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# INDONESIAN CAPITAL MARKET REVIEW

## Monetary Policy and Corporate Risk-Taking: Evidence From an Emerging Market

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*This study examines how monetary loosening influences risk-taking of companies listed in Vietnamese stock exchanges in the period from 2009 to 2019. Our research sample consists of 4,358 observations from 566 listed firms. Using the Pooled OLS regression model, we find that expansionary policy increases corporate risk-taking. Our research findings also demonstrate that firms with high leverage engage more in risk-taking activities, while firm size, state ownership and foreign ownership negatively affects corporate risk-taking. The research results imply that corporate managers, shareholders and policymakers in emerging markets should consider the nexus between monetary policy and corporate risk-taking levels during their decision-making process.*

**Keywords:** Monetary policy; Corporate Risk-taking; Emerging market; Vietnam.

**JEL Classification:** E52, G32

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### Introduction

Corporate risk-taking is an attractive topic in corporate finance since risk-taking activities play a crucial role in developing firms' businesses and improving their performance (Li & Liu, 2017; Sanders & Hambrick, 2007; Shahzad, Lu, & Fareed, 2019; Zhai, Xie, & Zhang, 2017). The extant literature shows that apart from firm-specific factors, corporate risk-taking is also driven by many factors of business environment such as legal regulations (Acharya, Amihud, & Litov, 2011; Djankov, Claessens, & Nenova, 2000; John, Litov & Yeung, 2008), corruption (Chen, Jeon, Wang, & Wu, 2015) and economic policy uncertainty (Tran, 2019a). Furthermore, Koch and Prassel (2011); Langenmayr and Lester (2018); Ljungqvist, Zhang, and Zuo (2017) find that fiscal policy

determines corporate risk-taking behavior. This paper investigates how monetary loosening affects risk-taking behaviors of listed firms in Vietnamese market.

Our study is motivated by three main reasons. Firstly, there has been no study on the nexus between monetary policy and non-financial firms' risk-taking. Prior studies mostly focus on the impact of monetary policy on commercial banks' risk-taking (Angeloni, Faia, & Duca, 2015; Chen, Wu, Jeon, & Wang, 2017; Matthys, Meuleman, & Vander Vennet, 2020; Neuenkirch & Nöckel, 2018; Paligorova & Santos, 2017). While banks have well-structured risk management mechanisms, non-financial firms' risk-taking decisions are mainly based on their managers' view. Moreover, monetary policy is strictly followed by banks while non-financial firms are less aware of monetary

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policy. Corporate managers tend to focus on industry and internal environment more than macroeconomic policy. Therefore, this paper provides new knowledge on the role of monetary policy in corporate risk-taking. Secondly, Vietnamese market is a good setting to study this topic since the government has a consistent monetary policy for a long period of time. From 2009 to 2019, the State Bank of Vietnam constantly follows an expansionary monetary policy. Finally, monetary policy in Vietnam is mainly implemented using money supply. As an emerging market, Vietnam has an underdeveloped bond market, a state-controlled banking system and a large informal credit system. These characteristics restrain the price-based mechanism of monetary policy (Patnaik, Shah, & Bhattacharya, 2011); therefore, Vietnamese government mainly relies on money supply (Anwar & Nguyen, 2018; Tran, 2019b).

We argue that in the condition of monetary loosening, firms can access credit more easily with lower cost of capital. This makes corporate managers increase their firms' performance aspirations (target or reference level of return) and expectations (anticipated return) (Kahneman & Tversky, 2013). Therefore, firms tend to participate in riskier activities (Li, Yan, & Zhang, 2014). This paper analyzes the effect of monetary loosening on non-financial firms' risk-taking. Our research sample includes 4,358 observations over the monetary loosening period in Vietnam from 2009 to 2019. Using the Pooled OLS regression model, we find that growth in money supply leads to an increase in corporate risk-taking.

Our paper shows that monetary policy is a determinant of corporate risk-taking. This understanding is important to firm managers, shareholders and policy makers. Corporate managers should take monetary policy into their investment decisions to enhance firm performance. Shareholders may value firms more effectively based on their risk-taking behavior. Policy makers should consider the nexus between monetary policy and corporate risk-taking while introducing new policies since corporate risk-taking plays an important role in encouraging a country's economic growth.

The rest of this paper is organized as follows: the second section presents the literature review and research hypothesis. Then, we describe our research data and regression models. The fourth section reports regression results to examine the impact of monetary policy on corporate risk-taking and robustness checks. The last section is about conclusions.

## Literature Review

The extant literature demonstrates that risk-taking is one of the most crucial corporate decisions. Bluhm and Krahen (2014) state that the financial decision-making process includes not only profitability expectation but also risk consideration. Corporate risk-taking behaviors are often examined in managerial risk-taking and organizational risk-taking behaviors (Wiseman and Gomez-Mejia, 1998). Managerial risk-taking refers to management team's decisions on resource allocation. Organizational risk-taking is described as the uncertainty about the firm's future revenue. Managerial risk-taking and organizational risk-taking are closely related because managerial decisions will lead to structural changes in organizations and thus result in the uncertainty of the firms (Díez-Esteban et al., 2017). Therefore, the risk-taking behavior of firms depends on the risk-taking behavior of individuals in firms' management teams. Regarding how decisions are made, traditional finance assumes that individuals can make rational decisions. Kahneman and Tversky (1979) relax this assumption by introducing prospect theory which describes how individuals make choices when they have to decide between alternatives that involve risk. Prospect theory suggests that individuals make decisions based on how they evaluate potential gains and losses of an investment opportunity relative to a benchmark. People are risk-averse when there is a moderate to high probability of gains or a low probability of losses and they are risk-seeking when there is a low probability of gains or a high probability of losses.

Risk-taking activities are essential for firms to grow their businesses and enhance their performance (Li & Liu, 2017; Sanders & Ham-

brick, 2007; Shahzad et al., 2019; Zhai et al., 2017). Beside the effect of corporate governance on risk-taking (Attig, El Ghouli, & Guedhami, 2009; Attig, Guedhami, & Mishra, 2008; Boubaker, Nguyen, & Rouatbi, 2016; Faccio, Marchica, & Mura, 2016; John et al., 2008; Kim, 2011; Nguyen, 2011; Su, Li, & Wan, 2017; Vo, 2016, 2018), many prior studies show that macroeconomic policies also affect corporate risk-taking behavior. Koch & Prassel (2011); Langenmayr & Lester (2018); Ljungqvist et al. (2017) show that there is an association between fiscal policy and corporate risk-taking. The research on how monetary policy affects risk-taking behavior is conducted with commercial banks. Chen et al. (2017); Matthys et al. (2020); Neuenkirch & Nöckel (2018); Paligorova & Santos (2017) find that an expansionary monetary policy increases bank risk. In Vietnam, Dang (2020); Ha & Quyen (2018); Pham et al. (2019) also show supporting evidence for the relationship between monetary policy and bank risk. However, previous papers have not investigated the nexus between monetary policy and risk-taking behavior of non-financial firms in emerging markets.

Prior studies prove that monetary policy substantially influences corporate debt (Berger & Udell, 1998; Cooley & Quadrini, 2006; Gertler & Gilchrist, 1993; Pindado, Requejo, & Rivera, 2020) and corporate investment (Morck, Yavuz, & Yeung, 2013). Some studies suggest that there is a nonlinear relationship between the growth in money supply and firm debt (Cooley & Quadrini, 2006; Pindado et al., 2020). Cooley and Quadrini (2006) state that in the condition of loosening monetary policy, lower cost of borrowing encourages firms to access credit and expand their business, thus increasing their projected profits. Nevertheless, new debt leads to higher volatility of profits. Therefore, a firm's debt financing decision depends on whether the advantages of additional debt financing outweigh the volatility of profits. Similarly, Pindado et al. (2020) show that when the quantity of money in the economy is low the growth in money supply is positively correlated to debt financing. However, if the quantity of money goes beyond the optimal level, an

increase in money supply would cause a decline in the use of debt.

In this paper, we argue that the linear relationship should dominate instead of the nonlinear relationship due to Vietnamese institutional environment. Vietnamese government consistently followed monetary loosening over the period 2009-2019. Moreover, monetary policy in Vietnam mainly relies on money supply since Vietnam has an underdeveloped bond market, a state-controlled banking system and a large informal credit system (Patnaik, Shah, & Bhattacharya, 2011). We argue that monetary loosening increases corporate risk-taking through debt financing. Berger & Udell (1998) and Gertler and Gilchrist (1993) reveal that there is a linear relation between monetary policy and firm debt. An expansionary monetary policy leads to higher availability of bank credit. Higher availability of debt and lower cost of borrowing lead to more borrowing opportunities for firms. As a result, firms take more risks in their investment activities. In addition, the risk-taking decisions are mainly made by firms' management teams. Therefore, we argue that managers' decision making process follows prospect theory of Kahneman and Tversky (1979).

**H1:** Expansionary monetary policy increases corporate risk-taking.

## Research Methods

### Research data

We collect data for this study from two sources. First, the growth rate of money supply M2 is obtained from the website of Asian Development Bank (2020). Second, financial information is provided by FimPro - the most famous financial data provider in Vietnam. We select non-financial firms with at least 250 trading days per year between 2009 and 2019. Our final research data includes 4,358 observations from 566 firms listed in Vietnamese stock exchange from 2009 to 2019. In addition, we winsorized all financial variables at 3% in order to narrow down the effects of outliers.

Table 1 describes the research data. Panel A illustrates that the number of firms increased

Table 1. Descriptive Statistics

Panel A. Annual number of firms

Year	N	Proportion	Year	Number of firms	Proportion
2009	185	4.25%	2015	438	10.05%
2010	222	5.09%	2016	454	10.42%
2011	305	7.00%	2017	490	11.24%
2012	398	9.13%	2018	506	11.61%
2013	419	9.61%	2019	509	11.68%
2014	432	9.91%			

Panel B. Industry Distribution

Industry	N	Proportion	Industry	Number of firms	Proportion
Basic Materials	606	13.91%	Industrials	1992	45.71%
Consumer Goods	698	16.02%	Oil & Gas	38	0.87%
Consumer Services	419	9.61%	Technology	149	3.42%
Health Care	164	3.76%	Utilities	292	6.70%

Table 2. Definitions of Research Variables

Variable	Definition
CRT	Annualized standard deviation of daily stock returns
CRT1	Standard deviation of ROA
CRT2	Standard deviation of ROE
MP	M2 growth rate
SIZE	Log(Total assets)
LEV	Total debt/Total assets
AGE	Log (1+ the number of years that a firm has been listed on the exchange)
FIXED	Total fixed asset/Total assets
CASH	(Cash + Cash equivalents)/Total assets
STATE	Percentage of shares held by the government
FOREI	Percentage of shares held by foreign investors
GRO	Annual sales growth

from 2009 to 2019 due to newly listed firms. In addition, the industry distribution in Panel B reports that Industrials constitute the highest proportion of the sample at 45.71%, followed by Consumer Goods (16.02%) and Basic Materials (13.91%). Oil and Gas sector accounts for the lowest proportion with only 0.87%.

### Regression models

Following Imhof and Seavey (2014) and Yang, Han, Li, Yin, and Tian (2017), we construct a model to examine how money supply M2 changes corporate risk-taking as follows:

$$CRT_{it} = \alpha + \beta_1 * MP_t + \gamma * CONTROL_{it} + \varepsilon_{it}$$

Where: CRT is annual standard deviation of daily stock returns. Imhof and Seavey (2014) and Nadeem, Suleman, and Ahmed (2019) argue that dispersed stock returns are the signal of uncertain income streams. Volatility of earnings can be used as a reasonable measure of risk-taking because when firms participate in riskier

projects their profits are expected to be more volatile (Acharya et al., 2011; Hilary & Hui, 2009; Mishra, 2011). Moreover, we also employ earnings volatility as a robustness check. MP is the annual growth rate of money supply M2. CONTROL is the vector of control variables including firm size (SIZE), leverage (LEV), firm age (AGE), fixed asset ratio (FIXED), cash holding ratio (CASH), state ownership (STATE), foreign ownership (FOREI) and sales growth (GRO).

We use three regression approaches including Pooled OLS, Fixed Effects Model (FEM) and Random Effects Model (REM) to estimate our research model.

## Results and Discussions

### Descriptive Statistics

Table 3 reports a summary of main variables. We find that the annualized standard deviation of daily stock return is 0.4609 on average

Table 3. Descriptive Statistics

	Mean	SD	Median	Min	Max
CRT	0.4609	0.1416	0.4525	0.2145	0.7800
MP	0.1728	0.0513	0.1623	0.1134	0.3300
SIZE	27.0635	1.4236	27.0071	24.3223	30.1139
LEV	0.4907	0.2184	0.5116	0.0781	0.8532
AGE	2.0086	0.4167	2.0795	0.6931	2.6391
FIXED	0.2129	0.1909	0.1520	0.0047	0.7349
CASH	0.0988	0.1010	0.0635	0.0027	0.4083
STATE	0.2638	0.2404	0.2535	0.0000	0.7172
FOREI	0.0992	0.1335	0.0380	0.0000	0.4897
GRO	0.0990	0.3073	0.0715	-0.5067	1.0577

Table 4. Correlation Coefficients Matrix

	CRT	MP	SIZE	LEV	AGE	FIXED	CASH	STATE	FOREI	GRO
CRT	1									
MP	0.1668	1								
SIZE	-0.3630	-0.0758	1							
LEV	0.0845	0.0120	0.3252	1						
AGE	-0.2159	-0.5055	0.1456	-0.0828	1					
FIXED	-0.0568	0.0032	0.0935	-0.0316	-0.0185	1				
CASH	-0.0538	0.0602	-0.1350	-0.3105	-0.0477	-0.1667	1			
STATE	-0.0110	0.0471	-0.0250	0.0812	-0.0567	0.1513	0.0805	1		
FOREI	-0.2822	0.0013	0.3175	-0.2076	0.1562	-0.0070	0.1495	-0.1699	1	
GRO	-0.0111	0.0651	0.0850	0.0881	-0.0744	-0.0148	0.0026	-0.0589	0.0408	1

and its mean is 0.4525. In addition, the annual growth rate of money supply M2 ranges from 11.34% to 33% since Vietnamese government consistently pursues an expansionary monetary policy in the research period.

In addition, Table 4 presents the correlation matrix among main research variables. The positive correlation between M2 growth and risk-taking implies that an increase in money supply makes firms engage more in risk-taking. Moreover, risk-taking has a positive correlation with leverage and a negative correlation with firm size, firm age, fixed assets ratio, cash holding ratios, state ownership, foreign ownership, and annual growth rate.

### Regression Results

Table 5 describes the regression results to examine how monetary loosening influences non-financial firms' risk-taking. We find that the high growth rate of money supply M2 increases corporate risk-taking. This implies that when the central bank introduces an expansionary policy, corporations experience lower financing costs. Consequently, their managers tend to take more risks in their investment. From the

perspective of prospect theory (Kahneman and Tversky, 1979), another explanation for managers' engagement in more risks is that an expansionary monetary policy can lead to higher inflation expectations and higher likelihood of financial instability in the future. Managers take more risks if they perceive low probability of gains or a high probability of losses in the future.

In line with Faccio et al. (2011) and John et al. (2008), we also find that firms with high leverage tend to participate more in risk-taking activities. This finding can be explained by the agency problem between firms and creditors.

Furthermore, consistent with Faccio et al. (2011), we find that both firm size and firm age are negatively related to corporate risk-taking. State ownership and foreign ownership are negatively correlated with risk-taking. Firms with government ownership and foreign ownership are monitored strictly by government agencies and foreign investors respectively. Consequently, they are less likely to take risky investment policies (Vo, 2016).

Moreover, following Boubakri et al. (2013), we utilize two alternative measures of risk-taking namely CRT1 and CRT2 as robustness

Table 5. Regression Results

Variables	Pooled OLS	FEM	REM
MP	0.7925*** -6.33	0.373** -2.17	0.569*** -4.64
SIZE	-0.0343*** (-10.47)	-0.0419*** (-7.66)	-0.0360*** (-12.80)
LEV	0.0859*** -4.67	0.0657*** -3.49	0.0675*** -4.72
AGE	-0.0232* (-1.79)	-0.0570*** (-3.46)	-0.0421*** (-3.69)
FIXED	-0.0054 (-0.25)	0.0473** -2.51	0.0158 -1.08
CASH	-0.052 (-1.61)	0.0119 -0.5	-0.0075 (-0.35)
STATE	-0.0341** (-2.36)	-0.0237 (-1.30)	-0.0295** (-2.34)
FOREI	-0.1470*** (-4.39)	-0.1620*** (-5.92)	-0.1560*** (-7.02)
GRO	-0.005 (-0.76)	0.0018 -0.33	-0.0002 (-0.04)
Constant	1.2550*** -11.54	1.6330*** -10.01	1.3790*** -15.35
Year dummies	Yes	Yes	Yes
Industry dummies	Yes	No	Yes
Clustered by firm	Yes	Yes	Yes
Number of Observations	4,358	4,358	4,358
R-squared	0.2538		
F-statistics		38.06***	
Wald chi-squared			1858.33***
Hausman test		61.98***	

Note: \*\*\*, \*\*, and \* denote significance at 1%, 5%, and 10% respectively

checks. CRT1 is the standard deviation of ROA (EBIT to total assets). CRT2 is the standard deviation of ROE (EBIT to total equity). Robustness checks in Table 6 show that our findings are stable regardless of measures of risk-taking.

## Conclusion

In this paper, we scrutinize the relationship between monetary policy and corporate risk-taking. Overall, we find that expansionary money policy tends to increase risk-taking activities of corporates listed on Vietnamese stock exchanges from 2009 to 2019. Our research findings also demonstrate that higher leveraged firms are more likely to engage in more risk-taking while firms with larger size, longer listing time, high government and foreign ownership are less engaged in risk-taking. These results imply that corporate managers in Vietnamese listed firms should consider monetary policy while making investment decisions in order to enhance their firm performance. For example, a firm manager

who expects a loosening monetary policy may want to launch riskier projects. However, apart from cost of borrowing, the manager should also consider whether an increase in level of risk will be compensated by a reasonable raise in expected return. Additionally, shareholders can base on corporate risk-taking behavior to value their firms and evaluate the performance of firm managers more effectively. Moreover, since corporate risk-taking plays an important role in economic growth, policymakers should consider the impact of monetary policy to corporate risk-taking behavior when introducing new policies. An expansionary monetary policy can promote economic growth by lowering the cost of borrowing and encouraging business expansion. Nevertheless, it can also result in a higher level of risk-taking and lead to a more volatile economic environment.

Our research contributes to the literature on financial behavior of firms in Vietnam, a typical emerging market. As corporate risk-taking plays a key role in boosting a country's econom-

Table 6. Robustness Checks With Alternative Measures of Corporate Risk-Taking

Variables	CRT	CRT1	CRT2
MP	0.7925*** -6.33	0.1390** -2.43	0.2464** -2.09
SIZE	-0.0343*** (-10.47)	-0.0018 (-1.35)	-0.0028 (-0.94)
LEV	0.0859*** -4.67	-0.0370*** (-5.08)	0.0906*** -5.51
AGE	-0.0232* (-1.79)	0.0097* -1.65	0.0168 -1.39
FIXED	-0.0054 (-0.25)	0.0145** -2.45	0.0339** -2.4
CASH	-0.052 (-1.61)	-0.0022 (-0.19)	-0.0263 (-1.15)
STATE	-0.0341** (-2.36)	-0.0206*** (-3.66)	-0.0394*** (-3.37)
FOREI	-0.1470*** (-4.39)	0.0019 -0.17	-0.0119 (-0.56)
GRO	-0.005 (-0.76)	-0.0002 (-0.12)	-0.0075** (-2.14)
Constant	1.2550*** -11.54	0.0737* -1.78	0.0521 -0.57
Year dummies	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes
Clustered by firm	Yes	Yes	Yes
Number of Observations	4,358	4,358	4,358
R-squared	0.2538	0.1392	0.1324

Note: \*\*\*, \*\*, and \* denote significance at 1%, 5%, and 10% respectively. t-statistics are in parentheses.

ic growth, policy makers should consider our research results while introducing new policies. In addition, taking into account the relationship between monetary policy and corporate-risk-taking, corporate managers can make appropriate investment decisions that help enhance their firm performance. Moreover, sharehold-

ers may value firms more effectively based on their risk-taking behavior. Our study is limited to a sample of firms listed on Vietnamese stock exchanges. Further research can compare the effects of monetary policy on corporate risk-taking behavior in other emerging markets to scrutinize if those results are similar.

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