

Original Research Article

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A Study on Monetary Policy Uncertainty and Commercial Bank Liquidity Risk

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Abstract: The Chinese government has intensified macro-policy countercyclical and cross-cyclical adjustments, adopting relatively frequent discretionary monetary policies, which has increased policy uncertainty. Commercial banks, as the dominant financial intermediaries in the financial system, regard monetary policy as a key operational indicator. Compared to other financial institutions, commercial banks are more sensitive to policy changes. With the acceleration of interest rate liberalization in China, the asset-liability structure of commercial banks has become increasingly diversified, highlighting maturity mismatch issues and elevating liquidity risk. This risk can impair bank profitability in minor cases and threaten bank survival in severe scenarios, potentially triggering large-scale market crises. Thus, liquidity management is crucial. Using annual unbalanced panel data from 42 Chinese commercial banks from 2009 to 2022, this paper empirically examines the impact and mechanism of monetary policy uncertainty (MPU) on commercial banks' liquidity risk.

Keywords: Monetary policy; Commercial banks; MPU; Liquidity risk

1. Theoretical Analysis and Research Hypotheses

(1) MPU and Bank Liquidity Risk

MPU will affect liquidity risk from both the perspectives of bank deposit absorption and credit supply. On one hand, a rise in MPU increases the uncertainty of corporate cash flows, thereby restraining corporate investment and exacerbating information asymmetry. This leads to a decline in corporate debt repayment capacity, prompting firms to retain more cash and reduce bank deposits. An increase in MPU also lowers households' expectations of future income, resulting in a reduced capacity for household deposits. When the decline in the willingness and ability of the real economy sector

to make deposits transmits to banks, the probability of future loan defaults and credit risk of banks will rise, leading to a decrease in liquidity creation. Furthermore, an increase in MPU elevates banks' credit default risk, weakening their debt repayment capacity. As depositors' expectations of banks' solvency decline, a "crowding-out effect" on deposits is triggered.

On the other hand, when MPU is high, banks are also required to increase the reserve requirement ratio, leading to a reduction in credit scale and passively lowering their liquidity risk. Moreover, during periods of high MPU, banks may exhibit "reluctance to lend" or "cautious lending" behaviors to address potential loan default risks, thereby shrinking their credit supply and curbing liquidity risk. Deng Wei et al. found that



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commercial banks tend to shift from high-risk to low-risk assets as economic policy uncertainty increases, engaging in asset 避 险 (risk aversion). Additionally, during periods of high MPU, banks tend to set aside more loan loss provisions. Based on this, two opposing hypotheses are proposed: MPU is positively correlated with banks' liquidity risk, and MPU is negatively correlated with banks' liquidity risk.

(2) The Impact Pathways of MPU on Bank Liquidity Risk

Sun Guangyu's research found that economic policy uncertainty positively impacts banks' liquidity mismatch by influencing their active risk-taking. Building on this foundation, this paper incorporates banks' passive risk-taking to comprehensively examine the mechanism through which MPU affects banks' liquidity risk.

Active risk-taking primarily refers to the bank risk-taking channel of monetary policy. For instance, an accommodative monetary policy can lead banks to proactively relax credit standards by reducing their risk perception and identification capabilities, thereby intensifying bank risk-taking. Active risk-taking occurs when banks issue loans, while passive risk-taking occurs during or after the loan issuance process. An increase in passive risk-taking arises when banks' risk tolerance remains unchanged, but their risk identification levels decline or adverse macroeconomic shocks lead to heightened bank risk-taking.

From the perspective of enterprises, monetary policy uncertainty (MPU) can generate negative macroeconomic shocks, deteriorate corporate profitability, reduce the value of collateral, and consequently increase the default risk of firms. As banks are the primary source of financing for enterprises, passive risk-taking in banks is elevated. From the banks' standpoint, when MPU rises, their risk aversion increases, potentially leading to higher provisions for loan losses and a reduction in active risk-taking. Therefore, the level of bank risk-taking is influenced by both passive and active risk-taking.

When bank risk-taking increases, liquidity risk also rises. Based on this, the following hypothesis is proposed: There exists an impact mechanism of "monetary policy uncertainty → bank risk-taking → bank liquidity risk."

2. Research Design and Data

(1) Econometric Model Specification

To verify the impact of MPU on bank liquidity risk, a baseline regression model controlling for individual fixed effects is constructed:

$$LR_{it} = \beta_0 + \beta_1 MPU_{t-1} + \gamma Controls_{it} + \delta_i + \varepsilon_{it} \quad (1)$$

where LR_{it} is the proxy variable for liquidity risk, MPU_{t-1} represents the one-period lagged MPU, and coefficient β_1 indicates the impact of the MPU index on bank liquidity risk. δ_i denotes bank-specific fixed characteristics, ε_{it} is the random error term, and $Controls_{it}$ represents the control variables. Direct inclusion of time-fixed effects would cause multicollinearity; therefore, time-fixed effects are not controlled, and instead, macro-level control variables are used.

(2) Variable Definitions

1) Core explanatory variable. MPU index. Huang and Luk constructed an Economic Policy Uncertainty Index for China using 10 mainland Chinese newspapers and developed refined indices for several major policy categories. The newspapers involved in constructing this index adequately reflect the economic conditions of mainland China and are widely used in domestic financial market research. To obtain annual data, this paper refers to the approach of Gu Haifeng et al., calculating the annual arithmetic average of the monthly MPU index data and then standardizing it.

2) Explained variable. Bank liquidity risk index. Drawing on the methodology of Wang Jiahua et al., this paper selects five representative indicators across three dimensions—asset-liability matching (liquidity ratio, loan-to-deposit ratio), capital adequacy (capital adequacy ratio), and asset safety (top ten customer loan concentration ratio, provision coverage ratio)—multiplied by their respective weights to measure bank liquidity risk. After standardizing all indicators and converting negative indicators to positive values, the entropy method is applied to calculate the weights for each indicator. The top ten customer loan concentration ratio carries the highest weight (37.42%), indicating that this metric exhibits the greatest variation among different banks.

3) Control variables. At the macro level, the year-on-year growth rates of GDP and M2 are selected; at the micro level, the asset-liability ratio, natural logarithm

of assets, cost-to-income ratio, and return on capital are chosen.

(3) Data Sources

This study utilizes unbalanced panel data from 42 A-share listed commercial banks in China spanning 2009 to 2022. The MPU index is sourced from the Chinese MPU index compiled by Huang and Luk; macroeconomic and bank-specific data are obtained from WIND, with missing values manually supplemented by consulting annual reports of the

banks.

3. Empirical Results

The baseline regression results are shown in **Table 1**. The regression coefficients of MPU are all significantly positive. After controlling for individual fixed effects and control variables, the coefficient is 0.2782, indicating that an increase in MPU significantly raises banks' liquidity risk. This validates the hypothesis that MPU is positively correlated with banks' liquidity risk.

Table 1 Baseline Regression Results

	(1)		(2)		(3)	
	LR	LR	LR	LR	LR	LR
MPU	0.0021*** (0.0002)	0.3114*** (0.1006)	0.0021*** (0.0002)	0.1453* (0.0818)	0.0020*** (0.0002)	0.2782*** (0.0703)
Control variable	NO	YES	NO	YES	NO	YES
intercept term	-0.0023*** (0.0002)	0.1806 (0.1744)	-0.0023*** (0.0002)	0.2762* (0.1641)	-0.0022*** (0.0002)	0.1613* (0.0839)
Individual fixed effects	NO	NO	NO	NO	YES	YES
Observed value	488	488	488	488	488	488
R ²	0.2763	0.1351	0.2694	0.0877	0.2694	0.0413

Note: Standard errors are in parentheses; ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. The same applies to the table below.

4. Impact Mechanism Testing

Existing research has found that increased bank risk-taking elevates bank liquidity risk. To further verify the impact mechanism of MPU on bank risk-taking, the following model is constructed:

$$Z_{it} = \gamma_0 + \gamma_1 MPU_{t-1} + \gamma_2 Controls_{it} + \delta_i + \varepsilon_{it} \quad (2)$$

Among these, Z_{it} serves as a proxy variable for bank risk-taking, and the coefficient γ_1 tests whether this mechanism is effective.

Table 2 Mechanism Test

	(1)	(2)
	NPL	RWAR
MPU	1.6986** (0.7496)	-0.9587*** (0.1282)
Control variable	YES	YES
Intercept term	8.6296*** (1.7488)	3.2973*** (0.2993)
Individual fixed effects	YES	YES
Observation value	488	488
R ²	0.4142	0.6983

As shown in **Table 2**, the regression coefficient of MPU is significantly positive, indicating that an increase in MPU raises the non-performing loan ratio of banks, which implies an increase in banks' passive risk-taking. The regression coefficient of MPU is significantly negative, meaning that higher MPU leads to lower active risk-taking by banks. Existing

research has found that banks' active risk-taking level declines with rising economic policy uncertainty. The reduced willingness of banks to take active risks suggests a lower risk tolerance and tighter credit standards, which imposes greater financing constraints on firms. Consequently, firms are more likely to delay or abandon profitable projects, leading to a decline in

their profitability and debt repayment capacity. This, in turn, increases the non-performing loan ratio of banks and exacerbates passive risk-taking. This provides an explanation for the results from the perspective of policy uncertainty transmitting through banks' active risk-taking to passive risk-taking. The absolute value of the MPU coefficient is larger for passive risk-taking ($1.6986 > 0.9587$), consistent with the findings of Gu Haifeng et al., whose research indicates that passive risk-taking may dominate among the two types of risk-taking behaviors. Therefore, the impact of MPU on banks' overall risk-taking remains significantly positive, indicating the existence of an influence mechanism: "MPU increase $\rightarrow$ higher bank risk-taking $\rightarrow$ exacerbation of bank liquidity risk."

5. Conclusions and Implications

This paper examines the impact of Monetary Policy Uncertainty (MPU) on bank liquidity risk and its transmission channels. The main conclusions are as follows: (1) An increase in MPU significantly elevates bank liquidity risk; (2) A transmission path exists: "rising MPU $\rightarrow$ increased overall bank risk-taking $\rightarrow$ heightened bank liquidity risk." The policy implications of this study are as follows. First, governments must recognize the adverse impact of MPU on bank liquidity risk. It is essential to enhance the transparency and predictability of monetary policy, maintain a stable policy environment, and reduce information asymmetry costs for banks. Policies should be sustainable and stable, with greater emphasis on addressing structural economic challenges through supply-side structural reforms. Second, banks need to strengthen their capacity to withstand MPU shocks, further optimize their business operational structures, and strive to establish dynamic and effective liquidity mismatch management mechanisms. Third, regulatory authorities must pay closer attention to changes in commercial banks' liquidity risk, improve comprehensive regulatory frameworks, and better prevent and mitigate financial risks.

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