



Contents lists available at SEI

Management & Engineering

journal homepage: www.seidatacollection.com



Monetary Policy, Cash Holdings and Financial Development

Yang YANG^{1,*}, Danyang YIN²

1. School of Economics and Management, Beijing Jiaotong University, Beijing 100080, P.R.China
2. School of Finance, Nankai University, Tianjin 300071, P.R.China

KEYWORDS

Monetary policy,
Financial development,
Cash holding

ABSTRACT

Cash is the most current part in the assets. Analyzing the factor to influence cash holding is an important issue. Monetary policy is an important way of macro-control, which has an impact on the bank credits. In our country, the development of financial development has a serious region discrepancy. The differences lead to the level of enterprises' cash holdings is different in different areas. This paper selected 1 263 listed companies from 31 provinces, autonomous regions and municipalities as a sample, and the sample period is from 2008 to 2016. The empirical results show that when monetary policy is tightened by the loose changes, enterprises will raise the level of cash holdings. In the region which has a high level of financial development, the level of cash holdings is lower. In the region which has a high level of financial development, the changes of monetary have a lower influence on cash holding level.

© ST. PLUM-BLOSSOM PRESS PTY LTD

1 Introduction

For all business of any size and type, cash is an

important component of its assets and also the most liquid part of the liquidity. The lack of cash will influence production activities and other

*Corresponding author.

E-mail address: yang940614@163.com

investment activities of enterprises. There are many factors that can affect the level of corporate cash holdings, such as the external macroeconomic situation, monetary policy, the internal characteristics of the enterprise itself, the structure of governance and the stage of the industry. In China, credit loan is an important source of financing for enterprises. Most enterprises choose to obtain credit financing from banks. At the same time due to historical accumulation and other reasons, financial development in different areas is uneven. In the eastern developed areas, whether the type and number of financial intermediaries or the development of the securities market should be significantly better than the western region. For the enterprises in different areas, do they make the same decision when facing the changes of monetary policy?

Basically, we classify the factor that can influence company's cash hold into two kinds namely internal factor and external factor. The former research focus on the relationship between internal factors and enterprise and cash holding. YANG Xingquan and Sun Jie (2007) believe that the level of cash holdings of enterprises is related to the corporate governance structure, and the variables and governance variables. The assets and liabilities ratio, bank loans, cash equivalents, investment opportunities, shareholders' balance and cash holdings have a negative impact; corporate cash flow, dividend payment dummy variable, industry competition and executive equity plans and cash holdings have a positive impact. Zhu Jigao and Lu Zhengfei (2009) used listed companies as a sample to measure the growth of enterprises with Tobin's Q value of listed companies. They found the company's cash holding level and the degree of monetary tightening is significantly correlated. There are few researches on the relationship between external factors and enterprise. Based on that, this article analyzes the relationship between monetary policy, financial development and the company's cash holdings.

This article uses the data of the listed

companies in 2008-2016 as the object of study to do the empirical study. First, we analyze the impact of monetary policy on cash holding. Then analyze the relationship between area financial development and cash holding. At last, we analyze the collective effect of the two factors on cash holding.

The research significance and innovation of this paper lies in the combination of the macroeconomic policies at the national level and the financial development at the regional level. The combination of macroeconomic policies at the national level and financial development at the regional level has enriched the research on the influencing factors of monetary policy. Combined with the cash-cash flow sensitivity model adopted in Almeida (2004), we have added monetary policy and financial development of the factors and the establishment of cross-term, constructed a new research framework.

The rest of this paper is organized as follows: The second part is the literature review and research hypothesis, put forward the hypothesis at the basis of domestic and foreign literature. The third part is research design, selects and measures the variables, and establishes a regression model for the study hypothesis. The fourth part is the descriptive statistic, correlation analysis and regression analysis of the empirical test results, and the robustness test. The fifth part is summary and advice.

2 Literature Review and Research Hypothesis

2.1 Monetary Policy and Cash Holding

The theory of monetary policy transmission mechanism has two branches in the West, one is the "monetary point of view", the main channel of monetary policy, including interest rates, exchange rates, and M2 supply. The other is the "credit point of view", where it is argued that monetary policy affects economic development mainly by changing the availability of bank credit. When the monetary policy is tight and if the company use external financing, the level of

financing constraints will rise and hence the company will increase the ratio of cash holdings.

When the monetary policy is relatively loose, the money supply increases and the credit price level will decline according to the supply and demand balance curve. Hence the cost of external financing will be reduced and the company will choose to reduce the cash holding ratio because it is easy to get bank loans. Hence, the company will engage in more investment activities to maximize asset value. When the monetary policy becomes tightened, the agency's scope of borrowing will be reduced and it is difficult for the company to get bank loans. In order to face all the circumstances in the future, the company will raise the level of cash holdings for the three motivations held by cash. Based on the analysis before, we put forward the first hypothesis. H1: When the monetary policy becomes from loose to tightening, the level of cash holding of company will increase.

2.2 Regional Finance Development and Cash Holding

The level of financial development between regions will affect macro-control policies. Domestic and foreign research shows that for the palace of higher degree of financial development, the impact of monetary policy is significantly stronger than the lower areas. Gu Naikang (2010) analyzed the influence of macroeconomic conditions on cash holding. He used the data of 2000 to 2007 listed companies as the object of study and used the same model Opler proposed in 1999. The result shows that firms have lower cash holdings in periods of good economic conditions.

When the central bank implement loose monetary policy, the companies in the eastern regions in China can get loans from bank easier than the ones in western regions because the finance development is much better in east than in west. There are more financial institutions and the competition is fierce in the east. Based on the analysis above, we propose hypothesis two and hypothesis three. H2: In the area where the

finance is more developed, the level of cash holding in company is lower. H3: When the monetary policy becomes from loose to tightening, the level of cash holding of company will increase less when the finance is more developed.

3 Research Design

3.1 Data Resources

This paper uses the data of A-share companies listed in Shanghai and Shenzhen before 2006, and based on the sample period of 2008 to 2016. It makes the following screening: (1) Remove the financial industry samples. (2) Remove corporate financial data incomplete sample. (3) Remove the sample companies listed after 2006. (4) Remove ST, SST enterprises. (5) Remove the financial data incomplete business. We obtained 1,263 samples and a total of 6,730 observations. The data indicators of the listed companies are obtained from the CSMAR database. Provinces and cities data are taken from the statistical yearbook. We use EXCEL2013 data screening and collation, with STATA12.0 and Eviews to do the descriptive statistics and linear regression. In order to eliminate the outliers, this paper performs Winsorize processing on successive variables at a level of 1%.

3.2 Explained Variables

Cash holding is the explanatory variables of this article, and there are two measures for this variable. Opler (1999) uses the sum of monetary funds and net short-term investments in the financial statements to represent cash holdings, and use cash holdings/non-cash assets to measure cash holding level. Another measure is represented by Ozkan (2004), which represents the explanatory variable by the ratio of cash and its equivalents to the total assets. This paper draws on the latter measure.

3.3 Explained Variables

There are three main categories of monetary policy in China namely tightening, stable and

loose. For the setting of monetary policy variables, there are qualitative and quantitative ways to represent it in the existing literature. We use qualitative approach and search the key words from the report in the central bank website to classify monetary policy. And set the dummy variable, if the monetary policy is tightening, then the variable equal 1 and the other equal 0.

There are many studies on the measurement of financial development in China. Li Bin and Jiang Wei (2006) put forward the financial depth which is FIR and banking competition degree. Others used a series of index systems to

evaluate the degree of regional financial development from different aspects, including government control indicators, money supply, financial development indicators, economic factors, market indicators of financial markets. We use FIR to measure financial development.

3.4 Control Variable

We selected two types of control variables namely business status and governance structure. At the same time, we add two dummy variables namely property rights and their respective industries, as shown in Table 1.

Table 1 Main Variable

Variable Type	Variable Symbol	Calculation Method
Explained Variable	CASH	Cash and Its Equivalents/ Total Assets
Explaining Variable	MP	Dummy variables, tight monetary policy is 1, the rest is 0
	Fir	Bank loan balance/ GDP
	MP*Fir	
Control Variable	SIZE	Logarithm of Total Asset
	CFO	Net Cash Flow From Operating Activities / Total Assets
	DEBT	Total Annual Liabilities / Total Assets
	SLR	Short-Term Liabilities / Total Liabilities
	TOP1	Proportion of the Largest Shareholder
	TSHR	Percentage of Outstanding Shares
	STATE	State-owned enterprises equal 1, the others equal 0
	Industry	Assignment by the Classification of SFC

3.4 Models

We propose three models to verify hypothesis 1 to 3 by the reference of the cash-cash flow

$$CASH = \beta_0 + \beta_1 MP + \beta_2 SIZE + \beta_3 DEBT + \beta_4 CFO + \beta_5 SLR + \beta_6 TOP1 + \beta_7 TSHR + \beta_8 STATE + \beta_9 Industry + \varepsilon \quad (1)$$

To verify H2, we propose model 2 as follows.

$$CASH = \beta_0 + \beta_1 Fir + \beta_2 SIZE + \beta_3 DEBT + \beta_4 CFO + \beta_5 SLR + \beta_6 TOP1 + \beta_7 TSHR + \beta_8 STATE + \beta_9 Industry + \varepsilon \quad (2)$$

To verify H3, we propose model 3 as follows.

$$CASH = \alpha_0 + \alpha_1 Fir + \alpha_2 MP * Fir + \alpha_3 SIZE + \alpha_4 DEBT + \alpha_5 CFO + \alpha_6 SLR + \alpha_7 TOP1 + \alpha_8 TSHR + \alpha_9 STATE + \alpha_{10} Industry + \varepsilon \quad (3)$$

sensitivity model proposed by Almeida in 2004 and other literature.

To verify H1, we propose model 1 as follows.

4 Empirical Results Analysis

4.1 Descriptive Statistics

Table 2 Descriptive Statistics

Variable	Mean	Standard Deviation	Min	Max	Median	N
CASH	0.14	0.12	1.63E-4	1.36	0.11	6730
MP	-	-	-	-	-	6730
Fir	1.42	0.47	0.83	2.54	1.31	6730
SIZE	21.84	1.23	16.74	28.03	21.77	6730
DEBT	0.54	0.25	0.08	1.75	0.54	6730
CFO	0.03	0.09	-0.29	0.32	-0.01	6730
SLR	0.82	0.20	0.21	1	0.90	6730
TOP1	0.35	0.16	0.085	0.75	0.33	6730
TSHT	0.86	0.20	0.20	0.21	0.98	6730

Table 2 shows the descriptive statistical results of each variable. The average cash holding level of Chinese listed companies is 14%. FIR measures the level of financial development.

The maximum value is 1.42 and the minimum value is 0.47. There is a great difference of financial development between the low and high.

Table 3 Variable Relevance

	CASH	MP	Fir	SIZE	DEBT	CFO	SLR	TOP1	TSHT
CASH	1								
MP	0.050 ***	1							
Fir	-0.113 ***	0.071 ***	1						
SIZE	0.085 ***	-0.222 ***	0.041 ***	1					
DEBT	0.0382 ***	0.030 ***	-0.013 **	-0.164 ***	1				
CFO	0.039 ***	0.005 *	-0.001 *	-0.022 **	0.056 ***	1			
SLR	0.089 ***	0.076 ***	-0.055 ***	-0.321 ***	0.005 *	0.0049 *	1		
TOP1	-0.025 **	0.009 *	0.109 ***	0.305 ***	-0.015 *	0.0111 *	-0.090 ***	1	
TSHT	0.024 **	0.000 *	0.011 *	0.143 ***	-0.036 ***	0.0199 *	-0.026 **	0.522 ***	1

***, **, and * indicate that the parameter estimate is significantly different from zero at the 1%, 5%, and 10% level.

Table 3 shows the correlation coefficients between the major variables. There is a significant positive correlation between cash holding and monetary policy, corporate scale, asset liability ratio, operating activity cash flow,

debt ratio and equity structure. And a negative relationship between cash holding and financial development, the largest shareholder shareholding ratio.

4.2 Empirical Result

Table 4 Empirical Result

	CASH			CASH 1		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
MP	0.153012***	-	-	0.239642***	-	-
FIR	-	-0.67306**	-0.112459**	-	-0.091757**	-0.161014**
MP*FIR	-	-	-0.237174***	-	-	-0.363781***
SIZE	0.002577**	-0.000944**	-0.002898**	0.004225**	-0.006784***	0.003788**
DEBT	0.094435**	0.092173***	-0.089971***	0.136567**	-0.13382***	-0.130437***
CFO	0.207347**	0.206381*	0.21139***	0.247672***	0.245509**	0.253191***
SLR	0.051817*	0.054551*	0.054782*	0.121165	0.124884*	0.125238***
TOP1	-0.021241**	-0.034314*	-0.029725*	-0.046706**	-0.06542***	-0.058380***
TSHT	-0.011263*	-0.0104345*	0.012382**	0.002902**	0.001457*	0.004444*
STATE	0.015339***	0.017945*	0.018725*	-0.010239*	-0.006774*	-0.005577
Industry	-0.003500***	-0.002575**	-0.002532**	0.000074*	0.001336*	0.001404
Adj-R ²	0.1322	0.1396	0.1061	0.0791	0.0994	0.0952
F	100.70***	109.67***	105.98***	80.72***	85.65***	83.35***
N	6730	6730	6730	6730	6730	6730

***, **, and * indicate that the parameter estimate is significantly different from zero at the 1%, 5%, and 10% level.

The left part of Table 4 shows the empirical results. In the regression of model 1, monetary policy is positively correlated with the level of cash holding at 1% level, which is consistent with previous expectations, proving the correctness of H1: the tightening monetary policy will result in an improvement of the firm's cash holdings. The regression results show that there is a significant positive correlation between firm size and cash holding level at 1% level. The larger the company, the more cash is required for production on weekdays and the need to raise cash holdings.

In the regression of model 2, financial development is negatively correlated with cash holdings at 1% level, consistent with expectations, proving the correctness of H2: the level of cash holdings of firms is lower with high levels of financial development. In the region of high financial development, financial development can reduce the transaction costs and investment risks by expanding the financial resources and increasing the financial instruments and other means to obtain more external credit funds at the lower cost.

In regression of model 3, FIR coefficient is

significantly negative, MP * FIR coefficient is also significantly negative, verify the H3. In areas with high level of financial development, the types of financial institutions are more efficient. When monetary policy changes from loosening to tightening, interest rates will rise and credit scales will shrink, but the developed financial intermediaries will form a buffer effect on such financing constraints. So compared to the low level of financial development in the region, the company is still able to get a richer external financing, so the company's corporate holdings will be lower.

4.3 Robustness Test

The right part of Table 4 shows the result of robustness test. In order to test the robustness of the results, we change the explaining variable of the former regression. Many scholars use cash (net money + short-term net investment) / non-cash assets to represent cash holdings, and we use this definition (CASH1) to replace CASH. After replacing the index of the enterprise cash holding ratio, the main variables coefficient and the significance level did not change greatly, the result is basically the same as before, indicating

that the test conclusion of this paper is stable.

5 Conclusion

This paper examines the impact of monetary policy and financial development on corporate cash holdings by using 1,263 listed companies from 31 provinces and municipalities and autonomous regions listed in Shanghai and Shenzhen. On this basis, the conclusions of this paper are as follows: Firstly, the average holding level of listed companies in China is 14%, and there is a big difference between different enterprises. Secondly, changes of monetary policy will have an impact on the company's cash holdings. Changes in monetary policy will change the size of bank credit, such as when the monetary policy from loose to tightening, the real interest rate rise, increased financing constraints, so the company will be more willing to hold more funds to face the possible future risks. Thirdly, the level of corporate cash holdings is lower when the level of financial development is higher. There are differences in the level of financial development in China. Fourthly, financial development can reduce the financing constraints of tight monetary policy.

Acknowledgment:

This article is supported by "The Fundamental Research Funds for the Central Universities". The project number is 2017YJS071.

References

- [1]. Almeida, H., M. Campello and M. Weisbach. The Cash Flow Sensitivity of Cash. *Journal of Finance*, 2004. 59. 1777-1804
- [2]. Myers S. C. The Capital Structure Puzzle, *Journal of Finance*. 1984. 39. 575-592
- [3]. Jensen, M. Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers. *American Economic Review*. 1986. 76. 323-329
- [4]. Tim Opler. Lee Pinkowitz. Rene Stulz. Rohan Williamson. The determinants and implications of corporate cash holdings. *Journal of Financial Economics*, 1999. 52. 3-46
- [5]. Ozkan A. Ozkan N. Corporate Cash Holdings: An Empirical Investigation of UK Companies. *Journal of Banking and Finance*. 2004. 28. 2013-2134
- [6]. Thomas W., Kathleen M., Rene M. Stulz. Why Do U.S. Firms Hold So Much More Cash Than They Used to? *Journal of Finance*. 2009. 64. (5).1986-2021
- [7]. Yang Xingquan, Sun Jie. An Empirical Study on the Factors Affecting Enterprise Cash Holdings-Evidence from Chinese Listed Company. *Nankai Management Review*. 2007.10.47-54(in Chinese)
- [8]. Gu Naikang, Wan Xiaoyong, Chen Hui. Macroeconomic Conditions, Financing Constraints and Cash Holdings. *Research on the Management of Sun Yat-sen University*. 2010. 5. 33-53(in Chinese)
- [9]. Zhu Jigao. Lu Zhengfei. Monetary Policy, Corporate Growth and Changes in Cash Holdings. *Management World*. 2009. 3. 152-188(in Chinese)
- [10]. Wu Ge, Liu Kun. Explore the Rules of Chinese Monetary Policy: Multi-Objective and Multi-Tool *International Finance Research*. 2015.1.15-24 (in Chinese)
- [11]. Cai Weixing. Zeng Cheng. Hu Zhiying. Enterprise groups, Monetary Policy and Cash Holdings. *Financial Research*. 2015.2.114-130 (in Chinese)
- [12]. Lu Zhengfei, Han Feichi. How Does Macroeconomic Policy Affect the Economic Effects of Corporate Cash Holdings? *Research on the Angle of Product Market and Capital Market*. 2013.6.43-59 (in Chinese)
- [13]. Li Bin, Jiang Wei. Financial Development and Corporate Debt Financing. *Chinese Accounting Review*. 2006.6.255-276 (in Chinese)