The Impact of the Two-pillar Regulatory Framework on the Effectiveness of Shadow Banking Supervision

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Abstract

Shadow banking has become the main factor of systemic financial risk contagion. Currently, the regulatory authorities have strengthened the supervision of shadow banking under the framework of dual-pillar regulation and control, but there are still few empirical analyses on the effect of supervision in the academic circle. Through the establishment of vector autoregressive model (VAR), this paper conducts an empirical analysis on the effectiveness of shadow banking regulation under the dual-pillar regulatory framework. The results show that the effect of shadow banking supervision under the dual-pillar regulatory framework is better than that of monetary policy alone.

Keywords: Shadow Banking, Dual-Pillar Regulatory Framework, VAR, Monetary Policy, MPA

Competing Interests:

The authors declare that there is no conflict of interest.

1. Introduction

The concept of shadow banking was first introduced by Paul McCulley in 2007, but it did not attract sufficient attention at the time. Following the 2008 subprime mortgage crisis, the limited regulation of shadow banking was regarded as one of the major contributors to the global financial turmoil, prompting regulatory authorities worldwide to strengthen their oversight. Given the complex business structures, high leverage, and low transparency of shadow banking, the systemic risks it generates are often hidden and difficult to detect. After the crisis, policymakers gradually realized that microprudential regulation alone was insufficient to prevent financial instability, and that financial supervision should also address the effective functioning of the financial system as a whole. Against this backdrop, the Basel Ⅲ Accord introduced a new regulatory model that integrates microprudential and macroprudential frameworks, and established requirements for countercyclical capital buffers. China has also been working to improve its dual-pillar regulatory framework to safeguard financial stability.

Since 2008, shadow banking credit in China has expanded rapidly, contributing significantly to the accumulation of financial risks. Moreover, as shadow banking activities are closely linked to the formal banking sector—earning it the moniker “the shadow of banks”—they play a critical role in credit creation while simultaneously amplifying systemic vulnerabilities. Consequently, assessing the effectiveness of shadow banking regulation under the current supervisory framework is crucial for further improving regulatory design and for mitigating major risks.

This paper focuses on the regulatory effectiveness of shadow banking. Building on an examination of how monetary policy influences shadow banking regulation, it further investigates whether macroprudential policy can effectively regulate shadow banking and how its introduction may alter the dynamics of monetary policy and shadow banking itself. On this basis, the paper explores whether the dual-pillar regulatory framework can provide effective oversight of shadow banking.

2. Literature Review

Shadow banking plays a significant role in the financial intermediation system. Closely connected to the operations of commercial banks, it poses considerable systemic risks.

Existing literature has primarily focused on the relationship between shadow banking and monetary policy. For example, Zhang Bingjie et al. (2021) analyzed multiple transmission channels of shadow banking risk, finding that risks are largely transmitted through monetary policy channels and that shadow banking amplifies these risks. Similarly, Li Wenzhe (2020) and Luca Agnello (2020) examined how shadow banking influences the transmission of monetary policy, arguing that the rapid expansion of shadow banking credit has substantially weakened the effectiveness of monetary policy and diverted it from its intended objectives.

Other studies have highlighted regulatory arbitrage as a core theme. Wan Xiaoli et al. (2016), for instance, explored the evolution of regulatory arbitrage strategies in shadow banking, attributing these changes to the strategic interaction between regulatory measures and shadow banking activities. A further stream of research has emphasized financial stability. Wang Xi (2020) and Kirchner Philipp (2020) demonstrated that shadow banking undermines the healthy functioning and orderly development of the financial system. However, these studies generally do not directly evaluate the effectiveness of regulatory measures targeting shadow banking.

One exception is Dong Yunjia (2016), who employed a financial regulation index approach to assess the effectiveness of shadow banking regulation, providing detailed micro-level evidence on the control of credit expansion. Yet, the subprime mortgage crisis underscored that monetary policy and microprudential regulation alone are insufficient to prevent financial crises, thereby drawing attention to the role of macroprudential policies. Lan Xiaomei et al. (2020) argued that monetary policy and macroprudential tools can jointly regulate shadow banking credit in a countercyclical manner, with the dual-pillar framework exerting a stronger effect than either policy in isolation. Similarly, Yan Jiajia et al. (2020), using a New Keynesian DSGE model, provided qualitative evidence supporting the effectiveness of the dual-pillar framework in shadow banking regulation.

Overall, prior studies have focused largely on qualitative assessments of regulatory effectiveness, while empirical evidence on the impact of the dual-pillar framework on shadow banking remains limited. To fill this gap, this study employs a vector autoregression (VAR) approach. We construct two VAR models—one including only monetary policy and another incorporating both monetary and macroprudential policies under the dual-pillar

framework—and conduct a comparative analysis to empirically evaluate the regulatory effectiveness of the dual-pillar framework on shadow banking in China.

3. Empirical Methods

3.1 Variable selection

The regulatory effectiveness of shadow banking is proxied by the month-on-month growth rate of shadow banking credit. Since regulatory authorities adopt different definitions of the scope of shadow banking, this study follows Wang Qianhong et al. (2021) and Guo Na et al. (2020), and, for the sake of data availability and consistency, adopts a funds-utilization perspective. Specifically, the proxy variable for shadow banking credit, denoted as RSB, is defined as the month-on-month growth rate of the sum of undiscounted bankers' acceptances, entrusted loans, and trust loans.

For monetary policy instruments, in line with Jin Chunyu et al. (2021), Liu Jinquan et al. (2020), and Chen Langnan et al. (2015), we distinguish between quantitative and price-based tools. The quantitative monetary policy tool is proxied by the month-on-month growth rate of broad money supply (M2), denoted as RM2. The price-based monetary policy tool is proxied by the month-on-month growth rate of the one-month Shanghai Interbank Offered Rate (RSHIBOR).

For macroprudential policy instruments, the countercyclical capital buffer is selected as the proxy, since it is the most frequently adjusted instrument in China's Macroprudential Assessment (MPA) framework. Moreover, the Basel Ⅲ Accord introduced the countercyclical capital buffer to address the risks associated with shadow banking. In line with its recommendations, the indicator "credit-to-GDP ratio minus its long-term trend" is commonly used to link countercyclical capital requirements to systemic risk conditions. In the Chinese context, the "total social financing" (SF) indicator better captures the overall financial resources provided to the real economy, including those from shadow banking. Therefore, we link the countercyclical capital buffer to the ratio of SF to GDP, consistent with the objectives of China's macroprudential policy.

Formally, let Ratio denote the SF-to-GDP ratio, and Trend represent its long-term trend. The macroprudential policy proxy variable is then defined as: GAP=SF/GDP-SF/GDP. The

long-term trend of the SF-to-GDP ratio is calculated using the Hodrick–Prescott (H-P) filter, as implemented in EViews 10.0.

3.2 Data sources and processing

The data used in this study are obtained from the RESSET database and the official website of the People's Bank of China. The sample period spans from November 2006 to December 2020, with monthly frequency, yielding a total of 170 valid observations. Since GDP data are reported quarterly, quarterly GDP is converted into monthly series using EViews 10.0. All sample data are seasonally adjusted using the X-12 method in EViews 10.0. The long-term trend of the ratio of social financing to GDP is then extracted using the Hodrick–Prescott (H-P) filter, also implemented in EViews 10.0. Consistent with standard practice for monthly data, the smoothing parameter is set at $\lambda = 14400$.

3.3 Model Selection

Given that financial and economic analyses typically involve multiple interrelated time series, the vector autoregression (VAR) model has been widely employed in empirical research, particularly in studies of monetary policy. The VAR framework allows for the examination of how shocks to one variable propagate through the system and affect other variables. In essence, a VAR model regresses each variable in the system on its own lagged values as well as on the lagged values of all other variables in the system. Formally, a p-order VAR model, denoted as VAR(p), is defined as:

$$Y_t = C + \emptyset_1 Y_{t-1} + \emptyset_2 Y_{t-2+} + \cdots + \emptyset_p Y_{t-p+} \varepsilon_t \quad (1)$$

Where $Y_t = [y_{1t}, y_{2t}, \cdots, y_{nt}]'$ is an $n \times 1$ vector of endogenous variables at time $t = 1,2, \cdots T$. C is an $n \times 1$ constant vector. $\emptyset_i (i = 1,2, \cdots, p)$ are $n \times n$ coefficient matrices; and ε_t is an $n \times 1$ vector of white-noise disturbances that satisfies:

$$E(\varepsilon_t) = \mathbf{0}$$
$$E(\varepsilon_t \varepsilon_t') = \boldsymbol{\Omega}$$
$$E(\varepsilon_t \varepsilon_s') = \mathbf{0}, s \neq t$$

Where Ω is an $n \times n$ symmetric and positive definite covariance matrix.

4. Empirical Results and Analysis

4.1 The impact of monetary policy on shadow banking credit

4.1.1 Unit root tests

In empirical analysis, the use of non-stationary time series variables can severely distort estimation results. Therefore, before conducting the analysis, it is essential to ensure the stationarity of the data. For this purpose, we apply the augmented Dickey–Fuller (ADF) unit root test using EViews 10.0.

As shown in Table 1, at the 5% significance level, the variables GAP, RM2, RSHIBOR, and RSB are stationary, thereby satisfying the conditions for constructing a VAR model.

Table 1. Unit root test results

Variable	Test Type (L,T,C)	t-Statistic	Critical Value (5%)	p-Value	Conclusion
RSB	(0,0,0)	-12.92810	-1.942722	0.0000	Stationary
RM2	(2,0,0)	-1.691433	-1.942745	0.0859	Stationary
RSHIBOR	(0,0,0)	-13.34880	-1.942722	0.0000	Stationary
GAP	(2,0,0)	-4.986090	-1.942745	0.0000	Stationary

Note: (L, T, C) denote lag order, trend term, and constant term, respectively.

4.1.2 Lag order selection

The appropriate lag length is determined by testing sequential VAR models with lag orders from 0 to 11. As reported in Table 2, the optimal lag length for the VAR model including only monetary policy variables is three, according to the Akaike Information Criterion (AIC) and Final Prediction Error (FPE).

Table 2. VAR lag order selection criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-65.32330	NA	0.000474	0.859413	0.917316*	0.882927*
1	-54.81181	20.49411	0.000465	0.840400	1.072015	0.934457
2	-43.81142	21.03218	0.000454	0.815238	1.220565	0.979837
3	-32.74288	20.74482	0.000442*	0.789219*	1.368257	1.024360
4	-26.53824	11.39469	0.000458	0.824380	1.577130	1.130064
5	-24.55039	3.575626	0.000501	0.912584	1.839045	1.288810
6	-20.59405	6.967145	0.000535	0.976026	2.076199	1.422794
7	-14.88122	9.844750	0.000558	1.017374	2.291259	1.534685
8	-10.79056	6.894947	0.000595	1.079127	2.526723	1.666980

9	-4.504400	10.35832	0.000618	1.113263	2.734571	1.771659
10	-1.258908	5.225446	0.000667	1.185647	2.980666	1.914585
11	18.75848	31.47387*	0.000584	1.047063	3.015794	1.846544

4.1.3 Model stability test

As illustrated in Figure 1, all the inverse roots of the AR characteristic polynomial lie within the unit circle, indicating that the VAR model including only monetary policy variables is stable.

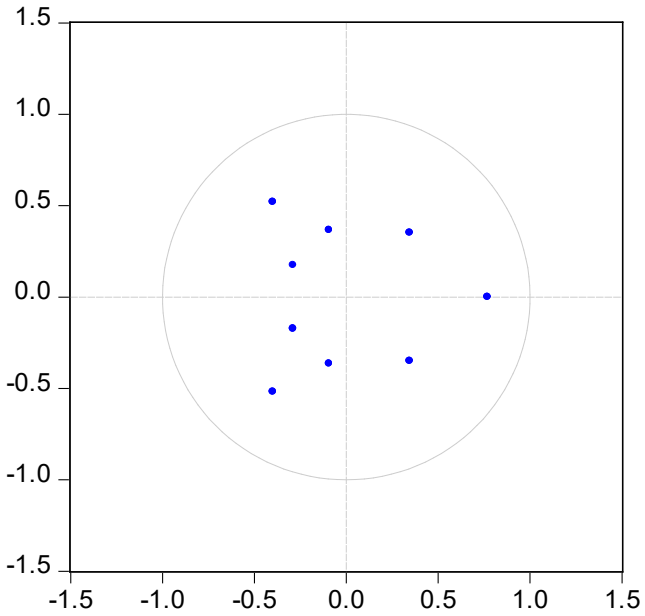

Figure 1 AR roots of VAR model

4.1.4 Granger causality test

To assess the validity of the VAR model and the interdependence among variables, we conduct Granger causality tests. Such tests are essential in economic modeling, as meaningful causal interactions are expected between explanatory and dependent variables.

The Granger causality results for RM2, RSHIBOR, and RSB are reported in Table 3. At the 5% significance level, the null hypothesis cannot be rejected, implying that monetary policy is not the direct cause of changes in shadow banking credit. Specifically, the null hypothesis for the causality from RM2 to RSB can only be rejected at the 60% confidence level, suggesting that quantitative monetary policy tools exert limited control over shadow banking credit. In contrast, the null hypothesis for RSHIBOR to RSB is rejected at the 16% confidence level, indicating that price-based monetary policy tools can, to some extent, influence shadow banking credit.

Table 3 Granger causality test results

Excluded	Chi-sq	df	Prob.
M2	2.045714	3	0.5630
RSHIBOR	5.281860	3	0.1523
All	7.581975	6	0.2704

4.1.5 Impulse response analysis

Figure 2 presents the impulse response functions (IRFs) of the VAR model with only monetary policy variables. The vertical axis measures the response of shadow banking credit, while the horizontal axis indicates time periods. The two curves reflect the dynamic responses of RSB to one-unit shocks from quantitative and price-based monetary policy tools.

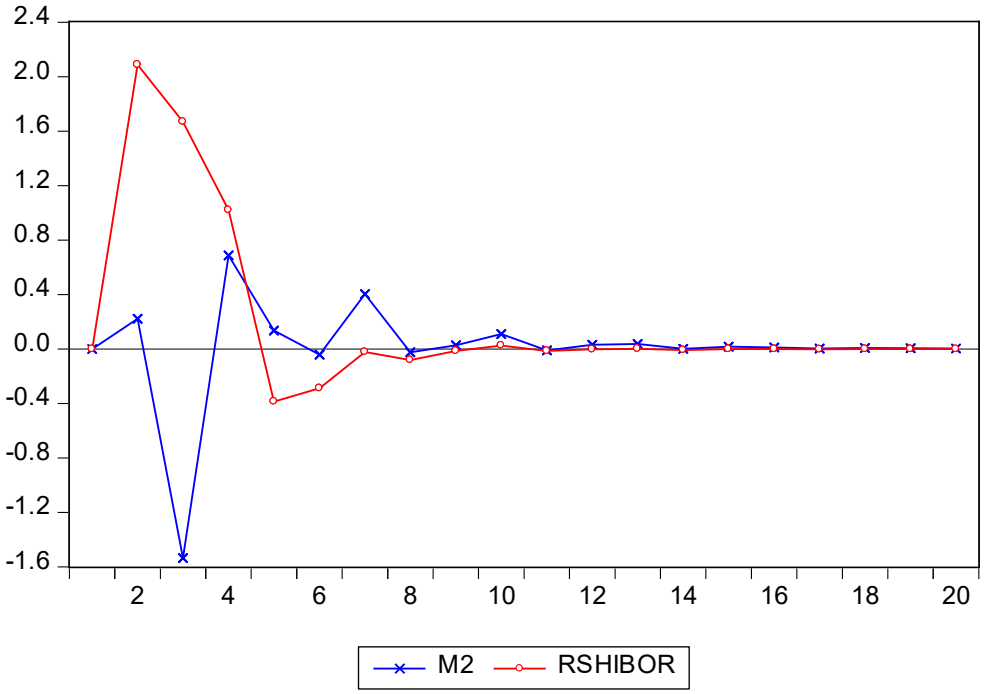

Figure 2: Impact of monetary policy on shadow banking credit scale

The results show that a one-unit positive shock to the price-based tool (RSHIBOR) immediately increases shadow banking credit, which peaks in the second period, then gradually declines and converges to zero after the eighth period. In contrast, a one-unit shock to the quantitative tool (RM2) initially causes a slight increase in shadow banking credit, followed by a sharp decline that bottoms out in the third period, before recovering and stabilizing near zero after the eighth period.

To better capture the cumulative effects, Figure 3 depicts the accumulated IRFs. The

cumulative impact of quantitative policy shocks approaches zero after the third period, suggesting that expansionary monetary supply can temporarily curb shadow banking credit but has no long-term effect. By contrast, the impact of price-based policy shocks persists, leading to sustained expansion of shadow banking credit. This likely reflects rising interbank rates, which increase funding costs for commercial banks and drive them toward shadow banking activities. Overall, the IRF findings are consistent with the Granger causality results.

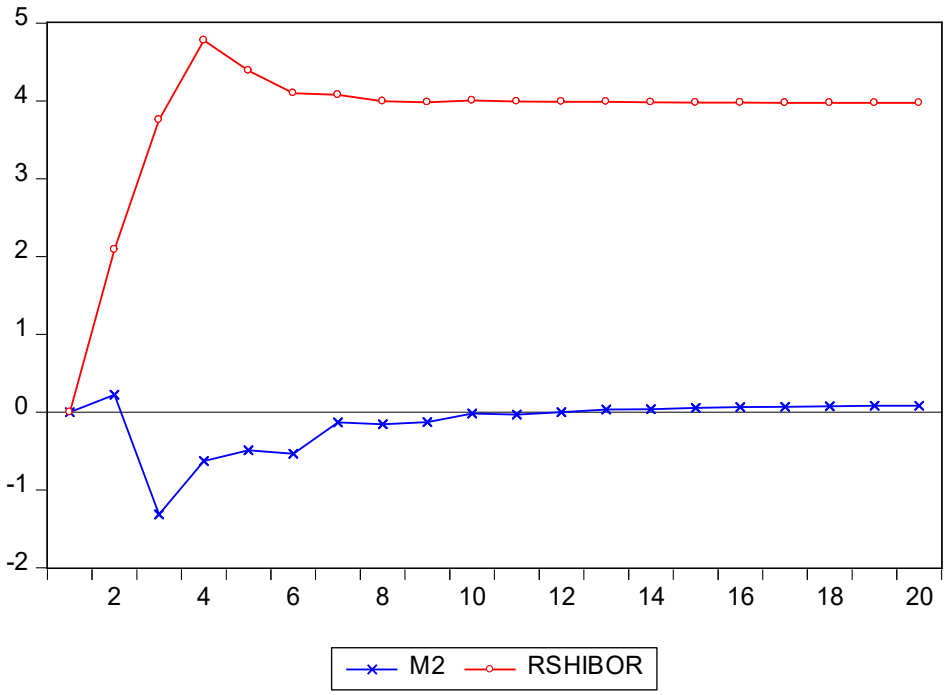

Figure 3: Cumulative impact of monetary policy on shadow banking credit scale

4.1.6 Variance decomposition

Table 4 reports the forecast error variance decomposition of RSB. From the second period onward, the explanatory power of monetary policy increases, with price-based tools consistently accounting for a larger share than quantitative tools. This indicates that price-based monetary policy has stronger regulatory influence over shadow banking credit—a finding consistent with the Granger causality and impulse response analyses.

Table 4: Variance decomposition of shadow banking credit scale (RSB)

Period	S.E.	RSB	M2	RSHIBOR	Monetary Policy
1	15.59449	100.0000	0.000000	0.000000	0.000000
2	15.73769	98.21951	0.019673	1.760813	1.780486
3	15.90013	96.22286	0.952765	2.824380	3.777145
4	15.94770	95.65048	1.132521	3.216997	4.349518
5	15.95821	95.59004	1.138268	3.271691	4.409959

6	15.96165	95.55850	1.138464	3.303035	4.441499
7	15.96731	95.49764	1.201461	3.300899	4.50236
8	15.96762	95.49492	1.201649	3.303434	4.505083
9	15.96769	95.49462	1.201898	3.303481	4.505379
10	15.96817	95.48989	1.206579	3.303533	4.510112
11	15.96819	95.48976	1.206630	3.303613	4.510243
12	15.96822	95.48941	1.206986	3.303602	4.510588
13	15.96826	95.48894	1.207477	3.303583	4.511060
14	15.96827	95.48891	1.207478	3.303609	4.511087
15	15.96828	95.48881	1.207587	3.303606	4.511193
16	15.96828	95.48876	1.207638	3.303604	4.511242
17	15.96828	95.48875	1.207642	3.303607	4.511249
18	15.96829	95.48873	1.207664	3.303606	4.511270
19	15.96829	95.48872	1.207671	3.303606	4.511277
20	15.96829	95.48872	1.207673	3.303606	4.511279

4.2 The impact of the dual-pillar regulatory framework on shadow banking credit

To evaluate the regulatory effectiveness of the dual-pillar framework, we extend the VAR model by incorporating the macroprudential policy variable (GAP).

4.2.1 Lag order selection

As shown in Table 5, lag length tests suggest that the optimal order for the VAR model under the dual-pillar framework is three.

Table 5: VAR model lag order determination

Lag	LogL	LR	FPE	AIC	SC	HQ
0	253.3220	NA	5.11e-07	-3.136125	-3.058920*	-3.104773
1	278.5609	48.89051	4.55e-07	-3.252338	-2.866312	-3.095577
2	308.8358	57.12254	3.80e-07	-3.431897	-2.737051	-3.149728
3	337.5669	52.76405	3.24e-07*	-3.592037*	-2.588370	-3.184459*
4	348.4046	19.35783	3.47e-07	-3.527102	-2.214614	-2.994115
5	354.7488	11.01252	3.92e-07	-3.405645	-1.784337	-2.747249
6	362.4010	12.89809	4.38e-07	-3.300641	-1.370513	-2.516837
7	376.9318	23.76103	4.49e-07	-3.282161	-1.043212	-2.372947
8	385.1926	13.09269	4.98e-07	-3.184813	-0.637044	-2.150191
9	394.6418	14.50063	5.47e-07	-3.102413	-0.245823	-1.942382
10	404.1276	14.07954	6.01e-07	-3.020473	0.144937	-1.735034
11	426.1981	31.64828*	5.66e-07	-3.096832	0.377399	-1.685983

Note: * indicates significance at the 5% level.

4.2.2 Model stability test

Figure 4 plots the inverse roots of the AR characteristic polynomial. Since all roots lie within the unit circle, the VAR model under the dual-pillar framework is stable.

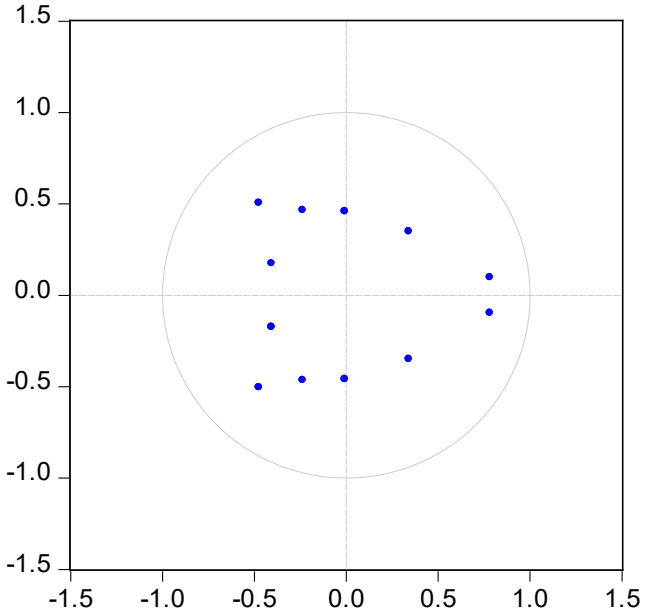

Figure 4: AR roots of VAR model

4.2.3 Granger causality: comparative analysis

Table 6 presents the Granger causality results for RSB, RSHIBOR, GAP, and RM2. At the 5% significance level, the null hypotheses for RM2 and RSHIBOR to RSB are rejected, implying that both monetary policy and macroprudential policy jointly drive changes in shadow banking credit under the dual-pillar framework. Compared with the results in Table 3, where causality was weak, the inclusion of macroprudential policy significantly enhances the effectiveness of monetary policy in regulating shadow banking. Thus, the dual-pillar framework provides stronger regulatory control than monetary policy alone.

Table 6: Granger causality test results

Excluded	Chi-sq	df	Prob.
M2	0.707144	3	0.8715
RSHIBOR	7.839274	3	0.0495
GAP	12.78910	3	0.0051
Dual-pillar	20.84382	9	0.0134

4.2.4 Impulse response: comparative analysis

Figure 5 illustrates the IRFs of shadow banking credit to shocks in macroprudential

policy. A one-unit positive shock to GAP immediately reduces shadow banking credit, which reaches its lowest point in the third period. Although slight rebounds occur, credit quickly adjusts downward, stabilizing near zero after the tenth period. This indicates that macroprudential policy under the dual-pillar framework enforces countercyclical control over shadow banking in both the short and medium term.

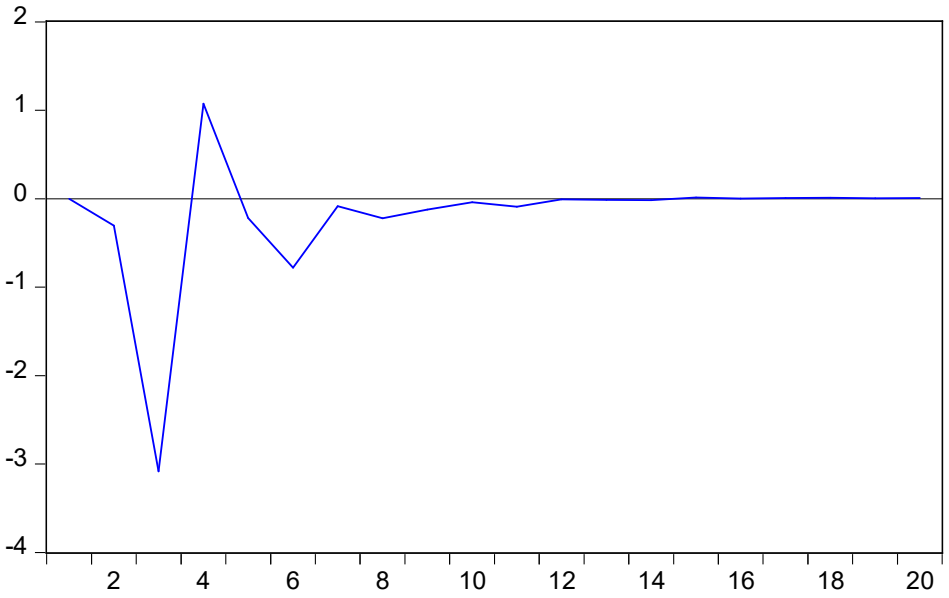

Figure 5: Impact of macroprudential policy on shadow banking credit scale under the dual pillar framework

Figure 6 shows the accumulated IRFs, confirming that macroprudential policy has a lasting negative effect on shadow banking credit.

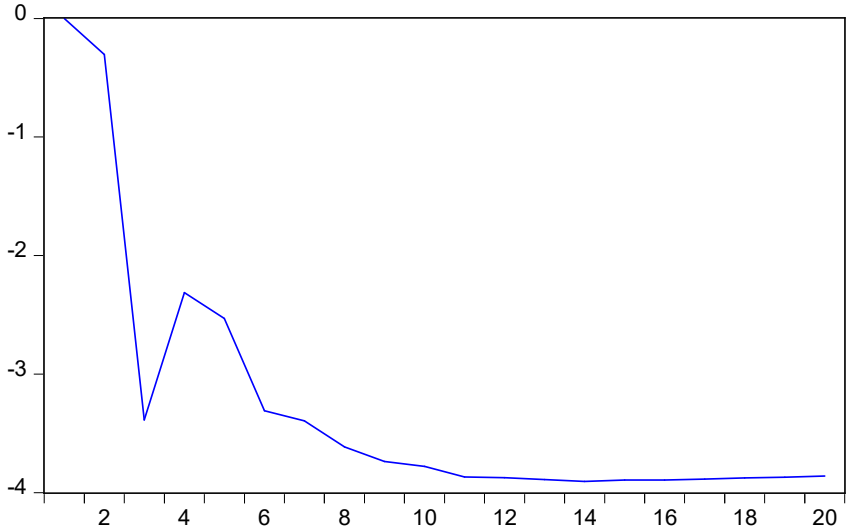

Figure 6: Cumulative impact of macroprudential policy on shadow banking credit scale under the dual pillar framework

Moreover, as illustrated in Figure 7, compared with the single-policy framework, the dual-pillar system strengthens the long-term regulatory power of both quantitative and price-based monetary policy tools. A possible explanation is that macroprudential policy weakens the feedback mechanism of shadow banking on money supply, thereby enhancing the effectiveness of monetary policy. Overall, the dual-pillar framework outperforms monetary policy alone in regulating shadow banking.

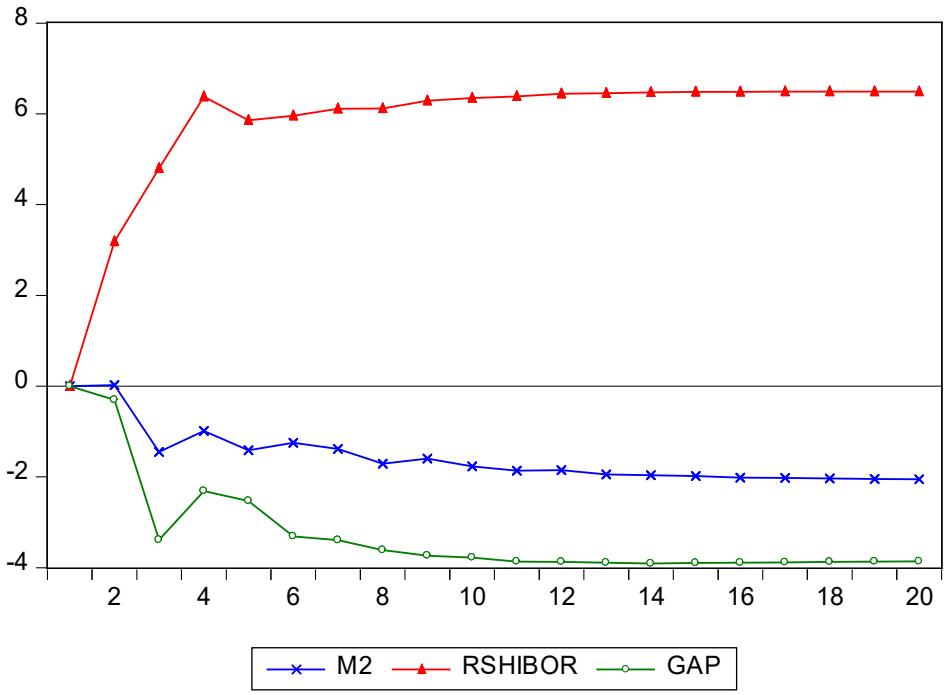

Figure 7: Cumulative impact of the dual pillar regulatory framework on shadow banking credit scale

4.2.5 Variance decomposition: comparative analysis

Table 7 reports the variance decomposition results for RSB under the dual-pillar framework. Compared with Table 4, the inclusion of macroprudential policy increases the proportion of shadow banking credit variance explained by monetary policy. Moreover, the explanatory power of the dual-pillar framework grows over time, underscoring its superior effectiveness in regulating shadow banking. These results are consistent with the Granger causality tests and impulse response analyses.

Table 7: Variance decomposition of shadow banking credit scale (RSB)

Period	S.E.	RSB	M2	RSHIBOR	GAP	Monetary Policy	Dual Pillar
1	15.12994	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000
2	15.46718	95.71893	0.000224	4.242333	0.038509	4.242557	4.281066
3	15.92348	90.33250	0.853185	5.028165	3.786153	5.881350	9.667503
4	16.04536	88.98016	0.922053	5.921687	4.176101	6.843740	11.019841
5	16.07341	88.82637	0.988746	6.005074	4.179814	6.993820	11.173634
6	16.09700	88.61016	0.996689	5.991327	4.401824	6.988016	11.389840
7	16.09913	88.59436	1.003745	5.998492	4.403400	7.002237	11.405637
8	16.10401	88.54130	1.044422	5.994867	4.419415	7.039289	11.458704
9	16.10625	88.52171	1.049224	6.005030	4.424038	7.054254	11.478292
10	16.10735	88.51034	1.060248	6.005332	4.424081	7.065580	11.489661
11	16.10794	88.50390	1.063841	6.005380	4.426884	7.069221	11.496105
12	16.10808	88.50244	1.063879	6.006853	4.426823	7.070732	11.497555
13	16.10837	88.49955	1.067057	6.006654	4.426742	7.073711	11.500453
14	16.10840	88.49917	1.067245	6.006749	4.426833	7.073994	11.500827
15	16.10842	88.49895	1.067341	6.006831	4.426879	7.074172	11.501051
16	16.10847	88.49850	1.067852	6.006797	4.426854	7.074649	11.501503
17	16.10847	88.49846	1.067863	6.006811	4.426869	7.074674	11.501543
18	16.10848	88.49836	1.067928	6.006803	4.426913	7.074731	11.501644
19	16.10849	88.49830	1.067976	6.006800	4.426923	7.074776	11.501699
20	16.10849	88.49827	1.067977	6.006799	4.426951	7.074776	11.501727

5. Conclusion

Based on data from November 2006 to December 2020, this study constructs two VAR models: one excluding macroprudential policies and the other including them. The main findings are as follows:

First, empirical evidence indicates that when only monetary policy is implemented, expansionary quantitative monetary policy can suppress the growth of shadow banking credit in the short term, but it has no significant long-term effect. In contrast, price-based monetary policy not only promotes the expansion of shadow banking credit in the short term but also sustains this effect over the long term.

Second, shadow banks respond immediately to shocks from macroprudential policy tools and exhibit a rapid rebound once trends emerge. This suggests that under the dual-pillar regulatory framework, macroprudential policy can continuously monitor and regulate shadow banking credit, implement counter-cyclical adjustments, and effectively control the expansion

of credit in a relatively short period, while exerting a persistent influence on credit scale.

Third, the dual-pillar regulatory framework is more effective in managing shadow banks than monetary policy alone. The inclusion of macroprudential policies strengthens the control of both quantity-based and price-based monetary policy tools over shadow banking. Additionally, quantitative monetary policy has a lasting impact on the scale of shadow banking, indicating that the dual-pillar framework is superior to standalone monetary policy.

Based on these findings, the following policy recommendations are proposed:

First, gradually improve the transmission channels of price-based monetary policy tools and coordinate the use of both types of monetary policy instruments. When only monetary policy is applied, expansionary quantitative monetary policy can restrain the expansion of shadow banking credit in the short term, but this effect is not significant in the long term. In contrast, price-based monetary policy not only can expand shadow banking credit in the short term but also maintain this effect in the long term. Moreover, under the dual-pillar framework, price-based monetary policy exerts far stronger regulatory influence on shadow banks than quantitative monetary policy. Considering these two phenomena, it can be inferred that interest rate–based monetary policy tools can more effectively influence the scale of shadow banking credit. However, in China, the transmission channels for interest rate–based instruments are underdeveloped due to the absence of interest rate liberalization. Therefore, to further enhance the regulatory capacity over shadow banking while ensuring market stability, it is necessary to achieve interest rate marketization.

Second, improve the macroprudential policy framework. Macroprudential policies can continuously supervise and regulate the scale of shadow banking credit, and implement counter-cyclical adjustments, effectively controlling credit expansion in a relatively short period. In addition, with the inclusion of macroprudential policies, both quantity-based and price-based monetary policy tools are strengthened in their control over shadow banks. Based on the above, it is necessary to improve the macroprudential policy framework. Regulators in various countries adjust financial systems counter-cyclically as a primary objective of macroprudential supervision. However, in China’s existing macroprudential tools, counter-cyclical capital mainly reflects the counter-cyclical regulatory goal. Furthermore, China’s macroprudential evaluation system focuses more on conventional banking institutions,

while evaluations of shadow banks remain relatively weak. Therefore, it is necessary to promote innovation in macroprudential tools, strengthen shadow banking supervision, and implement more comprehensive regulation of the financial system.

Third, gradually improve the dual-pillar regulatory framework based on the existing supervision. Since macroprudential policies can amplify the control of both types of monetary policy tools over shadow banks, and the dual-pillar framework demonstrates significantly better regulatory effects than monetary policy alone, it is necessary to strengthen communication between the two macro policy authorities under the dual-pillar framework. This will ensure that the two policies complement and coordinate with each other, construct a dual-pillar regulatory framework, and further enhance the supervision of shadow banking.

References

[1] Zhang B, Wang S, Wei Y, Zhao X. Research on the Risk Transmission Channels and Regulatory Countermeasures of Shadow Banking in China [J]. Systems Engineering - Theory & Practice, 2021, 41(01): 15-23.

[2] Li W. Economic Analysis of Shadow Banking in China: Effects on Monetary Policy [J]. China Economic Issues, 2020(05): 55-70.

[3] Kirchner P. On Shadow Banking and Financial Frictions in DSGE Modeling [J]. Review of Economics, 2020, 71(2).

[4] Wan X, Zheng D, Zheng J, Yan Y. Evolution Path and Driving Factors of Shadow Banking Regulatory Arbitrage in China [J]. Economist, 2016(08): 38-45.

[5] Wang X, Wang X, Bai Z. Dynamic Effects of Shadow Banking on Financial Stability [J]. Financial Forum, 2020, 25(10): 21-34.

[6] Agnello L, Castro V, Jawadi F, Sousa R M. How Does Monetary Policy Respond to the Dynamics of the Shadow Banking Sector? [J]. International Journal of Finance & Economics, 2020, 25(2).

[7] Dong Y. Research on the Effectiveness of Shadow Banking Regulation in China [D]. Tianjin University of Finance and Economics, 2016.

[8] Lan X, Yang S, Yang S. Effects of Coordinating Monetary Policy and Macroprudential Policy on Shadow Banking [J]. International Financial Research, 2020(09): 23-33.

[9] Yan J, Wu B. Study on Shadow Banking Regulation under the Dual-Pillar Policy Framework [J]. Financial Regulation Research, 2020(03): 35-50.

[10] Wang Q, Chen B. Effects of Shadow Banking on the Effectiveness of Monetary Policy under Coordinated Macroprudential Policy Tools [J]. Financial Theory Exploration, 2021(01): 3-16.

[11] Guo N, Peng Y, Feng L. Shadow Banking, Financial Risks, and the Effectiveness of Macroprudential Regulation [J]. Contemporary Economic Science, 2021, 43(02): 16-26.

[12] Jin C, Dong X. Research on the Effective Combination of Monetary Policy and Macroprudential Policy under the "Dual-Pillar" Framework in China [J]. Modern Economic Exploration, 2021(04): 56-65.

[13] Liu J, Li Y. China's Macroeconomic Policy Choices under the Dual Goals of "Stable Growth" and "Stable Leverage" [J]. Modern Economic Exploration, 2020(09): 1-8.

[14] Chen L, Tian L. Research on China's Monetary Policy Shock Effects from the Perspective of Policy Tools [J]. Economics (Quarterly), 2015, 14(01): 285-304.

[15] Wang Y. The Impact of Shadow Banking Credit Creation on Monetary Policy: Empirical Analysis Based on VAR Model [J]. Economics and Management, 2017, 31(02): 63-67.

[16] Cheng F, Meng W. Coordination between Macroprudential Policy and Monetary Policy: A Bayesian Estimation of DSGE Model [J]. China Management Science, 2017, 25(01): 11-20.

[17] Fang Y. Research on the Effectiveness of Macroprudential Policy [J]. World Economy, 2016, 39(08): 25-49.

[18] Liang Q, Li Z, Bu L. Effectiveness of Macroprudential Policy Tools in China [J]. Economic Science, 2015(02): 5-17.

[19] Wang A, Wang J. Effects of Macroprudential Policy and Its Relationship with Monetary Policy [J]. Economic Research Journal, 2014, 49(04): 17-31.