A Study of Cohort Effects of Corporate Cash Dividend Policies

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Abstract: Cash dividend distribution is an important element of corporate profit distribution, which is the top priority of financial decision-making and widely concerned by all walks of life. This paper launches the research on cash dividend policy from the emerging research perspective of cohort effect, taking Shanghai A-share listed companies from 2013 to 2021 as the research sample, and studies the cohort effect of cash dividend policy of listed companies in the same industry. The empirical results show that there is an industry cohort effect in the cash dividend policy of China's Shanghai A-share listed companies, i.e., the cash dividend policy of listed companies will be affected by the cash dividend policy of other companies in the same industry, and based on the intrinsic mechanism of the cohort effect, the industry cohort effect of the cash dividend policy of the non-leading company and the company with overconfident management is more significant.

1. Introduction

Cash dividend policy is an important strategy developed by company managers that is directly related to the financial position of the company, investor returns, and market position. In recent years, there exists an interesting phenomenon in the domestic and international markets that the level of cash dividend payment of listed companies is highly concentrated, which puzzles scholars: why does this phenomenon of highly concentrated level of payout exist? What factors influence this phenomenon? What are the economic consequences of this clustering phenomenon for the firm? Established dividend theories do not provide a good explanation of why this phenomenon occurs, and a theory from another discipline - the cohort effect - provides an explanation for this phenomenon.

The cohort effect, which began in education, social psychology and social behaviour, refers to the fact that the behaviour of one individual in a group within a particular context is influenced by the behaviour of other individuals in that group. Cohort effect may exist between companies in the same industry because companies in the same industry face similar market environment and have more similar company structure and comparable financial data. Therefore the cohort effect may exist between the financial behaviours of companies in the same industry.

Therefore, this paper examines the clustering phenomenon of dividend payout levels of Chinese

listed companies from the perspective of the cohort effect. The marginal contributions of this paper are as follows: first, unlike the traditional research perspective, this paper investigates the phenomenon of dividend policy clustering in the same industry based on the internal mechanism of the cohort effect, and explores whether the cohort effect has a differentiated impact in the perspective of company size and management characteristics, enriching the research on the influencing factors of dividend policy. Secondly, this paper explores the cohort effect of cash dividend policy and guides corporate managers to flexibly formulate the most suitable dividend policy for their enterprises, which is more conducive to the long-term development of enterprises. And it provides investors with the theoretical basis for the change of corporate cash dividend policy.

2. Literature Review

It has been confirmed by foreign scholars that there is a cohort effect in dividend policy among listed companies. In the study of mature capital markets, there is an interaction between corporate dividend decisions , and there is a cohort effect between companies in terms of cash dividend payments [1].Binay et al. (2018)[2] found that the expenditure policies of listed firms are significantly influenced by the corresponding policies of other firms in the same industry, creating a reference role and a cohort effect, and that this cohort effect is more pronounced in the smaller firms' cash dividends are more pronounced.Jillian (2019)[3] also considers the phenomenon of interaction between dividend policies of listed companies, and the study shows that after the average dividend of cohort firms is raised, individual firms also raise their dividends on average 1.5 quarters later, and the rate of raising due to the cohort effect occupies 12 per cent.

In the research definition of cohort effect, there are mainly same-region and same-industry cohort effects. Enterprises in the same region have dynamic competitive relationships and face similar geographic environments, regional institutional environments, levels of economic development and rule of law [4], and enterprises in the same region are likely to respond to dividend cohorting behaviours among regional enterprises in order to reduce the cost of information acquisition, complexity of decision-making, and to satisfy the need for legitimate mechanisms[5]. The increasing information demand of enterprises for industry cohort behaviour as well as the fact that enterprises in the same industry have similar property rights, market competition environment, there will also be a cohort effect among enterprises in the same industry, which is confirmed by the studies of Leary, Foucault, Kaustia, and Wanliangyong, etc., and the cohort effect of the same industry is also reflected in the dividend policy [6].

There are also scholars who examine the cohort effect from the perspective of dividend increase or decrease.Grennan (2019)[7] study based on the data of US firms shows that there is a peer effect for corporate dividend increases, while there is no peer effect for dividend decreases, where the reason may be that investors in the US capital market show a strong negative market reaction to dividend decreases [8-9]. Due to the mild market reaction of investors to dividend reduction in China, Zhong Tianli (2021)[10] proposed the hypothesis that the dividend increase and reduction behaviours of enterprises in China may be accompanied by a peer effect and proved it to be correct, and further researchers found that the dynamic competition is an important reason for enterprises to compete to increase the payment of dividends, and the reason for the dividend reduction peer group effect is the access to information.

3. Theoretical Analysis and Research Hypothesis

According to the existing literature, the intrinsic mechanisms of the cohort effect are mainly classified into information learning mechanism, competition mechanism, and reputation demand mechanism.

Information learning mechanism: Based on the information waterfall theory proposed by Banerjee and Bikhchandani, because of the high cost of information acquisition and the high noise of information, management may be more inclined to follow other enterprises in making decisions.

Combined with the dividend signalling theory, management is likely to use the dividend policy of the cohort firms and the market's reaction as a reference to make adjustments and corrections accordingly, thus releasing information to show the quality of their own firms. Unlike the irrational behaviour of the herd effect, in this theory the management belongs to the rational economic man, and will analyse the situation of their own company after obtaining important information from other companies, and then finally choose whether to follow or not. Moreover, there are often leading firms in the market, based on the information acquisition theory, the company will observe and learn from them, so as to imitate those firms that seem to have advantages, and the follower firms are more likely to imitate the leading firms to form the herd effect. The competition mechanism includes dynamic competition and industry competition mechanism. Dynamic competition means that the competitive strategy of other companies may affect the company's own alternative strategic preference ranking, and thus affect the company's own decision choice. The strategic choice of the company itself will affect the strategic choice of other companies, thus forming a long-term dynamic process repeatedly. Industry competition means that in an industry market with fierce competition and weak uncertainty, it is easier for enterprises to imitate the leaders, thus forming a queue effect. Uncertainty in the industry, firms compete in order to obtain a competitive advantage competition. Reputation demand mechanism is due to the fact that management is very concerned about their reputation, they tend to observe the major decisions made by other firms in order to prevent a bad reputation, so management is more than happy to maintain similar strategic choices with other firms.

Dividend policies among firms affect each other. Dividend policy has always been a key financial decision for company managers, company shareholders or external investors. Company managers are often faced with the dilemma of how to formulate an optimal dividend policy. Paying too much or too little dividends can have bad consequences. On the one hand, due to the signalling effect of dividends, paying fewer dividends can cause investor dissatisfaction. This is because too little dividends may send wrong signals to the market, making investors believe that the future development of the enterprise is not good enough, and thus weakening investors' enthusiasm. On the other hand, paying a high level of dividends may lead to a shortage of cash flow, reduce the company's financing ability, and may also miss investment opportunities that are favourable to the company's development, thus curbing the company's growth. As a result, managers consider many factors and the cost of formulating dividend policies, and they will refer to dividend policies made by other companies, in which companies in the same industry become the preferred reference for managers because the internal and external environments of companies in the same industry are more likely to be similar. Based on the mechanism of cohort effect generation described above, there will be cohort effect among cash dividend policies of companies in the same industry. Firstly, based on the information learning mechanism, due to the high difficulty of formulating dividend policy, the management of the company may learn about the dividend policy of other companies in the same industry for the purpose of saving time and cost and improving the efficiency of decision-making, and the management is a rational person, and will not blindly imitate and copy, but the management will choose and imitate the dividend policy that is most suitable for the company. Secondly, in today's context, the market economy is booming and the competition in the market is getting more and more intense, the dividend policy as a quite important part of the corporate strategic decision-making is the company's focus on financial decision-making. Based on the competition mechanism, the company may pay close attention to the cash dividend policy of the peer group companies in order to maintain or further expand its competitive advantage in the

industry. Third, companies and their management attach great importance to their reputation, and whether or not to pay dividends is important to investors, so if a company pays low or no dividends, it will be perceived by investors as an iron chicken or there are serious agency problems within the company, and based on the reputation mechanism, the company tends to keep its dividend policy at a similar level to that of the peer group based on the need to maintain its reputation. Bizjak et al. (2008) show that company managers mimic the cash dividend policies of peer group companies in order to maintain or further expand their competitive advantage in the industry.) showed that part of the reason why company managers imitate the dividend decisions of peer group companies is to avoid making wrong decisions. In conclusion, there is a cohort effect among the cash dividend policies of listed companies in the same industry. Accordingly, the following hypotheses are proposed [11]:

H1: There is a cohort effect between the cash dividend policies of listed companies in the same industry.

4. Research Design

4.1. Sample Selection and Data Sources

This paper selects 2013 to 2021 as the research interval. The data in this paper comes from CSMAR and Wind database, and the samples are treated as follows: (1) ST samples are excluded; ST samples are listed companies with continuous losses and facing delisting. Because of its continuous loss for more than two years, there are abnormalities in the financial data, which affects the accuracy of the study; (2) exclude the financial industry samples;, because the financial listed enterprises have special capital structure and financial processing principles; (3) to reduce the impact of extreme values, all continuous variables are subjected to upper and lower 1% shrinkage; finally, 8,431 observations are obtained. Stata16.0 was selected for data processing.

4.2. Variable Setting

(1) Cash Dividend Payout Ratio (Payout). Borrowing from Zhou Xiaohua (2021)[12], this paper adopts cash dividend payout ratio (cash dividend/net profit) to measure the explanatory variables.

(2) Cash Dividend Payout Ratio (Peerpayout) for Cohort Firms. This paper measures the explanatory variables with the mean of the cash dividend payout ratio of all listed firms in the industry except for firm i.

(3) Control variables: Control variables include: ①Company size (Size): Measured as the natural logarithm of the total assets of the enterprise at the end of the year. The larger the enterprise, the more mature and stable its development is likely to be, and in order to release a signal to the market that the enterprise is doing well, it may choose a higher level of cash dividend distribution. ②Solvency (Lev): Measured by the enterprise's gearing ratio for the year. The higher the gearing ratio, the weaker the solvency and the more difficult it is to obtain external financing, and such firms are likely to choose lower cash dividends. ③Company growth (Growth): Measured by the growth rate of the enterprise's operating income for the year. When the enterprise is in the growth period, the capital demand for investment and financing is larger, and the enterprise is more likely to choose to reduce the level of cash dividend distribution. ④Cash flow levels (Cash): Measured by the enterprise's net cash flow from operating activities/operating income for the year. The higher the level of cash flow, the more cash-rich the enterprise is, the greater its ability to pay out money, and the more likely it is to increase the level of cash dividend distribution from the enterprise. ⑤ Nature of ownership (Soe): Measured by whether the firm is a state-owned enterprise. When the

enterprise is a State-owned enterprise, the enterprise distributes a higher level of cash dividends. ⑥ Age of listing (Listage): The length of time a listed company has been listed as at the end of the year is measured. The longer a firm has been listed, the more it tends to distribute a lower level of cash dividends (Table 1).

Table 1: Definition of variables

	variable name	variable symbol	Variable Description
explanatory variable	Cash dividend payout ratio	Payout	Dividend payout ratio of firm i in industry j in year t
explanatory variable	Dividend payout ratio for the cluster	Peerpayout	Average of the cash dividend payout ratio in year t for all listed firms in industry j except firm i
control variable	Company size	Size	Natural logarithm of total assets
	Solvency	Lev	Total liabilities/total assets
	Company Growth	Growth	Growth rate of operating income
	Cash flow levels	Cash	Net cash flow from operating activities/income from operations
	Nature of ownership	SOE	State-owned enterprises take the value of 1, non-state-owned take the value of 0.
	Listing age	Listage	Natural logarithm of current year - year of listing + 1

4.3. Modelling

Drawing on Leary and Roberts (2014)[13] test, the following basic panel regression model was constructed to test the underlying hypotheses:

$$Payout_{ijt} = \alpha + \beta Peerpayout_{-ijt} + \gamma_1 Size_{ijt} + \gamma_2 Lev_{ijt} + \gamma_3 Growth_{ijt} + \gamma_4 Cash_{ijt} + \gamma_5 SOE_{ijt} + \gamma_6 Listage_{ijt} + \delta^{'} u_j + \varepsilon_{ijt} \quad (1)$$

Where subscripts i, j, and t represent the company, the industry it is in, and the year, respectively. To avoid the interference of the yearly factor on the research findings, the year fixed effect is controlled, if the regression coefficient β is significant and positive, indicating that there is an industry cohort effect in the cash dividend policy of listed companies, then hypothesis 1 holds.

5. Empirical Analysis

5.1. Descriptive Statistical Analyses

Table 2: Descriptive statistics

variable	average value	maximum values	minimum value	(statistics) standard deviation	observed value
Payout	0.300	1.730	0.000	0.280	8431
Peerpayout	0.310	1.730	0.000	0.080	8431
Size	22.750	26.750	19.580	1.430	8431
Lev	0.440	0.950	0.070	0.200	8431
Growth	0.240	4.090	-0.630	0.610	8431
Cash	0.120	0.760	-1.150	0.200	8431
Soe	0.490	1.000	0.000	0.500	8431
Listage	2.260	3.370	0.000	0.900	8431

Table 2 shows the descriptive statistics. The cash dividend distribution rate has a mean value of 0.300, a maximum value of 1.730, and a standard deviation of 0.280, indicating that the average

payout rate of the sample companies reached 30 per cent, and that there are differences in the dividend distribution rates of different companies.

5.2. Relevance Analysis

Table 3 reports the results of the correlation coefficient test, from which it can be seen that the explanatory variables are significantly positively correlated with the explanatory variables, which preliminarily verifies the existence of the cohort effect among the companies in the same industry.

Table 3: Results of correlation test

	Payout	Peerpayout	Size	Lev	Growth	Cash	Soe	Listage
Payout	1							
Peerpayout	0.059***	1						
Size	-0.062***	-0.120***	1					
Lev	-0.193***	-0.146***	0.539***	1				
Growth	-0.071***	-0.052***	0.037***	0.090***	1			
Cash	0.060***	0.041***	0.075***	-0.130***	-0.034***	1		
Soe	-0.095***	-0.148***	0.349***	0.267***	0.008	0.021*	1	
Listage	-0.126***	-0.088***	0.354***	0.326***	0.017	-0.053***	0.467***	1

Note: *, **, *** indicate significant at the 10 per cent, 5 per cent and 1 per cent levels, respectively.

5.3. Regression Analysis

(1) Existence test for the cohort effect of dividend policy in the same industry

Table 4 shows the results of benchmark regression. The regression coefficients of the cash dividend payment level of the cohort in columns (1), (2) and (3) are 0.206, 0.0882 and 0.134, respectively, and are all significant. It shows that the more cash dividends paid by the cohort enterprises in the same industry, the more cash dividends paid by the key enterprises. Hypothesis 1 is confirmed.

Table 4: Benchmark regression result

	(1)	(2)	(3)
	Payout	Payout	Payout
Peerpayout	0.206***	0.0882**	0.134***
	(5.39)	(2.31)	(3.44)
Constant	0.241***	0.0870	0.0607
	(19.79)	(1.55)	(0.75)
Controls	NO	YES	YES
Year	NO	NO	YES
N	8431	8431	8431
adj. R^2	0.0033	0.0506	0.0395

Note: *, **, *** denote significant at the 10%, 5% and 1% levels, respectively; standard errors in parentheses, same below.

5.4. Further Study

(1) Company size

In terms of the competitive imitation mechanism, firms will closely monitor the decision-making behaviour of their competitors (e.g., firms in the same industry) and influence their own responses in order to maintain a competitive advantage in the market. Non-leader firms in the industry may

have more scarce information resources and are more likely to make behavioural decisions to learn to imitate the dividend policies of companies in the same industry. Therefore, whether a firm is an industry leader may have an impact on the dividend policy cohort effect of listed firms. In this paper, we use firm size to measure industry-leading firms and non-industry-leading firms by sorting listed firms according to firm size, defining the upper half of branches as industry-leading firms and the lower half of branches as non-industry-leading firms. Group regressions are performed to observe whether the regression coefficients are significant and whether there is any difference. Table 5 shows the group regression results for company size.

Table 5: Results of grouping by company size

	(1)	(2)
	big	Small
Peerpayout	0.0935	0.195***
	(1.52)	(1.52)
Constant	0.379***	-0.373***
	(3.66)	(-2.64)
Controls	YES	YES
Year	YES	YES
N	3720	4711
adj. R^2	0.094	0.114

As can be seen from (1) and (2) in Table 5, the coefficients of the regression results for the large-scale and small-scale groups are 0.0935 and 0.195 respectively, and the regression coefficients for the large-scale group are not significant, while the coefficients for the small-scale group are significant at the 1 per cent level, indicating that there exists a dividend policy cohort effect among non-leader companies in the industry but not among industry-leader companies, suggesting that the size of the company (whether or not it is an industry leader) has a moderating effect on the dividend policy cohort effect.

(2) Management characteristics

As mentioned earlier, dividend policy is a financial decision made by the company's management, and the cash dividend policy cohort effect is the result of management imitating other companies in the same industry, regardless of whether it is due to the information imitation mechanism, the competition mechanism, or the reputation demand mechanism. Therefore, it is necessary to examine the impact of management characteristics on the cash dividend policy cohort effect.

Overconfident managers are more concerned with success and reputation in taking risks. Overconfident CEOs tend to extrapolate when making decisions. When a company of his peers receives a dividend for good performance, he will follow his peers thinking that the company he manages can be successful, too. Therefore, this paper will take Shanghai a company as an example to pay dividends to peers. Therefore, this paper proposes to use the three dimensions of gender, education, age, and whether or not to combine two jobs as the indicators of executive overconfidence in Shanghai A. The three dimensions of gender, education, age, and whether or not to combine two jobs as the indicators of executive overconfidence are as follows. With reference to previous studies, executives are defined as CEOs (presidents and general managers) and are measured as follows:

① Gender (Gender): Women as managers may be more cautious, men may be more confident in the company's decision-making; therefore, when the CEO of the company is a man, Gender takes the value of 1, otherwise it takes the value of 0; ② Education (Edu): Jiang Fu-xiu et al. Overconfidence tendency; therefore, in the company's current year CEO education in the master's

degree and above, Edu takes the value of 1, otherwise it takes the value of 0; ③ Age (Age): Jiang Wei et al. (2010) that older managers will collect more information in the decision-making process or due to the experience of more failures or decision-making errors, so as to be more prudent, reducing the judgemental bias in the decision-making process; therefore, in the company's current year CEO age is less than the sample company's same age, so that it takes the value of 1. CEO's age in the current year is less than the average of CEO's age in the same year in the sample company, Age takes the value of 1, otherwise it takes the value of 0.

The results of the test of the role of management overconfidence check on the cohort effect of dividend policy are shown in the table 6, and it is observed whether the regression results of each group are significant or not and the positivity or negativity of the regression coefficients.

Table 6: Management characteristics and dividend policy cohort effects

	(1)	(2)	(3)	(4)	(5)	(6)
	Gender1	Gender0	Edu1	Edu0	Age1	Age0
Peerpayout	0.159***	0.118	0.251***	0.107**	0.119*	0.176***
	(3.93)	(0.96)	(3.77)	(2.30)	(1.72)	(3.84)
Constant	0.0458	-0.149	0.0413	0.0344	-0.135	0.108
	(0.79)	(-0.58)	(0.46)	(0.47)	(-1.22)	(1.64)
Controls	YES	YES	YES	YES	YES	YES
Year	YES	YES	YES	YES	YES	YES
N	7950	470	2769	5651	2562	5858
adj. R^2	0.0733	0.0969	0.0723	0.0766	0.0811	0.0716
Test			Prob > chi2 = 0.0941		Prob > chi2 = 0.5171	

As can be seen from the table, Gender's group regression results indicate that gender will have an impact on the dividend policy cohort effect, which is manifested in the obvious existence of the cohort effect when the company managers are male; Edu's regression results are significant, and after the test of the difference in coefficients between the groups, the original hypothesis is rejected, i.e. there is a significant difference in the coefficients between the groups, which indicates that the cohort effect is more significant when the company managers have higher qualifications; and Age's sample groups are not rejected by any intergroup tests. Intergroup test did not reject the original hypothesis, that is, there is no significant difference between the coefficients between the groups, indicating that the age of the management does not have a significant impact on the dividend policy cohort effect. In summary, the gender and education of management have a greater impact on the cohort effect of cash dividend policy.

6. Conclusions and Implications of the Study

For the research on the influencing factors of cash dividend policy, most of the studies examine from the perspectives of internal characteristics of the company, external market environment, etc. This paper further explores the influencing factors of cash dividend policy by combining the concepts of cohort effect in psychology and behavioural science. This paper takes China's Shanghai A-share listed companies from 2013-2021 as the research sample, analyses whether there is a cohort effect of cash dividend policy of listed companies in the same industry, and examines whether company size and management characteristics have a differentiated impact on the cohort effect of cash dividend policy in the same industry. The empirical results show that there is an industry cohort effect in the cash dividend policy of China's Shanghai A-share listed companies, i.e., the cash dividend policy of listed companies will be affected by the cash dividend policy of other companies in the same industry; further research finds that, based on the intrinsic mechanism of the cohort effect, the cohort effect of the dividend policy of the companies that are not the leading companies

and whose management characteristics show overconfidence is more obvious.

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