Applied Mathematics and Nonlinear Sciences

<https://www.sciendo.com>

The influence of financial constraint on peer influence of cash dividend decision – Evidence from China

Xiaolan Wang¹, Fengzuo Li^{1,†}, Mohammad Salem²

¹ Business School, Yunnan University of Finance and Economics, Kunming 650221, Yunnan, China

² Accounting and Finance Department, Applied Science University, Bahrain

Submission Info

Communicated by Juan Luis García Guirao

Received May 7th 2021

Accepted July 23rd 2021

Available online November 12th 2021

Abstract

We analyse the influence of financial constraints on the peer effect of dividend decision in China by employing the Carhart four-factor model to construct instrument variables of peer influence. We find that (1) the decision of whether to pay cash dividends (DIV) is significantly influenced by peers, and the estimated marginal effect is 0.53%, but the question of whether to pay catering dividends and the extent of such dividends to be paid are not significantly affected by peers. (2) Under the semi-mandatory dividend policy in China, financial constraints will significantly reduce peer influence on the dividend level. (3) Peer influence on DIV is more pronounced among companies that face high financial constraints.

Keywords: dividend decision, peer influence, financial constraint, conduction path, Carhart four-factor model

1 Introduction

Cash dividend decision is one of the major financial management decisions of listed companies, but it is also influenced by China's regulatory policy. In order to protect the interests of investors and raise the dividend level of listed companies, the Securities Regulatory Commission has issued the policy that clearly states that the cumulative cash dividends (DIV) of the past 3 years should not be <20% of the average annual profits realised in the last 3 years if the companies want to issue new securities. This requirement is raised to 30% in 2008. Scholars name the policy as 'semi-mandatory dividend policy' (Li et al., 2010) [1], which has a certain impact on the dividend behaviour of Chinese companies. On the one hand, it makes the companies who need to issue new securities to refinance, which will increase their willingness to pay dividends and readily comply with the policy. However, companies that do not have such needs will lack incentives (Wang and Zhang, 2012. Wei et al., 2014) [2, 3] and thus their willingness to pay dividends may even become weakened (Gao et al.,

[†]Corresponding author.

Email address: fzli1986@163.com

2018) [4]. According to the dividend data of listed companies in China from 2008 to 2019, the proportion of listed companies distributing DIV rose from 52.64% to 69.7%, but the average cash dividend payment rate raised only from 22.69% to 26.49%, and cash dividend payment rate of listed companies which paid DIV decreased from 43.10% to 38%. The studies comprising the existing literature do not answer the question of why the dividend willingness is improved but the dividend level has not significantly improved in China.

Some scholars have found that the company's dividend decision is influenced by the peer companies, resulting in the convergence of dividend behaviour. Adhikari and Agrawal (2018) [5] take the American-listed company as the sample and find that the company dividend policy is affected by peer companies in the same industry. The main reason is the competition imitation mechanism. Grennan (2019) [6] also empirically analyses the peer influence of dividend decision change. Ding and Li (2020), Li et al. (2020) and Wang et al. (2021) [7–9] studied the regional and industrial peer influence on the dividend payouts of listed companies in China, but none of the above studies take into account the reality of financial constraints faced by most enterprises in China and the influence of the semi-compulsory dividend policy.

Therefore, considering the semi-mandatory dividend policy, this paper researches the influence of financial constraints on peer influence on cash dividend decision, and the conduction path of peer influence between enterprises with different financial constraints. The main contribution of this paper is (1) it enriches the research on the peer influence of dividend decision under the semi-compulsory dividend policy in China, (2) it researches the influence of financial constraints on dividend decision peer influence; and (3) it studies the conduction path of peer influence on dividend decision between enterprises with varying financial constraints.

2 Theoretical analysis and research hypotheses

2.1 Peer influence and dividend decisions

Peer influence arises from the imitation behaviour between enterprises. Lieberman and Asaba (2006) [10] put forward two theories on why enterprises imitate each other. One is the information-based theory, where firms follow other companies that are perceived as having superior information. The other one is rivalry-based theories, where firms imitate others to maintain competitive parity or limit rivalry. The information-based theory is related to the uncertainty of the external environment. If the company manager cannot accurately predict the results of a decision or an action, the company will very likely accept the information contained in the actions of other companies and imitate the decision-making actions of other peer companies. In fact, enterprises need to refer to a large number of internal and external information when making decisions. Moreover, because of the information asymmetry in the market, the cost of information acquisition is high, and even some external information is difficult to obtain. Companies in the same industry will imitate each other for the reasons that the macro-environment, industry policy and supply chain environment are very similar, and the basic elements and external information needed for decision-making are the same. Therefore, imitation and learning from peers may be a low-cost and efficient information channel, which can reduce the cost of information acquisition and the risk of decision-making.

Another kind of imitative motivation based on information is herd behaviour. As any behaviour of the enterprise conveys certain information to the outside world, this information may be used by stakeholders, such as investors, as useful information to evaluate the enterprise. Business managers may ignore private information in order to improve or maintain a good brand reputation and imitate others' behaviours to avoid negative evaluation. The dividend signal theory shows that the company pays dividends in order to transmit information to shareholders. The dividend principal-agent theory holds that dividend payment is beneficial to reduce the agent cost and reflects a good level of corporate governance. Therefore, companies may imitate peers in order to obtain a positive evaluation.

Another reason why peer individuals imitate each other is that competition produces imitation behaviour (Adhikari and Agrawal, 2018) [5]. When companies with comparable resource endowments and market posi-

tions compete with each other, companies can adopt differentiation strategies to distinguish them from competitors, and this reduces the possibility of imitation and may generate higher profits. However, any differentiation strategy often needs higher investment and is associated with higher risk, which could even lead to business failure. In contrast, homogenisation strategy can also limit the exertion of competitors' competitive advantage by imitating them, so imitation can also reduce competition. There are generally 'leaders' and 'followers' with different competitive advantages in an industry. 'Followers' often imitate the behaviours of 'leaders' in order to narrow the gap and reduce the intensity of competition. Dividend is an important factor of company information and company valuation. Regulators, third-party supervision and auditors may compare the target companies with the industry average level or the level of peer companies, so the target companies have competitive imitation motivation. Therefore, the company is likely to imitate the dividend decision behaviour of the peer companies. Therefore, we build up the hypothesis H1:

H1: Companies' dividend decisions are positively influenced by peer companies.

2.2 Financial constraints and dividend decisions

Financial constraints refer to the difficulty in obtaining financing when there is a need for capital to invest, which often arises due to the frictions in the supply of capital. The chief source of friction is information asymmetries between investors and the firm (Tirole, 2006) [11], and because of that, the investment cannot reach the optimal level he condition (Fazzari et al., 1988) [12]. The difference of internal and external capital cost leads to the preference of internal capital, so companies prefer endogenous capital and adopt residual dividend policy. A lot of research suggests that the smaller the external financial constraints on companies, the higher the dividend level. China's capital market is still in rapid development and most companies are facing financial constraints, and so they do not pay dividend (Zhang and Wang, 2015) [13]. To protect the interests of investors, the Chinese government introduced a semi-mandatory dividend policy, which requires the companies that want to issue new securities to pay a certain percent of profits in the form of DIV. Hence, companies with refinancial needs are deliberately deployed to meet regulatory conditions (Wei et al, 2017) [14], leading to a policy pandering motive. Therefore, we build up the hypotheses H2 and H3:

H2: The greater the financial constraints, the more likely the company is to pay dividends.

H3: The greater the financial constraints, the lower the cash dividend level of the company.

2.3 Peer influence, financial constraints and dividend decisions

When the enterprise's own profit cannot meet the investment demand, there is an external financial demand. At this time, it is difficult to obtain external financial support, unless the obligation is accepted to pay higher financial costs and put up with additional financial constraints. When enterprises face higher financial constraints, the payment of DIV will reduce the inner funds of enterprises; however, the external financial demand will be greater, which will lead to the reduction of financial flexibility and the loss of company value. When enterprises face higher financial constraints, they will put their own factors in a more important position, and at the same time, they will not be able to imitate their peers even if they want, which leads to weakening of the impact of peer companies. Therefore, we build up the hypothesis H4:

H4: The greater the financial constraints, the less the company's dividend decision is affected by the peer companies.

3 Data and variables

3.1 Data

We use the data of China's stock-listed companies as the primary data from the China CSMAR database. The full sample runs from 2010 to 2019. Following previous studies (e.g. Leary and Roberts, 2014) [15], we

exclude financial and ST companies, companies that have only one peer in 1 year or listed for <3 years. The final screening of 2589 listed companies results in a total of 18,337 samples. We winsorise all variables at the 0.5 and 99.5 percentile levels to minimise the influence of outliers.

3.2 Variables

3.2.1 Dependent variables

In analysing the cash dividend decision of company i , we use three measures as decision of cash dividend. The first one is whether to pay a cash dividend (Div_dum). The second one is whether to pay the catering dividend (Div_cat). Following previous studies of Chen et al. (2015) [16], the ratio of total accumulated DIV in the last 3 years to the arithmetic average of distributable profits in the last 3 years is between 30% and 40%, i.e., Div_cat equals 1, otherwise equals 0. The third one is Div_lev , which is measured by the ratio of cash dividend per share to earnings per share.

3.2.2 Explanatory variables

The explanatory variable is peer influence dividend decisions. Peer firms are defined as all firms in the same first-level industry classification of China Securities Regulatory Commission (CSRC) as peer companies, except firm i , in a given year corresponding to dependent variables, measured by $Peer_dum$, $Peer_cat$ and $Peer_lev$, respectively. $Peer_dum$ refers to the proportion of companies that pay cash dividends among peers, $Peer_cat$ refers to the proportion of companies that pay catering dividends among peers and $Peer_lev$ refers to the average cash dividend level of the peers.

Because the interaction between companies in the same industry will produce endogenous problems, there are also identification challenges in empirical tests of peer influence. Similar to those used by Adhikari and Agrawal (2018) [5], we use two instrumental variables, which are peer average idiosyncratic equity shocks ($Peer_ir$) and peer idiosyncratic volatilities ($Peer_risk$). The calculation processes are as follows:

First, we use the Carhart four-factor model to calculate the monthly idiosyncratic stock return of the company i . The models are as follows:

$$R_{ijt} = \alpha_{ijt} + \beta_1 MKT_t + \beta_2 SMB_t + \beta_3 HML_t + \beta_4 MOM_t + \varepsilon_{ijt} \quad (1)$$

$$\hat{R}_{ijt} = \hat{\alpha}_{ijt} + \hat{\beta}_1 MKT_t + \hat{\beta}_2 SMB_t + \hat{\beta}_3 HML_t + \hat{\beta}_4 MOM_t \quad (2)$$

$$\text{Idiosyncratic Return}_{ijt} = \varepsilon_{ijt} = R_{ijt} - \hat{R}_{ijt} \quad (3)$$

Table 1 Carhart four-factor model regression descriptive statistics.

Indicators	Observations	Mean	Standard deviation	Minimum value	Maximum value
β_MKT	214608	1.107	0.382	-13.088	4.887
β_SMB	214608	0.811	1.214	-10.784	37.164
β_HML	214608	-0.446	1.133	-19.25	20.891
β_MOM	214608	0.007	0.327	-4.943	8.215
α	214608	0.006	0.054	-0.641	1.963
R_{ijt}	214608	0.008	0.138	-0.69	4.049
$\hat{R}_{ijt}$	214608	0.013	0.104	-1.239	1.797
<i>Idiosyncratic Return</i>	214608	-0.004	0.119	-1.803	3.629

R_{ijt} refers to the stock return of company i in industry j in month t . The MKT_t is the excess monthly market return, SMB_t is the size factor, HML_t is the book-to-market factor and MOM_t is the momentum factor. $\hat{R}_{ijt}$ is

the calculated expected return of company i in industry j in month t . The difference between the R_{ijt} and $\hat{R}_{ijt}$ is the monthly Idiosyncratic Return. The descriptive statistics of Carhart four-factor model coefficient, real return, expected return and monthly Idiosyncratic Return are shown in Table 1.

Then, we sum 12 months Idiosyncratic Return of company i in year T as the annual Idiosyncratic Return. The average annual Idiosyncratic Return of peers in industry j in year T is the $Peer_ir_{ijt}$. The standard deviation of the Idiosyncratic Return of peers in industry j in year T is $Peer_risk_{ijt}$.

3.2.3 Financial constraints

Financial constraint is measured by the KZ index, which is the most popular measure of financial constraints (Farre-Mensa, 2016) [17]. KZ index is also widely used as a measure of financial constraints in China (Li and Huang, 2020) [18]. In order to fit the actual condition of China, we combine currency funds and transactional financial assets as cash holdings (CASH); net operating cash flows (OCF) and DIV are standardised according to total assets at the end of last year. The other two factors are the assets–liabilities ratio (LEV) and Tobin's Q. By using ordinal Logit regression, the regression coefficients were significant at 1% and pseudo R^2 is 0.253. The KZ index regression model is:

$$\hat{KZ} = -3.969CASH - 8.690CF - 33.089DIV + 4.388LEV + 0.431Tobin'sQ$$

3.2.4 Control variables

Following the existing literature, the control variables include enterprise size (Size), cash ratio (Cash), total return on assets (ROA), growth rate (Growth), Tobin's Q, asset–liability ratio (Lev), established life (Life), equity nature (Soe) and equity concentration (Shr1). The definition of variables is shown in Table 2.

3.3 Models

We use model (4) to test whether the company i 's dividend decision is influenced by peers in China. To test the impact of financial constraints on company i 's dividend decision and the peer influence of dividend decision, we add KZ index and interaction item of peer influence and KZ index to model (4) to form model (5). If the interaction item's coefficient is significantly negative, it means financial constraints will weaken the peer influence of dividend decision.

$$Div_dum_{ijt}/Div_cat_{ijt}/Div_lev_{ijt} = \alpha_{ijt} + \beta_1 Peer_dum_{ijt}/Peer_cat_{ijt}/Peer_lev_{ijt} \quad (4)$$

$$Div_dum_{ijt}/Div_cat_{ijt}/Div_lev_{ijt} = \alpha_{ijt} + \beta_1 Peer_dum_{ijt}/Peer_cat_{ijt}/Peer_lev_{ijt} \quad (5)$$

4 Empirical analysis

4.1 Descriptive statistics

Table 3 is a descriptive statistic of the main variables. Descriptive statistics show that the average Div_dum is 0.74, the average Div_cat is 0.094 and the average Div_lev is 0.264, indicating that from 2010 to 2019, 74% of listed companies paid DIV, 9.4% of listed companies paid catering dividends and the average dividend per share of earnings per share is 26.4%.

4.2 Peer influence on dividend decision

In order to test whether the peers influence listed companies' dividend decision in China. The regression results show that controlling other related variables, the regression coefficient of $Peer_dum$ is 2.191 and is significantly positive at the level of 5%, indicating that there exists peer influence. The result means that the higher the proportion of peer companies that pay DIV, the greater the possibility is for the company that will pay

Table 2 Variable definitions.

Variable name	Symbol	Variable definitions
Dividend decisions	Div_dum	Whether or not to pay DIV, pay DIV of 1, or 0
	Div_cat	Whether or not to pay catering dividend, pay catering dividend of 1, or 0
	Div_lev	Dividend level, the ratio of dividend per share to basic earnings per share
Peer influence	Peer_dum	Share of companies in the industry with the exception of target companies
	Peer_cat	Share of companies with peers that pay dividends other than target companies
	Peer_lev	Average dividend level for peer companies other than target companies
Peer average idiosyncratic equity shocks	Peer_ir	Average idiosyncratic return of peer companies calculated by Carhart four-factor model
Peer idiosyncratic volatilities	Peer_risk	The standard deviation of idiosyncratic return of peer companies calculated by Carhart four-factor model
Financial constraints	KZ	Calculated according to regression model of KZ index
Company size	Size	Natural logarithm of total assets at the end of the period
Cash ratio	Cash	Cash and cash equivalents balance/current liabilities at end of the period
Growth rate	Growth	(Gross operating income for the year - gross operating income for the previous year)/Gross operating income for the previous year
Growth	Tobin's Q	Market value/total end assets
Return on total assets	ROA	Net profit/total average assets for the year
Asset-liability ratio	Lev	Total ending liabilities/total ending assets
Established years	Life	Natural logarithm of the number of years of incorporation
Equity nature	Soe	The nature of a state-owned enterprise is 1, or 0
Equity concentration	Shr1	Share of the largest shareholder

DIV, cash dividends; ROA, return on assets.

DIV. The estimated marginal effect of Peer_dum is 0.0053 when other variables are kept at their means, which suggests that compared to a company with no-dividend-paying peers, a company with all-dividend-paying peers is 0.53% more likely to pay dividends. The coefficients of Peer_cat and Peer_lev are positive but not significant, indicating that there is no significant peer influence on the level of DIV of listed companies in China. This conclusion is different from that of Adhikari and Agrawal (2018) and Grennan (2019), who take the western

Table 3 Descriptive statistics of major variables.

Variable	Observations	Mean	Standard deviation	Minimum value	Median	Maximum value
Div_dum	18337	0.740	0.439	0.000	1.000	1.000
Div_cat	18337	0.094	0.292	0.000	0.000	1.000
Div_lev	18337	0.264	0.316	0.000	0.198	1.962
Peer_dum	18337	0.706	0.083	0.143	0.704	1.000
Peer_cat	18337	0.090	0.038	0.000	0.087	1.000
Peer_lev	18337	0.270	0.073	0.029	0.278	0.400
KZ	18337	1.144	1.794	-4.526	1.332	4.867
Size	18337	22.399	1.277	19.961	22.226	26.240
Life	18337	2.871	0.285	2.079	2.890	3.526
ROA	18337	0.036	0.056	-0.225	0.033	0.195
Lev	18337	0.451	0.201	0.062	0.449	0.887
Cash	18337	0.667	0.987	0.023	0.343	6.511
Growth	18337	0.191	0.464	-0.520	0.108	3.146
Tobin's Q	18337	1.995	1.306	0.000	1.591	8.135
Soe	18337	0.443	0.497	0.000	0.000	1.000
Shr1	18337	35.080	15.007	8.448	33.255	74.890
Peer_ir	18337	-0.004	0.011	-0.055	-0.006	0.062
Peer_risk	18337	1.397	1.380	0.001	1.624	4.962

DIV, cash dividends; ROA, return on assets.

Table 4 Peer influence on dividend decision.

	Div_dum	Div_cat	Div_lev
Peer_dum	2.191** (0.028)		
Peer_cat		4.225 (0.151)	
Peer_lev			0.290 (0.297)
Control variables	yes	yes	yes
Year/Industry	yes	yes	yes
IV:			
	Peer_dum	Peer_cat	Peer_lev
Peer_risk	0.012*** (0.000)	0.002*** (0.000)	0.016*** (0.000)
Peer_re	-1.343*** (0.000)	-0.564*** (0.000)	-1.048*** (0.000)
Wald test	4.53**	3.34*	1.51
N	18337	18331	18337

Note: The values in parentheses are p values. ***, ** and * indicate significant at the levels of 1%, 5% and 10%, respectively.

DIV, cash dividends.

developed markets as the research background. The reason for this result in China may be mainly explained by the financial constraints. The capital market of China is an emerging market, and most enterprises face higher financial constraints, which limits their ability to imitate peers to issue higher dividend levels. Besides, the semi-mandatory dividend policy of China makes the enterprises adopt a strong policy catering motive and pay less attention to the dividend decision behaviour of the peers, which leads to a situation wherein the influence on a company from its peers is not obvious.

Table 5 Financial constraints, peer influence and dividend decision.

	Div_dum		Div_cat		(3) Div_lev	
	(1)	(2)	(3)	(4)	(5)	(6)
Peer_dum	2.246** (0.025)	2.371** (0.023)				
Peer_cat			3.818 (0.204)	5.428* (0.080)		
Peer_lev					0.304 (0.275)	0.254 (0.354)
Peer_dum*KZ		-0.002 (0.991)				
Peer_cat*KZ				-1.977*** (0.009)		
Peer_lev *KZ						-0.029 (0.417)
KZ	0.120*** (0.000)	0.120 (0.444)	0.182*** (0.000)	0.378*** (0.000)	-0.008*** (0.001)	0.000 (0.965)
Controls variables	Yes	Yes	Yes	Yes	Yes	Yes
Year/Industry	Yes	Yes	Yes	Yes	Yes	Yes
IV:						
	Peer_dum	Peer mk	Peer_lev	Peer_dum	Peer mk	Peer_lev
Peer _risk	0.012*** (0.000)	0.013*** (0.000)	0.002*** (0.000)	0.002*** (0.000)	0.016*** (0.000)	0.015*** (0.000)
Peer_ir	-1.341*** (0.000)	-1.485*** (0.000)	-0.563*** (0.000)	-0.661*** (0.000)	-1.046*** (0.000)	-0.872*** (0.000)
Peer _risk*KZ		-0.000** (0.043)		-0.000*** (0.000)		0.000 (0.707)
Peer_ir*KZ		0.102*** (0.000)		0.066*** (0.000)		-0.114*** (0.000)
Wald test	5.07**	6.66**	2.98*	6.64**	1.61	1.02
N	18337	18337	18331	18331	18337	18337

Note: The values in parentheses are p values. ***, ** and * indicate significant at the levels of 1%, 5% and 10%, respectively.

DIV, cash dividends.

4.3 Financial constraints, peer influence and dividend decision

To test the impact of financial constraints on the peer influence on dividend decision of listed companies in China, we use model (5). The results are shown in Table 5.

Columns (1), (3) and (5) in Table 5 show that the peer influence is still only significantly positive as respects the decision of whether or not to pay dividends. The coefficients of financial constraints are 0.120, 0.182 and -0.008; all are significant at the level of 1%, which shows that financial constraint has a positive effect on the decision of whether or not listed companies pay cash and whether to pay dividends.

Because peer influence is an endogenous variable, interaction item of peer influence and KZ index is also an endogenous variable. We construct the interaction variables of Peer_ir with KZ index and Peer_risk with KZ index as the instrumental variables of the interaction item. Columns (2), (4) and (6) in Table 5 add interaction items of peer influence and KZ index, which mainly focus on the relations of financial constraint and the peer influence of dividend decision. The coefficient of interaction item in Column (2) is -0.002, but not significant. It means that the higher the proportion of peers who pay DIV, the more likely a company is to pay DIV, no matter what level of financial constraints it is facing. The coefficient of interaction item in Column (4) is -1.1977 and is significant at 1%, which indicates that the higher the proportion of peer companies that pay catering dividends, the less likely the enterprise is to pay catering dividends if the financial constraints are higher. This is because the higher the proportion of companies that pay dividends among their peers, the greater the competition is in the capital market and the higher the refinancing costs. So the company that needs to refinance will tend to raise funds from banks; as a result, the peer influence is weakened. The coefficient of interaction item in Column (6) is -0.029, which shows that the financial constraints in China not only limit the ability to improve the level of DIV but also limit the ability to imitate peer companies to pay higher DIV. It is an important reason why peer influence is not significant.

Table 6 Robustness test of 4.4.1 and 4.4.2.

	Excluding samples that pay Bonus Shares			Add industry risk as a control variable		
	Div_dum (1)	Div_cat (2)	Div_lev (3)	Div_dum (4)	Div_cat (5)	Div_lev (6)
Peer_dum	2.215** (0.023)			2.150** (0.026)		
Peer_cat		4.448 (0.134)			4.116 (0.176)	
Peer_lev			0.299 (0.299)			0.322 (0.246)
Ind_risk				-0.431 (0.687)	-0.685 (0.654)	0.200 (0.474)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Year/Industry	Yes	Yes	Yes	Yes	Yes	Yes
IV:						
Peer_risk	0.012*** (0.000)	0.002*** (0.000)	0.016*** (0.000)	0.013*** (0.000)	0.001** (0.029)	0.016*** (0.000)
Peer_ir	-1.395*** (0.000)	-0.569*** (0.000)	-1.050*** (0.000)	-1.365*** (0.000)	-0.542*** (0.000)	-1.056*** (0.000)
Wald test	5.14**	3.63*	1.41	4.62**	3.16*	1.92
N	17831	17825	17831	18337	18331	18337

Note: The values in parentheses are p values. ***, ** and * indicate significant at the levels of 1%, 5% and 10%, respectively.

DIV, cash dividends.

4.4 Robustness check

In this paper, the robustness test is carried out in the following ways and the conclusions are robust.

4.4.1 Sample selection bias

In order to reduce the impact of bonus share on cash dividend issuance decisions, we exclude the sample that gives bonus share, and the regression results show that the decision of whether to pay DIV is positively affected by peers. However, there is still no significant peer influence on whether to pay catering dividends and dividend level, as shown in Columns (1), (2) and (3) of Table 6.

4.4.2 Add control variables

Firms may use similar dividend policies simultaneously in response to common industry shocks. To solve the endogenous problem of possible missing variables, we add industry risk (Ind_risk) as a control variable. We use the standard deviation of the difference between monthly industry return and monthly market return as industry risk. The regression results are shown in Columns (4), (5) and (6) of Table 6.

4.4.3 Alternative financial constraint measure

SA index is also widely used by scholars to measure financial constraints. We replace the KZ index in model (5) with the SA index. The regression results show that the peer influence is only significantly positive as regards the decision of whether to pay DIV, and is not significant as regards the decision of whether to pay catering dividends and the extent of payment that can be made; and the coefficient of interaction item is consistent with the previous part (Table 7).

4.5 Further research: Peer influence conduction path from the perspective of financial constraints

The studies by Adhikari and Agrawal (2018) [5] have found that cash dividend decisions of small-scale companies are influenced by both small-scale peers and large-scale peers, while large-scale companies are only affected by large-scale peers, which means peers influence is asymmetric. From the perspective of financial constraints, we study the transmission path between different financial constraint companies.

We define a company whose KZ index is higher than the average KZ index in industry j in year T as a high financial constraint company. Otherwise, it is a low financial constraint company. There are 8186 samples in the low financial constraint group, as against 10,151 samples in the high financial constraint group, reflecting that most companies in China are facing high financial constraints.

The peer influence of low financial constraint and that of high financial constraint are calculated according to different financial constraint levels. Model (5) is used to analyse whether the company is influenced by peers with the same financial constraints level or with different financial constraints levels. Then the path of peer influence conduction is analysed.

The results in Table 8 show that, for low financial constrained enterprises, the coefficient of low financial constrained peer influence is 1.824 and that of high financial constrained peer influence is 2.142, but they are not significant. For high financial constrained companies, the coefficient of low financial constrained peer influence is 2.478 and that of high financial peer influence is 2.868; all are significant at the level of 10%, indicating that enterprises facing higher financial constraints are more likely to imitate peers, regardless of the financial constraints of peer companies. In other words, there are two paths to conduct the peer influence of the decision on whether to pay cash dividends: one is that the low financial constraint enterprise transmits to the high financial constraint enterprise and the other is that the high financial constraint enterprise transmits to the high financial constraint enterprise.

Table 7 Robustness test of 4.4.3.

	Div_dum		Div_cat		Div_lev	
	(1)	(2)	(3)	(4)	(5)	(6)
Peer_dum	2.170** (0.029)	9.337 (0.430)				
Peer_cat			4.335 (0.141)	-62.262*** (0.000)		
Peer_lev					0.285 (0.305)	-1.052 (0.387)
Peer_dum*SA		1.763 (0.551)				
Peer_cat*SA				-17.143*** (0.000)		
Peer_lev *SA						-0.352 (0.245)
SA	-0.857*** (0.000)	-2.126 (0.318)	-1.165*** (0.000)	0.516 (0.244)	-0.080*** (0.009)	0.011 (0.895)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Year/Industry	Yes	Yes	Yes	Yes	Yes	Yes
IV:						
Peer_risk	0.012*** (0.000)	-0.008 (0.119)	0.002*** (0.000)	-0.004 (0.111)	0.016*** (0.000)	-0.001 (0.902)
Peer_ir	-1.343*** (0.000)	0.755 (0.349)	-0.564*** (0.000)	-1.261*** (0.003)	-1.048*** (0.000)	3.025*** (0.000)
Peer_risk*SA		-0.005*** (0.000)		-0.001** (0.017)		-0.004*** (0.000)
Peer_ir*SA		0.544*** (0.008)		-0.180* (0.093)		1.054*** (0.000)
Wald inspection	4.59**	5.58*	3.44*	14.6***	1.47	2.05
Sample size	18337	18337	18331	18331	18337	18337

Note: The values in parentheses are p values. ***, ** and * indicate significant at the levels of 1%, 5% and 10%, respectively.

DIV, cash dividends.

5 Conclusions

Based on the sample of stock-listed companies from 2010 to China, this paper analyses the peer influence on cash dividend policy and the influence of financial constraints on dividend decision peer influence. It is found that (1) the decision of whether to pay DIV is significantly influenced by peers, but the decision of whether to pay catering dividends and the extent of dividend that can be paid are not significantly affected by peers. (2) Under the semi-mandatory dividend policy in China, financial constraints will significantly increase the willingness of companies to pay DIV, but will significantly reduce the dividend level and make the peer influence on the dividend level not significant. (3) Peer influence on DIV decision is more pronounced among companies that face high financial constraints, meaning that the peer influence is mainly conducted from low financial constrained companies and high financial constrained companies to high financial constrained companies.

Table 8 Peer influence conduction path in different financial constrained companies.

	Div_dum			
	Low financial constraints		High financial constraints	
Low Financial Constraint Group	1.824		2.478*	
Peer_dum	(0.167)		(0.060)	
High Financial Constraint Group		2.142		2.868*
Peer_dum		(0.176)		(0.063)
Control variables	Yes	Yes	Yes	Yes
Year/Industry	Yes	Yes	Yes	Yes
IV:				
Peer_risk	0.017*** (0.000)	0.006*** (0.000)	0.007*** (0.000)	0.019*** (0.000)
Peer_ir	-2.046*** (0.000)	-1.757*** (0.000)	-1.611*** (0.000)	-2.068*** (0.000)
Wald Inspection	1.17	1.04	4.72**	3.11*
Sample size	8184	8186	10151	10151

Note: The values in parentheses are p values. ***, ** and * indicate significant at the levels of 1%, 5% and 10%, respectively.

DIV, cash dividends.

References

- [1] Li, Z Wei, S Wu, A Study on Market Reactions to the Semi-mandatory Dividend Policy, *Economic Research Journal*, no. 3, pp. 144-155, 2010.
- [2] Z Wang, W Zhang, A Study on Financial Flexibility, Refinancing Options and Dividend Catering Strategies of Listed Companies, *Management World*, no. 7, pp. 151-163, 2012.
- [3] Z Wei, M Li, C Li, The Semi-mandatory Dividend Rules and Dividend Behaviors of Chinese Listed Firms, *Economic Research Journal*, no. 6, pp. 100-114, 2014.
- [4] Wao, H Luo, Y Zeng, Study on the Effect of Semi-compulsory Dividend Policy—Empirical Evidence from Listed Companies in China, *Macroeconomics*, no. 8, pp. 27-40+51, 2018.
- [5] B K Adhikari, A Agrawal, Peer Influence On Payout Policies, *Journal of Corporate Finance*, no. 48, pp. 615-637, 2018.
- [6] J Grennan, Dividend Payments As a Response To Peer Influence, *Journal of Financial Economics*, vol. 131, no. 3, pp. 549-570, 2019.
- [7] Z Ding, B Li, Regional Peer Effect of Dividend Policy of Listed Companies, *Journal of South China Normal University (Social Sciences Edition)*, no. 3, pp. 95-107+192, 2020.
- [8] Li, L Han, D Ma, A Study on the Peer Effect of Cash Dividend Policy of Listed Companies, *Communication of Finance and Accounting*, no. 10, pp. 29-33+38, 2020.
- [9] Wang, P Zhang, S Zhang, Peer Effects in Corporate Cash Dividends Policy, *Systems Engineering-Theory & Practice*, vol. 41, no. 01, pp. 1-14, 2021.
- [10] B Lieberman, S Asaba, Why Do Firms Imitate Each Other? *Academy of Management Review*, vol. 31, no. 2, pp. 366-385, 2006.
- [11] J Tirole, *The Theory of Corporate Finance*, Princeton University Press, 2006.
- [12] S Fazzari, R G Hubbard, B C Petersen, Financing Constraints and Corporate Investment, *Brookings Papers on Economic Activity*, no. 1, pp. 141-195, 1988.
- [13] W Zhang, Z Wang, How Geography Influences Dividend Policy: “Substitute Model” or “Outcome Model”? *Economic Research Journal*, vol. 50, no. 5, pp. 76-88, 2015.
- [14] Z Wei, C Li, Y Wu, J Huang, The Semi-mandatory Dividend Rules, Refinancing Motivation and Classical Dividend Theories—An Empirical Study Based on Agent Theory and Signaling Theory, *Accounting Research*, no. 7, pp. 55-61+97, 2017.
- [15] T Leary, M R Roberts, Do Peer Firms Affect Corporate Financial Policy? *The Journal of Finance*, vol. 69, no. 1, pp. 139-178, 2014.
- [16] Y Chen, X Li, M Li, Catering Cash Dividend Decision Refinancing Needs and Corporate Investment—Policy Effectiveness of Semi-mandatory Cash Dividend under Investment Efficiency Perspective, *Accounting Research*, no. 11, pp.

69-75+97, 2015.

- [17] J L A Farre-Mensa, Do Measures of Financial Constraints Measure Financial Constraints? *The Review of Financial Studies*, vol. 2, no. 29, pp. 271-308, 2016.
- [18] W Li, S Huang, Related Large Shareholders and Financial Constraints: Evidence from 'Xi Zu' Group, *Accounting Research*, no. 2, pp. 74-89, 2020.

This page is intentionally left blank