Macroprudential Policy in China

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Introduction

- Since the 2008 global financial crisis, macroprudential policy has been one of the main approaches to addressing potential financial risks.
- After the GFC, the Chinese government deployed a 4-trillion yuan stimulus plan.
- After China's economy entered the "new normal" stage, domestic financial risks accumulated.
  - On June 20, 2013, China suffered a serious liquidity problem.
  - The stock crash took place in mid-2015.
  - On August 11, 2015, the "8/11" foreign exchange rate regime reform triggered another round of stock crunch.
- China introduced the Macro Prudential Assessment (MPA) framework in 2016.

The Evaluation Methods

- Banks: 4 state-owned banks, 3 policy banks, 13 joint-stock banks, 1 postal saving bank and many urban banks, rural banks and foreign banks
- Evaluation outcomes: A (90 or more), B (60 or more but below 90); C (blow 90)
- Reward-and-punishment mechanism

The Evaluation Methods

Capital adequacy ratios and leverage ratios	• Capital adequacy ratios (80%), leverage ratios (20%) and total loss-absorbing capacity (0%)
Banks' assets and liabilities	• Broad loans (60%), entrusted loans (15%), interbank borrowing (15%)
Liqudity conditions	• Liquidity coverage ratio (40%), net stable funding ratio (40%), reserve requirements (20%)
Pricing behaviour for interest rates	• Competitiveness behaviours (50%), deviation of deposit interest rates (50%)
Quality of assets	• Non-performing loans (50%), provision coverage (50%)
Cross-border financing	• Position of foreign liabilities (60%), currency structure (20%) and maturity structure (20%)
Execution of credit policy	• Execution of monetary policy (70%), usage of central bank's financing (30%)

Double-pillar Framework

- The PBOC's policy system will eventually be a double-pillar policy framework combining the monetary policy and the macroprudential policy (Zhou Xiaochuan 2017).
- The first pillar is to keep both economic growth and inflation on a stable track.
- China's economy continues to face a downward pressure.
- Trade-off: economic growth and financial stability.

Double-pillar Framework

- The second pillar of the PBOC's policy framework is macroprudential policy.
- The goal of the macroprudential policy:
  - mitigate the pro-cyclical effect of the financial system
  - avoid systemic risks, such as those resulting from cross-market contagion

Research on macroprudential policy tools

- Huan Ye (2018) find the reserve requirement ratio, LTV and DTI are the most effective tools in controlling credit growth.
- Lanbiao Liu and Jinfu Dai (2019) find macroprudential tools are helpful for increasing loans of commercial banks and restraining the down turn.
- Pei Wang, Lixia Yu and Xuan Cao (2017) find in the long run, capital adequacy ratios have the counter-cyclical effect; the counter-cyclical capital buffers can respond to systemic risk quickly and play a key role in reducing systemic risk.
- Lideng Zhang, Qiming Tang and Yuhang Zhang (2019) find that using dynamic capital adequacy ratio that targets in housing credit growth can effectively control the credit risk, especially in the short run.

Research on macroprudential policy effectiveness

- Lubin Wang, Minmin Zheng and Shuai Huo (2019) find that the MPA during the contraction of financial cycle can release capital buffers, providing loose environment for financial institutions; the down turn of the economy, the overdrafts from last round economic boom, and the simultaneous contraction of business cycle and financial cycle might result in the failure of counter-cyclical regulation and affect the achievement of the MPA goals.

- Dawei Song (2018) find that macroprudential policy is helpful to decrease futural inflation risk, thus indirectly stable the interest rate and reduce welfare losses.

- Yong Ma and Chi Yao (2017) find regulatory pressure prompt banks to accelerate their adjustment of capital buffer, especially in urban commercial banks and rural commercial banks.

Research on the coordination of two policies

- Jiasheng Su and Xi Wang (2019) find the policy coordination between monetary and macroprudential departments can significantly decrease the welfare loss.
- Luo and Cheng (2017) find that macroprudential policy could make up for the deficiency of monetary policy in regulating the real estate market.
- Jiang, Li, Zhang, Zhou (2019) conclude the coordination effect and to provide some inspiration.

The coordination of China's monetary policy and macroprudential policy

- Jiang, Li, Zhang, Zhou (2019)
- Micro level: use the System Generalized Method of Moments (System GMM) method
  - to analyze the monetary policy and macroprudential policy coordination effect on the risk-taking of 88 of China's commercial banks;
- Macro level: use the Structural Vector Autoregression (SVAR) method
  - to analyze the two policies coordination effect on China's housing prices and stock prices.

Micro Level: System Generalized Method of Moments Panel Data Analysis

$$RAR_{i,t} = \beta_0 RAR_{i,t-1} + \beta_1 MPI_t + \beta_2 IIR_t + \gamma_1 X_{i,t} + \gamma_2 Z_t + \varepsilon_{i,t} \quad (1)$$

$$RAR_{i,t} = \beta_0 RAR_{i,t-1} + \beta_1 MPI_t + \beta_2 IIR_t + \beta_3 MPI_t \times IIR_t + \gamma_1 X_{i,t} + \gamma_2 Z_t + \varepsilon_{i,t} \quad (2)$$

Control variables description

Variable	Definition	Data Source
Bank level		
lnTA	The logarithm of total asset, used to measure size of a bank	Bank Focus database
ROAA	Return on average asset, used to measure profitability of a bank	Bank Focus database
EQR	Equity ratio = equity/total asset, used to measure the stability of a bank	Bank Focus database
LIR	Liquidity ratio = liquid asset/liquid liability, used to measure the liquidity of a bank	Bank Focus database
Macro level		
GDP	GDP growth rate	CEInet Statistics database
CPI	CPI growth rate	CEInet Statistics database
FAI	Fixed asset investment growth rate	CEInet Statistics database

Policies impacts on banks risk-taking

	System GMM	OLS-Robust	System GMM	OLS-Robust
Variable	**RAR**	**RAR**	**RAR**	**RAR**
L.RAR	0.660 ***	0.808 ***	0.659 ***	0.806 ***
	(0.0243)	(0.0221)	(0.0254)	(0.0226)
IIR	−0.636 ***	−0.344		
	(0.0626)	(0.242)		
MPI			−0.360 ***	−0.133
			(0.0620)	(0.194)
L.lnTA	−0.162 ***	0.115	−0.0658 **	0.118
	(0.0409)	(0.0954)	(0.0301)	(0.0959)
L.ROAA	−2.905 ***	−0.473	−3.008 ***	−0.546
	(0.273)	(0.421)	(0.305)	(0.422)
L.EQR	−0.382 ***	−0.123 **	−0.312 ***	−0.115 **
	(0.0326)	(0.0526)	(0.0307)	(0.0528)
L.LIR	0.114 ***	−0.0228	0.0917 ***	−0.0279
	(0.00624)	(0.0178)	(0.00750)	(0.0178)
GDP	0.281 ***	0.249 *	0.0514	0.188
	(0.0564)	(0.132)	(0.0618)	(0.185)
CPI	−0.463 ***	−0.532 ***	−0.513 ***	−0.569 ***
	(0.0289)	(0.118)	(0.0335)	(0.114)
FAI	0.0820 ***	0.0730 **	0.0755 ***	0.0703 *
	(0.0131)	(0.0325)	(0.0130)	(0.0373)
Constant	18.42 ***	7.667 ***	20.71 ***	8.599 **
	(0.771)	(2.231)	(1.707)	(3.637)
AR (1)	0.0000		0.0000	
AR (2)	0.8789		0.7246	
Wald Test	4776.97 ***		6866.90 ***	
Sargan Test	0.2300		0.1873	
Observations	842	842	842	842
R-squared		0.772		0.772
Number of bank	88		88	

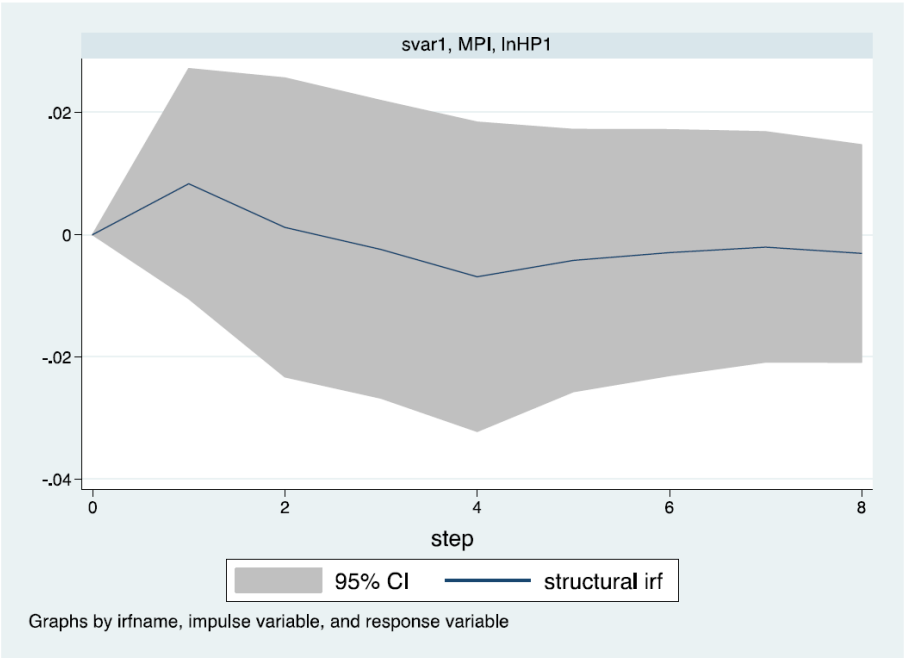
Notes: standard errors in parentheses, *** presents $p < 0.01$, ** presents $p < 0.05$, * presents $p < 0.1$. Source: author's calculation.

The interaction between two policies

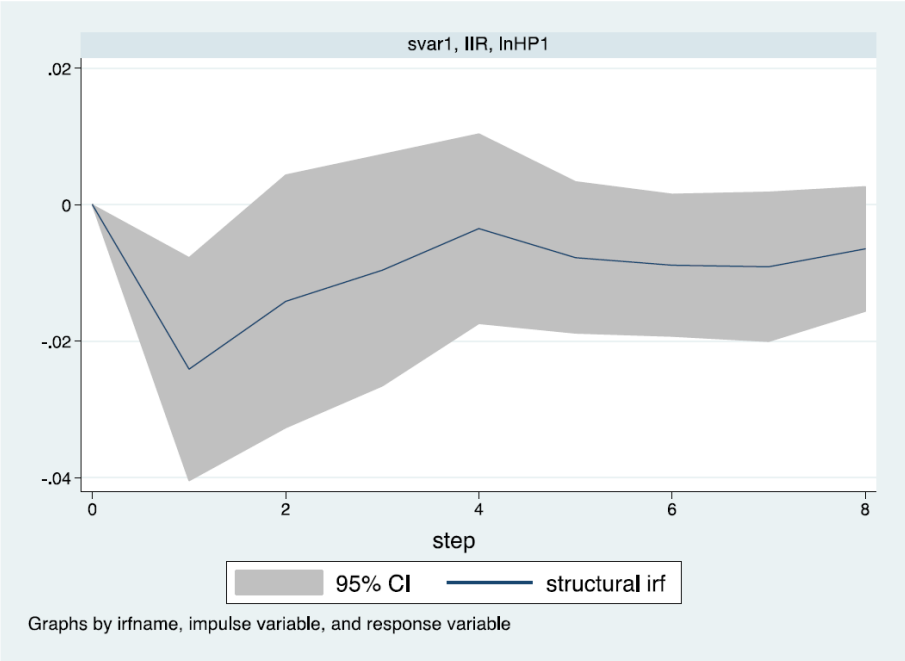
	System GMM	OLS-Robust	System GMM	OLS-Robust
Variable	**RAR**	**RAR**	**RAR**	**RAR**
L.RAR	0.649 ***	0.807 ***	0.663 ***	0.814 ***
	(0.0258)	(0.0226)	(0.0280)	(0.0221)
IIR	−0.587 ***	−0.323	−8.400 ***	−9.401 ***
	(0.0725)	(0.249)	(0.557)	(1.498)
MPI	−0.210 ***	−0.0718	−3.286 ***	−3.771 ***
	(0.0741)	(0.200)	(0.216)	(0.633)
IIR*MPI			1.123 ***	1.323 ***
			(0.0718)	(0.215)
L.lnTA	−0.0910 ***	0.118	0.172 ***	0.174 *
	(0.0327)	(0.0959)	(0.0437)	(0.0943)
L.ROAA	−2.832 ***	−0.489	−2.154 ***	−0.174
	(0.286)	(0.424)	(0.278)	(0.418)
L.EQR	−0.333 ***	−0.121 **	−0.322 ***	−0.121 **
	(0.0338)	(0.0530)	(0.0407)	(0.0518)
L.LIR	0.101 ***	−0.0239	0.142 ***	−0.00839
	(0.00899)	(0.0181)	(0.00907)	(0.0179)
GDP	0.153 **	0.202	0.225 ***	0.120
	(0.0630)	(0.185)	(0.0654)	(0.182)
CPI	−0.438 ***	−0.527 ***	−0.308 ***	−0.341 ***
	(0.0310)	(0.119)	(0.0344)	(0.120)
FAI	0.0670 ***	0.0664 *	−0.0765 ***	−0.116 **
	(0.0134)	(0.0374)	(0.0199)	(0.0471)
Constant	20.77 ***	8.699 **	37.42 ***	34.86 ***
	(1.750)	(3.636)	(2.248)	(5.550)
AR (1)	0.0000		0.0000	
AR (2)	0.9808		0.8207	
Wald Test	6379.19 ***		4916.48 ***	
Sargan Test	0.1992		0.3067	
Observations	842	842	842	842
R-squared		0.772		0.782
Number of bank	88		88	

Notes: standard errors in parentheses, *** presents $p < 0.01$, ** presents $p < 0.05$, * presents $p < 0.1$. Source: author's calculation.

House price



(a)

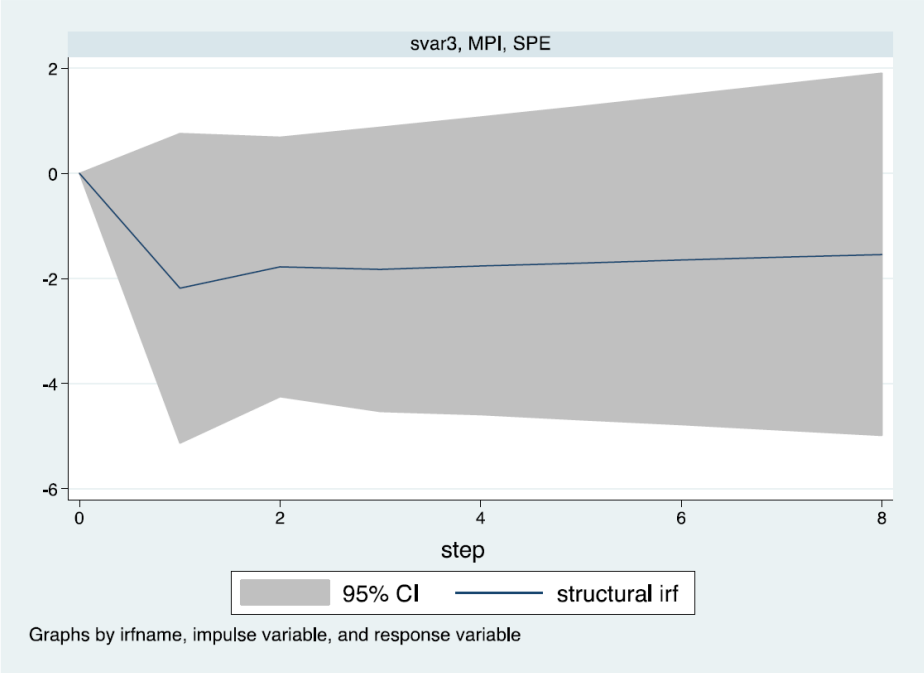


(b)

The variance decomposition of housing prices

Period	lnHP1	MPI	IIR
1	1	0	0
2	0.581332	0.044523	0.374145
3	0.568878	0.035673	0.395449
4	0.556743	0.035667	0.407589
5	0.588554	0.050631	0.360815
6	0.584151	0.054451	0.361398
7	0.58004	0.05404	0.365919
8	0.570029	0.052932	0.377039

Stock Prices



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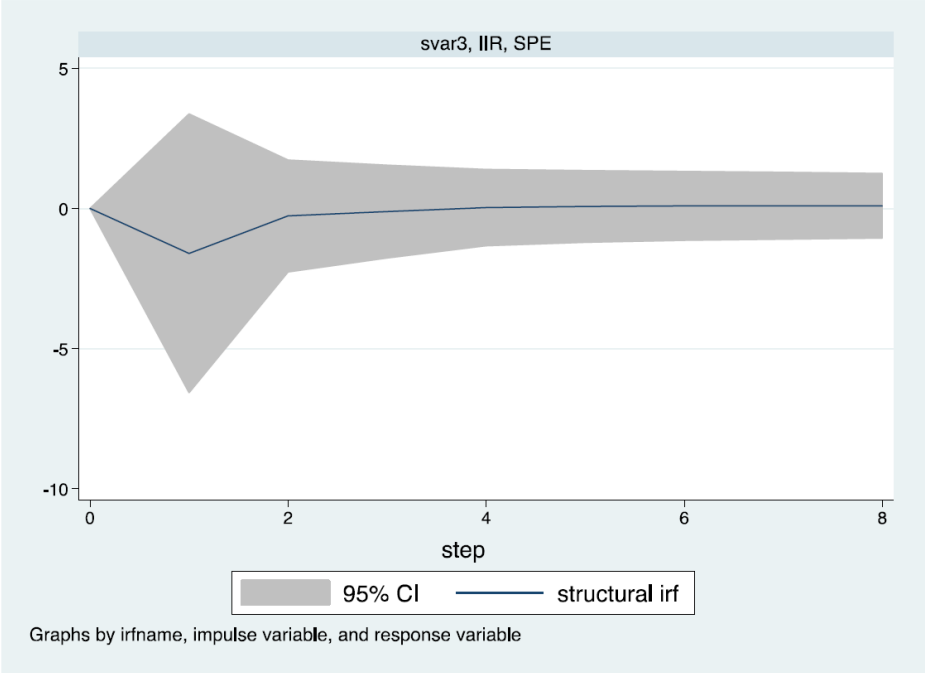

(b)

The variance decomposition of stock prices

Period	SPE	MPI	IIR
1	1	0	0
2	0.94139	0.038106	0.020504
3	0.918468	0.061178	0.020354
4	0.895587	0.084509	0.019904
5	0.875424	0.105136	0.019441
6	0.85722	0.123719	0.019061
7	0.840871	0.140384	0.018745
8	0.826154	0.155374	0.018471

It tells us...

- For regulating bank risk-taking, monetary policy and macroprudential policy should conduct counter-cyclical regulation simultaneously.
- For regulating housing prices, tight monetary policy and tight macroprudential policy should be implemented alternately.
- For regulating stock price bubbles, macroprudential policy should be the first defense-line and monetary policy should be the second one.
- Apart from the coordination of the two policies' direction, the coordination of the two policies' intensity is also of great importance.

Conclusion

- China's MPA system launched by the PBOC is an important policy practice in the field of macroprudential management.
- The PBOC is establishing a double-pillar policy framework to coordinate monetary policy and financial stability.
- Research on macroprudential policy in China is still limited.