Journal of Financial Stability 65 (2023) 101107

Contents lists available at ScienceDirect

Journal of Financial Stability

journal homepage: www.elsevier.com/locate/jfstabil

Macroprudential policy in central banks: Integrated or separate? Survey among academics and central bankers☆

Simona Malovaná [a,d,*], Martin Hodula [a,b], Zuzana Gric [a,c], Josef Bajzík [a,d,e]

[a] Czech National Bank, Czechia
[b] Technical University of Ostrava, Czechia
[c] Masaryk University in Brno, Czechia
[d] Prague University of Economics and Business, Department of Monetary Theory and Policy, Czechia
[e] Charles University in Prague, Faculty of Social Sciences, Czechia

ARTICLE INFO

JEL classification:
C83
E52
E58
G21
G28

Keywords:
Central banking
Expert survey
Institutional arrangement
Macroprudential policy
Monetary policy

ABSTRACT

We surveyed experts from academia, central banks, and other regulatory institutions on the preferred institutional setup of macroprudential policy and the underlying interactions stemming from the conduct of monetary and macroprudential policy. We find substantial support for the integration setup, under which macroprudential policy is entrusted to the central bank and not to a separate institution. The most significant factors driving the respondents' views are the large degree of interdependence of the two policies, the potential information gains from keeping them "under one roof", and a greater capability to resolve strategic conflicts. We identify non-negligible heterogeneity in the responses, especially in terms of respondents' experience, expertise, and position.

1. Introduction

In the aftermath of the Global Financial Crisis (GFC) of 2007–2009, national authorities worldwide gradually introduced a number of macroprudential policy measures aimed at increasing banking sector resilience. As a result, the literature has begun to examine the optimal setting of bank regulation (Miles et al., 2013; Admati and Hellwig, 2014; Thakor, 2014), the real economic impact of increasing relative regulatory stringency (Fidrmuc and Lind, 2020) as well as the interaction between macroprudential and monetary policy (Agénor et al., 2014; Malovaná and Frait, 2017), including research on conflicting situations and resolution mechanisms (Leduc and Natal, 2018; Bodenstein et al., 2019; Carrillo et al., 2021).

However, the design of the institutional setup for macroprudential policy has received significantly less attention in the literature, even though institutional architecture is a core element of macroprudential policy, analogous to a central bank being at the core of monetary policy. This relates in particular to the question of whether it is desirable to have a *separate* macroprudential authority outside the central bank or whether it is more effective to have both institutions *integrated* "under one roof". The central bank's role currently ranges from being a single entity responsible for macroprudential decisions (for example, in the Czech Republic, Ireland, and Canada) through participating in a committee with other institutions (for example, in the USA, France, and Germany) to standing outside the decision-making process, with a separate authority in charge of macroprudential policy (for example, in Norway, Finland and Sweden; Fig. 1).

The decision on the institutional arrangement of macroprudential and monetary policy is crucial for the economy. Above all, it is a matter of ensuring an exchange of information between the institutions concerned. Furthermore, minimizing the potential adverse effects of a trade-off between the coordination of given policies and the credibility of an institution with multiple (and sometimes conflicting) objectives is

☆ The authors note that the paper represents their views, not necessarily those of the Czech National Bank. We want to thank Tomáš Adam, Gene Ambrocio, Jan Brůha, Dominika Ehrenbergerová, Jan Frait, Jana Hodulová, Libor Holub, Jan Janků, Esa Jokivuolle, Adam Kučera, the participants of the Czech National Bank's seminar, and two anonymous referees for their helpful comments. All errors and omissions remain the fault of the authors. Simona Malovaná and Josef Bajzík acknowledge the support from the Prague University of Economics and Business (institutional research support grant no. IP100040).

* Corresponding author at: Czech National Bank, Czechia.
E-mail addresses: simona.malovana@cnb.cz (S. Malovaná), martin.hodula@cnb.cz (M. Hodula), zuzana.gric@cnb.cz (Z. Gric), josef.bajzik@cnb.cz (J. Bajzík).

https://doi.org/10.1016/j.jfs.2023.101107
Received 19 July 2022; Received in revised form 9 January 2023; Accepted 11 January 2023
Available online 19 January 2023

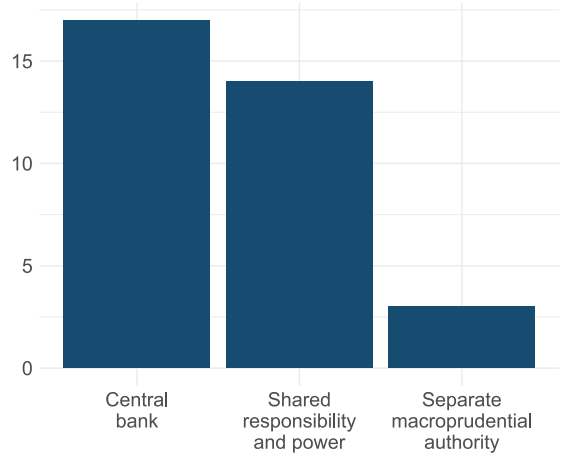

Fig. 1. Who is responsible for macroprudential policy?
Note: The figure summarizes the information on the institutional arrangement of macroprudential policy in different countries. Shared responsibility and power mean that central banks participate in the decision-making process with other institutions, for example, in the form of a committee or council. For more details, see Table A5 in the online appendix. The thirty-four countries included are: AT, BE, BG, CA, CY, CZ, DE, DK, EE, ES, FI, FR, GR, HR, HU, CH, IE, IS, IT, JP, LT, LU, LV, MT, NL, NO, PL, PT, RO, SE, SK, SL, UK, US.

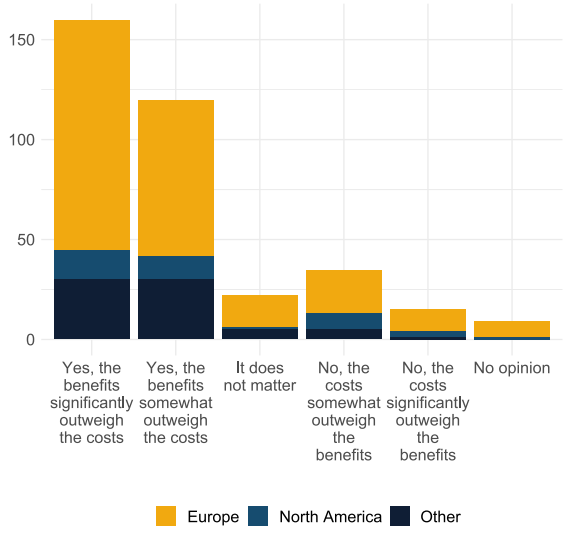

Fig. 2. Should the central bank conduct both monetary and macroprudential policy?
Note: The figure summarizes the responses to the questions in our survey regarding the institutional arrangement of macroprudential policy. The *y*-axis shows the number of responses for each answer option, broken down by the respondents' region.

necessary. While policy coordination can improve outcomes (Cecchetti and Kohler, 2014; Paoli and Paustian, 2017; Bodenstein et al., 2019), concentrating multiple objectives in one institution can complicate accountability, reduce credibility and weaken perceptions of the central bank's commitment to price stability (Beau et al., 2012; Smets, 2014). However, assessing the "optimal" institutional arrangement for macroprudential policy is not an easy task. The existing literature offers a comprehensive list of the pros and cons of the various institutional frameworks (Nier et al., 2011; IMF, 2013; Smets, 2014; Cassola et al., 2019; Ampudia et al., 2019), with the view that "one size does not fit all" being most widely held.

In this paper, we take a different approach: we survey experts from academia, central banks, and other regulatory institutions on their views on the preferred institutional setup, how it might affect the decision-making process, and what can lead to a strategic conflict between monetary and macroprudential policies. By addressing both academics and experts from central banks and other regulatory institutions, the survey should draw together theoretical and practical knowledge, forming a balanced view of the two. Our questions aim to determine whether it is more desirable to have macroprudential policy integrated into the central bank or kept outside it in a separate institution and the underlying factors driving the respondents' views. After launching the survey in the second quarter of 2021, we collected 361 complete questionnaires comprising respondents with a rich and diverse demographic and professional background.

We believe that taking the survey approach to examine this issue has the following benefits. A survey of economic experts with diverse backgrounds can complement the view provided by a modeling or narrative approach. Typically, when economists try to quantify the costs and benefits arising from monetary and macroprudential policy interaction, they rely on game-theoretic approaches with more or less strict assumptions regarding the strategic considerations between the two policies. One group of studies builds on a cooperative framework. It assumes that monetary and macroprudential policymakers are always able (and willing) to coordinate their policies to reach a cooperative solution or settle on the non-cooperative (Nash) equilibrium (e.g. Angelini et al., 2014; Cecchettia and Kohlerb, 2014; Farhi and Werning, 2016; Tayler and Zilberman, 2016; Collard et al., 2017; Leduc and Natal, 2018). This assumption is plausible when considering the integration setup but may be troublesome in the case of the separation setup. The second strand of literature builds on non-cooperative game theory, which may be better suited to examine the separation setup, accounting for the existence of policy trade-offs (e.g. Paoli and Paustian, 2017; Bodenstein et al., 2019; Carrillo et al., 2021). Still, both strands of literature fall short of adequately representing the complex strategic considerations. This is mainly because, unlike monetary policy, the macroprudential policy does not have a clear rule-based reaction or loss function, nor is it clear whether monetary and macroprudential policies are substitutes or complements.

Results from our survey challenge the "one size does not fit all" view of the macroprudential policy institutional setup. We find staggering support for the integration setup in which macroprudential policy is fully integrated as part of the central bank. Almost 80% of the respondents say that the benefits of the integration setup outweigh the costs (Fig. 2). Among the benefits, respondents listed knowledge sharing and the capacity to act swiftly as the most important. Almost 65% of all respondents also expect that switching to the integration setup would lead to improved financial sector resilience.

Turning to the questions on the strategic conflict between policies, almost all of the respondents (98%) stated that the two policies influence each other, and their coordination is desirable (90%). In addition, most respondents (76%) would also elevate one policy goal, either price stability or financial stability, in the case of a conflict, but there is no agreement on which one. The prevailing view adopted by micro-founded models of the monetary and macroprudential policy interaction is that the conflict arises simply because of an inherent conflict in policy goals (Bodenstein et al., 2019; Carrillo et al., 2021). The expert view, however, recognizes the importance of the time inconsistency associated with the monetary and macroprudential policy conduct as well as the different length and depth of the business and financial cycle. Specifically, while macroprudential policy focuses on the financial cycle, and its measures are often announced well in advance and gradually implemented, monetary policy tries to mitigate business cycle fluctuations, and its measures are implemented immediately or with a slight delay. Yet, this time inconsistency is often neglected in theoretical models or is somewhat crudely approximated by considering leadership structure within the models (Paoli and Paustian, 2017). Our questionnaire also touches upon the debate of monetary policy effectiveness in mitigating systemic risk, with respondents' opinions split almost half-and-half. However, 80% of the respondents agree

that keeping policy rates low for a long contributes to the build-up of financial imbalances. This expert view is in line with literature warning against the harmful effects of keeping the monetary policy accommodative for a long period (for a review of the literature, see Malovaná et al., 2023).

While inspecting the mutual dependency between question pairs, we find strong consistency in respondents' answers. Regarding respondent characteristics, we find that the integration setup has the least support among those with the least work experience in terms of years and diversification. More specifically, respondents who focus solely or predominantly on monetary policy are reluctant to support the integration of macroprudential policy in the central bank. On the contrary, the respondents with the most experience and expertise diversity expressed the most support for the integration. We also found that these views are consistent with the opinions on the coordination of both policies and the effectiveness of monetary policy in mitigating systemic risks. Those respondents who are generally less inclined to integrate macroprudential policy into the central bank are also less likely to perceive policy coordination as desirable and monetary policy as effective.

The remainder of the paper proceeds as follows. Section 2 describes the process of designing the questionnaire, selecting relevant respondents, and launching the survey. Section 3 presents a high-level summary of survey responses, focusing on the distribution of answers among different groups of respondents while putting our results in the context of the existing literature. Sections 4 and 5 look at how the respondents' opinions on various matters correlate and which characteristics, including demographic factors and professional background, can potentially drive opinion. Section 6 concludes.

2. Survey design

Our primary goal is to collect expert opinions on the preferred institutional setup of macroprudential policy and the underlying interactions stemming from monetary and macroprudential policy conduct.[1] As such, we grouped our questions into three key areas. First, we ask a series of questions on how the institutional arrangement of monetary and macroprudential policy might affect the decision-making process. Second, we survey the ways in which monetary and macroprudential policies influence each other and how the coordination of the two policies might benefit the economy. Third, we complement the previous two blocks with questions on the impact of capital-based and borrower-based measures on bank lending and the potential side effects of tightening such measures. The respondents' views on the effects of the macroprudential policy are inseparable from their considerations of the institutional setup and policy interactions. For instance, they allow us to find out if the respondents expect the effectiveness of the macroprudential policy tools to differ under the two institutional arrangements. Finally, we include questions on respondents' background factors, expertise, and general views.[2][3]

We acknowledge that the impact of various macroprudential policy measures, their interaction with monetary policy, and the institutional arrangement of the two are issues that are significantly affected by the past and current state of the economy and of the financial system as well as the sociodemographic characteristics of the respondents. The final questionnaire was designed to take into account the various aspects and maintain a balance between the level of detail of the questions asked, their clarity, and simplicity. The resulting questionnaire consisted of 20 question groups divided into four blocks which could be completed in about 15 min. The complete set of questions and responses is available in the online appendix in Table A1.

The survey was distributed among academics and experts from central banks and other regulatory institutions due to our desire to obtain the views of both camps. While the opinions of academics are expected to encompass the latest research findings, the expert opinion of professionals should draw on the practical experience gained from the decision-making processes within the policy institutions. We created a list of about 10,000 email addresses based on respondents' expertise and affiliation using the IDEAS/RePEc database. We proceeded in a number of steps. First, we decided on the researchers' fields we wished to include. Overall, we included 23 relevant fields out of 98 listed on the IDEAS/RePEc webpage.[4] We used a web scraping technique to harvest information about all the authors in each of these fields. Second, in order to include as many authors from central banks as possible, we harvested information about all the members affiliated with the central banks and monetary authorities listed in the IDEAS/RePEc database. Third, we finalized the list by removing irrelevant entries and duplicates.[5] We validated the email addresses beforehand using a commercially available service.[6]

We admit that by limiting ourselves to the IDEAS/RePEc database, we may be omitting the potentially valuable opinions of experts who do not have any research publications or those who have chosen not to be listed in the database. We suspect that this will be more of an issue for central bankers (whose primary focus is not research) than for academics. Therefore, we encouraged those respondents addressed to forward the questionnaire to their colleagues who may be potentially interested in participating. Because the survey contains questions on respondents' affiliation, professional experience, research field, and seniority, we are able to filter the responses afterward and are not limited by the distribution of our initial list of respondents. On the contrary, we aimed to obtain as many relevant responses as possible.

The survey was launched online on April 7, 2021, and closed on April 30, 2021. Two reminders were sent on April 22 and April 28. We received 694 questionnaires, of which 361 were complete and thus

[1] We are aware that survey methodologies have some caveats stemming from the fact that we cannot ensure the honesty of the respondents. Further, the meaning of "very likely" and "somewhat likely" can differ across respondents. However, if this measurement error resembles white noise, the final ranking of the importance of the answers will be informative. Still, we take special care to verify the consistency of respondents' answers by considering question pairs and by combining selected characteristics of our respondents to contrast the different groups of respondents.

[2] Given the complexity of the issues analyzed, the survey questionnaire was pilot-tested several times on different groups of respondents with different institutional backgrounds and expertise. As a result, some of the questions were simplified, some were removed, and the order and structure of the questions were optimized.

[3] While preparing our survey, we were inspired by the Bank of Finland survey of academic views on the optimal level of bank capital requirements (Ambrocio et al., 2020). However, we took special care to make sure the two surveys did not overlap.

[4] Accounting & Auditing (NEP-ACC), Banking (NEP-BAN), Central Banking (NEP-CBA), Corporate Finance (NEP-CFN), Computational Economics (NEP-CMP), Dynamic General Equilibrium (NEP-DGE), Econometrics (NEP-ECM), European Economics (NEP-EEC), Econometric Time Series (NEP-ETS), Microeconomic European Issues (NEP-EUR), Financial Markets (NEP-FMK), Forecasting (NEP-FOR), Business, Economic & Financial History (NEP-HIS), Insurance Economics (NEP-IAS), International Finance (NEP-IFN), Macroeconomics (NEP-MAC), Microfinance (NEP-MFD), Microeconomics (NEP-MIC), Monetary Economics (NEP-MON), Market Microstructure (NEP-MST), Open Economy Macroeconomics (NEP-OPM), Regulation (NEP-REG), Risk Management (NEP-RMG).

[5] The "raw list" was cleaned up by (i) removing the authors who had no email address, (ii) removing the authors who had not published since 2015 (i.e., had not been recently active), (iii) removing the authors with duplicate email addresses.

[6] About 68% of them were identified as deliverable (i.e., the email provider stated that the email address existed and was safe to send emails to), and the remaining 32% were identified as risky or unknown (i.e., the quality of the email address was low or no response was received from the email provider, i.e., the email might not have been delivered).

Table 1
Summary of all survey responses.

Question		Modal response	% share of modal	Dispersion	Options	Answers
A. Demographics and Background						
Q1	Gender	Male	86.4	−0.143	3	361
Q2	Age	30–39	31.3	0.693	5	361
Q3	Region	Europe - Euro Area	47.1	0.643	6	361
Q4	Primary field of research/expertise	Monetary policy	30.4	0.754	6	361
Q5	Sector w/ most experience in years	Academia	59.3	0.449	4	361
Q20	Current position	Researcher	68.9	0.312	4	360
Q17	Perceived stringency of MPP	Somewhat stringent	47.2	0.564	5	360
B. Macroprudential Policy Tightening and Bank Lending						
Q6	CCoB (short-term impact)	Some decrease in lending	57.9	0.515	6	361
Q6	CCoB (long-term impact)	Minimal to no change	48.5	0.601	6	361
Q7	Add. CB (short-term impact)	Some decrease in lending	56.5	0.543	6	361
Q7	Add. CB (long-term impact)	Minimal to no change	42.1	0.637	6	361
Q8	LTV (short-term impact)	Some decrease in housing loans	56.8	0.556	6	361
Q8	LTV (long-term impact)	Some decrease in housing loans	47.1	0.619	6	361
Q8	DSTI (short-term impact)	Some decrease in housing loans	56.8	0.555	6	361
Q8	DSTI (long-term impact)	Some decrease in housing loans	42.9	0.659	6	361
Q9	Side effect: cost (CR)	Likely	53.7	0.539	5	361
Q9	Side effect: cost (LTV/DSTI)	Unlikely	40.7	0.606	5	361
Q9	Side effect: rebalancing (CR)	Likely	54.0	0.541	5	361
Q9	Side effect: rebalancing (LTV/DSTI)	Likely	51.0	0.581	5	361
Q9	Side effect: arbitrage (CR)	Likely	44.9	0.627	5	361
Q9	Side effect: arbitrage (LTV/DSTI)	Likely	42.4	0.647	5	361
C. Institutional Arrangement, Macroprudential and Monetary Policy Coordination						
Q10	Under one roof	Yes, the benefits significantly outweigh the costs	44.3	0.615	6	361
Q11	Benefits: knowledge sharing	Significant benefits	58.7	0.456	6	361
Q11	Benefits: informal relations	Some benefits	42.9	0.658	6	361
Q11	Benefits: capacity to act swiftly	Significant benefits	44.6	0.607	6	361
Q12	Effects on: MPP stringency	Somewhat higher	39.1	0.694	6	361
Q12	Effects on: lending	Minimal to no change	41.6	0.663	6	361
Q12	Effects on: FS resilience	Somewhat higher	44.6	0.664	6	361
Q13	Preferred objective	Yes, financial stability, but only temporarily	36.3	0.736	6	361
Q14	Mutual influence	Yes, somewhat	51.4	0.359	4	360
Q15	Coordination desirable	Yes, very	57.8	0.410	4	360
Q16	Conflict: time horizon	Likely	52.2	0.550	5	360
Q16	Conflict: cycles	Likely	51.9	0.552	5	360
Q16	Conflict: implementation delay	Likely	43.1	0.607	5	360
Q18	LIRE & financial imbalances	Yes, in both the short and the long term	51.1	0.581	5	360
Q19	MP effective	Somewhat effective	43.9	0.598	5	360

Note: The table presents the answer that occurs most often (modal answer), its share in the total, the dispersion of answers, the number of options (possible answers for each question) and the number of responses collected for each question. The dispersion index is a standardized Simpson (Herfindahl–Hirschman) Index defined as (HHI - 1/N)/(1 - 1/N) where HHI is a non-standardized Herfindahl–Hirschman Index and N is the number of options. **Abbreviations:** MPP: macroprudential policy; CCoB: capital conservation buffer; Add. CB: additional capital buffers above the 10.5% minimum capital adequacy ratio; LTV: loan-to-value limit; DSTI: debt service-to-income limit; CR: capital requirements; FS: financial sector. **Questions (panel C):** Under one roof: *"Should the central bank conduct both monetary policy and macroprudential policy?"* Benefits: *"How are the following likely to be beneficial to the policy decision-making process if the central bank conducts both monetary and macroprudential policy?"* Effects on: *"How are the following likely to be different if the central bank conducts both monetary and macroprudential policy?"* Preferred objective: *"If there is a conflict between achieving price stability and financial stability (i.e. they cannot both be achieved at the same time), should a central bank favour one of the two?"* Mutual influence: *"Do macroprudential policy measures and monetary policy measures influence each other?"* Coordination desirable: *"Is the coordination of macroprudential and monetary policy desirable for the economy, regardless of the institutional arrangement?"* Conflict: *"To what extent are the following likely to result in a conflict between macroprudential and monetary policy?"* LIRE & financial imbalances: *"Does a low interest rate environment contribute to a build-up of financial imbalances?"* P effective: *"Do you consider monetary policy measures effective in mitigating existing systemic risks?"*.

included in our study.[7] Securing a high number of (completed) survey responses is always a challenge, but given that the topics covered in the survey are rather specific to the economics profession at large, we believe the resulting number of responses is reasonable. The survey was conducted anonymously to increase the likelihood of participation of senior staff, especially from central banks, and to facilitate honesty while answering.[8]

3. A bird's eye view of the survey responses

Table 1 provides a high-level summary of the survey responses, presenting the most frequent answer to each question (modal answer) and its share. A more detailed overview, with the percentage share of each answer, is then presented in Table A1 in the online appendix.

[7] As expected, the number of started and submitted questionnaires spikes significantly around the launch of the survey and the dates on which the two reminders were sent. The majority of questionnaires that were started but not submitted were abandoned by the respondents at a fairly early stage, i.e., usually during the first block of questions. As such, they do not provide any significant additional information and were not included in the analysis (Figure A2 in the online appendix). The response rate relative to all and deliverable email addresses was about 7% and 10%, respectively.

[8] On average, respondents were able to complete the survey in about 15 min, while the median completion time was 10 min less (Figure A1 in the online appendix).

3.1. Demographics and background

The first part of the survey asks about the demographic and professional background of the respondents (Q1–Q5). Most respondents are men aged 30 to 59 who reside in euro area countries (about 33% if we combine all three characteristics). The sample includes a fair share of respondents with both academic experience and experience from a central bank or macroprudential institution. The majority of respondents (85%) report experience from academia, with an average of almost 13 years. Nearly 45% of respondents report experience from a central bank with an integrated macroprudential policy and an additional 24% from a central bank without an integrated macroprudential policy.[9] About 70% of respondents identified themselves as researchers; the remaining 30% is evenly distributed between respondents in the analyst or managerial positions. The respondents' primary fields of expertise or research are evenly distributed between monetary policy, macroprudential policy, and bank regulation or supervision, with monetary policy taking a slight lead.[10] The perceived stringency of the macroprudential policy measures applied in the respondent's jurisdiction before the Covid-19 pandemic is also equally distributed between stringent and lenient. Overall, we are equipped with a well-balanced and diverse sample of respondents who are not heavily skewed towards a particular professional background or exposed to overly stringent or loose regulatory conditions.

3.2. Macroprudential policy tightening and bank lending

In the second part of the survey, we examine the respondents' opinions on the likely effects of macroprudential policy tightening on the provision of bank credit (Q6–Q9). Most respondents expect the introduction or tightening of *capital buffers* to have a negative effect on bank lending in the short term but minimal to no effect in the long term. On the contrary, *borrower-based measures* are expected to have a negative effect on the provision of housing loans both in the short and long term. The literature generally agrees that a tightening of capital requirements leads to a decrease in bank lending (Cerutti et al., 2017; Galati and Moessner, 2018; Jiménez et al., 2017; De Jonghe et al., 2020; Malovaná et al., 2021a). A possible difference in the short- and long-term impact is discussed in Mendicino et al. (2020), who also state that the difference depends broadly on the monetary policy response. The literature focusing on the impact of borrower-based measures is more coherent and, in general, points to a negative relationship with bank credit (Lim et al., 2011; Kuttner and Shim, 2016; Akinci and Olmstead-Rumsey, 2018; Malovaná et al., 2022b). The sign of the effects was shown to remain the same even if distinguishing between the short and long run (Carreras et al., 2018), with the short-term impact being less pronounced where the regulation has been phased in Basto et al. (2019).

Most respondents also agree that tighter macroprudential policy is likely to be associated with several side effects (Q9), such as the higher cost of bank lending, portfolio rebalancing, and regulatory arbitrage. The collected responses are largely in line with the recent empirical literature. Studies show that capital regulation increases lending rates (Gambacorta, 2011; De Nicolò, 2015), but the magnitude of this effect varies largely as outlined in the literature overviews conducted by Martynova (2015) and Boissay et al. (2019). Furthermore, Acharya et al. (2020) show that LTV and LTI limits in Ireland have caused a substantial distributional effect under which, on the one hand, the borrower-based limits have slowed down house price growth in overheated areas but, on the other, have increased risk-taking by the more constrained banks. In a similar vein, Peydró et al. (2020) document the existence of the distributional effect of borrower-based limits in the UK, which have led more constrained lenders to issue fewer high-LTI mortgages but have also increased the average loan size of these high LTI mortgages and increased the LTV ratio. Regarding regulatory arbitrage and leakages, Aiyar et al. (2014) document that unregulated banks (resident foreign branches) increase lending in response to tighter capital requirements while regulated banks reduce lending. Ahnert et al. (2021) show that macroprudential foreign exchange regulations may lead to a shift in market activities to less informed, less efficient, or unregulated sectors. Several studies show that the growth of non-bank financial intermediaries is positively related to a more stringent macroprudential policy (Kim et al., 2018; Cizel et al., 2019; Hodula et al., 2020; Irani et al., 2021).

3.3. Is there any preferred institutional arrangement?

In the third part, we collect expert opinions on the preferred institutional arrangement of macroprudential policy and the underlying interactions stemming from the conduct of monetary and macroprudential policy. Moreover, we ask the respondents what are the likely benefits and differences arising from a particular policy setup and what are the likely reasons for a conflict between macroprudential and monetary policy.

Concerning the institutional arrangement, we ask *"Should the central bank conduct both monetary policy and macroprudential policy?"* (Q10). The majority of respondents acknowledge the significant benefits of keeping monetary and macroprudential policy "under one roof" (the integration setup). Over 77% of respondents stated that the benefits of the integration setup significantly (44%) or somewhat (33%) outweigh the costs.

The strong support for the integration setup somewhat contradicts the observed tendencies in many economies to move macroprudential policy outside the central bank to a separate institution.[11] It also shows that the opinion "one setup does not fit all" found in earlier studies (Nier et al., 2011; IMF, 2011) is not broadly shared among experts. The stronger preference for the integration setup observed in our findings may also reflect the trust and confidence usually enjoyed by central banks, reflecting their generally high reputation in the economy relative to other, usually newer regulatory bodies.

We next ask the respondents how they evaluate the selected benefits associated with the integration setup – data and knowledge sharing, informal relations, and capacity to act swiftly – for the decision-making process (Q11). The respondents perceive knowledge sharing and the capacity to act swiftly as the main benefit of the institutional setup. Drawing on the existing literature, the information flows needed for the successful conduct of both policies are interlinked, and in many cases, the data outputs and expertise developed in one policy department serve as an input for decision-making in the other department (Nier et al., 2011; Buttigieg and Bamber, 2020). As such, the integration setup makes it possible to fully exploit beneficial information spillovers (Beau et al., 2012). However, from an administrative point of view, it also entails economies of scale contributing to significant cost

[9] Table A4 in the online appendix shows the full breakdown by respondents' length of professional experience in the different sectors.

[10] Most respondents in our survey stated that they focus on more than one field in their research or analytical work, with an average of 2.6 reported fields per respondent. About 27% of respondents selected only one field, while about 35% reported two fields and a further 17% three fields. Interestingly, respondents that selected more than one primary field usually paired monetary policy with a macroprudential policy focused on banks, both in the area of research (24% of respondents) and non-research (11% of respondents). For more details, see Tables A3 in the online appendix.

[11] For instance, macroprudential policy has been delegated to an autonomous institution in Australia, Canada, Chile, Denmark, Norway, Sweden, Switzerland, and the United States. However, in many of these countries, the central bank still participates in the discussion and decision-making process, for example, as a member of a committee or council (see Table A5 in the online appendix).

reduction (Ampudia et al., 2019). Moreover, having macroprudential and monetary policy under one roof fosters cooperation among experts while, at the same time, providing the basis for building both formal and informal relationships (Nier et al., 2011; IMF, 2011). Further, central banks with an integrated macroprudential framework have the capacity to use macroprudential instruments more swiftly (Lim et al., 2013).

We also ask the respondents whether they expect any changes to the stringency of macroprudential policy, provision of bank lending, and financial system resilience, provided the institutional arrangement would shift from the separation to the integration setup (Q12). A substantial proportion of the respondents (63%) expect that switching to the integration setup would likely be associated with an improved resilience of the financial sector. Additionally, 48% believe that regulation would be more stringent if the macroprudential policy were integrated within a central bank, and 42% say that the provision of bank lending would not change significantly. This soft evidence echoes the hard data-driven analyses found in the literature. Central banks, via their role as "lender of last resort", have strong incentives to prevent financial crises (Smets, 2014). As such, if it is in their arsenal, they can pursue a more stringent macroprudential policy than a separate regulatory body (Lim et al., 2013). Regarding financial system resilience, the separation setup increases the risk of uncoordinated actions (Bodenstein et al., 2019), which in turn makes the emergence of systematically important institutions as well as systemic risks as a whole more probable (Cecchetti and Kohler, 2014; Bodenstein et al., 2019).

3.4. Views on the coordination and conflicts between monetary and macroprudential policies

Two main types of policy conflicts may arise: a policy trade-off and a strategic conflict. *A policy trade-off* is a situation under which the two policy objectives are at odds. It thus relates to a normative question — which policy should respond to a given shock under a given scenario? The policy trade-off is always accompanied by *a strategic conflict*, which relates to a positive question — which policy will respond to the shocks given the strategic (policy) considerations. Table 2 summarizes the main situations when the monetary and macroprudential policy might clash. For instance, let us consider a scenario when a positive financial (credit) shock occurs at a time when output is near its potential, but the inflation pressures are very weak, and as a result, interest rates are kept very low (a situation prevailing in most advanced countries before the Covid outbreak). In such a setup, the macroprudential policy would be expected to tighten the policy, to prevent excessive leverage and systemic risk build-up. The monetary policy, on the other hand, should be kept accommodative to avoid missing the inflationary target. Hence, a policy trade-off arises alongside a strategic conflict between the two policies. A strategic conflict can also arise on its own in a situation when the two policy objectives do not clash. For example, in times of strong demand and increasing leverage, both policies can, in theory, be successful in addressing exuberant credit booms, such as those that occurred during 1998–2000, 2003–2006, and 2011–2016. A monetary policy tightening might help to bring down asset prices and slow down credit growth (Bernanke and Gertler, 1995; Rigobon and Sack, 2004). It will, however, have very little or no effect on bank capitalization.[12] In such a case, the strategic conflict solution (e.g., which policy will be used) would depend, among other things, on the capitalization and overall condition of the economy and the financial sector in particular. If the level of bank capital is low, macroprudential policy is likely to be superior to monetary policy in addressing excess credit growth.

[12] In fact, there is sound evidence that the monetary policy lending channel itself may be less potent when bank equity is at or below the regulatory minimum (Gambacorta and Shin, 2018).

In our survey, we ask several questions that touch on potential conflicts between these two objectives and policies. We are interested in respondents' opinions on the interactions and coordination of monetary and macroprudential policy, the contribution of LIRE to a build-up of financial imbalances, and the effectiveness of monetary policy in mitigating systemic risks. We also explicitly ask the respondents what the central bank should do if there is a conflict between achieving price and financial stability and which factors are likely to play a key role in such a conflict.

Regarding the interaction and coordination of macroprudential and monetary policy, we ask two simple questions: *"Do macroprudential policy measures and monetary policy measures influence each other?"* (Q14) and *"Is the coordination of macroprudential and monetary policy desirable for the economy, regardless of the institutional arrangement?"* (Q15). Almost all respondents (98%) stated that the two policies influence each other and over 90% of respondents believe that their coordination is desirable. It should not be entirely surprising that there is agreement on this topic. Over time, the majority of economists and policymakers have reached a general consensus that monetary and macroprudential policy tools are not independent, as they affect both monetary and credit conditions via their effect on asset prices, credit growth, and financial risk-taking (Agénor et al., 2014; Malovaná and Frait, 2017; Collard et al., 2017; Smets, 2014). The disagreement among policymakers is more on the side of the analytical and policy approach taken to manage the interaction and ensure the effectiveness of each policy in achieving the two main objectives — financial stability and price stability. This boils down to three strands of literature that have become dominant in the past decade.

The first view, known as the modified Jackson Hole consensus, advocates for a clear separation of price and financial stability. Specifically, central banks should primarily focus on achieving the goal of price stability, whereas the financial stability objective should be tackled with macroprudential policy measures (e.g. Blanchard et al., 2010; Smets, 2014). This view builds on the belief that the objectives, measures, and transmission mechanisms of monetary and macroprudential policies can be easily separated. By contrast, the second view considers price stability and financial stability to be strongly intertwined and inseparable, suggesting that policy coordination is desirable to achieve the best economic outcome. Macro-financial linkages, creating feedback loops between the real economy and the financial system, are at the core of this view (e.g. Brunnermeier and Sannikov, 2014). The third view, commonly referred to as the "leaning against the wind" strategy, proposes taking risks to financial stability into account in the conduct of monetary policy even when the current forecast does not indicate any risks to price stability. Proponents of this view implicitly acknowledge that macroprudential policy cannot fully address the existing or potential systemic risks while monetary policy can be effective in this pursuit (e.g. Woodford, 2012).

Similar disagreement on the degree to which a central bank should take into account financial stability concerns is also apparent from the responses we collected. Specifically, we ask the respondents whether a central bank should favor price stability or financial stability if they cannot both be achieved at the same time (Q13). More than 36% of respondents state that financial stability should be temporarily favored over price stability in the event of a conflict. A further 10% is of the view that financial stability should always be favored. On the contrary, about 30% would favor price stability, either temporarily (16%), or always (14%). We also find that respondents disagree on the effectiveness of monetary policy in mitigating existing systemic risks. To our question *"Do you consider monetary policy measures effective in mitigating existing systemic risks?"* (Q19), about 45% of respondents answer that monetary policy measures are somewhat effective, and a further 6% consider them to be very effective. Conversely, 32% of respondents consider monetary policy measures to be somewhat ineffective and 16% very ineffective in mitigating systemic risks.

Table 2
Strategic conflict between monetary and macroprudential policy in different stages of the financial and the business cycle.
Source: Malovaná and Frait (2017), Libich (2020).

		Demand shock		
		Positive	None	Negative
Financial (credit) shock	Positive	Strategic conflict	Strategic conflict and policy trade-off (minor)	*Strategic conflict and policy trade-off (major)*
	None	Strategic conflict and policy trade-off (minor)	No conflict	Strategic conflict and policy trade-off (minor)
	Negative	*Strategic conflict and policy trade-off (major)*	Strategic conflict and policy trade-off (minor)	Strategic conflict

Note: Less likely scenarios in *italics*.

Interestingly, while the views on the priority of objectives and policy effectiveness differ significantly, the view of the risks associated with a prolonged period of low interest rates are aligned. We ask the respondents *"Does a low interest rate environment contribute to a build-up of financial imbalances?"* (Q18). More than 80% of them answer that keeping interest rates "low-for-long" contributes to the build-up of financial imbalances. About 50% believe that the harmful effects of a low interest rate environment (LIRE) can be expected to play out both in the short and long term, while the other 30% expects the effects to be dominant either in the long term or in the short term. These results add to the intensive debate that has escalated in recent years in many advanced economies. Many studies warn against the unintended adverse effects of LIRE, which could lead to a poor risk assessment and the increased vulnerability of financial systems. The harmful effects include, but are not limited to, increased bank leverage and excessive lending (Dell'Ariccia et al., 2014; Jordà et al., 2015), the reallocation of financial intermediation to non-banks (Cizel et al., 2019; Hodula et al., 2020; Irani et al., 2021), the compression of term premiums and risk premiums on various asset classes and credit (Hanson and Stein, 2015; Adrian et al., 2014), and moral hazard (Heider et al., 2019).[13]

Last but not least, we ask the respondents *"To what extent are the following likely to result in a conflict between macroprudential and monetary policy?"* (Q16), and we give them three options: the different horizons of both policies, different lengths and depths of the business and financial cycle, and the delay between the announcement and implementation of macroprudential policy measures. A bulk of literature assumes that the strategic conflict arises simply because of an inherent conflict in policy goals (Bodenstein et al., 2019; Carrillo et al., 2021). Insight from our expert survey shows, however, that the conflict arises due to the time inconsistency associated with the monetary and macroprudential policy conduct as well as the different length and/or depth of the business and financial cycle. Such a view is in line with a strand of literature showing that the length of the business and financial cycles differs, with the financial cycle being typically longer (Drehmann and Gambacorta, 2012). While macroprudential policy usually operates with a keen eye on the financial cycle, monetary policy tries to mitigate business cycle fluctuations. A strategic conflict thus arises in situations where the economy is at different stages of the financial and business cycle (Borio, 2014; Malovaná and Frait, 2017). Furthermore, while monetary policy measures are implemented immediately or with a short delay, macroprudential policy measures are often announced well in advance and implemented with a relatively long delay.

Yet, the different frequencies of decision making are difficult to capture using the existing modeling frameworks. As such, it has to stand somewhat on the sidewalk of the theoretical literature interest. A crude way to capture the time inconsistency is to consider a leadership structure. For instance, Paoli and Paustian (2017) let the macroprudential instrument be chosen first on the grounds that macroprudential authority is often seen to move at a lower frequency.

[13] For a comprehensive review of literature, please see Malovaná et al. (2023).

4. Heterogeneity of survey responses

To aggregate respondents' views and compare the outcomes from different questions, we quantify the response options on a discrete scale between −1 and 1. We formulate our questions as normative, and hence, the positive values were generally assigned to agreeing responses while the negative values represent disagreeing responses. NA is assigned to the "no opinion" response option. We summarize the quantification of individual answers to all questions in Table A2 in the online appendix. The averages across all quantified responses to the questions related to the mutual relationship between monetary and macroprudential policy are stored in Table 3. The first row shows the mean quantified response of all respondents in our sample. The rest of the table then provides a breakdown by different respondents' characteristics.[14] According to the means of the quantified responses, we confirm that a majority of respondents are in favor of having macroprudential and monetary policy under one roof: the mean response is 0.53, closely corresponding to the verbal answer *"Yes, the benefits somewhat outweigh the costs"* (Table 3, column 1). However, we identify a non-negligible heterogeneity in the responses across different respondent characteristics. We find that the integration setup is favored more in Europe than in North America, which may reflect the institutional setup that is currently dominant in each region. While in the US the mandate for conducting macroprudential policy was given to a single independent committee (the Financial Stability Oversight Council, FSOC)[15] outside the central bank, the situation is a little fuzzier in Europe, with varying degrees of central bank involvement across countries.[16] While inspecting intra-EU heterogeneity, we find that euro area and non-EA respondent views are fairly close. For instance, the integration setup is perceived by both groups to have benefits that somewhat outweigh the costs, with a mean response of 0.56 for euro area respondents and 0.52 for non-euro area respondents.

[14] To account for differences in respondents' experience, we also calculated quantified mean responses weighted by the total number of years of experience. In addition, we tested for the difference between the unweighted and weighted answers. Results are stored in Tables A7 and A8 in the online appendix. Although in some cases, the difference is statistically significant, in most cases, it is not economically significant. Hence, we proceed with unweighted responses.

[15] The FSOC, established in 2010 and chaired by the US Secretary of the Treasury, consists of the Chairman of the Federal Reserve System and all the principal US regulatory bodies.

[16] In the European Union, a single independent body tasked with macroprudential oversight (the European Systemic Risk Board, ESRB) was also established. The ESRB, established in 2010 and chaired by the ECB president, consists of representatives from the ECB, national central banks and prudential authorities of EU Member States, and the European Commission. Unlike its US counterpart, however, the ESRB lacks direct enforcement powers; its role lies more in the monitoring and assessment of systemic risks and potentially issuing warnings and recommendations to national authorities. A significant part of the powers related to the conduct of macroprudential policy has remained in the hands of national central banks and regulatory bodies (Table A5 in the online appendix).

Table 3
Respondents favor keeping both policies under one roof.

	(1) Under one roof	(2) Preferred objective (A)	(3) Preferred objective (B)	(4) Mutual influence	(5) Co-ordination desirable	(6) LIRE & financial imbalances	(7) MP effective
Total	0.53	0.07	0.34	0.72	0.66	0.62	−0.04
Gender							
Female	0.48	0.00	0.42	0.78	0.66	0.72	−0.12
Male	0.54	0.08	0.33	0.71	0.66	0.61	−0.03
Age							
20–29	0.63	0.18	0.29	0.71	0.75	0.62	−0.12
30–39	0.53	−0.05**	0.33	0.79***	0.67	0.67	−0.11
40–49	0.54	0.03	0.34	0.68	0.74	0.57	−0.08
50–59	0.55	0.20**	0.29	0.71	0.62	0.61	0.08*
Over 59	0.47	0.17	0.45	0.67	0.50	0.62	0.04
Region							
Euro area	0.56	0.12	0.29	0.71	0.67	0.58	0.02
Europe excl. EA	0.52	0.05	0.32	0.73	0.65	0.70	−0.12
North America	0.36	0.01	0.55**	0.74	0.50**	0.58	−0.07
Other	0.58	0.00	0.36	0.71	0.72	0.65	−0.07
Position							
Researcher	0.55	0.14***	0.34	0.72	0.67	0.64	−0.03
Expert/Analyst	0.54	−0.02	0.27	0.72	0.77	0.61	−0.08
Management	0.44	−0.15**	0.40	0.69	0.52	0.56	−0.03
Primary field of expertise							
Monetary policy	0.53	0.04	0.37	0.76***	0.67*	0.62	−0.01
Macroprudential policy - Banks	0.60**	0.13*	0.30	0.75	0.72***	0.67	−0.04
Macroprudential policy - Other	0.63*	0.05	0.28	0.78*	0.77***	0.55	0.05
Supervision - Banks	0.59	0.11	0.31	0.72	0.76**	0.64	0.04
Supervision - Other	0.61	0.15	0.27	0.70	0.75**	0.69	0.12*
Other	0.53	0.11	0.34	0.70	0.69	0.61	0.01
Experience in a given sector (more than 5 years)							
Academia	0.51	0.10	0.35	0.73	0.67	0.64	0.02**
Monetary authority	0.48	0.05	0.20	0.72	0.64	0.75	−0.21**
Macroprudential authority	0.52	−0.06**	0.31	0.69	0.59	0.59	−0.10
Other	0.64*	0.14	0.28	0.73	0.71	0.71	0.15**

Note: The table presents the averages of quantified responses across different categories of respondent's background factors. The quantification of responses means that verbal answers were converted into numerical values (Table A2 in the online appendix). We perform two non-parametric statistical tests, the Mann–Whitney–Wilcoxon test and the Kruskal–Wallis test, to decide whether there are significant differences between the groups of respondents. Both tests give the same results. The null hypothesis of both tests states that there is no significant difference between the groups. If the *p*-value is less than the significance level, we can conclude that there are significant differences between the groups. Please see the note below Table 1 or Appendix A for the full wording of the questions. **Preferred objectives A and B:** The responses to the questions on favoring a particular objective are quantified in two different ways. Option A assigns positive values to the responses favoring the financial stability objective, while negative values are assigned to responses favoring the price stability objective. Option B assigns positive values to all agreeing responses (i.e. responses favoring either of the objectives), with negative values assigned to disagreeing responses (i.e. the opinion that neither objective should be favored).

***p < 0.01.

**p < 0.05.

*p < 0.1.

Next, relatively younger respondents favor the integration setup more than relatively older respondents, with a mean response of 0.63 for the 20–29 age bucket and 0.47 for the over 59 age bucket. This finding echoes our discovery that the integration setup has less support among respondents in managerial positions who are more likely to be older both in our sample[17] and in general (Goergen et al., 2015; Talavera et al., 2018). A younger generation of managers can be expected to draw more on the knowledge obtained during their recent studies, reflecting the newest theoretical and empirical findings. On the other hand, more senior leaders can exhibit a conservatism bias based on gained experience rather than new advancements in their field. As such, experienced senior managers can incline toward solutions that minimize potential risks but also propose limited policy change (Bantel and Jackson, 1989; Vroom and Pahl, 1971). Interestingly, the integration setup has the least support among those respondents who listed monetary policy as their primary field of expertise (mean 0.52) as compared to those who listed macroprudential policy (mean 0.60–0.63) or supervisory policy (mean 0.59–0.61).

[17] Respondents in managerial positions are relatively older (average age of 50 years) than other respondents (average age of 45 years).

We also confirm that the vast majority of respondents believe that the two policies significantly influence each other (mean 0.72) and consider their coordination to be very desirable (mean 0.66; see Table 3, columns 4 and 5). Similarly to the question on the institutional setup, we find the responses to be conditional on region, the respondents' age, professional position, and primary field of expertise. Relatively older respondents, respondents from North America, those in managerial positions, and those who cite monetary policy as their primary field show the least support for the view that the two policies are mutually dependent and their coordination is desirable. Not surprisingly, we find the responses to the three questions (institutional setup, mutual influence, and policy coordination) to be highly dependent on each other, and reassuringly, the respondents' views are largely consistent (see Appendix B).

We further look closely at the potentially most polarizing set of three questions, those related to the conflict between central banks' objectives, the role of LIRE in fueling financial vulnerabilities, and the effectiveness of monetary policy in mitigating systemic risks (Table 3, columns 2, 3, 6 and 7). We quantify the "preferred objective" question in two different ways. Option A assigns positive values (1 or 0.5) to answers favoring financial stability over the price stability objective

and negative values (−1 or −0.5) to answers favoring price stability over the financial stability objective. Option B then assigns positive values to all agreeing answers, i.e., to all responses which prefer either of the two objectives, and negative values to disagreeing answers, i.e., to all responses which do not choose between the two.

Regarding the potential conflict between the two objectives, the majority of respondents believe that one should be favored over the other (mean 0.34). Surprisingly, more respondents would give preference to financial stability above price stability, but the difference is rather small (mean 0.07). Again, we find a substantial gap between the younger and older generations. Specifically, relatively older respondents (and also respondents in managerial positions) are more in favor of advancing one of the two objectives in the case of a conflict. This is another way of dealing with a strategic conflict between the two policies and is generally more applicable in the case of the separation setup, with each institution having a clear mandate and single objective (Nier et al., 2011). We find that this particular strategy has more support among respondents from North America, where the separation setup has a long tradition, whereas, in Europe, the integration setup appears to be favored more (Nier et al., 2011; Cassola et al., 2019; Edge and Liang, 2019).

Furthermore, the respondents generally acknowledge the potentially harmful effects of LIRE (mean 0.62), while they remain uncertain about whether monetary policy tools can be used to effectively mitigate systemic risks (mean −0.04). We further find that respondents from European countries outside the euro area stated that LIRE is harmful significantly more often than respondents from the euro area. This may be linked to the recent literature showing that changes in monetary policy in core countries are associated with substantial spillover effects to peripheries (Morais et al., 2019; di Giovanni et al., 2017; Cao et al., 2021). The ECB has been keeping its main policy rates at historically low levels since the GFC, which may have spurred additional lending in peripheries in line with the functioning of the international bank lending channel (Kashyap and Stein, 2000; Cetorelli and Goldberg, 2012).

Last, we examine the respondents' opinions on the relationship between macroprudential policy and bank lending (Table A6 in the online appendix). As indicated by the quantified mean responses, the respondents believe that by following a macroprudential policy tightening, the provision of lending would decrease. While inspecting the heterogeneity of responses based on individual demographic or professional characteristics, we observe that the respondents with the monetary policy listed as their primary field of expertise report stronger downward pressure of capital-based measures on bank lending. Similarly, respondents from North America report stronger effects on lending than those in Europe.[18] Furthermore, within Europe, respondents in the euro area countries report stronger effects of macroprudential policy than those outside the euro area. The observed heterogeneity of responses concerning capital-based measures contrasts with the rather homogeneous responses regarding the likely effects of borrower-based measures.

As a final step, we verify the consistency and possible linkages between the individual questions. Since the discrete rating scale used in the questionnaire produced only an ordinal measurement of respondents' perceptions, we use nonparametric, or "distribution-free", statistical techniques to analyze the questionnaire data. We estimate contingency coefficients to assess the dependency between responses to question pairs. Unlike the correlation coefficient, the contingency coefficient cannot be used to assess the direction of the dependency, only its strength. Therefore, we complement the contingency analysis with ordinal logistic regressions from which we obtain the probability that respondents would answer two specific questions in a specific way. This can inform us on how probability changes (i.e., decreases or increases) depending on the different answers selected by the respondents. Details on the contingency coefficients and logistic regression, including the estimation results, can be found in the online appendix. Generally, we document a significant dependency between answers to individual questions, suggesting that respondents are consistent in their opinions throughout the questionnaire.

Table 4
Share of respondents divided into clusters based on their characteristics.

	Cluster 1	Cluster 2	Cluster 3
Number of respondents	250	71	40
Gender (%)			
Female	12.7	14.3	7.1
Male	87.3	85.7	92.9
Age (%)			
20–29	6.5	2.9	0.0
30–39	31.6	38.6	10.7
40–49	30.4	27.1	17.9
50–59	21.3	17.1	35.7
Over 59	10.3	14.3	35.7
Region (%)			
Euro area	49.4	42.9	35.7
Europe excl. EA	22.8	24.3	10.7
North America	11.4	10.0	10.7
Other	16.3	22.9	42.9
Position (%)			
Researcher	67.6	91.4	40.7
Expert/Analyst	16.8	5.7	22.2
Management	15.6	2.9	37.0
Primary field of expertise (%)			
Monetary policy	64.6	55.7	96.4
Macroprudential policy – Banks	38.0	81.4	71.4
Macroprudential policy – Other	13.7	48.6	35.7
Supervision – Banks	7.6	88.6	25.0
Supervision – Other	4.2	57.1	7.1
Other	41.1	27.1	53.6
Experience in a given sector (more than 5 years; %)			
Academia	54.8	77.1	71.4
Monetary authority	16.0	12.9	25.0
Macroprudential authority	35.0	17.1	17.9
Other	7.2	21.4	96.4

5. Can we learn more about respondents' views from a combination of their characteristics or text responses?

In the previous chapter, we discussed the heterogeneity in respondents' opinions and which individual factors can explain these differences. We now explore a combination of the respondents' characteristics which can reveal additional patterns in the formation of the respondents' views. We use three strategies. First, we perform a cluster analysis, where we let the data "speak" in terms of identifying groups of respondents. Second, we manually select and combine several characteristics to create a predetermined number of homogeneous groups of representative respondents. Finally, we divide the respondents into specific "schools of thought" that are against and for the integration setup and then compare their characteristics.[19]

[18] Ambrocio et al. (2020) found the same pattern in the North American–European relationship. They argue that it is driven by the fact that the same capital requirements would be less pervasive for US banks than for European banks due to accounting differences (Wall, 2017). To achieve the same level of capital restrictions, respondents from North America prefer more stringent capital regulation, and this might affect their perception of the effects of such regulation on bank lending.

[19] We believe comparing groups created ad hoc based on pre-selected characteristics with clusters identified in a more formal setting is useful. The former provides a more straightforward interpretation of group differences, while the latter shows differences due to rigorous analysis.

Table 5
Quantified mean responses of different groups of respondents.

		Under one roof	Preferred objectives (A)	Preferred objectives (B)	Mutual influence	Co-ordination desirable	LIRE & financial imbalances	MP effective
Total		0.53	0.07	0.34	0.72	0.66	0.62	−0.04
Clusters								
C1	Cluster 1	0.49**	0.04	0.36	0.71	0.59***	0.61	−0.09**
C2	Cluster 2	0.59	0.16	0.34	0.70	0.77**	0.64	0.03
C3	Cluster 3	0.69*	0.08	0.21	0.80*	0.88**	0.65	0.14*
Region, position and primary field								
R1	EA; researcher; MP field	0.58	0.19*	0.29	0.75	0.68	0.61	0.12**
R2	EA; researcher; not in MP field	0.67*	0.19	0.35	0.69	0.81	0.68	0.00
R3	North America; researcher	0.36	0.17	0.48	0.72	0.53	0.62	−0.14
R4	EA; management	0.46	−0.06	0.35	0.63	0.38*	0.44	−0.08
Academic experience								
R5	Only academic exp.	0.61	0.21**	0.50**	0.70	0.61	0.58	0.01
R6	Both exp.	0.52	0.06	0.27***	0.72	0.69**	0.68**	−0.04
R7	Only non-academic exp.	0.46	−0.11**	0.39	0.74	0.58	0.43***	−0.13
Monetary policy as primary field								
R8	Only MP field	0.40**	−0.14***	0.47*	0.68	0.52*	0.53	0.03
R9	Both fields	0.58	0.11	0.33	0.79***	0.73***	0.65	−0.03
R10	Only non-MP field	0.54	0.12	0.28	0.64***	0.63*	0.63	−0.10

Note: This table compares the mean quantified responses for different groups of respondents identified by a combination of selected characteristics. Number of respondents: C1 (250), C2 (71), C3 (40), R1 (76), R2 (43), R3 (29), R4 (26), R5 (83), R6 (224), R7 (53), R8 (64), R9 (172), R10 (125). We perform two non-parametric statistical tests, the Mann–Whitney–Wilcoxon test and the Kruskal–Wallis test, to decide whether there are significant differences between the groups of respondents. Both tests give the same results. The null hypothesis of both tests states that there is no significant difference between the groups. If the *p*-value is less than the significance level, we can conclude that there are significant differences between the groups.

***p < 0.01.

**p < 0.05.

*p < 0.1.

Table 4 summarizes the characteristics of three identified clusters.[20] The first cluster is populated by the least experienced respondents (in terms of years and different institutions) and the least diversified expertise (predominantly focused on monetary policy). This cluster also has the highest proportion of respondents from North America. The second cluster is characterized by a high proportion of researchers, respondents with academic experience and diverse expertise, and including a high proportion of respondents focused on macroprudential policy and/or supervision. The third cluster is populated by the most experienced respondents with the highest share of managers.

Table 5 compares quantified mean responses of the three clusters and additional ten representative groups of respondents. The answers of the selected groups of respondents lay additional support to the findings presented in the previous chapters and confirm the consistency of the respondents' views. The integration setup has the least support among respondents from the first cluster and the most support among those in the third cluster. In addition, this view is consistent with the opinions on the coordination of both policies and the effectiveness of monetary policy in mitigating systemic risks. Those respondents who are generally less inclined to integrate macroprudential policy into the central bank (cluster 1) are less likely to perceive policy coordination as desirable and monetary policy as effective. The opposite is true for cluster 3.

The comparison of respondents groups created based on predetermined characteristics (R1–R10) more or less confirms the patterns identified via the cluster analysis. The analysis shows that the integration setup has the least support among researchers from North America (R3) and respondents who work exclusively in the field of monetary policy (R8). Respondents with these characteristics are also strongly represented in cluster 1. The integration setup has the highest rate of support among researchers from the euro area (R1, R2) and respondents with work experience gained solely in academia (R5). The respondents' views on the preferred institutional setup mimic their views on whether the monetary and macroprudential policies influence each other and whether their coordination is desirable. While the mean quantified responses come out positive for all respondent groups, significantly smaller mean values are reported for researchers from North America (R3) as well as monetary policy practitioners (R8). Unsurprisingly, respondents who work or conduct research in the field of monetary policy (R8) would be significantly more in favor of the price stability objective than other respondent groups in the case of a policy conflict.

As a final step, we compare the characteristics of respondents divided into two groups with opposite views on the arrangement of central bank objectives and policies (Table 6). There is a continuing debate about whether monetary policy frameworks focused on price stability should be amended to include financial stability objectives. To define the two groups, we follow Smets (2014), where he summarizes three dominant views of the matter. In the first group, called the "modified Jackson Hole consensus", we include respondents that are against the integration setup, while in the second group, called "leaning against the wind", we include respondents in favor of it. We further divide the respondents into both groups based on their answers to the three most polarizing questions on the preferred objective in the event of a conflict, the implications of LIRE, and the effectiveness of monetary policy in mitigating systemic risks.[21] Respondents preferring the objective of financial stability, acknowledging adverse consequences of LIRE, and considering monetary policy effective in reducing systemic risks are expected to be more in favor of the "leaning against the wind" strategy. If respondents disagree (agree) with at least one, two, or all

[20] We perform hierarchical agglomerative clustering and use the silhouette method to determine the number of clusters. The silhouette method provides a measure of data consistency (how close each point in one cluster is to points in the neighboring clusters). As a result, we identify 3 clusters with 250, 71, and 40 respondents, respectively. We perform numerous sensitivity checks with different sets of characteristics used for clustering, different number of clusters, and different methods. In our opinion, the presented results provide the most useful information about these exercises.

[21] We do not consider the other two questions on the mutual influence and coordination of policies, given that the vast majority of respondents expressed the same opinion.

Table 6
Do respondents with some distinctive profile fall to specific "schools of thought"?

	Modified Jackson Hole consensus		Leaning against the wind		
	Weak	Medium	Weak	Medium	Strong
Sample share (%)	7	4	23	33	19
Region (%)					
Euro Area	38	50	46	43	58
Europe excl. EA	25	29	27	22	13
North America	21	14	5	12	10
Other	17	7	23	22	19
Sector (%)					
Academia	92	79	83	82	91
Central Bank	54	79	61	64	35
Other public sector	29	36	25	33	33
Private sector	25	14	22	28	26
Position (%)					
Researcher	75	36	71	66	78
Expert/Analyst	12	14	11	21	9
Management	12	43	16	12	12
Primary field of expertise (%)					
Monetary policy	62	71	63	74	61
Macroprudential policy and supervision	54	36	61	63	62
Other	54	21	37	38	45
Average experience (years)					
Experience in total	22	21	20	20	26
Experience per sector	11	9	11	11	15

Note: This table shows the proportions of respondents in each "school of thought" broken down by their characteristics. The percentages in the table should be read in columns within blocks. For example, the share of respondents with a weak "Jackson Hole consensus" view is 7%, while the share of researchers of these respondents is 75%.

three additional questions, their opinion is considered weak, medium, or strong.

Only about 7% (4%) of respondents are against the integration setup and disagree with at least one (two) additional questions at the same time. In addition, only about 1% of respondents (4 people) hold a strong view and would prefer a very clear division of objectives and policies.[22] On the other hand, the option of about 20% of respondents is strongly in line with the "leaning against the wind" strategy, and another 56% are somewhat (moderately or weakly) inclined towards this strategy as well. Respondents that lean more towards the modified Jackson Hole consensus are mainly managers from central banks with a very narrow focus on monetary policy. The majority of these respondents reside in European countries, mainly the Euro Area. In contrast, respondents with a very strong view in favor of leaning against the wind strategy are predominantly researchers from universities with more experience and diverse expertise. A high proportion of these respondents focus not only on monetary policy but also on financial stability policies and other areas of research.

The documented differences between the responses of certain groups can be explained from multiple angles. For instance, the dichotomy between the answers of respondents in managerial positions and the rest of the respondents can be attributed to the existence of a conservatism bias (Bantel and Jackson, 1989; Vroom and Pahl, 1971). The fact that respondents with a monetary policy background answer questions about the effects of monetary policy differently than the rest of the respondents may be due to a confirmation bias (Nickerson, 1998). A related piece of evidence is supplemented by Fabo et al. (2021). They find that central bank researchers tend to find quantitative easing to be more effective than academic papers do. They list career concerns, conducts of action that supports a bank's reputation, and confirmation bias as possible channels to explain their findings.

5.1. Text responses

In the survey questionnaire, we encourage the respondents to use the feedback section at the end of each block to expand their answers. About a quarter used this option and expressed their views also in the form of text responses. Many of these answers either confirm the selected option by providing the same information or describe the transmission mechanism of the policies. The remaining answers (provided by about 40 respondents, which represents 11% of our sample) then bring additional information that we can divide into several groups. First, about one-third expressed concerns about political and industry pressures, which are generally expected to be stronger in the conduct of macroprudential policy than in the conduct of monetary policy. Interestingly, respondents propose different solutions to this issue. While some see this as an argument for integrating macroprudential policy in a central bank (given its high independence and credibility), others use it as an argument against the integration setup (given that it may endanger the central bank's independence and credibility). Both opinions are represented roughly equally.

Second, another third of these answers acknowledge that the institutional arrangement, policy coordination, and how potential conflicts between objectives are resolved depends on circumstances such as the prevailing economic and financial environment, the institutional and political environment, the mandate of the central bank, the incentives of the decision-maker or the degree of harm that would have occurred in the absence of central bank action. Finally, several respondents state, either explicitly or implicitly, that financial stability is a prerequisite for price stability and the effective conduct of monetary policy. In other words, price stability cannot be achieved without financial stability, which is why the macroprudential policy toolkit should be integrated into the central bank.

If we focus on the respondents we previously classified as in favor of the modified Jackson Hole consensus, they express their concerns about central bank independence and credibility. More specifically, a central bank can be tempted, either internally or as a result of external pressures, to achieve financial stability by keeping monetary policy too accommodative, thereby compromising the objective of price stability. Respondents also draw attention to the issue of legitimacy: If a central bank has multiple objectives, it should be part of its mandate which objective it prioritizes. In such a case, the reasons for the conflict are limited. However, it is necessary to add that these concerns were explicitly raised by less than ten respondents.

[22] These respondents are not listed in the table, given their small number.

6. Conclusions

In a survey of experts from academia, central banks, and other regulatory institutions worldwide, we find remarkable support for integrating macroprudential policy under the umbrella of the central bank. Specifically, we discover that the likely reasons behind the strong support of the integration setup are: (i) the widely shared opinion among the respondents on the strong interdependence of monetary and macroprudential policy conduct, (ii) information gains stemming from the fact that the data outputs and expertise developed in one policy department may serve as an input for the decision making in the other department, and (iii) increased capacity to act swiftly in response to conflicting situations. In addition, respondents who favor the integration setup would favor the financial stability objective of a central bank over its price stability objective in the case of a strategic conflict. The same respondents also acknowledge more strongly than others that a low-interest rate environment fuels financial vulnerabilities, implicitly increasing systemic risks. Interestingly, we find that while the integration setup enjoys the support of most of our respondents, those who are relatively less experienced show significantly less support, along with respondents who work or conduct research in monetary policy.

Our findings are related mainly to the emerging literature on the interactions stemming from monetary and macroprudential policy conduct. The findings from our survey support the view stemming from game-theoretic studies, which overwhelmingly claim that the situations under which economic welfare is maximized are those where the policies show a high degree of coordination or even a situation in which macroprudential policy takes the lead.

International institutions usually support assigning the central bank a greater role in macroprudential policy, but they are understandingly reluctant to make a strong case for one particular institutional setup. While the results of our survey support the integration setup, we agree with the existing literature that country-specific factors play an important role and should be taken into account when designing a macroprudential policy framework. We hope that our soft evidence will benefit the ongoing discussions in many countries which are in the process of revising their institutional frameworks.

Funding

Part of the research behind this paper was funded by the Prague University of Economics and Business institutional research support grant no. IP100040.

Code availability

The underlying code (R) and data are available upon request.

Declaration of competing interest

One or more of the authors of this paper have disclosed potential or pertinent conflicts of interest, which may include receipt of payment, either direct or indirect, institutional support, or association with an entity in the biomedical field which may be perceived to have potential conflict of interest with this work. For full disclosure statements refer to https://doi.org/10.1016/j.jfs.2023.101107.All authors are employed by the Czech National Bank.

Data availability

Data will be made available on request.

Appendix A. Supplementary data

Supplementary material related to this article can be found online at https://doi.org/10.1016/j.jfs.2023.101107.

References

Acharya, V.V., Bergant, K., Crosignani, M., Eisert, T., McCann, F., 2020. The Anatomy of the Transmission of Macroprudential Policies. IMF Working Papers 20/58, International Monetary Fund..
Admati, A., Hellwig, M., 2014. The Bankers' New Clothes. Princeton University Press.
Adrian, T., Etula, E., Muir, T., 2014. Financial intermediaries and the cross-section of asset returns. J. Finance 69 (6), 2557–2596.
Agénor, P.-R., Alper, K., da Silva, L.A.P., 2014. Sudden floods, macroprudential regulation and stability in an open economy. J. Int. Money Finance 48, 68–100.
Ahnert, T., Forbes, K., Friedrich, C., Reinhardt, D., 2021. Macroprudential FX regulations: Shifting the snowbanks of FX vulnerability? J. Financ. Econ. 140 (1), 145–174.
Aiyar, S., Calomiris, C.W., Wieladek, T., 2014. Does macro-prudential regulation leak? Evidence from a UK policy experiment. J. Money Credit Bank. 46 (s1), 181–214.
Akinci, O., Olmstead-Rumsey, J., 2018. How effective are macroprudential policies? An empirical investigation. J. Financ. Intermediation 33, 33–57.
Ambrocio, G., Hasan, I., Jokivuolle, E., Ristolainen, K., 2020. Are bank capital requirements optimally set? Evidence from researchers' views. J. Financ. Stab. 50, 100772.
Ampudia, M., Beck, T., Beyer, A., Colliard, J.-E., Leonello, A., Maddaloni, A., Marques-Ibanez, D., 2019. The Architecture of Supervision. ECB Working Paper No. 2287, European Central Bank.
Angelini, P., Neri, S., Panetta, F., 2014. The interaction between capital requirements and monetary policy. J. Money Credit Bank. 46 (6), 1073–1112.
Bantel, K.A., Jackson, S.E., 1989. Top management and innovations in banking: Does the composition of the top team make a difference? Strateg. Manag. J. 10 (S1), 107–124.
Basto, R., Gomes, S., Lima, D., 2019. Exploring the implications of different loan-to-value macroprudential policy designs. J. Policy Model. 41 (1), 66–83.
Beau, D., Clerc, L., Mojon, B., 2012. Macro-Prudential Policy and the Conduct of Monetary Policy. Occasional Papers No. 8, Banque de France.
Bernanke, B.S., Gertler, M., 1995. Inside the black box: The credit channel of monetary policy transmission. J. Econ. Perspect. 9 (4), 27–48.
Blanchard, O., Dell'Ariccia, G., Mauro, P., 2010. Rethinking macroeconomic policy. J. Money Credit Bank. 42, 199–215.
Bodenstein, M., Guerrieri, L., LaBriola, J., 2019. Macroeconomic policy games. J. Monetary Econ. 101, 64–81.
Boissay, F., Cantú, C., Claessens, S., Villegas, A., 2019. Impact of financial regulations: Insights from an online repository of studies. BIS Q. Rev. March.
Borio, C., 2014. The financial cycle and macroeconomics: What have we learnt? J. Bank. Financ. 45, 182–198.
Brunnermeier, M.K., Sannikov, Y., 2014. A macroeconomic model with a financial sector. Amer. Econ. Rev. 104 (2), 379–421.
Buttigieg, C.P., Bamber, M., 2020. Institutional architecture for financial supervision: A case study. Law Financ. Mark. Rev. 1–8.
Cao, J., Dinger, V., Gómez, T., Gric, Z., Hodula, M., Jara, A., Juelsrud, R., Liaudinskas, K., Malovaná, S., Terajima, Y., 2021. Monetary Policy Spillover to Small Open Economies: Is the Transmission Different under Low Interest Rates? CNB Working Paper No. 6/21, Czech National Bank.
Carreras, O., Davis, E.P., Piggott, R., 2018. Assessing macroprudential tools in OECD countries within a cointegration framework. J. Financ. Stab. 37, 112–130.
Carrillo, J.A., Mendoza, E.G., Nuguer, V., Roldán-Peña, J., 2021. Tight money-tight credit: Coordination failure in the conduct of monetary and financial policies. Am. Econ. J.: Macroecon. 13 (3), 37–73.
Cassola, N., Kok, C., Mongelli, F.P., 2019. The ECB after the Crisis: Existing Synergies among Monetary Policy, Macroprudential Policies and Banking Supervision. Occasional Paper 237, European Central Bank..
Cecchetti, S.G., Kohler, M., 2014. When capital adequacy and interest rate policy are substitutes (and when they are not). Int. J. Central Bank. 10 (3), 205–231.
Cecchettia, S.G., Kohlerb, M., 2014. When capital adequacy and interest rate policy are substitutes (and when they are not). Int. J. Central Bank. 10 (3), 205–231.
Cerutti, E., Claessens, S., Laeven, L., 2017. The use and effectiveness of macroprudential policies: New evidence. J. Financ. Stab. 28, 203–224.
Cetorelli, N., Goldberg, L.S., 2012. Banking globalization and monetary transmission. J. Finance 67 (5), 1811–1843.
Cizel, J., Frost, J., Houben, A., Wierts, P., 2019. Effective macroprudential policy: Cross-sector substitution from price and quantity measures. J. Money Credit Bank. 51 (5), 1209–1235.
Collard, F., Dellas, H., Diba, B., Loisel, O., 2017. Optimal monetary and prudential policies. Am. Econ. J.: Macroecon. 9 (1), 40–87.
De Jonghe, O., Dewachter, H., Ongena, S., 2020. Bank capital (Requirements) and credit supply: Evidence from pillar 2 decisions. J. Corp. Finance 60, 101518.
De Nicolò, G., 2015. Revisiting the impact of bank capital requirements on lending and real activity. Available at SSRN 2688110.
Dell'Ariccia, G., Laeven, L., Marquez, R., 2014. Real interest rates, leverage, and bank risk-taking. J. Econom. Theory 149 (C), 65–99.
di Giovanni, J., Kalemli-Özcan, Ş., Ulu, M.F., Baskaya, Y.S., 2017. International Spillovers and Local Credit Cycles. NBER Working Papers 23149, National Bureau of Economic Research.

Drehmann, M., Gambacorta, L., 2012. The effects of countercyclical capital buffers on bank lending. Appl. Econ. Lett. 19 (7), 603–608.
Edge, R.M., Liang, N., 2019. New Financial Stability Governance Structures and Central Banks. FEDS Working Paper 2019-019, Board of Governors of the Federal Reserve System.
Fabo, B., Jančoková, M., Kempf, E., Pástor, L., 2021. Fifty shades of QE: Comparing findings of central bankers and academics. J. Monetary Econ. 120 (C), 1–20.
Farhi, E., Werning, I., 2016. A theory of macroprudential policies in the presence of nominal rigidities. Econometrica 84 (5), 1645–1704.
Fidrmuc, J., Lind, R., 2020. Macroeconomic impact of basel III: Evidence from a meta-analysis. J. Bank. Financ. 112, 105359.
Galati, G., Moessner, R., 2018. What do we know about the effects of macroprudential policy? Economica 85 (340), 735–770.
Gambacorta, L., 2011. Do bank capital and liquidity affect real economic activity in the long run? A VECM analysis for the US. Econ. Notes 40 (3), 75–91.
Gambacorta, L., Shin, H.S., 2018. Why bank capital matters for monetary policy. J. Financ. Intermediation 35, 17–29.
Goergen, M., Limbach, P., Scholz, M., 2015. Mind the gap: The age dissimilarity between the chair and the CEO. J. Corp. Finance 35, 136–158.
Hanson, S.G., Stein, J.C., 2015. Monetary policy and long-term real rates. J. Financ. Econ. 115 (3), 429–448.
Heider, F., Saidi, F., Schepens, G., 2019. Life below zero: Bank lending under negative policy rates. Rev. Financ. Stud. 32 (10), 3728–3761.
Hodula, M., Melecky, A., Machacek, M., 2020. Off the radar: Factors behind the growth of shadow banking in Europe. Econ. Syst. 44 (3).
IMF, 2011. Macroprudential Policy: An Organizing Framework. Policy Papers 2011/082, International Monetary Fund.
IMF, 2013. Key Aspects of Macroprudential Policy. Policy Papers 2011/018, International Monetary Fund.
Irani, R.M., Iyer, R., Meisenzahl, R.R., Peydró, J.-L., 2021. The rise of shadow banking: Evidence from capital regulation. Rev. Financ. Stud. 34 (5), 2181–2235.
Jiménez, G., Ongena, S., Peydró, J.-L., Saurina, J., 2017. Macroprudential policy, countercyclical bank capital buffers, and credit supply: Evidence from the Spanish dynamic provisioning experiments. J. Polit. Econ. 125 (6), 2126–2177.
Jordà, Ò., Schularick, M., Taylor, A.M., 2015. Betting the house. J. Int. Econ. 96 (S1), 2–18.
Kashyap, A.K., Stein, J.C., 2000. What do a million observations on banks say about the transmission of monetary policy? Amer. Econ. Rev. 90 (3), 407–428.
Kim, S., Plosser, M.C., Santos, J.A., 2018. Macroprudential policy and the revolving door of risk: Lessons from leveraged lending guidance. J. Financ. Intermediation 34, 17–31.
Kuttner, K.N., Shim, I., 2016. Can non-interest rate policies stabilize housing markets? Evidence from a panel of 57 economies. J. Financ. Stab. 26, 31–44.
Leduc, S., Natal, J.-M., 2018. Monetary and macroprudential policies in a leveraged economy. Econ. J. 128 (609), 797–826.
Libich, J., 2020. Unpleasant monetarist arithmetic: Macroprudential edition. Econ. Rec. 96 (312), 19–39.
Lim, C.H., Costa, A., Columba, F., Kongsamut, P., Otani, A., Saiyid, M., Wezel, T., Wu, X., 2011. Macroprudential Policy: What Instruments and How to Use Them? Lessons from Country Experiences. IMF Working Paper WP/11/238, International Monetary Fund.
Lim, C.H., Ramchand, M.R.S., Wagner, M.H., Wu, M.X., 2013. Institutional Arrangements for Macroprudential Policy in Asia. IMF Working Paper No. 13/165, International Monetary Fund..
Malovaná, S., Bajzik, J., Ehrenbergerová, D., Jank, J., 2023. A prolonged period of low interest rates in Europe: Unintended consequences. J. Econ. Surv. (in press).
Malovaná, S., Frait, J., 2017. Monetary policy and macroprudential policy: Rivals or teammates? J. Financ. Stab. 32, 1–16.
Malovaná, S., Hodula, M., Bajzík, J., Gric, Z., 2021a. A Tale of Different Capital Ratios: How to Correctly Assess the Impact of Capital Regulation on Lending. CNB Working Paper 8/2021, Czech National Bank.
Malovaná, S., Hodula, M., Gric, Z., Bajzík, J., 2022b. Borrower-based macroprudential measures and credit growth: How biased is the existing literature?. CNB Working Paper 8/2022, Czech National Bank.
Martynova, N., 2015. Effect of Bank Capital Requirements on Economic Growth: A Survey. DNB Working Paper No. 467, De Nederlandsche Bank.
Mendicino, C., Nikolov, K., Suarez, J., Supera, D., 2020. Bank capital in the short and in the long run. J. Monetary Econ. 115, 64–79.
Miles, D., Yang, J., Marcheggiano, G., 2013. Optimal bank capital. Econ. J. 123 (567), 1–37.
Morais, B., Peydró, J.-L., Roldán-Peña, J., Ruiz-Ortega, C., 2019. The international bank lending channel of monetary policy rates and QE: Credit supply, reach-for-yield, and real effects. J. Finance 74 (1), 55–90.
Nickerson, R.S., 1998. Confirmation bias: A ubiquitous phenomenon in many guises. Rev. General Psychol. 2 (2), 175–220.
Nier, E., Jácome, M.L.I., Osinski, J., Madrid, P., 2011. Institutional Models for Macroprudential Policy. IMF Staff Discussion Note No. 18, International Monetary Fund.
Paoli, B.D., Paustian, M., 2017. Coordinating monetary and macroprudential policies. J. Money Credit Bank. 49 (2–3), 319–349.
Peydró, J.-L., Rodriguez-Tous, F., Tripathy, J., Uluc, A., 2020. Macroprudential Policy, Mortgage Cycles and Distributional Effects: Evidence from the UK. Staff Working Paper 866, Bank of England.
Rigobon, R., Sack, B., 2004. The impact of monetary policy on asset prices. J. Monetary Econ. 51 (8), 1553–1575.
Smets, F., 2014. Financial stability and monetary policy: How closely interlinked? Int. J. Central Bank. 10 (2).
Talavera, O., Yin, S., Zhang, M., 2018. Age diversity, directors' personal values, and bank performance. Int. Rev. Financ. Anal. 55, 60–79.
Tayler, W.J., Zilberman, R., 2016. Macroprudential regulation, credit spreads and the role of monetary policy. J. Financ. Stab. 26, 144–158.
Thakor, A.V., 2014. Bank capital and financial stability: An economic trade-off or a faustian bargain? Annu. Rev. Finan. Econ. 6 (1), 185–223.
Vroom, V.H., Pahl, B., 1971. Relationship between age and risk taking among managers. J. Appl. Psychol. 55 (5), 399.
Wall, L., 2017. Post-crisis changes in US bank prudential regulation. In: Preparing for the Next Financial Crisis. Policies, Tools and Models. Cambridge University Press.
Woodford, M., 2012. Inflation Targeting and Financial Stability. Working Paper 17967, National Bureau of Economic Research.