

## A Study on Stock Dividend of Chinese Securities Market

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**Abstract**—Based on related dividend theories, this paper uses the empirical data of Chinese securities market, constructs the sub-portfolios which consist of three samples including stock dividend, cash dividend and non-dividend and studies the return of these three types of sub-portfolios by co-integration model and Sharpe index model. The results show that the operating condition of listed companies issuing stock dividend is the best ideal, listed companies' growth decides the choice of dividend policy, stock dividend is the natural choice of listed companies with sustainable development advantages.

**Keywords**- Dividend Policy; Cash Dividend; Mystery of Cash Dividend (MCD); Sharpe index model

### I. INTRODUCTION

Dividend shows a method of paying for shareholders' investments. Generally, the listed companies make decisions about whether to give dividend, with which method and how many to give according to their financial situations and development needs. The decision about dividend is the regular significant financial decision of joint-stock companies, which is identified as dividend policy. Dividend policy studies not only the ratio between company retained earnings and common stock dividend paying but also the paying method. Ordinary dividend payments include cash dividend, stock dividend, stock redemption and stock split-up. Stock redemption means that through the method of buying back their stocks, listed companies distribute profits to the shareholders; stock split-up means that through splitting the stock shares, listed companies increase the number of stocks without decreasing the total number of shareholders' equity. Thus, it decreases the stock exchange price and promotes the circulation. Cash dividend and stock dividend are two basic dividend payments of listed companies, there haven't impolite stock redemption and stock split-up in Chinese securities market. Since this paper takes Chinese listed companies' market behaviors as the basic data of empirical study, listed companies' dividend policy can be divided into three types of cash dividend, stock dividend and non-dividend.

From the perspective of investors as listed companies' shareholders, paying cash dividend just means transferring their wealth from left hands (equity form) to right

hands(cash form) without any value growth. Furthermore, it also should offer extra fees such as income tax decreasing the total number of values that investors harbor. Assuming that investors adopt the way of decreasing stock holdings and sell part of their shares according to the amount of dividend payments of listed companies. Investors don't need to pay income tax and other related fees. Therefore, why investors expect listed companies choose to pay cash dividend and prefer the stocks issuing cash dividend? This is so called mystery of cash dividend, MCD. Obviously, MCD is one kind of behavior anomalies in finance market which reflects investors' irrational behavior in the situation of information asymmetry.

In the current securities market, is MCD's effluence on the stock market price a long-term motivation? Is there a significant difference in operation status between companies paying cash dividend and those without choosing cash dividend, and which one is the better? Is there a significant difference in investment income level between stocks paying cash dividend and those without cash dividend, which one is the higher? Will MCD, the irrational preference of cash dividend detract along with the development and improvement of securities market? These series of problems all need the market's testing. This is just this paper's meaning.

Fisher Black (1976)<sup>[1]</sup> firstly proposes the concept of MCD, he considers that the study about paying dividend is an extremely delicate work, just like taking an extremely difficult jigsaw puzzle, all the time people cannot assemble its every parts together to see the truth face, so it is called MCD. MCD attracts many financial theorists' attention, Brealey and Myers (2002)<sup>[2]</sup> list this research as one of ten outstanding financial problems. They indicate that MCD is always the major outstanding item in the financial field, former researches do not get identical conclusions, and there are so much complex and difficult research work waiting to be done.

### II. THE BASIC HYPOTHESES

The companies which issue stock dividend, cash dividend and non-dividend are all in one stock market, the system risk is the leading factor leading the equity risk

premium of these companies, this market trend is stock market fluctuation's gravity line of three different dividend policies, there is significant co-integration relationship between stock return's long-term equilibrium characteristic of different dividend policies.

On the basis of significant co-integration relationship, we can establish the long-term equilibrium between market risk premium and stock return of three different dividend policies to reflect dividend policies' sensitivity on market risk premium and the excess earnings of all kinds of portfolios.

There are significant differences between stock return's long-term equilibrium characteristic of different dividend policies. Thus, it concludes the hypothesis of this empirical study. There is significant difference between stock return's long-term equilibrium characteristic of different dividend policies.

### III. THE EMPIRICAL STUDY DESIGN

The time span of the samples starts from December 31, 2004 to December 31, 2009; the start time is corresponding to the base of CSI300. Since December 31, 2004, at the beginning of every year the listed companies actually going into the sampled stocks is the foundation of CSI300, after eliminating the financial stocks, it becomes a sample of the empirical study.

According to the stock portfolios of the listed companies with three kinds of different dividend policies, separately calculate the comprehensive index of the stock price of three types of investment combination, it refers to the dividend index reflecting the general price level's comprehensive change of these three subsamples with different dividend policies. IS represents the composite price index of stock dividend portfolios, IC represents the composite price index of cash dividend portfolios, IN represents the composite price index of non-dividend portfolios. So, it gets the dividend index of three different dividend policy portfolios. At the same time, this paper uses sample stocks dropping the financial stocks to calculate the CSI 300 Non-Financial Index and record it as I300. The investment return rate based on all kinds of dividend policy portfolios is the basic analysis indicators of the empirical study, through the investment return rate to test dividend policy and the performance of stock market and the relationship of the listed companies' operating status. Therefore, based on the three dividend index, using the first-order logarithmic difference of the dividend index, this paper respectively calculate the time series data of the comprehensive return rate on investment. RIS means stock dividend return rate on a portfolio, RIC means cash dividend return rate on a portfolio, RIN means non-dividend return rate on a portfolio. This paper also uses the first-order logarithmic difference of the CSI300 non-financial index I300 data to calculate the time series data and record it as R300.

Taking dividend portfolio returns RIS for example, the empirical research of the Sharp model

$$R_{IS,t} = \alpha + \beta R_{m,t} + \varepsilon_t \quad (1)$$

Formula (1),  $R_m$  means the return rate of the market portfolio, in this empirical study, using the return rate of Shanghai and Shenzhen 300 non-financial index R300 as the market portfolio return;  $\varepsilon_t$  means residual term, namely a white noise process and obey the normal distribution;  $\alpha$  is the intercept of Sharp model reflecting the unsystematic risk premium of capital portfolios and securities, when  $\alpha$  is significantly positive, namely that the capital portfolios and securities have excess earnings;  $\beta$  is the slope of Sharp model reflecting the elasticity of capital portfolios and securities on the market portfolio's return. From formula (1), we can know in the Sharp model, the market portfolio's return rate reflects systematic risk premium, which is a return value containing no risk return rate. According to the linear property of Sharp model, if we see the risk-free return rate as a constant, the slope  $\beta$  of Sharp model is equal to the  $\beta$  coefficient of the capital asset pricing model.

Taking Shanghai and Shenzhen 300 non-financial index R300 as the market portfolio, this empirical study adopts the Sharp model to construct the long-term equilibrium of the stock dividend return RIS, cash dividend return rate of investment portfolios RIC and non-dividend return rate of investment portfolios RIN. It reflects the stock portfolios of different dividend policy, the elasticity of the return rate of the market portfolios and the characteristics and differences about the excess earnings.

### IV. THE EMPIRICAL STUDY BASED ON SHARP MODEL OF THREE DIVIDEND PORTFOLIOS

From the perspective of the capital asset pricing of the stock market, this empirical study uses Sharp model as long-term equilibrium model to analyze the formation's mechanism and differences of the three different dividend policy portfolios; and on the basis of Sharp model. Using Johansen co-integration test methods, the test results shows in Table I.

### V. THE CO-INTEGRATION TEST OF DIVIDEND POLICY PORTFOLIOS RETURN RATE

| Hypothesized No. of CE(s)     | None     | At most 1 | At most 2 | At most 3 |
|-------------------------------|----------|-----------|-----------|-----------|
| Trace Statistic               | 869.1576 | 607.2092  | 375.2241  | 176.5832  |
| p value (Trace Statistic)     | 0.0001   | 0.0001    | 0.0001    | 0.0000    |
| Max-Eigen Statistic           | 261.9484 | 231.9851  | 198.6409  | 176.5832  |
| p value (Max-Eigen Statistic) | 0.0001   | 0.0001    | 0.0001    | 0.0000    |

From Table I we know, corresponding to all the null hypothesis, all the test statistics of the characteristic value track and maximum eigenvalue are very significant, refuse to the null hypothesis that the whole number is up to three, there are four co-integration relationship, namely the return rate of stock dividend portfolio RIS, the return rate of cash dividend portfolio Recite return rate of non-dividend

portfolio RIN and Shanghai and Shenzhen 300 non-financial index return rate ,the liner relationships between each variable and other three variables all have long-term equilibrium properties. In a system, the number of co-integration is more, the system is more stable. Between three types of dividend policy portfolio return and 300 non-financial index return is a very stable co-integration relationship.

In order to meet the need of fitting Sharp model, this empirical study makes co-integration analysis of the return rate of stock dividend portfolio RIS, the return rate of cash dividend portfolio RIC, the return rate of non-dividend portfolio on Shanghai and Shenzhen 300 non-financial index return rate respectively. Test results shows in Table II.

#### VI. THE CO-INTEGRATION TEST ON CSI300 NON-FINANCIAL INDEX RETURN

| Hypothesized No. of CE(s)  | RIS      | RIC      | RIN      |
|----------------------------|----------|----------|----------|
| <i>Trace Statistic</i>     |          |          |          |
| <i>None</i>                | 432.4293 | 427.3153 | 411.3901 |
| <i>p value (None)</i>      | 0.0001   | 0.0001   | 0.0001   |
| <i>At most 1</i>           | 194.3812 | 191.8988 | 188.4499 |
| <i>p value (At most 1)</i> | 0.0000   | 0.0000   | 0.0000   |
| <i>Max-Eigen Statistic</i> |          |          |          |
| <i>None</i>                | 238.0481 | 235.4165 | 222.9402 |
| <i>p value (None)</i>      | 0.0001   | 0.0001   | 0.0001   |
| <i>At most 1</i>           | 194.3812 | 191.8988 | 188.4499 |
| <i>p value (At most 1)</i> | 0.0000   | 0.0000   | 0.0000   |

In Table II, the results of co-integration analysis refuse to the null hypothesis that zero not exist co-integration relationship, and it can only exist one .It shows that between each dividend policy portfolio yields and the Shanghai and Shenzhen 300 non-financial index return exist significant co-integration relationship. Therefore, we can eliminate spurious regression problem to meet the need of Sharp model.

Based on the inspection of co-integration relationship, according to formula (1), using Shanghai and Shenzhen 300 non-financial index returns R300 as the return rate of the market portfolios, separately fit the Sharp model of three different policy portfolios, and its regression estimator and test value such as the Table III shows.

#### VII. THE REGRESSION AND TEST VALUE OF SHARP MODEL

In Table III, the p value of the Sharp model of three

| Statistics                           | RIS        | RIC        | RIN       |
|--------------------------------------|------------|------------|-----------|
| $\alpha$                             | 0.0004     | -0.0001    | 0.0000    |
| <i>p value (<math>\alpha</math>)</i> | 0.0564     | 0.4535     | 0.9897    |
| $\beta$                              | 1.0135     | 0.9836     | 0.9490    |
| <i>p value (<math>\beta</math>)</i>  | 0.0000     | 0.0000     | 0.0000    |
| <i>Adjusted R-squared</i>            | 0.9121     | 0.9619     | 0.8725    |
| <i>F-statistic</i>                   | 12594.2300 | 30675.7900 | 8310.9400 |
| <i>p value (F-statistic)</i>         | 0.0000     | 0.0000     | 0.0000    |

different dividend policy portfolios is tending to zero, and the adjusted R square minimum value is above 0.9 indicating that the three Sharp model are all significant, the whole model has better fitting effect.

Table III, ,the p value of regression coefficient  $\beta$  test value of three Sharp model also tends to zero, indicating that the market portfolios' return have significant impacts on the return rate of three different dividend policy portfolios, the system risk premium is the main factor of the change of the return rate of the dividend policy portfolio. Among them ,the  $\beta$  coefficient of stock dividend portfolio is 1.0135 ,in the three dividend policy portfolios it's the highest and the single regression coefficient  $\beta$  value which is higher than 1 reflecting the stock dividend portfolio on the change of the return rate of the market portfolio is relatively sensitive; the regression coefficient  $\beta$  value of non-dividend portfolio is 0.9490 which is the minimum; the regression coefficient  $\beta$  value of cash dividend portfolio is in the intermediate position .However, the regression coefficient value of cash dividend portfolio and non-dividend portfolio are all less than 1 meaning that this two kinds of dividend policy portfolios on the change of the return rate of market portfolio is relatively conservative.

Only when stock dividend portfolio is in the 5.64% significant level, the regression constant test value of three Sharp model is significantly greater than zero. The regression constant  $\alpha$  test value of cash dividend portfolio and non-dividend portfolio is not significant, so we cannot refuse the null hypothesis that the overall true value is zero. Therefore, these three Sharp model is concerned, there are excess earnings only in the stock dividend portfolios, and the excess earnings of cash dividend portfolios and non-dividend portfolios tend to zero and don not have significant excess earnings. Thus, we can consider that  $\beta$  of Sharp model the stocks with different dividend policy is significant, and  $\alpha$  of Sharp model of the stocks with different dividend policy exists significant differences.

## VIII. CONCLUSIONS

With Sharp model and significance test, it gets the following conclusions.

The portfolio of stock dividend has obvious excess yield. In the Sharp model, only when the regression constant  $\alpha$  test value of stock dividend portfolio is in the 5.64% significant level and positive, and the regression constant  $\alpha$  of the other dividend policy portfolios are all not significant, so we cannot refuse the null hypothesis of zero. So, in the Sharp equilibrium model of three different dividend policy portfolios, only stock dividend portfolios have obvious characteristic of excess earnings.

The stock portfolio of stock dividend on the fluctuations of the market portfolio return is the most sensitive. The elastic of regression coefficient of Sharp model of stock dividend portfolio is the highest. It shows that stock dividend portfolio belongs to the live kind of listed companies, whether from the long-term equilibrium, listed companies with stock dividend all have higher risk premium than the companies with the other dividend policies.

## REFERENCES

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