MONETARY LOOSENING AND DIVIDEND POLICY: EVIDENCE FROM VIETNAMESE STOCK MARKET

Quoc Trung Tran[*], Xuan Minh Nguyen, Thi Hoang Anh Nguyen, Thi Mai Nguyen, and Thi Thuy Trang Truong

Foreign Trade University, Ho Chi Minh City Campus, 15 D5 Street, Ward 25, [7] Binh Thanh District, Ho Chi Minh City, Vietnam

[*]Corresponding author: tranquoctrung.cs2@ftu.edu.vn

ABSTRACT

Vietnam is a promising laboratory to examine the effect of monetary loosening policy on corporate dividend decisions due to the following reasons: (1) Vietnamese government conducts monetary loosening policy continuously between 2007 and 2017; (2) the monetary policy relies mainly on money supply; and (3) credit channel is the dominant monetary transmission channel. With a research data including 4,493 observations from 2008 to 2017, we find that both the choice to pay dividends and dividend payout ratio are positively affected by money supply and this effect is mitigated by corporate cash holdings. In addition, money supply is positively related to speed of dividend adjustment.

Keywords: money supply, dividend policy, emerging market, monetary loosening, stock market

INTRODUCTION

After a pioneer research conducted by Black (1976), dividend puzzle is studied intensely by financial economists and becomes one of the most interesting topics in corporate finance. According to Miller and Modigliani (1961), capital markets are perfect and dividend policy is irrelevant. Actually, corporate dividend decisions are significantly affected by market frictions. The extant literature shows that

information asymmetry between firm managers and outside investors is an important determinant of corporate dividend policy. According to the pecking order theory developed by Myers and Majluf (1984), firms decide to issue new securities to finance their investment opportunities only when their private information indicates that these securities are overvalued. Understanding this manipulation behaviour, outside investors are willing to purchase them only at low prices. Therefore, firms are reluctant to raise external funds and tend to restrict dividends to save retained earnings for available investment opportunities. Many prior studies find that firms with more investment opportunities, better access to external funds, and higher costs of external financing are less likely to pay dividends in the United States (Alli et al., 1993; Holder et al., 1998; Jiraporn et al., 2011), Bangladesh (Mollah, 2001), Ghana (Amidu & Abor, 2006), Jordan (Al-Malkawi, 2007), Canada (Baker et al., 2007), Thailand (Thanatawee, 2011) and across countries (Cao et al., 2017; Denis & Osobov, 2008; Tran et al., 2017). However, there are relative few studies investigating how corporate dividend policy is determined by monetary policy that may change the availability and the costs of external financing.

Among four major transmission channels of monetary policy, credit channel is the most effective mechanism to explain how monetary policy affects corporate financial decisions in an emerging market due to its under-developed and bank-based financial system (Mengesha & Holmes, 2013; Yang et al., 2017). Credit transmission channel includes bank lending mechanism and broad credit mechanism. The former states that monetary loosening (tightening) policy increases (decreases) bank reserves and deposits that increase (decrease) the availability of bank loans. The latter posits that the asymmetry of information between borrowers (i.e., firms) and lenders (i.e., financial intermediaries and markets) results in a premium in the cost of external funds over the cost of internal funds (Oliner Stephen & Rudebusch, 1996). Consequently, monetary tightening (loosening) would increase (decrease) the cost of external financing relative to internal financing. Therefore, monetary tightening (loosening) policy affects negatively (positively) corporate dividend policy through its positive (negative) effect on external financing. In this paper, we argue that Vietnamese stock market is a promising laboratory to investigate how monetary policy affects corporate dividend policy via credit channel due to three reasons. First, during the period from 2007 to 2017, Vietnamese government pursued monetary loosening policy continuously to enhance economic growth. Second, as an emerging market, Vietnam has an under-developed financial system characterised by a small bond market dominated by government bonds, a weak competition banking system dominated by state-owned banks and a strong informal financial system (Nguyen, 2018; Thanh et al., 2011). These characteristics make policy interest rate ineffective in monetary policy and the State Bank of Vietnam uses money supply as a key instrument of its monetary policy. Many studies find

supporting evidence of quantity-based mechanism in Vietnam (Anwar & Nguyen, 2018; Bhattacharya, 2014; Nguyen et al., 2012). Third, many prior studies show that credit channel is the dominant monetary transmission channel in Vietnam (Hung & Pfau, 2009; Nguyen, 2015). In this paper, we hypothesise that monetary loosening leads to lower costs of external financing and thus firms tend to increase their dividends.

First, we use both logit and tobit models to investigate the effect of monetary loosening on the propensity to pay dividends and dividend payout ratio respectively. In addition, Yang et al. (2017) find that cash holdings are able to mitigate the effect of monetary policy on firm investment; therefore, we also insert an interactive term between money supply growth and cash holdings into these logit and tobit regression models to examine how corporate liquidity influences the relationship between loosening monetary policy and dividend decisions. Second, following Pandey and Bhat (2007), we develop a dynamic model to analyse how money supply growth affects the speed of dividend adjustment. We use M2 growth rate as a proxy for monetary policy. Control variables include firm profitability, financial leverage, asset tangibility, firm size, Tobin's Q, asset growth, retained earnings, and bank relationship. With a sample of 4,493 observations from 751 listed firms in Vietnamese stock market over the period from 2008 to 2017, we find that money supply growth is positively related to both the choice to pay dividends and the magnitude of dividends. Corporate cash holdings are able to mitigate the effect of monetary expansion on dividend policy. Furthermore, money supply growth is positively associated with the speed of dividend adjustment.

This study contributes to the literature on corporate financial decisions by providing evidence that monetary loosening policy affects corporate dividend policy via credit transmission channel. Moreover, our research findings imply that corporate managers should follow monetary supply to predict its effects on corporate activities and prepare proactive plans. Policy makers also have more understandings on the transmission channel of monetary loosening policy and thus conduct the policy more effectively.

The rest of this paper is organised as follows. The second section presents institutional environment, literature review and hypothesis development. The third describes research models and data collection. The fourth section reports regression results, and the fifth section presents main conclusions.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Miller and Modigliani (1961) posit that corporate dividend policy is irrelevant since they assume that the capital market is perfect. However, there are many market frictions in the real world and corporate dividend decisions are determined by several factors. Prior research shows that one of the most common determinant of dividend policy is the information asymmetry between managers and outside investors. According to the pecking order theory developed by Myers and Majluf (1984), firm managers have an informational advantage over outside investors and they only raise external funds to finance available investment opportunities with new issues if they know that these new securities are overvalued. Investors recognising this problem tend to place a lower value to the new issues. Consequently, firms prefer internal funds to external funds and thus they tend to save retained earnings for their investment projects instead of distributing dividends. There are many prior studies that document empirical supporting evidence for the pecking order theory (Aivazian et al., 2003; Al Shabibi & Ramesh, 2011; Al-Malkawi, 2007; Al-Najjar & Hussainey, 2009; Cao et al., 2017; Denis & Osobov, 2008; Fama & French, 2001; Holder et al., 1998; Jabbouri, 2016; Jensen et al., 1992; Jiraporn et al., 2011; Kowalewski et al., 2007; Thanatawee, 2011; Tran et al., 2017).

The extant literature also shows that monetary policy may be transmitted to the real economy through four major transmission channels including credit channel, interest rate channel, equity price channel, and exchange rate channel (Nguyen, 2015; Vo & Nguyen, 2017). Bank lending mechanism states that monetary policy affects both bank assets (loans) and banks' liabilities (deposits). An expansionary monetary policy that raises bank reserves and bank deposits increase the availability of bank loans (Ciccarelli et al., 2015). Empirical evidence of bank lending mechanism is found in many countries namely Europe (Altunbaş et al., 2002), China (Fungáčová et al., 2016; Gunji & Yuan, 2010) and Malaysia (Abdul Karim et al., 2011). When firms have better access to bank credit to finance their investment opportunities, they are more likely to pay dividends. In addition, broad credit mechanism states that information asymmetry between firms and their creditors is present when lenders process loan applications (adverse selection) and monitor the credit contracts (moral hazard problems). Since lenders have an information disadvantage over firm managers, they only provide firms with funds if firms agree to pay them premium that makes external financing more expensive than internal financing. When the government conducts an expansionary monetary policy, the cost of external financing is lower (Oliner Stephen & Rudebusch, 1996). Prior empirical studies document that the broad credit channel is operational in monetary policy transmission in the United States (Bernanke & Gertler, 1995; Christensen & Dib, 2008; Warner & Georges, 2001) and European

countries including Portugal, Ireland, Italy, Greece, and Spain (Ciccarelli et al., 2015). When the cost of external finance is comparatively lower under the impact of monetary loosening policy, firms are more likely to pay dividends (Myers & Majluf, 1984). Pandey and Bhat (2007) use a dummy variable to analyse how a monetary restriction affects corporate payout ratio in India and find that a monetary tightening negatively affects dividends. It can cause about a 5%–6% decrease in payout ratio. In this paper, we examine the effect of monetary loosening on both the choice to pay dividends and the magnitude of dividends.

We find that Vietnam is an interesting institutional environment to investigate the impact of monetary loosening on dividend policy because of three reasons. First, Vietnamese government maintains monetary expansion to stimulate economic growth over a long period from 2007 to 2017. Second, as an emerging market, Vietnam has an under-developed financial system that makes the price-based mechanism of monetary policy ineffective and the quantity-based mechanism becomes the key instrument (Smets & Wouters, 2002). Vietnamese securities market was established in 2000 and is significantly developing since 2005. Therefore, Vietnamese bond market is still small and dominated by government bonds. This status of the bond market hampers the channel in which short-term policy rate is transmitted to the yield curve (Moreno, 2008). In addition, competition in the banking system is weak. Four state-owned banks including Agribank, BIDV, Vietcombank and Vietinbank are the largest financial institutions with approximately 50% market share. In addition, commercial banks are controlled strictly by the State Bank of Vietnam. Consequently, banks incur high costs for processing information, evaluating projects, and monitoring borrowers. They continuously maintain high bank reserves and policy rate cannot have efficient effects on deposit and lending rates (Agénor & El Aynaoui, 2010). Furthermore, Vietnam has a strong informal financial system. Many studies show that SMEs and households in Vietnam raise funds from informal lenders as an alternative to formal credit (Nguyen, 2018; Thanh et al., 2011). When policy rate is increased, borrowers may switch to informal sources of finance with lower financing costs and this increase is not effective. As a result, the State Bank of Vietnam uses money supply as the major instrument of monetary policy. Nguyen (2015) examines potential channels of monetary transmission in Vietnam during the period from 1995 to 2009 with monthly data and find that the changes in money supply have significant effects on output in the short run through the exchange rate and the credit channel. Vo and Nguyen (2017) investigate monetary policy transmission in Vietnam with monthly data between January 2003 to December 2012 and find that credit channel is effective while there is no significance evidence for both the exchange rate channel and the asset price channel. Anwar and Nguyen (2018),

and Hung and Pfau (2009) also document empirical supporting evidence for credit channel in Vietnam.

Based on the extant literature and the institutional environment of Vietnam, we argue that when money supply increases under a monetary loosening policy, firms incur lower costs of external financial and thus they are less likely to retain earnings for future investment. Therefore, a loosening monetary policy makes firms pay more dividends.

H_1: Dividend policy is positively affected by money supply growth

In addition, dividend payment is a means to disgorge cash. Several studies find a positive relationship between corporate cash holding and dividend policy (Brockman & Unlu, 2009; Tran et al., 2017). We argue that firms with more cash holdings are less likely to rely on external finance and they are more flexible to manage their dividend policy. Therefore, the effect of a monetary loosening on corporate dividend policy is mitigated by corporate cash reserves.

H_2: Corporate cash holdings mitigates the positive effect of money supply growth on dividend policy

Furthermore, based on a pioneer field study on the United State firms' dividend decisions, Lintner (1956) proposes a partial adjustment model to describe corporate dividend behaviour. Accordingly, firms partially adjust their dividend towards target payout ratio every year. Pandey and Bhat (2007) use a dummy variable to proxy tightening policy and find that a monetary restriction has a significant impact on dividend payout behaviour. We argue that under a monetary expansion, firms have better access to credit and incur lower transaction costs; therefore, they tend to increase dividend smoothing and speed of adjustment.

H_3: Money supply growth positively affects dividend smoothing and speed of adjustment

RESEARCH METHODS

In this section, we design research models to test our research hypothesis and describe research data. First, we employ logit and tobit regression models to examine how monetary loosening affects the choice to pay dividends and payout ratio respectively and the role of cash holdings to mitigate this effect. Furthermore, we develop a dynamic model to investigate the effect of money supply growth

on the speed of dividend adjustment. Second, we present how to construct our research sample, its distribution and descriptive statistics of key research variables.

Research Models

In line with Brockman and Unlu (2009), Shao et al. (2013), and Tran et al. (2017), we investigate effect of money supply on both the propensity to pay and dividend magnitude with the following models.

$$PAY_t = \alpha + \beta_1 MGR_{t-1} + \beta_2 CAS_t + \beta_3 ROA_t + \beta_4 LEV_t + \beta_5 TAN_t + \beta_6 SIZ_t +$$
$$\beta_7 TOB_t + \beta_8 GRO_t + \beta_9 REA_t + \beta_{10} BAR_t + \eta Industry\ dummies + \varepsilon \tag{1}$$

$$DPR_t = \alpha + \beta_1 MGR_{t-1} + \beta_2 CAS_t + \beta_3 ROA_t + \beta_4 LEV_t + \beta_5 TAN_t + \beta_6 SIZ_t +$$
$$\beta_7 TOB_t + \beta_8 GRO_t + \beta_9 REA_t + \beta_{10} BAR_t + \eta Industry\ dummies + \varepsilon \tag{2}$$

In the equations, PAY_t is paying propensity assigned 1 if firms pay dividend in year t and 0 otherwise. DPR is dividend payout ratio ratio measured by dividend deflated by total assets in year t. Besides, to extend this line of analysis, we replace PAY_t in Equation 1 by dividend initiation (INI_t) and dividend omission (OMT_t), separately. INI_t is assigned 1 if firms fail to pay dividend in year t–1 but pay dividend in year t and 0 otherwise. OMT_t is assigned 1 if firms pay dividend in year t–1 but fail to pay dividend in year t. MGR_{t-1} is the growth rate of money supply M2 in year t–1. We use the first lag of M2 growth rate since one year is a common lag in effect of monetary policy in prior studies (Bhattacharya, 2014; Yang et al., 2017). The coefficient β_1 is expected to be positive. ROA_t is firm profitability measured by return on assets ratio in year t. When firms are more profitable, they tend to pay more dividend (Fama & French, 2001). CAS_t is cash holding calculated by total cash and cash equivalents deflated by total assets in year t. Higher cash holding may lead to more dividend distribution since dividend is a means to disgorge cash (DeAngelo et al., 2006). LEV_t is firm leverage measured by total liabilities to total assets ratio in year t. TAN_t is tangibility measured by net fixed assets divided by total assets in year t. SIZ_t is firm size calculated by natural logarithm of total assets in year t. According to pecking order theory, firms with higher leverage, lower tangibility and smaller size face higher costs of external financing (Myers & Majluf, 1984). Therefore, they retain more earnings for future projects. TOB_t is Tobin's Q measured by market value of equity plus book value of liabilities deflated by assets in year t. GRO_t is firm growth calculated by growth rate of total assets in year t. Firms with more investment opportunities represented by Tobin's Q and firm growth are less likely to pay dividend. REA_t is firm maturity measured by retained earnings deflated by total assets in year t. According to life cycle theory, mature firms have fewer investment opportunities and they tend to

distribute more dividend (Grullon et al., 2002). BAR_t is bank relationship measured by total bank debt to assets ratio in year t. When bank relationship is stronger, firms incur lower transaction costs and their dividend payout ratio is higher. Expected signs of explanatory variables are presented as follows: MGR_{t-1} (+), CAS_t (+), ROA_t (+), LEV_t (-), TAN_t (+), SIZ_t (+), TOB_t (-), GRO_t (-), REA_t (+), BAR_t (+).

In addition, to examine how corporate cash holdings reduce the effect of monetary expansion on dividend policy, we employ an interactive term between cash holdings and the growth of money supply.

$$PAY_t = \alpha + \beta_1 MGR_{t-1} + \beta_2 CAS_t + \beta_3 MGR_{t-1}{}^* CAS + \beta_4 ROA_t + \beta_5 LEV_t +$$
$$\beta_6 TAN_t + \beta_7 SIZ_t + \beta_8 TOB_t + \beta_9 GRO_t + \beta_{10} REA_t + \beta_{11} BAR_t + \qquad (3)$$
$$\eta \text{Industry dummies} + \varepsilon$$

$$DPR_t = \alpha + \beta_1 MGR_{t-1} + \beta_2 CAS_t + \beta_3 MGR_{t-1}{}^* CAS_t + \beta_4 ROA_t + \beta_5 LEV_t +$$
$$\beta_6 TAN_t + \beta_7 SIZ_t + \beta_8 TOB_t + \beta_9 GRO_t + \beta_{10} REA_t + \beta_{11} BAR_t + \qquad (4)$$
$$\eta \text{Industry dummies} + \varepsilon$$

The coefficient β_3 in both Equations 3 and 4 is expected to be negative.

According to dividend irrelevance theory developed by Miller and Modigliani (1961), both investors and firms are indifferent between dividends and retained earnings in a perfect capital market. However, in the real world, corporate dividend policy is determined by many market frictions. Firms decide to distribute earnings as dividends when marginal benefits exceed marginal costs of dividend payment. Following Brockman and Unlu (2009), Shao et al. (2013), and Tran et al. (2017), we use the pooled logit regression model to estimate Equations 1 and 3 since the choice to pay dividends (PAY) is a binary variable. In addition, from econometric perspective, the DPR is left-censored; therefore, using ordinary least squares (OLS) regression for the full sample including both payers and non-payers or the reduced sample with only payers leads to biased results due to the problem of selection bias. Following many prior studies (Ashraf & Zheng, 2015; Cao et al., 2017; Tran et al., 2017), we employ the pooled Tobit regression to estimate Equations 2 and 4 with the full sample to avoid this problem (Wooldridge, 2010).

Moreover, we continue to investigate how money supply affects the speed of dividend adjustment by adding an interaction between money supply growth and dividend per share to Lintner's partial adjusted model modified by Fama and Babiak (1968) as follows:

$$\text{DPS}_t = \alpha + \beta_1\text{EPS}_t + \beta_2\text{EPS}_{t-1} + \beta_3\text{DPS}_{t-1} + \beta_4\text{MGR}_{t-1} + \beta_5\text{MGR}_{t-1}$$
$$^*\text{DPS}_{t-1} + \beta_6\text{CAS}_t + \beta_7\text{ROA}_t + \beta_8\text{LEV}_t + \beta_9\text{TAN}_t + \beta_{10}\text{SIZ}_t + \qquad (5)$$
$$\beta_{11}\text{TOB}_t + \beta_{12}\text{GRO}_t + \beta_{13}\text{REA}_t + \beta_{14}\text{BAR}_t + \eta\text{Industry dummies} + \varepsilon$$

In the equation, DPS_t is dividend per share in year t, EPS_t is earnings per share in year t, EPS_{t-1} is earnings per share in year t–1, and DPS_{t-1} is dividend per share in year t–1. The speed of adjustment is $1 - (\beta_{3} + \beta_5\text{MGR}_{t-1})$; therefore, β_5 is expected to be negative.

According to Mileva (2007) and Roodman (2009), in order to control endogeneity problems and autocorrelation, generalised method of moments (GMM) regression should be employed to estimate a dynamic instead of OLS or fixed effect and random effect models. Therefore, Equation 5 is estimated with two-step system GMM regression with finite sample correction for standard errors (Windmeijer, 2005). Besides, fixed effect and random effect models with robust standard errors are also used as robustness checks. All firm-level variables are winsorised at 1% and all regression models are run with industry dummies in order to control outlier effect and industry effect respectively.

Research Data

To construct research data, we collect data from all non-financial firms listed in two stock exchanges in Vietnam. Financial information is supplied by Stoxplus. Money supply (M2) growth is collected from the statistics of the Asian Development Bank. After eliminating observations with missing information, we obtain the final sample of 4,493 firm-years from 751 firms during the period from 2008 to 2017. Since the research period includes the financial crisis, we have controlled the potential effect of this crisis by adding a crisis dummy into all regression models. The dummy is assigned 1 if firm-years belong 2008 or 2009 and 0 otherwise. We find that our research findings remain stable.

Table 1 presents description of research data. Panel A shows that the annual number of firms rises sharply from 233 to 409 over the period from 2008 to 2010, then it starts to increase slightly from 2012. In 2017, there are 577 firms included in the research sample. Panel B reports number of firm-years by industry in accordance with the Industry Classification Benchmark (ICB) classification. Oil and gas constitutes the smallest proportion of firms with 1% while industrials accounts for the largest percentage at 45.27%. Consumer services and basic materials range

from 14.5% to 16.5%. Consumer goods is at 9.59% while technology and health care consist of 3% to 4% of the sample.

Table 1.
Description of research sample

Annual number of firms					
Year	N	Percent	Year	N	Percent
2008	223	4.96	2013	479	10.66
2009	300	6.68	2014	496	11.04
2010	409	9.10	2015	533	11.86
2011	453	10.08	2016	555	12.35
2012	468	10.42	2017	577	12.84
Industry distribution					
Industry	N	Percent	Industry	N	Percent
Oil & gas	45	1.00	Health care	163	3.63
Basic materials	656	14.60	Consumer services	720	16.02
Industrials	2,034	45.27	Utilities	273	6.08
Consumer goods	431	9.59	Technology	171	3.81

Table 2 presents descriptive statistics of key research variables. There are 77% of firms in the research sample which are dividend payers. On average, dividend accounts for 3.1% of total assets and dividend per share is 1,124 VND while earnings per share is 2,591 VND. M2 grows at about 21.4% per year and the growth rate ranges from 12.1% to 46.1%. Average return on assets is 6.4% and approximately 50% of corporate assets are financed by debt.

Table 2.
Descriptive statistics

Variables	Mean	Median	SD	Min	Max
PAY_t	0.777	1.000	0.417	0.000	1.000
DPR_t	0.031	0.019	0.038	0.000	0.201
DPS_t	1.124	0.918	1.190	0.000	5.959
EPS_t	2.591	1.904	2.813	−3.322	13.979
MGR_{t-1}	0.214	0.185	0.082	0.121	0.461
CAS_t	0.102	0.062	0.111	0.001	0.537

Table 2. (*continued*)

Variables	Mean	Median	SD	Min	Max
ROA_t	0.064	0.050	0.071	–0.132	0.320
LEV_t	0.494	0.518	0.222	0.043	0.906
TAN_t	0.210	0.149	0.195	0.000	0.837
SIZ_t	26.891	26.793	1.448	23.740	30.801
TOB_t	1.054	0.846	0.772	0.203	4.589
GRO_t	0.140	0.846	0.292	–0.343	1.694
REA_t	0.063	0.050	0.089	–0.271	0.349
BAR_t	0.378	0.383	0.210	0.010	0.828

Notes: PAY = paying propensity; DPR = dividend payout ratio; DPS = dividend per share; MGR = M2 growth rate; ROA = firm profitability; CAS = cash holding; LEV = firm leverage; TAN = tangibility; SIZ = firm size; TOB = Tobin's Q; GRO = firm growth; REA = firm maturity; BAR = bank relationship; DPS is dividend per share; EPS = earnings per share.

RESEACH RESULTS

Table 3 reports regression results of the baseline models to investigate the effect of M2 growth on dividend policy and the expanded models to analyse how cash holdings mitigate this effect. We find that M2 growth rate is positively related to the choice to pay dividends and payout ratio at 1% of significance. These findings are supporting evidence for credit transmission channel of monetary policy. When money supply is larger, credit is more available and the costs of external financing is lower under the effects of bank lending mechanism and broad credit mechanism; consequently, firms tend to raise more external funds to finance their investment projects and they are more likely to pay dividends. In addition, we also find a positive relationship between dividend initiation and M2 growth rate. This indicates that a monetary loosening also makes firms more likely to initiate their dividend payment after a dividend omission.

Moreover, our estimation results also show that the interactive term between M2 growth rate and cash holdings is negatively related to both the choice to pay and the magnitude of dividends. In line with Yang et al. (2017), these findings imply that firms with higher cash holdings are less affected by a monetary loosening. A higher M2 growth rate leads to a decrease in the cost of external financing; however, firms with more cash reserves are more flexible in their investment decisions and thus their dividend policy is less influenced by a monetary expansion. Besides, consistent with Denis and Osobov (2008), Fama and French (2001), and Tran et al. (2017), we find that firm profitability and firm growth affects dividend

policy positively and negatively respectively. Firms with higher growth rate have more investment opportunities; therefore, they need to restrict dividends in order to avoid external financing as suggested by the pecking order theory (Myers & Majluf, 1984).

Table 3.
Monetary loosening, dividend policy and mitigating effect of cash

	Baseline model		Initiation and omission		Mitigating effect of cash	
	PAY_t	DPR_t	INT_t	OMT_t	PAY_t	DPR_t
MGR_{t-1}	2.6617***	0.0257***	2.9728***	−0.2672	3.5580***	0.0405***
	(4.79)	(3.58)	(4.77)	(−0.36)	(4.95)	(4.04)
CAS_t	5.2619***	0.0356***	−0.7806	−2.0856***	8.0380***	0.0685***
	(5.44)	(4.57)	(−1.34)	(−2.83)	(5.12)	(3.54)
$MGR_{t-1}*CAS_t$					−13.5299*	−0.1585**
					(−1.95)	(−1.97)
ROA_t	11.0491***	0.3563***	−0.5338	−9.6390***	11.1009***	0.3586***
	(6.36)	(14.03)	(−0.39)	(−5.54)	(9.60)	(14.08)
LEV_t	2.4335***	−0.0102*	−0.1312	−0.9934*	2.4207***	−0.0103*
	(4.41)	(−1.73)	(−0.25)	(−1.66)	(5.82)	(−1.76)
TAN_t	0.6211*	0.0044	0.3245	−0.1815	0.6214***	0.0044
	(1.88)	(1.16)	(1.18)	(−0.62)	(2.73)	(1.15)
SIZ_t	0.1794***	−0.0007	−0.0779*	−0.1047**	0.1813***	−0.0007
	(3.55)	(−1.12)	(−1.84)	(−2.41)	(5.26)	(−1.09)
TOB_t	−0.1145	0.0042***	−0.1567	0.0306	−0.1192	0.0041***
	(−1.23)	(3.06)	(−1.60)	(0.33)	(−1.61)	(2.99)
GRO_t	−0.9125***	−0.0299***	0.7197***	−0.0553	−0.9083***	−0.0298***
	(−6.24)	(−12.86)	(4.54)	(−0.31)	(−6.74)	(−12.87)
REA_t	6.0813***	0.0134	0.6886	2.9381***	6.0480***	0.0126
	(4.45)	(0.75)	(0.76)	(3.02)	(8.06)	(0.71)
BAR_t	−0.1120	0.0067	0.4390	1.1922*	−0.1008	0.0068
	(−0.20)	(1.22)	(0.81)	(1.88)	(−0.23)	(1.24)
Intercept	−6.0069***	0.0204	−0.7420	0.9221	−6.2451***	0.0167
	(−4.42)	(1.24)	(−0.67)	(0.81)	(-6.51)	(0.99)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes

Table 3: (continued)

	Baseline model		Initiation and omission		Mitigating effect of cash	
	PAY$_t$	DPR$_t$	INT$_t$	OMT$_t$	PAY$_t$	DPR$_t$
No. observations	4,493	4,493	4,493	4,493	4,493	4,493
Left-censored		1,004				1,004
F-statistics/Wald chi-squared	289.39***	63.23***	78.84***	85.36***	295.06***	59.66***

Notes:* is significant at 10%; ** is significant at 5%; *** is significant at 1%.

Furthermore, Table 4 presents estimation results of the partial adjustment model to examine effect of money supply on dividend adjustment speed. We find that the interaction between money supply growth and the lagged dividend per share has a significantly negative coefficient. Based on the partial adjustment model presented in Equation (5), this finding indicates that M2 growth rate is positively associated with the speed of dividend adjustment. When money supply increases under the impact of a monetary loosening policy, firms face higher availability and lower costs of external funds. Therefore, they have lower propensity to retain earnings and adjust their dividends towards the target payout ratio faster.

Table 4.
Monetary loosening and dividend adjustment speed

Dependent variable is DPS$_t$	Fixed effects	Random effects	System GMM
EPS$_t$	0.0945***	0.0871***	0.1141***
	(4.76)	(4.41)	(5.44)
EPS$_{t-1}$	0.1109***	0.0938***	0.1145***
	(8.09)	(6.68)	(3.27)
DPS$_{t-1}$	0.1692***	0.5279***	1.3696***
	(3.22)	(8.96)	(3.49)
MGR$_{t-1}$	0.8483***	1.5676***	6.2396***
	(3.00)	(4.99)	(2.91)
MGR$_{t-1}$*DPS$_{t-1}$	−1.0354***	−1.4525***	−6.3805***
	(-4.34)	(−5.48)	(−2.67)
CAS$_t$	0.2920	0.3968**	0.4489
	(1.38)	(2.05)	(1.59)

(*continued on next page*)

Table 4: (continued)

Dependent variable is DPS_t	Fixed effects	Random effects	System GMM
ROA_t	2.5810***	4.3366***	3.4148***
	(2.90)	(5.51)	(3.83)
LEV_t	−0.0366	0.0669	0.1364
	(-0.14)	(0.46)	(0.71)
TAN_t	0.0075	−0.1568**	−0.0446
	(0.05)	(−2.35)	(−0.53)
SIZ_t	−0.0212	−0.0111	−0.0333**
	(−0.40)	(−0.94)	(−2.34)
TOB_t	0.0617*	0.0282	0.0709**
	(1.65)	(0.90)	(2.09)
GRO_t	−0.3818***	−0.5022***	−0.3894***
	(−6.51)	(−9.41)	(−6.64)
REA_t	−1.6050***	−0.9765***	−1.7267***
	(−3.48)	(−3.00)	(−3.95)
BAR_t	0.3492*	0.2375*	0.1681
	(1.69)	(1.65)	(0.88)
Intercept	0.8136	0.1990	−0.2784
	(0.58)	(0.61)	(−0.52)
Industry dummies	Yes	Yes	Yes
No. observations	4,079	4,079	4,079
F-statistics /Wald chi-squared	21.54***	2502.15***	1103.64***
AR(1)			−4.74***
AR(2)			−0.28
Hansen test			25.93

Notes: * is significant at 10%; ** is significant at 5%; *** is significant at 1%

CONCLUSION

According to the pecking order theory of dividends, firms tend to pay more dividends when they have better access to credit and lower costs of external financing. Many prior studies find supporting evidence to this theory with firm-specific variables. In this paper, we argue that monetary policy may affect corporate dividend policy since it influences both the availability and the costs of external financing via two

mechanisms of credit transmission channel, namely bank lending and broad credit. We find that Vietnam is a promising laboratory to examine the effect of monetary loosening policy on corporate dividend decisions because of three reasons: (1) Vietnamese government conducts monetary loosening policy continuously between 2007 and 2017; (2) the monetary policy relies mainly on money supply due to its under-developed financial system; and (3) credit channel is the dominant monetary transmission channel. Using a research sample of 4,493 observations firms from 2008 to 2017, we document that monetary loosening positively affects corporate dividend policy and this effect is mitigated by corporate cash holdings. Besides, we also find that firms tend to adjust their dividends faster under expansionary monetary policy. These findings imply that managers and investors need to recognise the effect of monetary on corporate financial decisions and managers may use corporate liquidity management to mitigate this effect. In addition, these understandings help policy makers conduct monetary policy more effectively to change corporate financial decisions.

ACKNOWLEDGEMENTS

REFERENCES

Abdul Karim, Z., Azman-Saini, W., & Abdul Karim, B. (2011). Bank lending channel of monetary policy: Dynamic panel data study of Malaysia. *Journal of Asia-Pacific Business*, *12*(3), 225–243.

Agénor, P.-R., & El Aynaoui, K. (2010). Excess liquidity, bank pricing rules, and monetary policy. *Journal of Banking & Finance*, *34*(5), 923–933.

Aivazian, V., Booth, L., & Cleary, S. (2003). Do emerging market firms follow different dividend policies from U.S. firms? *Journal of Financial Research*, *26*(3), 371–387. https://doi.org/10.1111/1475-6803.00064

Al Shabibi, B.K., & Ramesh, G. (2011). An empirical study on the determinants of dividend policy in the UK. *International Research Journal of Finance & Economics*, *80*, 105–120.

Al-Malkawi, H.A.N. (2007). Determinants of corporate dividend Policy in Jordan: An application of the tobit model. *Journal of Economic and Administrative Sciences*, *23*(2), 26–41. https://doi.org/10.1108/10264116200700007

Al-Najjar, B., & Hussainey, K. (2009). The association between dividend payout and outside directorships. *Journal of Applied Accounting Research*, *10*(1), 15–35. https://doi.org/10.1108/09675420910963360

Alli, K.L., Khan, A.Q., & Ramirez, G.G. (1993). Determinants of corporate dividend policy: A factorial analysis. *Financial Review*, *28*(4), 523–547. https://doi.org/10.1111/j.1540-6288.1993.tb01361.x

Altunbaş, Y., Fazylov, O., & Molyneux, P. (2002). Evidence on the bank lending channel in Europe. *Journal of Banking & Finance*, *26*(11), 2093–2110. https://doi.org/10.1016/S0378-4266(02)00201-7

Amidu, M., & Abor, J. (2006). Determinants of dividend payout ratios in Ghana. *Journal of Risk Finance*, *7*(2), 136–145. https://doi.org/10.1108/15255940610648580

Anwar, S., & Nguyen, L.P. (2018). Channels of monetary policy transmission in Vietnam. *Journal of Policy Modeling*, *40*(4), 709–729. https://doi.org/10.1016/j.jpolmod.2018.02.004

Ashraf, B.N., & Zheng, C. (2015). Shareholder protection, creditor rights and bank dividend policies. *China Finance Review International*, *5*(2), 161–186.

Baker, H.K., Saadi, S., Dutta, S., & Gandhi, D. (2007). The perception of dividends by Canadian managers: New survey evidence. *International Journal of Managerial Finance*, *3*(1), 70–91. https://doi.org/10.1108/17439130710721662

Bernanke, B.S., & Gertler, M. (1995). Inside the black box: The credit channel of monetary policy transmission. *Journal of Economic Perspectives*, *9*(4), 27–48.

Bhattacharya, R. (2014). Inflation dynamics and monetary policy transmission in Vietnam and emerging Asia. *Journal of Asian Economics*, *34*, 16–26.

Black, F. (1976). The dividend puzzle. *The Journal of Portfolio Management*, *2*(2), 5–8.

Brockman, P., & Unlu, E. (2009). Dividend policy, creditor rights, and the agency costs of debt. *Journal of Financial Economics*, *92*(2), 276–299. https://doi.org/10.1016/j.jfineco.2008.03.007

Cao, L., Du, Y., & Hansen, J.Ø. (2017). Foreign institutional investors and dividend policy: Evidence from China. *International Business Review*, *26*(5), 816–827.

Christensen, I., & Dib, A. (2008). The financial accelerator in an estimated New Keynesian model. *Review of Economic Dynamics*, *11*(1), 155–178. https://doi.org/10.1016/j.red.2007.04.006

Ciccarelli, M., Maddaloni, A., & Peydró, J.-L. (2015). Trusting the bankers: A new look at the credit channel of monetary policy. *Review of Economic Dynamics*, *18*(4), 979–1002. https://doi.org/10.1016/j.red.2014.11.002

DeAngelo, H., DeAngelo, L., & Stulz, R.M. (2006). Dividend policy and the earned/contributed capital mix: A test of the life-cycle theory. *Journal of Financial Economics*, *81*(2), 227–254. https://dx.doi.org/10.1016/j.jfineco.2005.07.005

Denis, D.J., & Osobov, I. (2008). Why do firms pay dividends? International evidence on the determinants of dividend policy. *Journal of Financial Economics*, *89*(1), 62–82. https://doi.org/10.1016/j.jfineco.2007.06.006

Fama, E.F., & Babiak, H. (1968). Dividend policy: An empirical analysis. *Journal of the American Statistical Association*, *63*(324), 1132–1145.

Fama, E.F., & French, K.R. (2001). Disappearing dividends: Changing firm characteristics or lower propensity to pay? *Journal of Financial Economics*, *60*(1), 3–43. doi:http://dx.doi.org/10.1016/S0304-405X(01)00038-1

Fungáčová, Z., Nuutilainen, R., & Weill, L. (2016). Reserve requirements and the bank lending channel in China. *Journal of Macroeconomics*, *50*, 37–50. https://doi.org/10.1016/j.jmacro.2016.08.007

Grullon, G., Michaely, R., & Swaminathan, B. (2002). Are dividend changes a sign of firm maturity? *Journal of Business*, *75*(3), 387–424.

Gunji, H., & Yuan, Y. (2010). Bank profitability and the bank lending channel: Evidence from China. *Journal of Asian Economics*, *21*(2), 129–141. https://doi.org/10.1016/j.asieco.2009.12.001

Holder, M.E., Langrehr, F.W., & Hexter, J.L. (1998). Dividend policy determinants: An investigation of the influences of stakeholder theory. *FM: The Journal of the Financial Management Association*, *27*(3), 73–85.

Hung, L.V., & Pfau, W.D. (2009). VAR analysis of the monetary transmission mechanism in Vietnam. *Applied Econometrics International Development*, *9*(1), 165–179.

Jabbouri, I. (2016). Determinants of corporate dividend policy in emerging markets: Evidence from MENA stock markets. *Research in International Business and Finance*, *37*, 283–298. https://doi.org/10.1016/j.ribaf.2016.01.018

Jensen, G.R., Solberg, D.P., & Zorn, T.S. (1992). Simultaneous determination of insider ownership, debt, and dividend policies. *Journal of Financial & Quantitative Analysis*, *27*(2), 247–263.

Jiraporn, P., Kim, J.C., & Kim, Y.S. (2011). Dividend payouts and corporate governance quality: An empirical investigation. *Financial Review*, *46*(2), 251–279. https://doi.org/10.1111/j.1540-6288.2011.00299.x

Kowalewski, O., Stetsyuk, I., & Talavera, O. (2007). Corporate governance and dividend policy in Poland. Working paper, Financial Institutions Center at The Wharton School, 1–35.

Lintner, J. (1956). Distribution of incomes of corporations among dividends, retained earnings, and taxes. *American Economic Review*, *46*(2), 97–113.

Mengesha, L.G., & Holmes, M.J. (2013). Monetary policy and its transmission mechanisms in Eritrea. *Journal of Policy Modeling*, *35*(5), 766–780. https://doi.org/10.1016/j.jpolmod.2013.06.001

Mileva, E. (2007). Using Arellano-Bond dynamic panel GMM estimators in Stata. Working paper, Economics Department, Fordham University, *64*, 1–10.

Miller, M.H., & Modigliani, F. (1961). Dividend policy, growth, and the valuation of shares. In H.R. Vane, & C. Mulhearn (Eds.), *Elgar reference collection: Pioneering papers of the Nobel Memorial Laureates in Economics*, vol. 2 (pp. 113–135). Cheltenham, U.K. and Northampton, MA: Elgar.

Mollah, A.S. (2001). Dividend policy and behaviour, and security price reaction to the announcement of dividends in an emergency market: A study of companies listed on the Dhaka stock exchange. PhD dissertation, University of Leeds, United Kingdom.

Moreno, R. (2008). Monetary policy transmission and the long-term interest rate in emerging markets. *BIS Papers*, *35*, 61–80.

Myers, S.C., & Majluf, N.S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, *13*(2), 187–221. https://doi.org/10.1016/0304-405X(84)90023-0

Nguyen, H.M., Cavoli, T., & Wilson, J.K. (2012). The determinants of inflation in Vietnam, 2001–09. *ASEAN Economic Bulletin*, 1–14.

Nguyen, V. (2015). The role of different channels in transmitting monetary policy into output and price in Vietnam. *Journal of Economics Development*, *17*(1), 20.

Nguyen, B. (2018). Entrepreneurial reinvestment: Local governance, ownership, and financing matter – Evidence from Vietnam. *Journal of Small Business Management, 57*(2), 323–349. https://doi.org/10.1111/jsbm.12475

Oliner Stephen, D., & Rudebusch, G.D. (1996). Is there a broad credit channel for monetary policy? *Federal Reserve Bank of San Francisco Review*, *1*, 3–13.

Pandey, I., & Bhat, R. (2007). Dividend behaviour of Indian companies under monetary policy restrictions. *Managerial Finance*, *33*(1), 14–25.

Roodman, D. (2009). How to do xtabond2: An introduction to difference and system GMM in Stata. *The Stata Journal*, *9*(1), 86–136.

Shao, L., Kwok, C. C. Y., & Guedhami, O. (2013). Dividend policy: Balancing shareholders' and creditors' interests. *Journal of Financial Research*, *36*(1), 43–66. https://doi.org/10.1111/j.1475-6803.2013.12002.x

Smets, F., & Wouters, R. (2002). Openness, imperfect exchange rate pass-through and monetary policy. *Journal of Monetary Economics*, *49*(5), 947–981.

Thanatawee, Y. (2011). Life-cycle theory and free cash flow hypothesis: Evidence from dividend policy in Thailand. *International Journal of Financial Research*, *2*(2). https://doi.org/10.5430/ijfr.v2n2p52

Thanh, V., Cuong, T.T., Dung, B., & Chieu, T. (2011). Small and medium enterprises access to finance in Vietnam. Paper presented at the Small Medium Enterprises Access to Finance in Selected East Asian Economies Jakarta, 1 March.

Tran, Q.T., Alphonse, P., & Nguyen, X.M. (2017). Dividend policy: Shareholder rights and creditor rights under the impact of the global financial crisis. *Economic Modelling*, *64*, 502–512.

Vo, X.V., & Nguyen, P.C. (2017). Monetary policy transmission in Vietnam: Evidence from a VAR approach. *Australian Economic Papers*, *56*(1), 27–38.

Warner, E.J., & Georges, C. (2001). The credit channel of monetary policy transmission: Evidence from stock returns. *Economic Inquiry*, *39*(1), 74–85.

Windmeijer, F. (2005). A finite sample correction for the variance of linear efficient two-step GMM estimators. *Journal of Econometrics*, *126*(1), 25–51.

Wooldridge, J.M. (2010). *Econometric analysis of cross section and panel data*, 10th ed. Cambridge: MIT Press.

Yang, X., Han, L., Li, W., Yin, X., & Tian, L. (2017). Monetary policy, cash holding and corporate investment: Evidence from China. *China Economic Review*, *46*, 110–122.