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Shareholder wealth effect of dividend policy: Empirical evidence from the Chinese securities market

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Abstract Based on the special separated equity management structure of the listed companies in China and using a sample of the listed companies with distributed dividend in 2003 and 2004, this paper tests the shareholder wealth effects of dividend policy in Chinese separated equity market. Results show that shareholders of non-circulating stock get a high return rate by cash dividends, and circulating shareholders obtain a high short-term return rate by stock dividends.

Keywords dividend policy, shareholder wealth effect, blockholders

摘要 基于我国上市公司股权分置的特殊治理结构,以2003–2004年所有分配股利的上市公司为样本,实证检验我国上市公司股利政策的股东财富效应,发现:分配现金股利使非流通股股东实现高回报率,而流通股股东获得股票股利的较高短期收益率。

关键词 股利政策, 股东财富效应, 控股股东

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1 Introduction

The extant domestic literature on dividend policy of listed companies mainly focuses on three perspectives: the signaling theory, agency cost theory and influencing factors. However, there are few studies on shareholder wealth effects derived from the high return associated with dividend issued by the listed companies. Meanwhile, Western researches on taxation policies and the differences between tax rates are not applicable to the situation in China.

The great majority of the listed companies in China originated from state-owned enterprises through structural reform. Their governance structure differs from both the UK-US pattern which has a dispersed structure of shareholding, or the Japan-Germany pattern in which the shareholding is highly-concentrated and crossed. It features a dual structure of circulating stock and non-circulating stock, the state-owned (corporation) share is in control and highly concentrated, which forms the key person monopolizing-pattern.¹ Under this pattern, the key person is in a powerful dominant position, without due balance and monitoring mechanisms. With regard to the dividend policy, the dominant stakeholders make decisions on either providing cash dividends, or stocking dividends according to their own benefits. Generally speaking, because non-circulating stock is accounted for by the book value or purchased with discount while circulating stock is priced by the market value, the dominant shareholders obtain higher returns than circulating shareholders when listed companies provide cash dividends. Thereby, on the one hand, the control shareholders prefer to provide cash dividends and the cash dividends are used as a tool for digging wealth channels. On the other hand, circulating shareholders get little return through cash dividends so they prefer stock dividends from which they can get high capital gains through stock price increase after dividends. Therefore, the authors believe that non-circulating big shareholders get a high return when corporations provide cash dividends; when corporations provide stock dividends, circulating shareholders get high short-term return. Dividend distribution can generate the shareholder wealth effect. The main purpose of this paper is to test whether or not there is the shareholder wealth effect of the dividend policy in Chinese listed companies.

¹From a sample of the listed companies in Shanghai and Shenzhen Stock Exchange on December 31, 2004, Wang Qiao and Zhang Weidong found that two-thirds of the total shares were non-circulating ones including 46.97% state-owned shares and 16.47% corporation shares for a combination of 63.44%. By comparison, only one-third of the total shares were circulating ones. Furthermore, the majority of the circulating shares were owned by small and medium shareholders while the minority was institutional investors like funds.

This paper consists of the following sections: the literature review (Section 2); research hypotheses (Section 3); research methods (Section 4); empirical test (Section 5); and conclusions (Section 6).

2 Literature review

Since Miller and Modigliani (1961) proposed the famous theory that there was no correlation between dividend policy and corporate value under the precondition of the hypothesis of “perfect capital market”, an academic field has been devoted to research on dividend policy of listed companies. For example, Lintner (1956) primarily demonstrated the signaling theory on the basis of an empirical analysis on a questionnaire completed by the financial managers of 600 listed companies in the USA. Lintner believed that the information of corporate net earnings was transmitted by dividend policy which was the same as the conclusion of Fama and Babiak (1968). Aharony and Swary (1980) found that the different effects of stock price on earnings and the dividend figures suggested that dividend announcement was another signal transferring device which was not totally substituted by earning announcement. Gosnell et al. (1996) examined the intraday stock price reaction to substantial shifts in dividend policy and concluded that the reaction to the negative changes of dividend policy was intensive and durable. Lang et al. (1989) divided firms into excessive investors ($Q < 1$) and maximum wealth investors ($Q > 1$) according to Tobin's Q . They examined the reaction to dividend changes by the two kinds of firms respectively and supported the dividend policy model over the commission-agency frame. Green et al. (1999) observed a reversal phenomenon in the USA according to the researches on Swedish lottery bonds market and found that the drop of bond price in ex-dividend date was greater than coupon payment, which supported the tax-driven hypothesis of trade motivation.

Jenson and Meckling (1976) and Easterbrook (1984) created agency costs theory about dividend policy. Rozeff (1982) primarily did empirical researches on the relationship between agency costs and dividend policy. Based on the analysis of 1,000 firms in 64 industries from 1974 to 1980, they found that: (1) the more shares the insiders hold, the less necessary to reduce agency costs by paying dividend; the more shareholders a company has, the more dividend need to be paid to cut the agency costs. When the dividend is increased, the controllable free cash flow held by managers can be reduced and the transaction costs of external financing would rise too. Increased dividend relative to earnings lower agency costs through decreasing the free cash flow held by managers but raise the transactions costs of external financing. Therefore, there is an optimal dividend payout rate which maximizes the sum of these two opposing costs. La

Porta et al (2000) analyzed the data of dividend payout from 4,000 large-sized listed companies in 33 countries and regions in 1996 and found that firms in the countries which provide better protection for the minority shareholders paid higher dividends.

Chen et al. (1998) first researched the information transfer effects of initial dividend in China and found that three kinds of dividend (cash dividend, stock dividend and mixed dividend) could generate abnormal earnings and had information transfer effects. However, both the significant level and abnormal earnings of cash dividend effects were lower than those of the mixed and stock dividend. Wei (1998) claimed that market was in favor of stock dividend while disliking cash dividend. Through the investigation on the market effect of different allotment plans, Chen and Yao (2000) found that cash dividend could not be an effective information transferring mechanism but bonus issue and allotment did have significant information transferring effect. Yu and Cheng (2001) researched the influence of three kinds of distribution forms (cash dividend, stock dividend and mixed dividend) on stock price changes in initial and general dividend respectively and found that the abnormal earnings ratio of stock price caused by cash dividend was significantly smaller than those of the stock and mixed dividend either through initial dividend or general annual dividend. Chen et al. (1999) suggested that the dividend changes would cause stock price fluctuation. Also, dividend increasing and decreasing announcements would lead to information transferring effect. However, there were differences between the two situations that the reflection to dividend increasing announcement was weaker than that to dividend decreasing announcement. Wei (2000) believed that the dividend policy of Chinese listed companies was driven by their persistent payoff changes. As a whole, Chinese listed companies considered persistent payoff when they made the decision of dividend policy hence dividend policy transferred the information of persistent payoff to investors as an information channel.

Lü and Wang (1999), Zhao et al. (2001) believed that shareholder structure had an effect on dividend policy. The larger shareholder concentration ratio led to less stock dividend distribution and the amount of cash dividend paid by firms was decreased. Chen and Zhao (2000), however, thought that there was no relationship between equity management structure and dividend policy. Liu and Hu (2003) found that there was no significant relationship between cash dividend and circulating stock rate. According to the opinion of La Porta et al. (2000), the listed companies would have paid a small sum of dividend because the law to protect small-sized investors' rights was absent in China. However, how to explain the phenomenon that many firms paid cash dividend regularly and maintained in a high payout ratio? Lee and Xiao (2002, 2004) analyzed the dividend policy of

Chinese listed companies from the perspective of large shareholder expropriation. They believed that firms with high shareholder concentration were more likely to pay cash dividend. As a tool for digging tunnels, cash dividend helped large shareholders transfer cash from listed companies. Besides, in order to comply with the qualification of stock allocation, firms adjusted return on equity (ROE) through cash dividend payout decreasing net equity; cash dividend payout after stock allocation meant that non-circulating shareholders sold a certain percentage of non-circulating share to circulating shareholders in the way of paying cash dividend. By means of the method of event research from the perspective of the arrangement of corporate governance structure, Lü and Zhou (2005) found that snatching profit hypothesis and decreasing agency costs hypothesis can explain the firms' dividend paying behavior in certain extent. Cash dividend showed features of double-edged sword in Chinese capital market. Deng and Zeng (2005) divided the shareholder structure of listed companies into three categories: absolute control shareholder, relative control shareholder and balance control shareholder. The results indicated that the listed companies with absolute control shareholders had high dividend payout ratios and those with balance control shareholders had moderate dividend payout ratios, while those with relative control shareholders had the lowest dividend payout ratios. In addition, there was a relationship between dividend payout ratio and the whole control structure rather than the holding share percentage of control shareholders. Signaling theory of dividend policy claims that stock dividend is welcomed by Chinese stock market and cash dividend is not an effective information convey system. In fact, shareholder structure has effects on the dividend policy of listed companies. However, there is no agreement due to the different research perspectives, methods and samples' interval. Based on the environment of listed companies controlled by insider and separate equity management, the integrated research on listed companies' cash dividend and stock dividend has found that dividend distribution behavior reflects shareholder wealth effects which is a deviation from companies' long-term sustainable development.

3 Research hypotheses

3.1 Control shareholders and cash dividend

According to the views of La Porta et al. (2000) and Faccio et al. (2001), cash dividend distribution was a good measure to limit profits snatch from small-sized shareholders to control shareholders. In China, insiders in the listed companies have no pressure to pay cash dividend because of the laggard and incomplete laws for protecting investors' benefits. Lee and Xiao (2004) found that control

shareholders in Chinese listed companies snatched the profit of small investors by paying cash dividend and there was a positive relationship between the degree of concentration of control shareholders and the frequency and degree of cash dividend payout. Companies with high and medium degree of concentration executed a stable dividend payout rate policy while companies with low degree of concentration paid stable dividend sum. Paying cash dividend would be a legal method for control shareholders to snatch profit from listed companies among various snatching ways and it was opposite to the opinion that cash dividend can solve the agency problem between control shareholders and small-sized shareholders. Lü and Zhou (2005) provided the conceptions of “dividend snatch profit” and “paying dividend cost”. If shareholding percentage of control shareholders was low, control shareholders chose to pay less cash dividend because marginal cost of paying dividend was more than marginal profit of paying cash dividend. As increasing shareholding percentage, the opportunity cost of control shareholders giving up snatching profit was increased. Once marginal cost of paying dividend was less than or equal to marginal profit of paying cash dividend, control shareholders would pay more cash dividend and preferred to cash dividend for snatching profit from small-sized shareholders. Liu and Hu (2003) used a sample of 299 listed companies in Shenzhen and Shanghai Stock Exchanges in 2002 and researched that companies’ paying cash capability and investment opportunities had effect on cash dividend. The result showed that a great number of companies paid cash dividend beyond their equity free cash flow, therefore cash dividend was generated from allocated share financing. The phenomenon “paying cash dividend as well as sharing allocation” disobeyed the general rule of financial management.

Because most listed companies in China originate from state-owned enterprises through structural reform, the largest shareholder is group companies (parental companies) that hold the state-owned share of listed companies. The average share-holding rate of the largest shareholder is 45.44%. Moreover, their share is bought in the price equaled to or lowered than par value. Therefore, there is enough motivation of group companies to require listed companies to pay cash dividend for realizing high investment return rate and a large sum of cash incoming and increase their wealth. Hence, we argue:

Hypothesis 1: there is a positive relationship between the degree of shareholder concentration and cash dividend paying out rate.

In the past, the literatures of agency theory emphasized that paying cash dividend decreased the free cash flow held by insiders in companies; therefore it was the best way to decline agency cost. One thing that should be emphasized was that Chinese listed companies did not distinguish common shareholders when they paid cash dividend. Because the shares held by large shareholders

could not be circulated, they bought non-circulating share in the price equaled to or lowered than pay value as a compensation for non-circulating share. Thereby, generous cash dividend brought higher return rate for large shareholders. When the other illegal methods used by large shareholders for transferring resources from listed companies to their own pockets were limited, they turned to legal paying cash dividend to snatch profits from companies. According to the theory of sustainable growth, there are many factors which restrict paying cash dividend including the amount of cash in hand inside companies, the capability of generating cash, growth opportunities in the future and so on. If the real growth rate is larger than sustainable growth rate, inside capital will be short so companies should not pay or pay less cash dividend; even though the real growth rate is smaller than sustainable growth rate, companies should maintain a certain amount of cash in hand after paying cash dividend. Li (2004) found that real growth rate was larger than sustainable growth rate by using mixed sample of every year, annual sample of every year, or grouping sample which was grouped by the amount of cash dividend paying. That meant that companies which paid cash dividend generally existed inside resources scarcity caused by rapid growth. Based on the theory of sustainable growth, companies should not pay or pay less cash dividend in order to reduce resource output. Chinese listed companies, however, not only paid cash dividend but also paid high cash dividend which disobeyed the principle of sustainable growth theory. From all the above analyses, we can find that large shareholders have strong motivation to realize high investment return rate using cash dividend; even under the circumstance of inside resource scarcity, listed companies still pay cash dividend which disobeys the principle of sustainable growth theory, which destroys companies' ability of long-term development and profit ability and are also detrimental to the long-term sustainable development of listed companies. Therefore, we propose:

Hypothesis 2: there is a negative relationship between companies' cash distribution proportion and profitability.

3.2 Circulating shareholders and stock dividend

Based on theories, stock dividend will cause neither the changes of companies' net equity (shareholder wealth) nor cash output because it is just an adjustment among equity subjects. Paying stock dividend will not give rise to the value of stock on hand because the number of stock held by shareholders increases but price decreases proportionality. In other words, there is no real economic meaning of paying stock dividend. How to explain the phenomenon that stock dividend is pursued by circulating shareholders?

According to dividend signaling theory, growing companies often choose stock dividend. Growing companies need a large amount of capital for investment to

grow up rapidly and generally speaking they have bright prospect. Stock price will rise dramatically in the future because it reflects companies' performance. According to the number provided by Wei (1998)², we believe that the return rate of paying cash dividend is 1.87% for circulating shareholders, which is lower than three-month deposit interests (2.87%) at the same term. Therefore, the main investment return of circulating shareholders is capital gain. After stock price drops proportionality caused by paying stock dividend, stock price generally increases in certain degree so stock dividend will increase circulating shareholders' wealth indirectly. In addition, according to the investor hallucination theory, a great deal of earnings by the sale of additional obtained stock meanwhile maintaining the investors' corpus stably will arise to a positive psychological effect on investors. The above two opinions are the fundamental reasons for circulating shareholders preferring to stock dividend. From that, we obtain the third and fourth hypotheses of this paper:

Hypothesis 3: for circulating shareholders, the earning brought by stock dividend is more than that brought by cash dividend;

Hypothesis 4: stock dividend brings about high short-term abnormal earnings for circulating shareholders.

4 Research method

4.1 Sample data

We chose all A share listed companies with dividend distribution in Shanghai and Shenzhen Stock Exchanges from 2003 to 2004 as research samples to test above hypotheses. The process of choosing samples: (1) eliminate outlying observations with the percentage of paying cash dividend is more than 1 or less than 0; (2) eliminate financial companies. The number of samples is 930 totally after filtering with above requirements. All the data of corporate governance, dividend distribution and stock price in this paper are chosen from CSMAR (China Stock Market Accounting Research) series databases belonged to Shenzhen GTA Information Technology Co., Ltd. and Cninfo.com.cn. SPSS11.0 is used to analyze data in this research.

²Wei (1998) chose 130 companies with paying dividend pre-plans in 1997. Finally, 59 companies paid cash dividend (average stock price was 11.04 Yuan) and average cash dividend per share was 0.206 Yuan. For non-circulating shareholders in these companies, dividend return rate was more than 20% while that of circulating shareholders was merely 1.87% which was far less than the interest rate (2.88%) for three-month deposit after deducting personal income tax (20%).

4.2 Variable design

Table 1 Variable design

Name	Explanation
<i>CASHDIV</i>	Cash dividend payout ratio = cash dividend per share/earnings per share
<i>TOP1</i>	Shareholder ratio of the first majority shareholders
<i>TOP1²</i>	Square of shareholder ratio of the first majority shareholders
<i>TOP2-5</i>	Aggregated shareholder ratio from the second to fifth majority shareholders
<i>ROS</i>	Return on sales
<i>ROE</i>	Return of equity
<i>GOS</i>	Growth of sales

4.3 Model selection

Deng and Zeng (2005) did an empirical test on the relationship between shareholder structure and cash dividend paying rate and believed that there was a U-shaped relationship between cash dividend paying rate and the holding share percentage of the first majority shareholders rather than a linear relationship. According to the theoretic analysis on research hypotheses and the above research conclusions, we create model as below to test the relationships between cash dividend paying rate of listed companies and shareholder concentration degree and profit ability

$$\begin{aligned}
 CASHDIV = & \beta_0 + \beta_1 TOP1 + \beta_2 TOP1^2 + \beta_2 TOP2_5 \\
 & + \beta_3 ROS + \beta_4 ROE + \beta_5 GOS + \varepsilon
 \end{aligned}
 \tag{1}$$

5 Empirical test

5.1 Test for Hypothesis 1 and Hypothesis 2

5.1.1 Descriptive statistic and analysis of sample variables

From Table 2, we can find that cash dividend paying rate is still high with maximum (90%) and mean (43.56%) after eliminating outlying observations with the percentage of paying cash dividend, which is more than 1 or less than 0. The maximum number of holding shares percentage of the first majority shareholders is 85% and mean is 46.46%. It means that the phenomena of one state-owned share domination exclusively and controlled by large shareholders in Chinese listed companies are not reformed thoroughly. The mean and minimum numbers of aggregated shareholder ratio from the second to fifth majority

Table 2 Descriptive statistic of sample variables

Name	Sample size	Minimum	Maximum	Mean	Standard deviation
<i>CASHDIV</i>	930	0.0103	0.9000	0.4356	0.2942
<i>TOP1</i>	930	6.14	85.00	46.46	17.44
<i>TOP1</i> ² ($\div 10000$)	930	0.0038	0.7225	0.2462	0.1632
<i>TOP2-5</i>	930	0.08	58.15	14.74	12.99
<i>ROS</i>	930	-0.0899	1.7229	0.1053	0.1286
<i>ROE</i>	930	-0.0618	0.4198	0.099	0.0564
<i>GOS</i>	930	-0.6782	13.4762	0.3492	0.6398

shareholders are 14.74% and 0.08% respectively. They cannot restrict and supervise the first majority shareholders. According to majority shareholders tunnel-digging theory, the first majority shareholders transfer capital from companies to their own pockets through dividend distribution in listed companies.

5.1.2 Pearson's correlation coefficient of sample variables

Table 3 Pearson's correlation coefficient of sample variables

	<i>CASHDIV</i>	<i>TOP1</i>	<i>TOP1</i> ²	<i>TOP2-5</i>	<i>ROS</i>	<i>ROE</i>	<i>GOS</i>
<i>CASHDIV</i>	1.000*** (0.000)						
<i>TOP1</i>	-0.060* (0.067)	1.000*** (0.000)					
<i>TOP1</i> ²	-0.065* (0.068)	0.981*** (0.000)	1.000*** (0.000)				
<i>TOP2-5</i>	0.051 (0.119)	-0.638*** (0.000)	-0.632*** (0.000)	1.000*** (0.000)			
<i>ROS</i>	-0.098*** (0.003)	0.146*** (0.000)	0.163*** (0.000)	0.019 (0.554)	1.000*** (0.000)		
<i>ROE</i>	-0.374*** (0.000)	0.175*** (0.000)	0.204*** (0.000)	-0.023 (0.487)	0.270*** (0.000)	1.000*** (0.000)	
<i>GOS</i>	-0.051 (0.123)	0.038 (0.247)	0.031 (0.345)	-0.036 (0.276)	-0.077** (0.019)	0.127*** (0.000)	1.000*** (0.000)

Notes: *P*-value of two-tailed test is in parentheses. *, **, and *** indicate significance at the 10, 5, and 1 percentage levels, respectively.

5.1.3 Multiple regression

The results of Tables 3 and 4 indicate that there is a significant converse U-shaped relationship between cash dividend paying rate and holding shares percentage of the first majority shareholders and there is a positive relationship between cash

Table 4 Test result of multiple regression

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Constant	0.463*** (19.773)	0.445*** (29.904)	0.408*** (32.80)	0.454*** (7.624)	0.621*** (10.879)	0.621*** (10.873)
<i>TOP1</i>	-0.009* (-1.836)			-0.008 (-0.326)	-0.004 (-1.633)	-0.004 (-1.631)
<i>TOP1</i> ²		-0.09* (-1.825)		-0.05 (-0.210)	-0.051* (2.066)	-0.051* (2.063)
<i>TOP2-5</i>			0.001 (1.561)	0.008 (0.935)	0.017* (2.129)	0.016** (2.128)
<i>ROS</i>				-0.187*** (-2.862)	-0.002 (-0.313)	-0.002 (-0.309)
<i>ROE</i>					-1.735*** (-12.034)	-1.735*** (-11.886)
<i>GOS</i>						-0.0003 (-0.022)
<i>F</i> -test	3.372*	3.332*	2.435	2.962**	31.705***	26.392***
Adj <i>R</i> ²	0.03	0.03	0.02	0.130	0.143	0.142
<i>D-W</i>	1.994	1.995	1.994	1.985	1.988	1.988
<i>N</i>	930	930	930	930	930	930

Notes: *T*-value of two-tailed test is in parentheses. *, **, and *** indicate significance at the 10, 5, and 1 percent levels respectively.

dividend paying rate and aggregated shareholder ratio from the second to fifth majority shareholders. When the first majority shareholders are in absolute controlled position with a high holding share percentage, the second to fifth majority shareholders cannot supervise and restrict the first majority shareholders. Therefore, the first majority shareholders prefer to transfer listed companies' capital through related transaction and they pay a small amount of cash dividend. As the increasing aggregated shareholder ratio from the second to fifth majority shareholders, they can supervise and restrict the first majority shareholders in a certain degree. Companies raise cash dividend paying rate and sharing profit helps large shareholders retract capital and realize excess investment return rate. When the holding share percentage of the first majority shareholders is small, control shareholders restrict each other. In other words, nobody is in absolute controlling position. Considering companies' long-term development, they pay less cash dividend and retain more earnings for future investment opportunities. It is different from the conclusions of Yuan (2001), Deng and Zeng (2005). There is a negative relationship between cash dividend paying rate and net sale profit rate and return on equity. It means that the higher cash dividend paying rate is, the weaker companies' profit ability is. Large shareholders are more and more inclined to using legal cash dividend to deprive small shareholders because other illegal approaches are limited. High cash dividend paying rate helps large

shareholders realize high investment return rate, but it leads to the scarcity of inside resources, short of capital for development and low profit ability. It is agreed with the conclusion of Li (2004). Companies pay cash dividend in order to help control shareholders transfer capital and realize high return rate rather than to improve companies' profit ability. Therefore, Hypotheses 1 and 2 are proved.

5.2 Test for Hypothesis 3 and Hypothesis 4

5.2.1 Calculating formula

In this research, we find that the reflection of stock price to stock dividend distribution plan occurred in three time periods: announcement date to ex-dividend right (it lasts one week generally. In other works, it includes five trading days.), ex-dividend date and one week after ex-dividend date (they are five trading days after ex-dividend date). In the two latter time periods, the reflection of stock price to stock dividend distribution plan is called increased market or decreased market. Therefore, we choose three indicators (return rate on ex-dividend date, return rate of one week after ex-dividend date and return rate from announcement date to ex-dividend date) to research short-term shareholder wealth effects of stock dividend. The calculating formulas for the three indicators are listed below.

5.2.1.1 Stock dividend's return rate on ex-dividend date

$$P_m = \frac{P_{mt-1} - CA}{1 + SD + TI} \quad (2)$$

$$R_m = \frac{P_{mh} - P_m}{P_m} \quad (3)$$

Where R_m = return rate on ex-dividend date, P_m = theoretical price after ex-dividend date, P_{mt-1} = closing price of one day before ex-dividend date, CA = cash dividend per share, SD = stock dividend per share, TI = the percentage of provident fund per share adding to stock, P_{mh} = maximum among opening price and closing price on ex-dividend date.

5.2.1.2 Return rate of one week after ex-dividend date

$$R_w = \frac{P_{wh} - P_m}{P_m} \quad (4)$$

Where R_w = return rate of one week after ex-dividend date, P_{wh} = maximum closing price of one week after ex-dividend date.

5.2.1.3 Return rate from announcement date to ex-dividend date

$$R_d = \frac{P_{dh} - P_{dt-1}}{P_{dt-1}} \quad (5)$$

Where R_d = return rate from announcement date to ex-dividend date, P_{dh} = maximum closing price from announcement date to ex-dividend date, P_{dt-1} = closing price of one day before announcement date.

5.2.1.4 Annual return rate of cash dividend of circulating stock

$$P_c = \frac{\sum_{j=1}^{12} P_j}{12} \quad (6)$$

$$R_c = \frac{CA}{P_c} \quad (7)$$

Where R_c = annual return rate of cash dividend, P_c = annual average stock price, P_j = closing price of month (j).

5.2.2 Descriptive statistics of short-term return rate of stock dividend

From Tables 5 and 6, we found that stock dividend distribution plan of listed companies showed significant short-term shareholder wealth effect at three time periods (announcement date to ex-dividend date, ex-dividend date and one week after ex-dividend date) from 2003 to 2004. Mean of total sample in 2003: return rate on ex-dividend date, one week after ex-dividend date and from announcement date to ex-dividend date were 0.61%, 2.01% and 2.90% respectively; mean of total sample in 2004: return rate on ex-dividend date, one week after ex-dividend date and from announcement date to ex-dividend date were 0.03%, 0.87% and 1.83% respectively. Compared with 2003, the short-term return rate of stock dividend in 2004 was significantly lower than that in 2003. It might relate to bear stock market throughout the whole year in 2004.

5.2.3 T-test of cash dividend return rate

From the data in Table 7, we found the maximum and mean cash dividend return rates of non-circulating shares in 2003 were 42% and 11.01% respectively while

Table 5 Short-term return rate of stock dividend in 2003

		Return rate on ex-dividend date (%)	Return rate of a week after ex-dividend date (%)	Return rate from announcement date to ex-dividend date (%)	Sample size
Shenzhen Stock Exchange	Minimum	-1.84	-3.85	0	17
	Maximum	30.85	32.06	9.1	
	Mean	2.89	4.96	3.06	
Shanghai Stock Exchange	Minimum	-22.54	-22.54	-5.75	39
	Maximum	10.06	16.62	13.28	
	Mean	-0.38	0.73	2.83	
Total	Minimum	-22.54	-22.54	-5.75	56
	Maximum	30.85	32.06	13.28	
	Mean	0.61	2.01	2.90	

Table 6 Short-term return rate of stock dividend in 2004

		Return rate on ex-dividend date (%)	Return rate of a week after ex-dividend date (%)	Return rate from announcement date to ex-dividend date (%)	Sample size
Shenzhen Stock Exchange	Minimum	-4.78	-2.39	-2.56	25
	Maximum	15.33	15.33	11.40	
	Mean	1.22	2.77	2.55	
Shanghai Stock Exchange	Minimum	-27.98	-27.98	-9.97	75
	Maximum	8.66	11.45	11.2	
	Mean	-0.43	0.14	1.55	
Total	Minimum	-27.98	-27.98	-9.97	90
	Maximum	15.33	15.33	11.40	
	Mean	0.03	0.87	1.83	

those of circulating shares were just 8.15% and 1.20% respectively; maximum and mean cash dividend return rates of non-circulating shares in 2004 were 90% and 13.60% respectively while those of circulating shares were just 7.48% and 1.61% respectively. According to two-year data, we can conclude that annual cash dividend return rate of non-circulating shares is about ten times larger than that of circulating shares.

From the descriptive statistic results in Table 7, cash dividend return rate of non-circulating shares is significantly larger than that of circulating shares. In order to test this hypothesis, we examine variable $RR = R_{C1} - R_{C2}$, where R_{C1} is

Table 7 Descriptive statistic of annual return rate of cash dividend

		Annual return rate of cash dividend in 2003 (%)		Annual return rate of cash dividend in 2004 (%)	
		Circulating shares	Non-circulating shares	Circulating shares	Non-circulating shares
Shenzhen Stock Exchange	Minimum	0.07	1	0.08	1
	Maximum	8.15	42	5.59	50
	Mean	1.24	10.71	1.62	13.25
	Sample Size	154		147	
Shanghai Stock Exchange	Minimum	0.07	1	0.12	0.5
	Maximum	7.19	40	7.48	90
	Mean	1.18	11.17	1.61	13.75
	Sample Size	292		337	
Total	Minimum	0.07	1	0.08	0.5
	Maximum	8.15	42	7.48	90
	Mean	1.20	11.01	1.61	13.60
	Sample Size	446		484	

Notes: cash dividend return rate of non-circulating shares = cash dividend per share / stock par value.

cash dividend return rate of non-circulating shares, R_{c2} cash dividend return rate of circulating shares. We use the total sample of 930 listed companies which paid cash dividend and sub-sample of two years and design single-tailed mean test for RR

$$H_0: \mu \leq 0$$

$$H_1: \mu > 0$$

Test statistic

$$t = \frac{\overline{RR} - \mu_0}{S/\sqrt{n}} \sim t(n-1) \quad (8)$$

Where $\overline{RR} = \sum_{j=1}^n RR_j$; S is the sample standard error of RR_j ; n is sample size; $\mu_0 = 0$.

Test results are shown in Tables 8 and 9.

Table 8 RR descriptive statistical result

	N	Mean	Std. deviation	Std. error mean
RR	930	0.1094	0.08462	0.00277
RR_{2003}	446	0.0981	0.06944	0.00329
RR_{2004}	484	0.1199	0.09540	0.00434

Table 9 *T*-test result of *RR*

	Test value = 0					
	<i>t</i>	<i>df</i>	Sig. (two-tailed)	Mean difference	95% confidence interval of the difference	
					Lower	Upper
<i>RR</i>	39.443	929	0.000	0.1094	0.1040	0.1149
<i>RR</i> 2003	29.837	445	0.000	0.0981	0.0916	0.1046
<i>RR</i> 2004	27.649	483	0.000	0.1199	0.1114	0.1284

From the *T*-test results shown in Tables 8 and 9, we can find that cash dividend return rate of non-circulating shares is larger than that of circulating shares in 1% significant level no matter using total sample or annual samples. It can explain the problem that why large shareholders of listed companies want to pay cash dividend even in a high percentage. Stock dividend brings high short-term return rate for circulating shareholders and it is far more than cash dividend return rate. Moreover, cash dividend return rate of non-circulating shares is significantly larger than that of circulating shares. Therefore, Hypotheses 3 and 4 are proved.

6 Conclusions and limitations

6.1 Conclusions

The extant literature provides a great deal of empirical evidences on dividend policy of listed companies including empirical tests on three aspects: signaling theory, agency cost theory and influencing factors. However, there are few empirical evidences on shareholder wealth effects of dividend distribution plan of listed companies. They ignore the fact that control shareholders realize high investment return rate with cash dividend policy and circulating shareholders obtain high short-term return rate by stock dividends. Using A share market data of listed companies from 2003 to 2004, this paper researches shareholder wealth effects of dividend policy in Chinese listed companies and main results are as follows.

1) There is a significantly reversed U-shaped relationship between cash dividend paying rate and holding share percentage of the first majority shareholders and there is a positive relationship between cash dividend paying rate and aggregated shareholder ratio from the second to fifth majority shareholders. When the first majority shareholders are in an absolute controlling position with a high holding share percentage and the holding share percentage of the first majority shareholders which are small, cash dividend paying rate is low. When the first majority shareholders are in a relative controlling position,

companies raise cash dividend paying rate and sharing profit helps large shareholders retract capital and realize excessive investment return rate.

2) There is a negative relationship between cash dividend paying rate and returns on issues and return of equity. Because one state-owned share domination exclusively and special corporate governance structure of separate equity management, large shareholders of listed companies transfer capital from companies to their own pockets by dividend distribution. High cash dividend paying rate leads to the scarcity of inside resources, short of capital for development and low profit ability.

3) Stock dividend distribution plans bring about short-term excess return rate for circulating shareholders. Stock dividend distribution plans of listed companies exist significant short-term shareholder wealth effects at three time periods (announcement date to ex-dividend date, ex-dividend date and one week after ex-dividend date) from 2003 to 2004. Compared with 2003, the short-term return rate of stock dividend in 2004 declined. It might relate to bear stock market throughout the whole year in 2004.

4) The return rate brought by stock dividend for circulating shareholders is far more than that brought by cash dividend. Cash dividend return rate of non-circulating shareholders is significantly larger than that of circulating shareholders and the former one is about 10 times larger than the latter one.

6.2 Limitations

In this paper, we use three indicators to test total sample for measuring the effect shareholder concentration degree to cash dividend paying rate. They are shareholder ratio of the first majority shareholders, square of shareholder ratio of the first majority shareholders and aggregated shareholder ratio from the second to fifth majority shareholders. However, we do not group shareholder structure as absolute control shareholders, relative control shareholders and balance control shareholders. By this way of grouping, we may draw different conclusions using sub-sample data to discuss the relationship between shareholder concentration degree and dividend paying rate. In this paper, we use three indicators to measure short-term return rate of stock dividend including return rate on ex-dividend date, return rate of one week after ex-dividend date and return rate from announcement date to ex-dividend date. We need further research to examine the veracity and applicability of calculating formulas.

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