International Journal of Business, Human and Social Sciences
ISSN: 2517-9411
Vol:5, No:5, 2011

# A Research about How the Dividend Policy Influences the Enterprise Value on the Condition of Consecutive Cash Payoff

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***Abstract*—**this article conducts a research about the relationship between cash dividend policy and enterprise value based on the data coming from the A-share listed companies over period 2005-2009. In conclusion, the enterprise value has a negative correlation with the incremental and the degressive cash dividend per share, and has a positive correlation with the stable cash dividend per share.

***Keywords*—**cash dividend policy; enterprise value; stability

## I. Introduction

CASH dividend policy, one of the three famous financial policies, plays an important role in enterprises' value circle. Since Mill and Modigliani (1961) [1] propose the "irrelevant dividend view", disputes on dividend policy have occurred constantly. Black(1976) [2] shows the dividend puzzle makes the dividend policy one of the major mysteries in the field of modern financial management and whether stable cash dividend can prompt enterprise value is still unknown.Lintner (1956) [3] makes empirical studies on implements of cash dividend policy finding that listed companies in American incline to select stable cash payoff. He maintains that management layer will not change the dividend payout unless they believe changes of profit are sustainable. Bakeretal (1985) [4] studies dividend policy through investigation methods and finds that management much concerned over the stability of dividend policy when they make decisions on dividend. Pruitt and Gitman(1991) [5] have similar conclusions after investigation. Dewenter and Warther(1998) [6] carry out their study applying Lintner's model. They conclude that stability of company's dividend in America is higher than that in Japan and also is higher than that in the selected history interval (1946-1964). Leithner and Zimmermann (1993) [7] show that all the enterprises in most European countries implement stable dividend policy. Glenetal. (1995) [8] argues that dividend policy in developed countries has higher stability than that in developing countries. As for domestic studies, Changjiang Lv and Kemin Wang ( 1999 ) [9] test influencing factors of listed companies' dividend policy by linearity gradual regression analysis method based on 1997-1998 data. The results confirm Lintner's "Signaling Theory". Chunguang Zhao and Dongzhi Yu( 2000 ) [10] shows that stability of dividend is essential to the improvement of enterprise value based on comparing value coefficients of stable-dividend companies and unstable-dividend companies. However, their conclusion is not specific. Hongqi Yuan ( 2004 ) [12] finds dividend policy of our countries' listed companies is not stable using Lintner's model. Hanming Yang( 2006 ) [11] argues that there is few significance to study the stability of dividend policy currently in China. He studies Correlation between the increasing and decreasing dividend and enterprise value by introducing variables such as Tobin Q to Lintner's model. It is concluded that the increasing dividend can improve enterprise value.

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## II. Stability Of Companies' Cash Dividend Payoff In China

We construct model through correcting Lintner's model in order to test stability of Chinese companies' dividend payoff.

Lintner interviewed executives of 28 well performed companies on influenced factors of dividend. He gained 3 conclusions. Firstly, management inclined to make a target ratio of dividend payoff according to the company's profit. Secondly, the most important influenced factor of changing dividend was current profit and dividend payoff. Thirdly, management are prudent to adjust dividend policy and only when they are convinced that the change, they adjust dividend payoff. Based on these 3 conclusions, Lintner constructed models as:

$$D^*t = r^*E_t \quad (1)$$

$$\Delta D = D_t - D_{t-1} = a + (D^*t - D_{t-1}) + U_t \quad (2)$$

where D*t is dividend payoff in year t, r is ratio of dividend payoff to current profit in year t, $E_t$ is profit in year t; and $D_{t-1}$ is dividend payoff in year t-1, c stand for an adjustment factor of r and it changes according to debt, investment opportunity, transaction cost and other factors, a is constant, Ut is error term.

Compass model 1 and model 2, we gain the following equation:

$$D_t = a + \beta_1 E_t + \beta_2 D_{t-1} + U_t \quad (3)$$

where $\beta_1$equals r*c, $\beta_2$equals 1-c.

When use Lintner's model to test stability of company dividend policy in China, we refer to Hongqi Yuan's conclusion and amend model 3 as:

$$DPS_t = a + \beta_1 EPS_t + \beta_2 DPS_{t-1} + U_t \quad (4)$$

Where DPS represents dividend per stock, EPS represents

profit per stock. We use cross-sectional data to study the stability of dividend payoff in China.

From table I we can see that all the constants "a" are positive in the period 2006-2009 and they are markedly positive in 2006-2009 expect the year 2007.It means that companies that sequentially offer cash dividend do not want to reduce or give up dividend payoff. DPS in hysteretic period is remarkably positive at the significance of 5% which means that management take account dividend payoff in previous periods when they make dividend policy. That EPS is positive when the significance is 0.01 indicates companies with good performance incline to distribute high dividend. Except 0.331 in 2007,c which represents dividend adjustment speed is fluctuated at 0.5 in the period 2006-2009.This indicates management usually make great adjustment according to profit, so we can say dividend is not stable in China.

TABLE I
STABILITY TESTING OF DIVIDEND IN COMPANIES THAT SEQUENTIALLY OFFER CASH DIVIDEND

| | 2006y | 2007y | 2008y | 2009y |
|---|---|---|---|---|
| a | 0.018 (2.036)b | 0.010 ( 1.467 ) | 0.027 (3.249)a | 0.040 (7.157)a |
| EPS | 0.211 (10.511)a | 0.141 (11.345)a | 0.135 (11.417) a | 0.106 (9.409)a |
| $DPS_{t-1}$ | 0.514 (10.161)a | 0.669 (16.547)a | 0.429 (9.126)a | 0.476 (15.231)a |
| Adj-$R^2$ | 0.605 | 0.739 | 0.598 | 0.653 |
| F-Test | 212.131a | 425.900a | 234.629 a | 393.565a |
| Dividend policy adjustment speed ( c ) | 0.434 | 0.331 | 0.571 | 0.525 |
| Target ratio of dividend payoff ( r) | 0.486 | 0.427 | 0.236 | 0.202 |

Numbers in the first row is the regression coefficients of the variables and the second row lists t value; a, b and c represent significance at 0.01, 0.05 and 0.1 respectively.

## III. IMPACT OF DIVIDEND STABILITY ON ENTERPRISE VALUE

### *A Research hypothesis*

The goal of modern financial management should be company value maximization. Dividend policy is one of the top 3 modern financial policies. So the final goal of studies on dividend policy is to find out whether different dividend policies and stability can improve enterprise value.

***H1:*** There is positive relationship between increasing DPS and enterprise value.

Increasing DPS can increase investors' confidence to the company so that it improves enterprise value.

***H2:*** There is negative relationship between decreasing DPS and enterprise value.

Decreasing DPS sends signals to investors that the company has a blurring future which makes negative effects on enterprise value.

***H3:*** changeless DPS has positive relationship with enterprise value.

Geng Jing and Guichang Zhe(2010) show that stable dividend payoff send information to market that the company is developing well. This contributes to the company's reputation and can increase investors' confidence in company. Also, stable dividend does well for investors to make plans of income and payoff. So fluctuated dividend policy is not welcomed by investors and then stock price declines.

### *B Research model*

We construct model (5) to test H1, H2 and H3:

$$TobinQ = \beta_0 + \beta_1 DIV + \beta_2 DIV_{-1} + \beta_3 ROA + \beta_4 DEBT + \beta_5 GROW + \beta_6 TAT + \beta_7 LNASSET + \beta_8 DYD + \beta_9 DAD_2 + \beta_{10} GYG + \beta_{11} GYG^2 + \beta_{12} FRG + \beta_{13} FRG^2 + \sum_{i=14}^{25} \beta_i INDU + \sum_{j=26}^{30} \beta_j YEAR + \varepsilon \quad (5)$$

TABLE II
REGRESSION EQUATION (5) RELATED VARIABLES' MEANING AND FORMULA INTERPRETATION

| Variable symbol | Variable meaning | Formula interpretation |
|---|---|---|
| Tobin Q | Enterprise value | (tradable share *closing price per share +non-tradable share * net assets per share + debt book value)/total assets book value |
| $DIV_{-1}$ | Cash dividend per share in hysteretic period | Cash dividend payoff of prior period/total shares |
| △ DIV | Difference between current year dividend and prior year dividend | □DPS in current year –DPS in prior year□ |
| ROA | Earning ratio of total assets | Net profit/total assets |
| DEBT | Asset-liability ratio | Liability/assets |
| GROW | Operating revenue growth rate | (current year's operating revenue–last year's operating revenue)/ last year's operating revenue * 100% |
| TAT | total assets turnover ratio | operating revenue / ( beginning total assets + ending total assets ) *2 |
| LNASSET | natural logarithm of total assets | LN ( total assets ) |
| DYD | Shares proportion of the largest shareholder | |
| $DYD^2$ | The square of the largest shareholder's shares proportion | |
| GYG | proportion of state-owned shares | |
| $GYG^2$ | The square of state-owned shares proportion | |
| FRG | Proportion of legal person shares | |
| $FRG^2$ | The square of legal person shares proportion | |
| INDU | Industry dummy variables | If the company belongs to some industry, INDU takes value in 1,otherwise takes value in 0 |
| YEAR | Year dummy variables | YEAR takes value in 0~1.If the year belongs to some year,INDU is 1, otherwise it is 0. |

There are different views about the relationship of corporate governance structure and enterprise value. Sun Q. and Tong W.H.S. (2000) [14] studied the influence of state-own share on corporate performance and show that state-own share has positive effect on part of privatized companies' performance. But the relationship between them is not linear but inverted U-shaped. Xinyuan Chenm, Donghua Chen and Kai Zhu（2004）[15] hold the same opinion that too high or too low proportion of state-own share is adverse to corporate performance. However, Hong Luo（2006）[16] argues that both state-own share ratio and legal person share ratio have inverted U-shaped relationship with corporate performance and this is proved in his empirical study. When there is a controlling shareholder in the company, the largest shareholder can supervise management efficiently so that information asymmetry between shareholders outside and management inside can be reduced. But simultaneously the largest shareholder possibly encroaches on minority shareholders' interests by its controlling status. Based on these above, we think that both too high and too low ownership concentration have negative effects on enterprise value. So we hypothesize that the largest shareholder has inverted U-shaped relationship with enterprise value while whether legal person share ratio and state-own share ratio have U-shaped or inverted U-shaped relationship with enterprise value cannot be defined.

***C** Sample collection and sorting*

In order to test whether dividend stability can improve enterprise value or not, we collect data of companies which issued A shares only in Shanghai Securities Exchange and Shenzhen Securities Exchange and sort them:(1)selected sample must be listed before January and distribute cash dividend only during the year;(2) eliminate ST companies;(3) eliminate financial companies;(4) eliminate companies distributing dividend in metaphase to avoid its effect on our results;(5) eliminate companies whose closing price cannot be found on 30th April of the next year. Sort the samples into 465 increasing-dividend, 334 decreasing-dividend and 309 unchanged-dividend samples.

We obtain our data from RESSET database. The regression analysis and data processing were completed through SPSS13.0 For Windows and Excel 2003.

***D** Descriptive statistical analysis of sample*

Table III shows that companies with increasing cash dividend have the largest average Tobin's Q, while companies with decreasing cash dividend have the smallest average Tobin's Q and companies with changeless cash dividend have intermediate average Tobin's Q. The changing trend of Cash dividend per share is similar to that of return on assets and Tobin's Q. As for average asset-liability ratio, in companies with increasing cash dividend it is the lowest while in companies with decreasing cash dividend it is the highest and in companies with changeless cash dividend it is intermediate. Growth and asset turnover of companies with increasing cash dividend are higher that those in companies with decreasing or changeless cash dividend.

TABLE III
STATISTICAL TABLE OF AVERAGE ENTERPRISE VALUE AND DIVIDEND PER SHARE ETC. OF COMPANIES WITH CONTINUOUS PAYMENT OF CASH DIVIDEND

| | Tobin's Q | DIV (Yuan) | ROA | DEBT | GROW | TAT | LNASSET |
|---|---|---|---|---|---|---|---|
| total | 2.436 | 0.158 | 4.90% | 49.00% | 17.60% | 86.60% | 22.002 |
| Increasing | 2.701 | 0.213 | 5.90% | 47.90% | 21.20% | 91.60% | 22.018 |
| Staying | 2.321 | 0.126 | 4.50% | 48.20% | 14.40% | 85.90% | 21.891 |
| decrea | 2.176 | 0.11 | 3.90% | 51.20 | 15.50 | 80.50 | 22.08 |

***E** Regression analysis*

Table IV indicates that no matter DPS is increasing,

TABLE IV
REGRESSION RESULTS BETWEEN ENTERPRISE VALUE AND INCREASING CASH DIVIDEND, DECREASING CASH DIVIDEND AND CHANGELESS CASH DIVIDEND RESPECTIVELY

| variables | Expected sign | Increasing dividend | Expected sign | Changeless dividend | Expected sign | Decreasing dividend |
|---|---|---|---|---|---|---|
| Intercept b0 | +/- | 9.935 | +/- | 9.887 | +/- | 10.167 |
| DIV-1 | + | 2.544（4.285）a | + | 1.753（2.606）a | + | 1.990（3.259）a |
| □DIV | + | -1.809 (-2.063)b | | | - | -0.608 (-1.286) |
| ROA | + | 28.392 (17.958)a | + | 21.113 (8.659)a | + | 19.252 (11.162)a |
| DEBT | - | 0.210 (1.089) | - | -0.918 (-2.106)b | - | -0.174 (-1.316) |
| GROW | + | 0.175 (1.103) | + | 0.052 (0.331) | + | 0.012 (-0.121) |
| TAT | + | -0.061 (-0.685) | + | -0.097 (-1.044) | + | 0.109 (-1.464) |
| LNASSET | + | 0.009 (0.502) | + | 0.045 (2.175)b | + | 0.043 (2.960)a |
| DYD | +/- | 3.999 (2.188)b | +/- | 5.246 (2.853)a | +/- | 2.945 (2.012)b |
| DYD^2 | - | -3.849 (-1.723)c | - | -6.965 (-2.942)a | - | -3.608 (-2.183)b |
| GYG | +/- | 2.167 (2.294)b | +/- | 0.022 (0.025) | +/- | 0.766 (-1.132) |
| GYG^2 | +/- | -3.434 (-2.171)b | +/- | 0.048 (-0.031) | +/- | -0.948 (-0.893) |
| FRG | +/- | 0.588 (0.711) | +/- | 1.948 (1.674)c | +/- | -0.442 (-0.484) |
| FRG^2 | +/- | -0.743 (-0.653) | +/- | -3.384 (-1.557) | +/- | 1.292 (-1.737) |
| INDU | +/- | Control | +/- | Control | +/- | Control |
| YEAR | +/- | Control | +/- | Control | +/- | Control |
| Adj-R2 | | 0.837 | | 0.862 | | 0.875 |
| F value | | 174.225a | | 142.280a | | 172.162a |

Numbers in the first row is the regression coefficients of the variables and the second row lists t value; a, b and c represent significance at 0.01, 0.05 and 0.1 respectively.

decreasing or changeless, R2 is greater than 0.83 and F valve represents significance at 0.01 which show that variables have high explanatory power.

From table IV, we can see no matter DPS is increasing, decreasing or changeless, DPS in hysteretic period has positive relationship with Tobin's Q and this is significant at 0.01.However, △ DIV has negative correlation with Tobin' s Q on conditions of both increasing and decreasing DPS, and this is significant at 0.05 when DPS is increasing. So H1 is not improved. When the dividend is decreasing, though between △ DIV and enterprise value, there is an inverse correlation, the relationship is not significant which is possibly resulted from too small sample size. When the dividend is changeless, DPS in hysteretic period is same with the current DPS, so the regression results can improve H3.We can also conclude, except that it is positive between asset-liability ratio and enterprise value, the signs of DEBT,GROW,TAT and lnA meet the predictions. Relationship between the largest shareholder ' s proportion of shares and enterprise value is consistent with our hypothesis that is inverse U-shaped on the three conditions above and this is significant. However, none of the relationships between state-own share ratio or legal person share ratio and enterprise value under the three conditions is accordance with our hypothesis. And maybe this is attributed to sample size.

When DPS is increasing, enterprise value has negative relationship with △ DIV which is inconsistent with our hypothesis. As for the reasons, we think most of companies in China are in the high developing stage for which the most serious problems are those connected with capital. Although cash dividend payoff relieves asymmetric information between inner management and outer shareholders which can reduce agency costs, shareholders are worried about companies' development as it can be influenced by cash dividend payoff. The company can raise money by issuing new shares or by debt, but it loses chance of internal financing. Besides, referring to our statistics, as of the end of 2009,the average shareholding ratio of the listed companies ' largest shareholder is 41.79% and that of second largest shareholder is 7.83%.Only 10.5% Companies' largest shareholder' s share proportion is below 20%.So,maybe just as Xinyuan Chen ( 2003 ) [17] Concludes in his study on the company Foshan Lighting, the reason of the negative relationship between △ DIV and enterprise value is that investors suspect of controlling shareholders seizing the minority shareholders' interests through cash dividend payoff.

## IV. CONCLUSIONS AND RECOMMENDATIONS

According to our study results above, stable dividend payoff can improve enterprise value. However, because of the specific stage, some imperfect laws and regulations in China, minority shareholders' interests cannot be protected totally. So the investors do not make positive responses about increasing dividend payoff.

Because of this, on the one hand, we should do things as enhancing intensity to protect the investors, improving and perfecting Corporations Law, Stock Law and other laws and regulations, taking tougher enforcement and supervision, and protecting the interests of investors from being violated. On the other hand, listed companies should set up a more scientific dividend policy so that enterprise value can be enhanced.

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