

# Monetary and macroprudential policy effectiveness and spillovers\*



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*What are the trade-offs involved in the implementation of macroprudential and monetary measures? And how do monetary and macroprudential policies interact? Recent research conducted at the European Central Bank (ECB) tackles these questions both theoretically and empirically. We argue that monetary and macroprudential policies face important trade-offs. In addition, since monetary and macroprudential policies transmit to the broad economy via the financial system, they unavoidably affect each other's effectiveness. Taking these factors into account is key for the design and implementation of both policies. There are clear advantages of limiting the constraints on the practical implementation of macroprudential policy as well as of accounting for financial stability considerations when taking monetary policy decisions.*

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\*This policy brief was written by Luc Laeven (Director General, Directorate General Research, European Central Bank), Angela Maddaloni (Head of Section, Directorate General Research, European Central Bank) and Caterina Mendicino (Adviser, Directorate Monetary Policy, European Central Bank). This article summarises some of the key analytical findings and policy implications that have emerged from research by ECB staff conducted as part of the [ECB Research Task Force \(RTF\) on monetary policy, macroprudential policy and financial stability](#). The views expressed here are those of the authors and do not necessarily represent the views of the European Central Bank and the Eurosystem.

The main goal of this policy brief is to provide a research-based overview on monetary policy, macroprudential policy and financial stability. We focus on two sets of questions addressed by recent research carried out within the ECB's Research Task Force on monetary policy, macroprudential policy and financial stability.<sup>1</sup> First, we analyse what the potential trade-offs are that monetary and macroprudential policies face. Second, we explore the spillovers among these policies and how do they interact.

## Macroprudential policy: effectiveness and trade-offs

The objective of macroprudential policy is to limit the build-up of financial stability risks and increase the resilience of the financial sector to reduce the incidence and severity of financial crisis. Recent and growing evidence shows that macroprudential policies can indeed be effective in moderating credit and asset price cycles (see, for example, Ampudia et al., 2021). But the analysis of these issues has put relatively little emphasis on the potential costs associated with the activation of macroprudential tools.

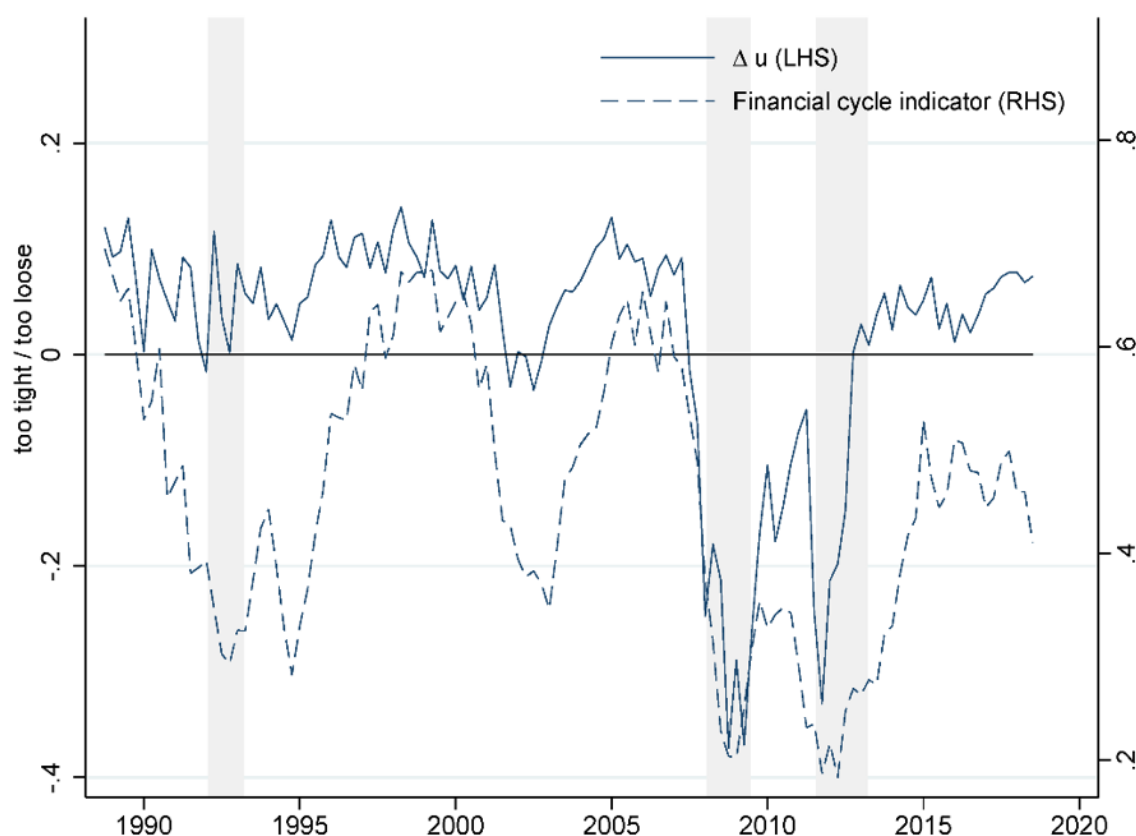
To understand the net benefits of macroprudential policy interventions it is important to consider that by limiting credit growth, macroprudential policy can limit the costs of financial crisis but could also have adverse effects on economic growth. Gadea Rivas, Laeven and Pérez-Quirós (2020) document a trade-off between growth and risk associated with the pace of credit growth. While rapid credit growth tends to be followed by deeper recessions, more credit implies longer expansions which have a direct positive impact on economic growth. Hence, a key challenge for macroprudential policy is to manage the balance between longer expansions and deeper recessions.

Quantitative models are particularly useful to assess the costs and benefits of macroprudential policy and to provide a quantification of the overall net benefits. The quantitative model of the euro area developed by Mendicino et al. (2021) illustrates that higher capital requirements make banks less vulnerable to credit losses, which in turn reduces the incidence and cost of bank insolvencies for the economy. But increasing capital requirements might also lead to tighter bank lending standards and to a lower provision of credit to the private sector. A model consistent way to measure the net benefits of higher capital requirements is via household welfare. When capital requirements are relatively low, the positive effects on bank defaults dominate and welfare increases. On the contrary, when the probability of bank default is low, elevated borrowing costs dominates and welfare declines.

While structural models can rely on welfare measures to assess the net benefits of policies, it remains challenging to quantify empirically when it is beneficial to activate macroprudential tools. To advance in this direction, Chavleishvili et al. (2021) developed a risk management approach. This builds on a quantile vector autoregression model that can account for the strong asymmetries that characterize macro-financial interactions. In addition, it relies on an objective function which takes into account both the cost of downside risk and the benefits of the upside potential of countercyclical policy measures by including in the calculations of expected real GDP growth the risk of a growth shortfall. This approach broadens the notion of downside risk by considering the entire left tail of the GDP growth distribution, rather than just a specific quantile.

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<sup>1</sup> See Laeven, Maddaloni and Mendicino (2022) for a detailed review of the key analytical findings and policy implications that have emerged from ECB staff's research developed under the ECB Research Task Force on monetary Policy, macroprudential policy and financial stability.

**Figure 1: Net benefits of an active macroprudential tightening in the euro area**


Source: Chavleishvili et al. (2021). Notes: Solid line indicates net benefits of adopting an actively countercyclical macroprudential policy based on a specific objective function, relative to a passive (no activation) policy, i.e.  $\Delta u_t = u_t(\text{active}) - u_t(\text{passive})$ .<sup>2</sup> The dashed line depicts the financial cycle as estimated by Schuler et al. (2020).

The solid line in Figure 1 plots the results of a counterfactual exercise which at each specific point in time measures the gains of tightening macroprudential tools to build-up buffers which are then released once the crisis starts. The fact that it is almost always in positive territory means that the net benefits of tightening macroprudential tools have been positive most of the time in the euro area.

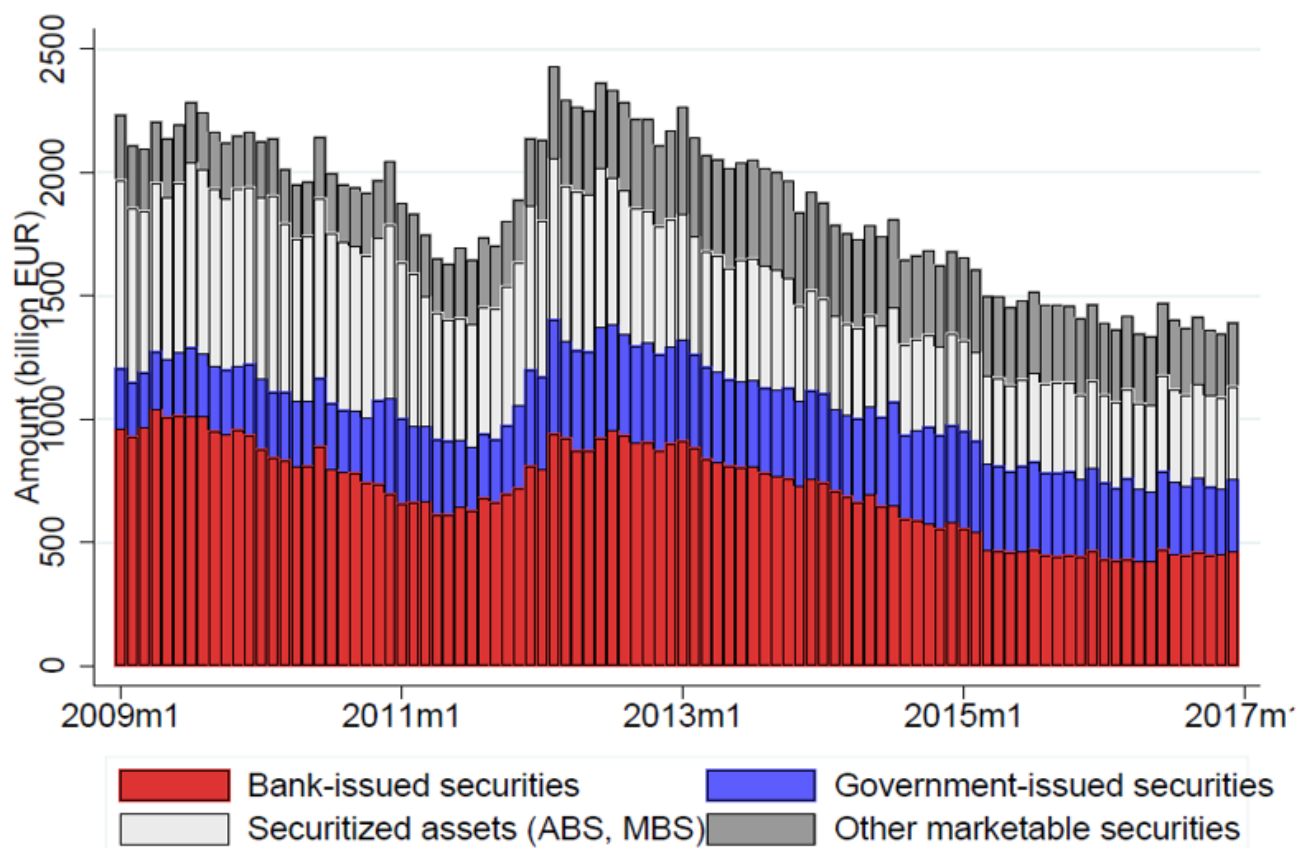
## Monetary policy

The global financial crisis renewed interest in understanding the implications of accommodative monetary policy for bank risk taking and the importance of bank heterogeneity for shaping the transmission of monetary policy (see e.g. Albertazzi et al. 2020a, for a review of the literature). ECB research shows that bank heterogeneity is also important in the transmission of negative policy rates which have been introduced in the euro area since July 2014. After an initial decrease in the pass-through, banks adapted to the new environment and started charging negative rates, primarily to corporates (see Altavilla et al. 2020). However, the degree of the pass-through depends on the initial level of the deposit rate, which is different across euro area countries, (see e.g. Mendicino et al., 2021 and Bittner et al. 2022). These differences transmit to banks' funding costs and eventually increase risk-taking incentives especially for banks more reliant on deposit funding and therefore more affected by low and negative rates (see, for example, Ampudia and Van den Heuvel, 2018; Bubeck, Maddaloni and Peydró, 2020; Heider, Saidi and Schepens, 2019; and Heider and Leonello, 2021).

<sup>2</sup>The counterfactual exercise simulate forward the GDP growth rate  $y_{t+h}$  and the growth shortfall  $GS_{t,t+h}$  at any time  $t+h$  with  $h=1,\dots,12$ . Hence the objective function for each of the two scenarios (active vs passive macroprudential policy) is defined as follows  $u_t(\text{scenario})=y_{t+1:t+12}(\text{scenario})+0.50 GS_{t+1:t+12}(\text{scenario})$ . See eq. (17) in Chavleishvili et al. (2021).

In recent years central banks have provided large amounts of liquidity to the banking sector. In line with theoretical arguments, research developed under the task force shows that during crisis central bank liquidity provision has positive effects on lending (Jasova et al. 2020), it is associated with lower money market tensions (Corradin et al. 2020) and it is successful in mitigating bank fragility (Albertazzi et al. 2020b), thus contributing to an overall increase in financial stability. However, this policy might also increase systemic risk at the margin. Figure 2 documents the collateral pledging of euro area banks with the ECB. Banks disproportionately pledged with the central bank bonds issued by other banks (more than sovereign bonds).

**Figure 2: Collateral Pledged with the European Central Bank**



Source: Jasova et al. (2021). Notes: The graph displays the collateral pledging with the ECB. Bank issued (red bars) and government-issued securities (blue bars).

In recent research, Jasova, et al. (2021) present evidence that during crisis times central bank liquidity interventions provide incentives for banks to disproportionately hold and pledge bonds issued by domestic interconnected banks. Importantly, these results do not imply that this policy increases overall systemic risk but rather that systemic risk may increase at the margin by encouraging the cross-holding of bank bonds.

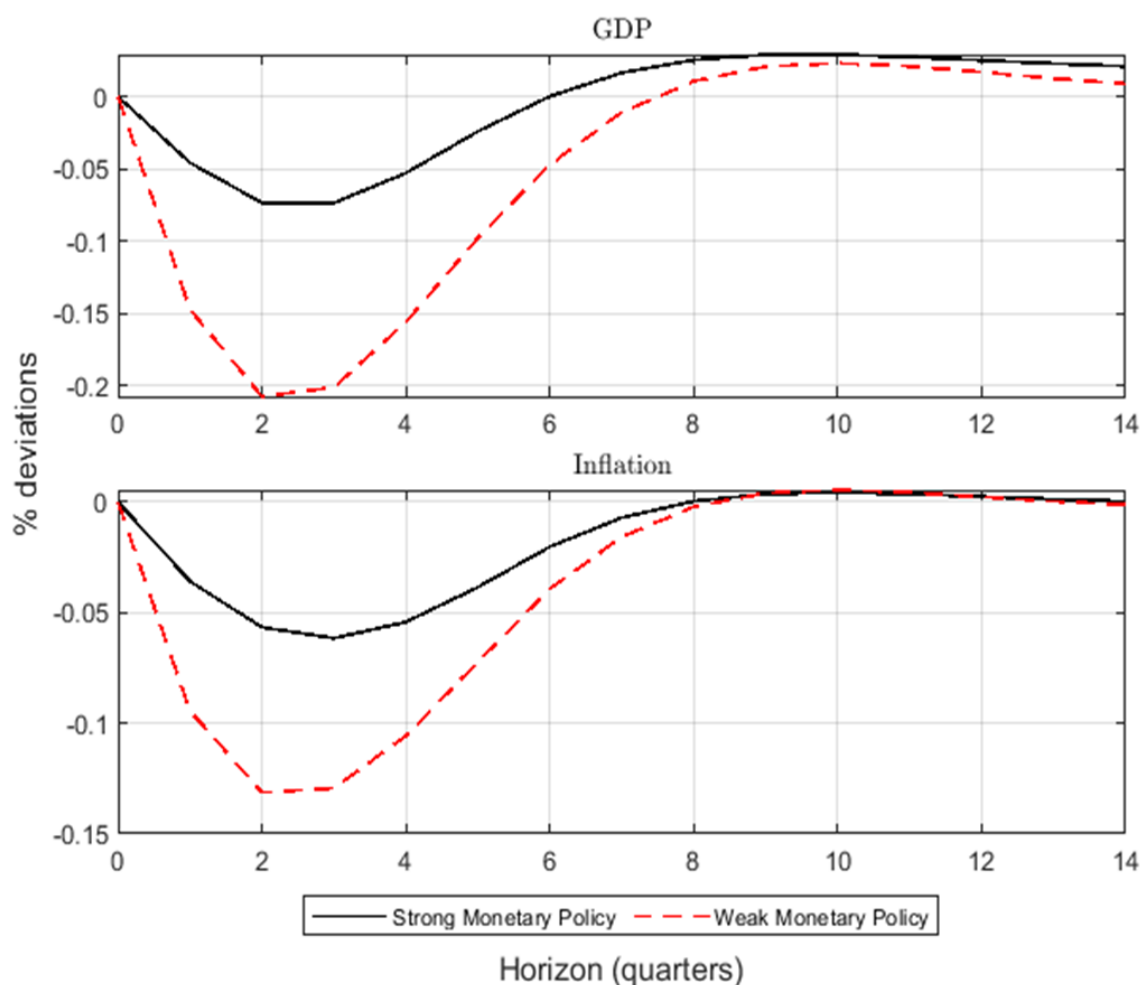
Central bank asset purchases can also have important consequences for bank vulnerability. Karadi and Nakov (2021) argue that in the presence of binding financial constraints, asset purchases are effective in offsetting the negative impact of a financial shock. Output and lending spreads are perfectly stabilized, as well as inflation. In addition, asset purchases also mitigate the initial drop in bank equity caused by the financial shock. However, by avoiding an increase in lending spreads, central bank asset purchases may reduce bank profitability over time and slow down the recapitalization of the banking sector.

## Monetary and macroprudential policies: spillovers and interaction

The amount of credit intermediated by banks is crucial for monetary policy transmission but also a key determinant of the build-up of financial instability. Therefore, there are potentially large interactions between monetary policy and macroprudential policy in shaping the evolution of bank credit (see Martin, Mendicino and Van der Gote, 2021, for a review of the literature). Recent research documents that, while effects can be state-dependent, the coordination of policies is always beneficial vis-à-vis a situation in which the two policies act in an uncoordinated fashion (see, for example, Van der Gote, 2021).

Mendicino et al. (2020) argue that monetary policy has an impact on the transmission of macroprudential policy. Capital requirement increases are beneficial because improve the stability of the banking sector and therefore beneficial for the economy in the long run. However, they also entail some temporary costs driven by the restriction of bank credit in the short-run. Hence the macroprudential authority needs to balance the short-run costs and long-run benefits of changes in capital requirements. At the same time, the conduct of monetary policy can play an important role in determining the size of the short-run costs. Figure 3 shows that accommodative monetary policy (black line) reduces significantly the short-term costs of increasing capital requirements compared to a less accommodative case (red line).

**Figure 3: The interaction of monetary policy and macroprudential policy**



Source: Mendicino et al. (2020). Notes: The graph displays the effects of a 1 percentage point increase in banks' capital buffers over time. Accommodative monetary policy is shown by the black solid line, a constrained monetary policy is shown by the red dashed line.

On the other hand, the soundness of the banking system also affects the transmission of monetary policy, and the level of the natural real interest rate (see, for example, Cozzi et al., 2020). Banks' net worth is more sensitive to monetary policy shocks when they have high leverage and riskier assets. Conversely, higher capital requirements and a more resilient banking system dampen the transmission of monetary policy. Van der Gote (2020) documents that in a low interest rate environment, macroprudential policy contains systemic risk in financial markets but also boosts the natural interest rate – the interest rate that supports the economy at full employment while keeping inflation constant – and hence helps mitigate the intensity of “liquidity traps”.

From an empirical point of view it is, however, quite difficult to assess how these two policies interact because they operate through common transmission channels. To provide an empirical assessment of the interaction of policies, Altavilla, Laeven and Peydró (2021) use granular credit register data for euro area countries and they show that monetary and macroprudential reinforce each other, and that this effect depends on the amount of bank capital. It follows from this analysis that the complementary effects of accommodative macroprudential and monetary policies are state dependent, being stronger when bank capital is low.

## Conclusion

In this policy brief, we highlight the main takeaways of recent research developed within the ECB Research Task Force on monetary policy, macroprudential policy and financial stability. We argue that the implementation of both monetary and macroprudential policies faces important trade-offs between the supply of credit to the broader economy and financial stability risks. In addition, as they both operate through the financial system, monetary and macroprudential policy entail substantial spillovers. Hence, policy authorities must take these trade-offs and spillovers into account when designing monetary and macroprudential policy interventions. From a practical point of view, the results highlight the importance of financial stability considerations for monetary policy decisions and the needs to reduce limits to the practical implementation of macroprudential policy, which remains the first line of defense against the build-up of systemic risk. ■

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