Monetary and Macroprudential Policies: Does the Financial Cycle Matter?

Diana Lima
Banco de Portugal

Fátima Silva
Banco de Portugal

Raquel Miranda
Banco de Portugal

Vítor Oliveira
Banco de Portugal

Wildmer Gregori
Banco de Portugal

BANCO DE PORTUGAL
EUROSISTEMA

8th ChaMP Workstream 1 Workshop
Lisbon
December 12, 2025

Contents

- Motivation
- Related literature
- Research questions
- Dataset & Empirical approach
- Results
- Conclusion

Motivation

Conceptual Framework:

- Monetary Policy: primarily targets price stability through the policy rate.
- Macroprudential Policy: focuses on safeguarding the financial system as a whole, implementing capital and borrower-based measures.

Key Interactions:

- Spillover Effects: loose monetary policy can fuel excessive credit growth and asset bubbles, which macroprudential tools aim to contain.
- Transmission Channels: macroprudential measures can affect credit supply and demand, which in turn influences how monetary policy transmits through the economy.
- Policy Trade-offs: tightening macroprudential policy to curb financial risks might dampen economic activity and lower inflation, forcing monetary policy to be more accommodative, and viceversa. In addition, the two policies may complement each others (e.g., high vs low interest rate environments).

Motivation - Role of the financial cycle

Macroprudential policy aims to lean against the financial cycle by:

- Building buffers in good times, activating buffers during credit booms to increase resilience, or releasing buffers in bad times, to support lending and economic recovery.
- Targeting vulnerabilities: policies are designed to address excessive credit growth, inflated asset prices, and leverage.

In addition:

- Monetary policy might need to stay loose to support growth, even as financial imbalances build, creating tension with macroprudential goals.
- Complementarity: a resilient financial system (thanks to macroprudential tools) allows monetary policy to better focus on price stability.
- Policy coordination: recognizing the financial cycle helps to implement better targeted policies, and avoid unintended consequences.

Related literature

Gambacorta and Murcia (2017) find that:

- MPP have been quite effective in stabilising credit cycles, especially for policies aimed at curbing the cycle than at fostering resilience;
- macroprudential tools have a greater effect on credit growth when reinforced by the use of MP.

IMF (2023) shows empirically the responses of bank credit to five policies (i.e., MP, MPP, fiscal policy, capital flow management, foreign exchange intervention):

- for emerging markets and developing economies (EMDEs), MP, MPP and FXI reinforce each other.
- In contrast, there is no robust evidence of interactions with macroprudential policies for Advanced Economies.

ECB (2024) points out that with the build-up of resilience, macroprudential policy acts de facto countercyclically, supporting monetary policy in its pursuit of price stability:

- the source of the inflationary shock (supply versus demand side) and the monetary environment primarily affect the intensity, speed and extent of buffer build-up or release within each stage of the financial cycle while affecting borrower-based measures in their bindingness.

Research questions

- What is the impact of monetary and macroprudential policies on credit growth?

(Hp1: MP an MPP tightening have a negative impact on credit growth)

- How these two policies interact?

(Hp2: the two policies shall complement each other)

- What is the role of the financial cycle in this context?

(Hp3: the interaction between the two policies should change depending on the phase of the financial cycle)

❖ Contribution to the literature: to assess the interaction of monetary and macroprudential policies taking into account the financial cycle

Dataset

The dataset is at the country level (see Appendix A to see the list of countries included) and ranges from 1991 to 2021 with a quarterly frequency. The baseline equation is composed by the following variables:

- Real credit growth (dependent variable and control)
- Monetary policy (regressor): change in the policy rate's basis points
- Macroprudential policy (regressor): change in the number of implemented policies
- Real GDP growth (control)
- Financial cycle indicator, to split the sample (Schüler et al., 2020; Hartwig et al., 2021)

Table A: Descriptive table of the baseline equation

Variable	Obs	Mean	Std. dev.	p5	p95
Real credit growth	3,617	1.6816	5.4003	-6.7885	10.8827
Monteary policy	3,617	-0.0046	1.0669	-2.2034	1.8148
Macroprudential policy	3,617	0.0232	0.3872	0.0000	1.0000
Real GDP growth	3,617	0.5933	1.9025	-1.1558	2.2255
Financial cycle indicator	3,186	0.4998	0.1929	0.1780	0.8130

Empirical approach

The baseline equation is formulated as follows:

$$\Delta C_{i,t} = \sum_{k=1}^{4} \alpha_{1,k} MP_{i,t-k} + \sum_{k=1}^{4} \alpha_{2,k} MPP_{i,t-k} + \sum_{k=1}^{4} \alpha_{3,k} MP_{i,t-k} * MPP_{i,t-k} + \sum_{k=1}^{4} \beta_{1,k} \Delta C_{i,t-k} + \sum_{k=1}^{4} \beta_{2,k} \Delta GDP_{i,t-k} + \varphi_i + \tau_t + \varepsilon_{i,t}$$

where:

- ΔC and ΔGDP refer to real credit and GDP growth
- MP and MPP refer to monetary policy and macroprudential policy
- $\varphi_i, \tau_t, \varepsilon_{i,t}$ refer to country and time fixed effect, and the error term
- Regressors are lagged four quarters

Results – MP

Hp1a: MP tightening have a negative impact on credit growth

- The hp is confirmed, as a MP tightening lowers credit growth
- Yet, MP is effective with a lag of two quarters, once both country and year fixed effects are considered

	(1)	(2)	(3)
VARIABLES	Credit growth	Credit growth	Credit growth
L1_MP	-0.1894**	-0.1342*	-0.1123
	(0.0735)	(0.0725)	(0.0767)
L2_MP	-0.2519***	-0.1947**	-0.1666**
	(0.0778)	(0.0802)	(0.0813)
L3_MP	0.0056	0.0547	0.0762
	(0.0803)	(0.0883)	(0.0877)
L4_MP	-0.0269	0.0176	0.0329
	(0.0781)	(0.0840)	(0.0869)
L1_GDP_Growth	0.1761***	0.3176***	0.2757***
	(0.0427)	(0.0454)	(0.0492)
L2_GDP_Growth	-0.1571***	0.0831*	0.0190
	(0.0399)	(0.0456)	(0.0486)
L3_GDP_Growth	0.1925***	0.3135***	0.2610***
	(0.0509)	(0.0508)	(0.0556)
L4_GDP_Growth	0.0603*	0.1140***	0.0744**
	(0.0301)	(0.0322)	(0.0330)
L1_RCG	0.0670***	-0.0233	-0.0365*
	(0.0159)	(0.0195)	(0.0194)
L2_RCG	0.0439**	-0.0027	-0.0182
	(0.0190)	(0.0195)	(0.0196)
L3_RCG	0.0634**	0.0362	0.0203
	(0.0263)	(0.0298)	(0.0278)
L4_RCG	0.0117	-0.0159	-0.0297
	(0.0164)	(0.0204)	(0.0198)
Country FE	Yes	No	Yes
Year FE	No	Yes	Yes
Observations	3,617	3,617	3,617
R-squared	0.0421	0.1735	0.1839

Results – MPP

Hp1b: MPP tightening have a negative impact on credit growth

- The hp is confirmed, as a MPP tightening lowers credit growth.
- The impact is significant in both first and second lags.

	(1)	(2)	(3)
VARIABLES	Credit growth	Credit growth	Credit growth
L1_MPP	-0.9905***	-0.7562***	-0.7745***
	(0.2054)	(0.2110)	(0.2106)
L2_MPP	-0.9249***	-0.8344***	-0.8362***
	(0.2963)	(0.2623)	(0.2656)
L3_MPP	-0.1367	-0.1862	-0.2258
	(0.2197)	(0.2134)	(0.2157)
L4_MPP	0.1655	0.1020	0.0444
	(0.1936)	(0.1960)	(0.2029)
L1_GDP_Growth	0.2480***	0.3569***	0.3207***
	(0.0501)	(0.0520)	(0.0548)
L2_GDP_Growth	-0.0810	0.1043**	0.0514
	(0.0511)	(0.0488)	(0.0515)
L3_GDP_Growth	0.2103***	0.3290***	0.2893***
	(0.0550)	(0.0543)	(0.0567)
L4_GDP_Growth	0.0524	0.1188***	0.0905**
	(0.0351)	(0.0358)	(0.0356)
L1_RCG	0.0620***	-0.0186	-0.0299
	(0.0189)	(0.0243)	(0.0250)
L2_RCG	0.0190	-0.0212	-0.0338*
	(0.0157)	(0.0180)	(0.0182)
L3_RCG	0.0714***	0.0473*	0.0348
	(0.0232)	(0.0277)	(0.0273)
L4_RCG	0.0287*	0.0045	-0.0064
	(0.0168)	(0.0202)	(0.0206)
Country FE	Yes	No	Yes
Year FE	No	Yes	Yes
Observations	3,837	3,837	3,837
R-squared	0.0450	0.1670	0.1761

Results – MP * MPP

Hp2: the two policies shall complement each other

- The baseline specification confirms that MP is effective with after 2 quarters, while MPP is effective already after 1 quarter
- As stated in hp2, MP and MPP reinforces each other (when MP is found to be effective, i.e., after two quarters)
- Analysing the combined significance of the 4 lags together, the policies are negative and significant (MP --» -0.10***; MPP --» -1.82***; MP*MPP --» -0.23*)

			BASELINE
	(1)	(2)	(3)
VARIABLES	Credit growth	Credit growth	Credit growth
L1_MP	-0.1833**	-0.1303*	-0.1084
	(0.0676)	(0.0675)	(0.0712)
L1_MPP	-0.9392***	-0.6962***	-0.7086***
	(0.1992)	(0.1934)	(0.1947)
c.L1_MP#c.L1_MPP	0.1352	0.1548*	0.1364*
	(0.0839)	(0.0818)	(0.0800)
L2_MP	-0.2234***	-0.1723**	-0.1445*
	(0.0799)	(0.0827)	(0.0826)
L2_MPP	-0.9771***	-0.8948***	-0.8835***
	(0.2823)	(0.2436)	(0.2489)
c.L2_MP#c.L2_MPP	-0.2877***	-0.2581**	-0.2600**
	(0.1046)	(0.1007)	(0.1024)
L3_MP	0.0406	0.0797	0.1011
	(0.0798)	(0.0900)	(0.0882)
L3_MPP	-0.1617	-0.2150	-0.2435
	(0.2272)	(0.2245)	(0.2258)
c.L3_MP#c.L3_MPP	-0.0865	-0.0320	-0.0489
	(0.1467)	(0.1647)	(0.1736)
L4_MP	-0.0037	0.0318	0.0475
	(0.0671)	(0.0748)	(0.0765)
L4_MPP	0.1256	0.0626	0.0186
	(0.2190)	(0.2119)	(0.2194)
c.L4_MP#c.L4_MPP	-0.0904	-0.0562	-0.0576
	(0.2637)	(0.2749)	(0.2900)
Controls	Yes	Yes	Yes
Country FE	Yes	No	Yes
Year FE	No	Yes	Yes
Observations	3,617	3,617	3,617
R-squared	0.0521	0.1800	0.1902

Results – MP * MPP & FC

Hp3: the interaction between the two policies should change depending on the phase of the financial cycle

- Tightening MP lowers credit growth when the financial cycle is low
- Tightening MPP lowers credit growth in both phase of the financial cycle
- The two policies reinforce each other when the financial cycle is low

Dependent variable	(1) Credit growth	(2) Credit growth
Focus on	MPxMPP	MPxMPP
when	FcycleLow	FcycleHigh
L1_MP	-0.2693**	0.0864
	(0.1063)	(0.1494)
L1_MPP	-0.4122	-0.9098**
	(0.3740)	(0.3957)
c.L1_MP#c.L1_MPP	0.2676	0.1723
	(0.1588)	(0.1253)
L2_MP	-0.2638*	-0.0397
	(0.1459)	(0.1302)
L2_MPP	-1.0373**	-0.6688
	(0.3983)	(0.4198)
c.L2_MP#c.L2_MPP	-0.3512*	-0.1880
	(0.1983)	(0.1964)
L3_MP	-0.0310	0.2408*
	(0.1890)	(0.1260)
L3_MPP	0.2858	-0.4724
	(0.4534)	(0.3192)
c.L3_MP#c.L3_MPP	0.0173	-0.0731
	(0.2595)	(0.2176)
L4_MP	-0.0067	0.0601
	(0.1696)	(0.0896)
L4_MPP	0.7317***	-0.2285
	(0.2540)	(0.3468)
c.L4_MP#c.L4_MPP	0.6067**	-0.4468
	(0.2358)	(0.4116)
Controls	Yes	Yes
Country FE	Yes	Yes
Year FE	Yes	Yes
Observations	1,573	1,613
R-squared	0.1906	0.2777

Results – MP * CBM vs BBM

- CBM are more effective in lowering the credit growth
- MP is reinforced by BBM

Dependent variable	(1) Credit growth	(2) Credit growth
Focus on	CBM	BBM
L1_MP	-0.1091	-0.0923
	(0.0779)	(0.0752)
L1_MPP	-0.6157***	-0.1840
	(0.2021)	(0.3036)
c.L1_MP#c.L1_MPP	0.1977	0.1201
	(0.2030)	(0.1535)
L2_MP	-0.1636*	-0.1342*
	(0.0819)	(0.0734)
L2_MPP	-0.8853***	0.0000
	(0.2575)	(0.2664)
c.L2_MP#c.L2_MPP	-0.3295	-0.3284**
	(0.2086)	(0.1411)
L3_MP	0.0762	0.1100
	(0.0879)	(0.0737)
L3_MPP	-0.0139	0.0040
	(0.2250)	(0.3645)
c.L3_MP#c.L3_MPP	-0.2699	-0.3565
	(0.2668)	(0.2441)
L4_MP	0.0341	0.0597
	(0.0868)	(0.0704)
L4_MPP	-0.2494	0.1910
	(0.2313)	(0.2804)
c.L4_MP#c.L4_MPP	0.1610	-0.4041
	(0.2020)	(0.3140)
Controls	Yes	Yes
Country FE	Yes	Yes
Year FE	Yes	Yes
Observations	3,617	3,617
R-squared	0.1899	0.1856

Results – MP * CBM vs BBM & FC

- MP is effective when the financial cycle is low
- CBM are effective in both phase of the financial cycle, yet stronger when the financial cycle is low
- The reinforcement effects among policies depends on the financial cycle

	(3)	(4)	(5)	(6)
Dependent variable	Credit growth	Credit growth	Credit growth	Credit growth
Focus on	CBM		BBM	
when	Fcycle_ind<0.5	Fcycle_ind>=0.5	Fcycle_ind<0.5	Fcycle_ind>=0.5
L1_MP	-0.2630**	0.0614	-0.2633**	0.0869
	(0.0988)	(0.1411)	(0.1033)	(0.1676)
L1_MPP	-0.6673*	-0.6975*	0.2937	-0.8431
	(0.3321)	(0.3493)	(0.5405)	(0.5225)
c.L1_MP#c.L1_MPP	0.1227	0.0971	0.1839	0.0708
	(0.3319)	(0.1828)	(0.2631)	(0.3784)
L2_MP	-0.2349	-0.0995	-0.2372	-0.0206
	(0.1411)	(0.1296)	(0.1461)	(0.1502)
L2_MPP	-1.9348***	-0.4346	0.0895	0.0053
	(0.2860)	(0.3821)	(0.6891)	(0.2761)
c.L2_MP#c.L2_MPP	-0.4697	-0.4877**	-0.5048*	-0.3938
	(0.3378)	(0.2327)	(0.2954)	(0.3259)
L3_MP	0.0049	0.1679	0.0297	0.2829**
	(0.1881)	(0.1544)	(0.1870)	(0.1227)
L3_MPP	0.0944	-0.0727	-0.0962	0.6277
	(0.3482)	(0.3466)	(0.7043)	(0.4933)
c.L3_MP#c.L3_MPP	0.0697	-0.1555	-0.5106	0.8965
	(0.6097)	(0.2533)	(0.3118)	(0.5378)
L4_MP	0.0089	0.0359	0.0237	0.1153
	(0.1724)	(0.1177)	(0.1685)	(0.0776)
L4_MPP	0.3325	-0.3711	0.3043	-0.1557
	(0.2983)	(0.2606)	(0.3398)	(0.6380)
c.L4_MP#c.L4_MPP	0.2625	0.2108	0.3740	-1.2985***
	(0.4276)	(0.1472)	(0.2415)	(0.3215)
Controls	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	1,573	1,613	1,573	1,613
R-squared	0.1931	0.2747	0.1843	0.2774

Results - Robustness checks

We implemented different robustness checks:

- Euro-area sample restriction: We re-estimate the baseline specification using only EA countries to verify that the results are not driven by structural differences between EA and non-EA economies.

- Alternative macroprudential policy indicator: We replace the baseline MPP measure with the MPP shock.

- COVID-19 period control: We include a dummy variable equal to 1 for 2020Q2–2021Q1 to account for the quarters most affected by pandemic-related disruptions.

Conclusion

- Either a tightening in MP or MPP lower credit growth
- The two policies reinforce each other, but the MP is effective after two quarters, while the MPP is already effective after one quarter
- It appears that both policies are more effective when the financial cycle is low
- CBM and BBM influence differently MP and credit growth

Thank you

References

- ECB (2024). Implications of higher inflation and interest rates for macroprudential policy stance. Occasional Paper Series, 2024/358. doi:10.2866/1363836.
- Gambacorta, L., & Murcia, A. (2017). The impact of macroprudential policies and their interaction with monetary policy: an empirical analysis using credit registry data. Working paper n. 636. https://www.bis.org/publ/work636.pdf.
- Hartwig, B., Meinerding, C., & Schüler, Y. S. (2021). Identifying indicators of systemic risk. Journal of International Economics, 132, 103512.
- IMF (2023). Macroprudential Policy Effects. Evidence and Open Questions. Departmental paper 2023/002. https://doi.org/10.5089/9798400226304.087.
- Schüler, Y. S., Hiebert, P. P., & Peltonen, T. A. (2020). Financial cycles: Characterisation and real-time measurement. Journal of International Money and Finance, 100, 102082.

Appendix A
Countries included in the analysis

	Country	Frequency		Country	Frequency
1	Australia	123	19	Italy	123
2	Austria	87	20	Japan	123
3	Belgium	123	21	Korea	87
4	Brazil	99	22	Luxembourg	87
5	Canada	123	23	Mexico	88
6	Chile	86	24	Netherlands	123
7	China	40	25	NewZealand	123
8	Colombia	63	26	Norway	123
9	CzechRepublic	100	27	Poland	102
10	Denmark	123	28	Portugal	123
11	Finland	87	29	Russia	70
12	France	123	30	SouthAfrica	74
13	Germany	123	31	Spain	123
14	Greece	87	32	Sweden	123
15	Hungary	103	33	Switzerland	123
16	India	38	34	Turkey	75
17	Indonesia	50	35	UnitedKingdom	123
18	Israel	103	36	UnitedStates	123