta_i$  is the correlation coefficient of the  $i^{\text{th}}$  stock with the rate of return in the market.

The rate of excess return from the  $i^{\text{th}}$  stock is  $AR_i$ ; the average rate of excess return is AAR; the cumulative rate of return is CAR. The rate of excess return is calculated with the following formula:

$$AR_i = (R_i - \hat{\alpha}_1 - \hat{\beta}_1 R_m) \quad (3)$$

Where  $\hat{\alpha}_1$  is the estimation of  $\alpha_i$  and  $\hat{\beta}_1$  is the estimation of  $\beta_i$ .

This paper uses the average excess return as follows:

$$ARR = \frac{1}{N} \sum_{i=1}^N AR_i \quad (4)$$

The rates of excess return in five days before and after the event occurs are aggregated to obtain the cumulative rate of excess return:

$$CAR = \sum_{t=-5}^{t=5} AAR \quad (5)$$

In practice, Eviws software is employed with the least square method to obtain the estimations  $\hat{\alpha}_1$  and  $\hat{\beta}_1$  using the daily returns of sample stocks in 2016 and the daily returns of the SZSE Component Index in the same period. After that, AAR and CAR are calculated.

### 3.2.3 Hypothesis

The hypothesis to be verified is as follows:

H: The “stock split” preplan announcement and execution announcement have no impact on the share price of public companies.

In other words, calculation is carried out on the basis of AAR (preplan announcement, execution announcement)=CCR (preplan announcement, execution announcement)=0 to check whether it is significant under the confidence level of 5% in the T-test.

## 4. Empirical Results

The beta values of 159 companies were calculated using the CAPM model. After that, rate of excess return was obtained using the time window T-5 and T+5 for preplan period and announcement period. Statistics and calculations were further conducted with Excel to obtain the average rate of excess return and cumulative rate of excess return for each time window. At last, T-test was carried out to obtain the results as shown in Tables 1-4.

Table 1. Average rate of excess return and T-test value

ARR	Average	Minimum	Maximum	T-test Value
T=-5	0.0024	-0.1000	0.0914	1.3443
T=-4	0.0018	-0.0956	0.0874	1.2721
T=-3	-0.0064	-0.0739	0.0735	-3.5201
T=-2	-0.0023	-0.0726	0.1009	-1.7640
T=-1	0.0054	-0.1079	0.1787	2.9121
T=0	0.0010	-0.0068	0.0976	1.1207
T=1	-0.0005	-0.0787	0.1007	-0.3727
T=2	-0.0002	-0.0876	0.0784	-0.2620
T=3	0.0016	-0.0765	0.1068	0.5231
T=4	-0.0003	-0.0856	0.1024	-0.6721
T=5	0.0001	-0.0856	0.0956	0.6546

Table 2 presents the rate of excess return of 159 sample companies on the “stock split” preplan announcement date and in five days before and after the date, as well as the T-test values.

Table 2. Average cumulative rate of excess return and T-test value

CAR	Average	Minimum	Maximum	T-test Value
[-5, 0]	0.0010	-0.0068	0.0976	1.1207
[0, 5]	0.0001	-0.0856	0.0956	0.6546
[-5, 5]	0.0001	-0.08563	0.0956	0.6546

(Note: Table 1 and Table 2 are prepared using the rate of excess return in five days before and after the preplan announcement date)

The following results are obtained from Table 1 and Table 2:

(1) Among the “stock split” preplan announcement date and five trading days before and after the date, average rate of excess return was significant only on the third and the first day before the announcement, but never significant in five days after the preplan announcement date.

(2) As revealed in the analysis on the T-test value in the periods [-5, 0], [0, 5] and [-5, 5], the hypothesis H was not rejected in these periods. In other words, there was not significant cumulative rate of excess return in these periods.

The calculations and statistics related to “stock split” execution announcement were analyzed to obtain the values as shown in Tables 3 and 4.

Table 3. Average rate of excess return and T-test value

ARR	Average	Minimum	Maximum	T-test Value
T=-5	-0.0035	-0.1005	0.1007	-2.4601
T=-4	0.0046	-0.0974	0.1368	3.1130
T=-3	0.0010	-0.0678	0.1489	1.7341
T=-2	0.0006	-0.1872	0.1058	0.6721
T=-1	0.0017	-0.1003	0.1010	4.3542
T=0	0.0269	-0.0796	0.1087	6.0734
T=1	0.0059	-0.0594	0.1006	3.1103
T=2	-0.0004	-0.0007	0.1001	-0.5130
T=3	-0.0004	-0.0684	0.1001	-1.0320
T=4	-0.0005	-0.0897	0.1012	-0.3111
T=5	-0.0099	-0.0965	0.1003	-7.8123

Table 4. Cumulative rate of excess return and T-test value

CAR	Average	Minimum	Maximum	T-test Value
[-5, 0]	0.0269	-0.0796	0.1087	6.0734
[0, 5]	-0.0099	-0.0965	0.1003	-7.8123
[-5, 5]	-0.0099	-0.0965	0.1003	7.8123

(Note: Table 3 and Table 4 are prepared using the rate of excess return on the “stock split” execution announcement date and in five days before and after the date)

The following results are obtained from Table 3 and Table 4:

(1) As shown in Table 3 and Table 4, under the confidence level of 5%, average rate of excess return was significant on the “stock split” execution announcement date, the first and fifth days after the date, and the fifth, fourth and first days before the date, i.e. T=-5, -4, -1, 0, 1, 5. If T=-5 is removed from the period, average rate of excess return is positive at first and then becomes negative. In other words, share price went up and then fell down within the period. As revealed in the statistics and calculations of the sample companies in 2016, share price peaked on the first day after the “stock split” execution announcement date, but tumbled thereafter and hit the bottom on the fifth day after the date.

(2) The T-test values in the periods [-5, 0], [0, 5] and [-5, 5] were analyzed to reveal that the hypothesis H was rejected in these periods. In other words, there was significant cumulative rate of excess return in these periods.



## 5. Conclusion and Recommendations

The empirical study on the rate of excess return from 159 sample companies at the time windows before and after the “stock split” event in 2016 reveals that excess rate of return is not significant in 11 days related to the “stock split” preplan announcement. In other words, investors do not respond to this event, so that the fluctuation of share price is not correlated with this event. However, rate of excess return is significant in 11 days related to the “stock split” execution announcement. Clearly, this event attracts investors, so that it is highly correlated with the fluctuation of share price. Moreover, “stock split” execution announcement may have positive or negative impacts on share price. Among them, positive impact mainly occurs before the announcement date, while share price is negatively affected after the announcement date. Meanwhile, rate of excess return is negative on the whole, and share price decreases after the announcement date. It reveals the short-term enthusiasm of investors for “stock split” policy.

Obviously, “stock split” preplan announcement does not affect share price significantly, so that it is not highly correlated with share price, but “stock split” execution announcement has significant impacts on share price, so that they are strongly correlated. Meanwhile, “stock split” also leads to the short-term speculative investment from investors.

On the basis of the above conclusions, the following recommendations are given:

(1) Improve market supervision and standardize the management and information disclosure of public companies

Market supervision is essential to eliminating market chaos and standardizing market. It involves not only the review at the beginning of company establishment but also the supervision over every decision and business operation of companies.

(2) Enhance the training and education of high-quality investors

Many investors fail in making investments or take irrational actions due to their lack of professional knowledge and skills, so that enhancing the standards for investment funds and stock brokers in the special market of China and improving their professional quality must be the important way to prevent blind investments and guarantee a reasonable market.

(3) Standardize the dividend payout system of public companies

Supervisory authorities can improve the standardization of corporate dividend policy and reinforce the supervision and standardization of conditions for the implementation of dividend policy, so as to urge companies' development and implementation of dividend policy suitable for themselves, and reduce their speculative practices of utilizing unreasonable dividend policy.

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