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Capital buffers and the micro-macro
nexus

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Capital buffers and the micro-macro nexus¹

Highlights

- *Together, microprudential and macroprudential policies contribute to financial stability.*
- *Frictions across the macro-micro policy divide may emerge due to the reliance on a single instrument – banks' minimum capital targets – to achieve distinct objectives.*
- *Integrating macro- and microprudential expertise into stress tests can help to alleviate tensions and promote a common understanding of capital needs without compromising each authority's mandate.*
- *As there is always a risk of inconsistent policy actions, institutional arrangements for setting capital buffers should facilitate appropriate coordination.*

1. Introduction

A cornerstone of the framework for preserving financial stability, capital buffers serve multiple policy objectives. From a microprudential perspective, capital buffers seek to safeguard the safety and soundness of individual financial institutions, ensuring they possess sufficient loss-absorbing capacity to continue operating even under adverse conditions. From a macroprudential standpoint, capital buffers operate through two dimensions. Within the time dimension, capital buffers are aimed at increasing the resilience of the financial system and moderating the amplitude of the financial cycle. Within the cross-sectional dimension, capital buffers help to reduce the probability that shocks will propagate across the financial system.

Control over the various capital buffer components often lies with multiple authorities, each setting their policy instruments guided by largely distinct considerations. For example, macroprudential authorities take decisions regarding the countercyclical capital buffer (CCyB), assessing the accumulation of system-wide financial imbalances. Meanwhile, microprudential authorities set Pillar 2 buffers, accounting for bank-specific risks, particularly those not fully captured by, or outside the scope of, the Pillar 1 framework. Considerations regarding the phase of the financial cycle, crucial for macroprudential authorities, may also be integrated into microprudential assessments under Pillar 2, to the extent they can affect the risk profile of individual institutions.

While the two perspectives are complementary, the proximity of policy objectives and the substantial overlap of their mandates and toolkits may generate frictions across the macro-micro policy divide and result in sub-optimal decisions regarding capital buffers. Differences in the mandates of macro- and microprudential authorities, although they are closely related, will eventually lead to distinct views regarding the timing and substance of the policy response in specific circumstances.² Moreover, although

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² Such frictions are particularly relevant when it comes to measures aimed at addressing the time dimension of systemic risk (as discussed in subsequent sections). In contrast, macroprudential instruments targeting the cross-sectional dimension of systemic risk, such as capital surcharges for systemically important banks, do not appear to collide with microprudential objectives. While

the capital buffer consists of various components that reflect the distinct policy objectives, from the bank's perspective it functions as one, shaping the bank's strategies, including in relation to risk-taking and lending. Against this backdrop, one question that emerges is whether and to what extent such potential tensions across the macro-micro divide can be alleviated.

This paper aims to contribute to this ongoing debate. It starts by revisiting the international standards on capital buffers (Section 2) and their implementation in selected jurisdictions (Section 3), with a view to understanding potential sources of frictions between micro- and macroprudential policy objectives (Section 4). What follows is a discussion about the possibility of designing an arrangement that allows for consistent deployment of both policies while mitigating potential frictions (Section 5). Section 6 concludes.

2. Capital buffers under the Basel Framework

The Basel Framework stipulates that banks maintain capital buffers above Pillar 1 minimum requirements. In particular, banks need to satisfy a capital conservation buffer (CCoB), a systemic risk buffer (SIB) and a countercyclical capital buffer (CCyB). Whenever capital levels fall within the regulatory buffer range, banks can continue to conduct their business, albeit with increasingly tighter restrictions on capital distributions as they dip further into the regulatory buffer. In addition, banks are often subject to capital add-ons under Pillar 2, in the form of additional minimum requirements (Pi2R) and buffers (Pi2B). Therefore, the targeted³ minimum capital that each bank is expected to meet includes a combination of Pillar 1 and Pillar 2 minimum requirements and buffers, each serving either micro- or macroprudential objectives.

Some of those buffers are fixed for each institution (SIB) while others are regularly reviewed and adjusted, depending on the prevailing circumstances for each bank (Pi2B) or the system as a whole (CCyB). The Basel Framework is neutral in relation to institutional arrangements and does not prescribe how control over the various policy instruments is to be allocated across authorities. However, the responsibility for setting Pillar 2 add-ons and CCyB often lies with distinct authorities with different objectives. Below is an overview of the key characteristics and objectives of those two policy instruments.

Countercyclical capital buffer

The countercyclical capital buffer aims to ensure that banking sector capital requirements take account of the macro-financial environment in which banks operate. In particular, the CCyB aims to ensure that the banking sector enhances its loss-absorbing capacity in periods of excessive aggregate credit growth, which are often associated with heightened levels of systemic risk. In doing so, the CCyB regime also contributes to tempering the financial cycle by increasing the cost of credit, thereby moderating lending activity. In a downturn, the CCyB regime seeks to ensure that individual banks remain solvent through a period of stress, but also that the banking sector as a whole has sufficient capital to help maintain the flow of credit to creditworthy businesses and households. By releasing the CCyB in downturns of business and financial cycles, authorities aim to lower the risk of excessive deleveraging by banks, which would lead to further deterioration of the real economy accompanied by additional credit losses to the banking system.

also capital-based, such instruments are fixed in nature, with their calibration typically relying on pre-defined methodologies based on banks' individual characteristics, such as their size, interconnectedness and complexity. Hence, this paper focuses on potential tensions between microprudential instruments and macroprudential policies targeting the time dimension of systemic risk.

³ Throughout the paper, minimum capital targets are defined as the sum of regulatory requirements, including minimum requirements and buffers.

More recently, drawing on the experience from the Covid-19 crisis, some authorities have chosen to implement positive CCyB rates,⁴ even in the absence of clear signs of accumulation of financial imbalances. The motivation for such positive cycle-neutral rates is to improve macroprudential authorities' ability to respond to unpredictable external shocks by releasing the CCyB. The underlying assumption is that there is a positive correlation between lending and banks' capital headroom.⁵

Pillar 2 capital add-ons

One of the core objectives of the Pillar 2 supervisory review process (SREP) is to ensure that banks have adequate capital to address all relevant risks to which they are exposed. Accordingly, supervisors are expected to impose capital add-ons, in the form of minimum requirements or buffers, whenever the outcome of the supervisory review process for a specific entity demonstrates that capital requirements as determined by the Pillar 1 framework are not commensurate with its risk profile. This would be the case, for example, if the supervisor concluded that the bank did not possess an effective risk management framework or robust internal controls. Material levels of concentration risk or interest rate risk in the banking book (IRRBB) would also give supervisors grounds to require additional capital. Moreover, in several jurisdictions, additional buffers (Pi2B) are imposed in order to ensure that banks hold sufficient loss absorbency to cope with stress scenarios without breaching minimum requirements. The calibration of Pi2B typically makes use of the estimated capital depletion that each bank experiences in the adverse scenario of stress tests.

The Pillar 2 framework is principle-based, giving authorities substantial flexibility to tailor its implementation according to jurisdiction-specific factors. At the same time, this flexibility results in significant variation in the way the framework is implemented across jurisdictions. This includes differences in, for example, the methodology employed to set capital requirements, the scope of risks covered under the supervisory review process, the implications of breaching such requirements and, importantly, the stress test methodologies used to calculate Pi2B.

3. Capital buffers in selected jurisdictions

This section looks at the frameworks for setting capital buffers in selected jurisdictions, with a particular focus on the interactions between macro' and microprudential buffers.

European banking union

Countercyclical capital buffer

The CCyB rates in European banking union (BU) jurisdictions are set by the relevant national authorities using various approaches. Some member jurisdictions explicitly target a positive cycle-neutral CCyB rate, while others have chosen to keep CCyB at zero in the absence of signs of accumulation of financial imbalances.⁶ However, the ECB can top up the CCyB level established by national authorities. In terms of the methodology for setting the buffer size, national authorities often use expert judgment informed by

⁴ This includes, for example, authorities in Australia, Hong Kong SAR, Spain and the United Kingdom.

⁵ The surplus of a bank's capital resources above all regulatory requirements. See BCBS (2022) for further details.

⁶ Behn et al (2023).

one or more of the following quantitative approaches: (i) the automatic “buffer guide” rule based on macro-financial indicators; (ii) macroeconomic models; and (iii) stress tests.⁷

Pillar 2 capital add-ons

On the basis of the SREP, the Single Supervisory Mechanism (SSM) determines the quantity of additional own funds required (P2R) in all circumstances as well as the own resources above capital requirements to ensure that institutions remain adequately capitalised in stress conditions (P2G). P2R is established through a four-step process based on the SSM’s own risk assessment for each bank, complemented by banks’ internal capital adequacy assessment processes (ICAAPs). Meanwhile, the SSM sets P2G based on the regular BU-wide stress tests. Specifically, supervisors place banks in one of four buckets according to the depletion of their capital ratios in the adverse scenario of the stress test. Each bucket has a corresponding range of P2G. In a second step, using supervisory judgment, authorities set P2G for each bank within the range of the bucket.⁸

United Kingdom

Countercyclical capital buffer

The CCyB is determined by the Bank of England’s Financial Policy Committee (FPC). The FPC follows a two-step approach to determine the CCyB rate. First, the FPC assesses the level of financial vulnerabilities based on a set of indicators to form a view on where the UK economy is in the financial cycle. Second, the FPC assesses the banking system’s resilience to shocks. This assessment is based on, among other things, quantitative indicators and a stress test exercise – the annual cyclical scenario (ACS) test. The FPC’s strategy is to set a positive cycle-neutral CCyB rate of around 2% when indicators of underlying cyclical financial vulnerabilities are at or around their long-term historical average and the assessment of banks’ resilience to shocks indicates they are likely to be able to absorb a shock.⁹

Pillar 2 capital add-ons

The Prudential Regulatory Authority (PRA) is responsible for setting Pillar 2 capital requirements for banks. Similar to the BU, this involves the determination of two components – Pillar 2A (P2A) and Pillar 2B (P2B or PRA buffer). P2A aims to cover risks not addressed under Pillar 1 (eg concentration risk, IRRBB) or not adequately addressed under Pillar 1 (eg operational risk). It is estimated following a risk by risk approach, based on risk-specific methodologies developed by the PRA.

Meanwhile, the PRA buffer is based on three analyses: (i) an assessment of the amount of capital banks should maintain to withstand a severe stress scenario; (ii) an assessment of whether a bank has significant risk management and governance weaknesses; and (iii) supervisory judgment. The component of the PRA buffer that relates to the impact of the stress scenario is estimated considering that a portion of the amount of capital needed in that scenario is already captured by the CCyB and CCoB. Specifically, the results of the ACS test, which support the CCyB decision, also inform the setting of the PRA buffer, hence providing a view on the appropriate level of system-wide and individual bank resilience.¹⁰

⁷ Couaillier et al (2019).

⁸ See Dahlgren et al (2023) for further details.

⁹ Bank of England (2023a).

¹⁰ PRA (2021).

United States

Countercyclical capital buffer

In the United States, the CCyB is set by the Federal Reserve Board. The objective of the CCyB activation is to further increase the resilience of the banking sector when systemic vulnerabilities are assessed to be meaningfully above normal. A second objective is to reduce the fluctuations in the supply of credit. In forming its view about the appropriate size of the US CCyB rate, the Board considers a number of financial system vulnerabilities, including asset valuation pressures, risk appetite, leverage in the non-financial sector, leverage in the financial sector and maturity and liquidity transformation in the financial sector. In practice, the US CCyB rate has been set at zero since its implementation in 2013.¹¹

Pillar 2 capital add-ons

Under the Federal Reserve Board's capital framework for bank holding companies, covered savings and loan holding companies, and US intermediate holding companies with \$100 billion or more in total consolidated assets, capital buffers are determined by the supervisory stress test results. The so-called stress capital buffer (SCB) requirement sits directly on top of minimum requirements and is at least 2.5% – the equivalent of the Basel Framework's capital conservation buffer. The Federal Reserve estimates the SCB using a set of supervisory models that take as inputs bank-provided data on their financial conditions and risk characteristics, as well as the Federal Reserve's scenarios.¹²

4. Problems with the current setup

Under the current framework, enhancing the resilience of the financial system stands as a shared objective between micro- and macroprudential authorities, driving both the determination of Pillar 2 capital buffers by banking supervisors for each institution and of the CCyB by macroprudential authorities. Banking supervisors pursue this policy objective through a bottom-up approach, which may include a stress test aimed at ensuring that banks remain sufficiently capitalised in an adverse scenario. Meanwhile, macroprudential authorities follow a top-down strategy, which fully acknowledges the interactions between macro-financial developments and banks' capital and credit policies.

While both macro- and microprudential perspectives aim to ensure that banks have sufficient loss absorbency to address the impact of adverse scenarios, their respective assessments and, consequently, their implicit or explicit aggregate capital targets may not always be aligned if they are based on different assumptions. More importantly, conclusions might deviate from one another as a result of different perspectives regarding the relationship between minimum capital targets and macro-financial developments that could affect financial stability. In particular, micro- and macroprudential authorities may come to substantially different assessments if the former does not factor into the determination of bank-specific Pillar 2 buffers the link between aggregate capital targets and the economy's credit supply. Notice that these interactions are fundamental to justify macroprudential policy actions. This is because such policies aim to address the fallacy of composition¹³ which emerges when individual behaviour (eg banks constraining credit due to high cost of capital in a recession) may lead to a sub-optimal social outcome (eg a deeper recession leading to more risks for financial stability).

¹¹ Federal Reserve Board (2016).

¹² Federal Reserve Board (2023).

¹³ See, for example, Crockett (2000).

During the upswing phase of financial cycles, actions by both authorities tend to work in the same direction, reinforcing one another. Specifically, in a context in which financial imbalances are building up, macroprudential policies will tend to favour additional capital requirements in order to protect the system from the risks associated with a disorderly unwinding of those imbalances and, also, to slow down credit supply. In contrast, divergent perspectives regarding the appropriate policy response may emerge during a downturn. In particular, amid an uncertain scenario, banking supervisors are likely to prioritise the stability of individual banks, whereas macroprudential authorities will be concerned about the risk of excessive deleveraging and the extent to which this could exacerbate the crisis.¹⁴ In that situation, there is a risk that the macroprudential (microprudential) authority will use its instruments – such as the CCyB (Pi2B) – to compensate an excessively stringent (lax) microprudential (macroprudential) policy stance, thereby leading to frictions and inconsistencies among policy domains.

5. A possible framework

The proposed framework aims to reduce frictions across the macro-micro divide by defining the objectives of the various policy instruments more clearly and by disentangling the processes applied to determine their calibration. The framework below is fully in line with Basel standards and the overall philosophy of the national arrangements summarised above, although some technical adjustments would be required.

Process

- **Pillar 2 requirement (Pi2R):** set by the microprudential authority to ensure that banks have sufficient capital to cover risks not addressed (eg IRRBB) or not sufficiently addressed by Pillar 1 requirements (eg operational risk). As a minimum requirement, it sits on top of Pillar 1 minimum requirements and its breach has implications akin to those of a breach of Pillar 1 requirements. The estimation of Pillar 2 requirements follows a risk by risk approach (as to reduce overlaps with other prudential requirements and buffers) and is supplemented by supervisory judgment.
- **Pillar 2 buffer (Pi2B):** also determined by the microprudential authority; its objective is to ensure that banks have sufficient loss-absorbing capacity in a stressed scenario. These buffers are determined by the amount of capital depletion in adverse stress test scenarios not covered by the CCoB and the cycle-neutral CCyB (see below). For simplicity, and following current practices, such buffer is assumed to be usable in case of stress, with its recalibration following the (annual) supervisory cycle.
- **Countercyclical capital buffer (CCyB):** set by the macroprudential authority, it comprises two components. First, a cycle-neutral component calibrated with the objective of giving macroprudential authorities sufficient firepower to counter system-wide unexpected shocks. Second, a financial cycle-sensitive component, activated when significant macro-financial imbalances accumulate (eg excessively high or low credit growth).

Functioning

The microprudential authority establishes Pi2B with the objective of ensuring a minimum level of resilience for each bank. That is defined as the capital needed for the bank to satisfy minimum Pillar 1 (P1) and Pillar 2 requirements (including SIB) if severe but plausible adverse conditions occur over a specific horizon. Specifically, Pi2B is calculated as the difference between the capital depletion in the adverse scenario of

¹⁴ See Osinski et al (2013) for a discussion about synergies and potential tensions between macro- and microprudential objectives during the different phases of the financial cycle.

the stress test and the sum of the CCoB and the cycle-neutral component of the CCyB. Notice that if the microprudential authority were to subtract both the cycle-neutral and the cyclical component of the CCyB from the capital depletion in the stress test when calculating Pi2B, this would effectively compensate any increase (release) of the CCyB with a lower (higher) level for Pi2B. In doing that, the microprudential authority would in practice be neutralising the impact of any action taken by the macroprudential authority. Therefore, the capital target of the microprudential authority for each bank would therefore be: $P1 + Pi2R + SIB + CCoB + CCyB \text{ (neutral)} + Pi2B$.¹⁵

The macroprudential authority considers the capital targets set by the microprudential authority. In particular, it evaluates whether the system-wide minimum capital target, derived by aggregating the microprudential capital targets for each bank, effectively addresses risks posed by prevailing or expected macro-financial conditions (particularly in relation to credit supply) for the preservation of financial stability. Otherwise, the macroprudential authority adjusts the CCyB to ensure that the aggregate minimum capital target accounts for such risks and provides incentives for orderly credit provision. Accordingly, the need to set CCyB above the cycle-neutral level would occur only on a limited number of circumstances: (i) when aggregate microprudential capital targets (including Pi2B) do not adequately cover the risks associated with a potential disorderly correction of macro-financial imbalances (such as excessive credit growth); and/or (ii) when higher capital targets are deemed effective to moderate those imbalances. Conversely, CCyB would be set below the cycle-neutral level if there are indications that existing system-wide capital requirements could lead to excessive bank deleveraging.

The stress test as a coordinating device

As far as system-wide resilience is concerned, the scope for an increase of the CCyB above the cycle-neutral level partially depends on the extent to which considerations related to the financial cycle are incorporated into the determination of Pi2B. In the limit, if the design of the stress test used to determine Pi2B adequately (insufficiently) captures the risks associated with a disorderly correction of macro-financial imbalances, the need to set CCyB above the neutral level should be rather limited (strong). The case to lower the CCyB below the neutral level in a downturn would be stronger (weaker) if the stress test leads to a high (low) average Pi2B. Therefore, the stress test used for calibrating Pi2B plays a crucial role in determining possible complementarities and frictions between macroprudential and microprudential capital targets.

Conceptually, a sufficiently elaborate stress test could incorporate the interdependence between the macroeconomy, asset prices and the collective actions of individual banks.¹⁶ If successful, capital requirements derived from such an exercise would be compatible with the desired resilience of individual institutions and the overall system. Arguably, in that scenario the very existence of a macroprudential function could even be questioned. If the microprudential authority were able to fully take into account not only the direct effect of capital targets on banks' resilience but also the indirect effect of aggregate capital targets on the soundness of individual financial institutions through their impact on the credit and business cycles, there would not be much left for macroprudential authorities to consider. However, fully embedding all interactions among micro and macro variables into stress tests poses formidable

¹⁵ At present, in the euro zone there is no differentiation of the level of P2G according to the jurisdiction where the bank operates. In the proposal, as the relevant CCyB (neutral) is defined at the country level, the average Pi2G for banks in each member state would reflect those differences.

¹⁶ The macroprudential perspective recognises that risk is to some extent endogenous with respect to the behaviour of the financial system. For further details, see Borio (2003).

challenges.^{17,18} That makes it unrealistic to expect a full convergence of the bank-specific safety and soundness perspective of microprudential authorities and the systemic focus of macroprudential authorities. Yet properly designed stress tests could help align both functions.

In most jurisdictions, stress tests scenarios are “outcome-based” (OB) in that they target a determined level of severity, with severity measured in terms of the performance of macroeconomic variables such as GDP growth or unemployment.¹⁹ The adverse scenario typically assumes shocks leading to a determined contraction of economic activity and employment (like in the BU) or aim at resembling previous recessionary episodes (like in the US). In most cases, there is no explicit link between the severity of the scenario and the prevailing macro-financial conditions when the exercise is conducted, although in some cases some degree of countercyclicality has been introduced.^{20,21} Importantly, the probability of occurrence of the adverse scenario plays no role in the design of the stress test.

The probability distribution of different macroeconomic scenarios depends on, among other factors, the position of the economy in the financial cycle. For example, a scenario of sharp credit contraction leading to a severe recession – implying a large downward deviation of GDP from the baseline – is more likely when the economy has been subject to excessive credit growth in the past than when it has already experienced a sharp correction of financial imbalances.²²

Therefore, stress tests could become more risk-sensitive by shifting from an OB to a “probability-based” (PB) approach and by factoring in the role played by financial variables. Such an approach could target a probability of occurrence of the adverse scenario rather than a specific evolution of macroeconomic variables. Under this PB approach, when aggregate credit has been growing persistently above its determinants, the adverse scenario would factor in the higher likelihood of a sharp fall in credit leading to a particularly severe deviation of GDP from the baseline.²³ However, when credit has been growing below its fundamentals – due to, for example, a previous correction of imbalances – the constant probability adverse scenario would be consistent with relatively more benign credit and macroeconomic developments than in the previous case.

By considering these statistical regularities when designing stress test scenarios, the exercise would be more in line with the principle that stress tests should be based on severe but also plausible scenarios. Moreover, in doing that, it might become easier to develop a common understanding between micro- and macroprudential authorities regarding the actual capital needs of individual banks and the system.²⁴ This is illustrated in Table 1. When credit has been growing more than what is indicated by its long-term fundamentals, there should, in principle, be no friction but rather complementarity in the actions taken by both authorities. In that setting, the adoption of a PB rather than an OB approach for the stress

¹⁷ Juselius and Tarashev (2020), for example, argue that the inclusion of macrofinancial variables such as debt-service ratio and credit-to-GDP gap in models may improve forecasts of credit losses, not only at the systemic level, but also for individual banks.

¹⁸ In the UK some steps have been taken in that direction, as the annual cyclical scenario is used as a key input for the determination of both the CCyB by the FPC and the PRA buffer. See Bank of England (2023b) for further details.

¹⁹ See EBA (2023) and Federal Reserve (2024).

²⁰ In the US, for example, stress test scenario design includes a rule whereby the unemployment rate can be the higher of 10% or the current rate plus 3 to 5 percentage points.

²¹ Borio et al (2014) argue that stress-tests can be enhanced if scenarios account for the state of the cycle.

²² See Bank of England (2023b).

²³ This does not imply that authorities need to accurately quantify the probability of a severe recession. Nor does it require the identification of the exact position of the economy in the financial cycle. Instead, such approach entails a directional assessment, indicating with sufficient degree of confidence whether the likelihood of occurrence of such a severe scenario is higher than in a situation where there are no signs of financial imbalances accumulation.

²⁴ Since, in the case of the European Banking Union, the macroprudential function largely lies with national authorities, this mechanism would require the adverse scenario of the area-wide stress test to take into account financial cycle considerations at the country level.

tests would just lead to relatively higher Pi2Bs and therefore reduce the need for the macroprudential authority to set the CCyB significantly above its neutral level. However, it is true that in that scenario the macroprudential authority might feel uneasy with the resulting combination of *releasable* and *usable* buffers. In particular, it might prefer a larger CCyB – which could be released when the need arose – over a larger average Pi2B as this would give them more firepower which could be deployed quickly and effectively to cope with possible future adverse shocks.

Stress testing as a coordinating device

Table 1

Credit	Stress test ¹	Pi2B ²	CCyB ²	Microprudential objective ³	Macroprudential objective ³
Excessive	OB	–	↑↑	✓+	✓
	PB	↑	↑	✓+	✓
Normal	OB	–	–	✓	✓
	PB	–	–	✓	✓
Deficient	OB	–	↓↓	X	✓
	PB	↓	↓	✓-	✓

¹ OB = outcome-based approach; PB = probability-based approach. ² ↑ (↓) = higher (lower) than calibration under normal credit growth scenario; ↑↑ (↓↓) = significantly higher (lower) than calibration under normal credit growth scenario. ³ ✓ = overall calibration meets policy objective; ✓+(-) = overall calibration close to target but above (below) what is needed to meet policy objective; X = overall calibration insufficient to meet policy objective.

Source: FSI analysis.

The impact of this methodological change would be more significant in the downturns when credit developments are excessively subdued. For instance, suppose a situation in which the economy suffers a contraction of credit and output after having experienced a sharp correction of financial imbalances. Assume also the sequence of actions by micro- and macroprudential authorities as suggested above, ie Pi2B is first set assuming a neutral CCyB and, subsequently, the macroprudential authority decides on the actual value of CCyB. If the stress test used by the microprudential authority followed an OB approach, the resulting Pi2Bs would lead to aggregate capital targets (for a neutral CCyB) that the macroprudential authority would probably consider as leading to excessive deleverage. The latter would therefore lower the CCyB below neutral levels. That, however, would place actual capital targets below the level desired by the microprudential authority, which could eventually react by raising Pi2B. Such action would deactivate the macroprudential actions and lead to an obvious friction between authorities. In contrast, if the microprudential authority were to adopt a PB approach, acknowledging the lower probability of yet another credit contraction leading to a deeper recession, this would result in more moderate Pi2Bs and, therefore, a lower aggregate capital target. This would mitigate potential tensions between authorities as there would be less of a case for macroprudential authorities to significantly lower the CCyB.

Notice that this coordinating mechanism is not predicated on the microprudential authority explicitly adopting a more countercyclical stance. Instead, it is the direct outcome of implementing a more rigorous, risk-sensitive, time-consistent identification of severe yet plausible macroeconomic scenarios, based on which individual banks' loss absorbency would be determined.

That said, despite its benefits, the above decentralised mechanism does not eliminate the need for effective cooperation across functions. More formal coordination, for instance, could be helpful to decide on the right combination of the CCyB and the average Pi2B, particularly when the latter is also set to address macro-financial risks, such as a correction of financial imbalances. But coordination is particularly important in crisis situations. A case in point is the Covid-19 pandemic, when effective

coordination across authorities took place. In response to the shock, where possible, macroprudential authorities released the CCyB to facilitate the provision of credit to the real economy, notwithstanding the uncertain macroeconomic and financial environment. For their part, despite the deteriorating outlook, microprudential authorities did not attempt to neutralise the macroprudential action by increasing their Pillar 2 buffers. On the contrary, they invited banks to deplete the existing buffers when needed. That simply implied a (transitory) departure from a narrow interpretation of their safety-and-soundness mandate and the assumption of macroprudential considerations as a priority in those extreme circumstances.

Cross-border banking

The consistency of macro and micro policy actions becomes more challenging in a context of internationally active banks with significant subsidiaries in different jurisdictions. This is because such banks are subject to consolidated microprudential requirements imposed by the home supervisor, specific obligations for the relevant subsidiaries mandated by the relevant host supervisor and macroprudential measures taken by host authorities affecting financial activities in their own jurisdictions.

In that context, the proposed scheme would need to be adjusted to account for the fact that the bank-specific CCyB would be a weighted average of CCyB rates from all jurisdictions where the bank is active. This implies that, when determining Pi2B, the home supervisor needs to consider cycle-neutral CCyB rates in all jurisdictions where supervised banks operate. Macroprudential authorities, in turn, would assess the capital adequacy of the banking system by comparing the sum of microprudential capital requirements for the domestic businesses of all legal entities incorporated in their jurisdiction and the minimum capital target for the banking system estimated considering, inter alia, the position of the economy in the financial cycle. Accordingly, if any macroprudential authority concluded that the two measures materially deviate from one another in its jurisdiction, it would adjust the domestic CCyB size as necessary.

As before, an increase of CCyB above the cycle-neutral level should not generate major frictions between the national macroprudential authority and the home or host microprudential supervisors. However, during downturns conflicts might arise if one or more of the relevant host macroprudential authorities lowered the CCyB below its cycle-neutral level. In this context, again, a suitable stress test design can help to alleviate such tensions. Yet the cross-border dimension brings additional complexities to the extent that the stress test, in this case, needs to factor in the impact of financial imbalances in all relevant jurisdictions where banks under its remit operate.

This might not always be an easy task. Moreover, conflicts may persist even after the introduction of macro-financial imbalances into the stress test. As a result, some degree of formal coordination between the home supervisor and relevant host authorities in countries where supervised banks own relatively large subsidiaries seems unavoidable. At the same time, the impact of lowering the CCyB is less likely to generate substantial conflicts for jurisdictions with less material foreign subsidiaries. First, because a reduction in CCyB in those jurisdictions would have a smaller impact on banks' overall minimum capital targets. Second, because, in such cases, if needed, the home supervisor could offset such reduction with a higher Pi2B for the group as a whole. That would preserve a lower cost of credit for the subsidiary in the jurisdiction where the CCyB has been lowered – as intended by the host macroprudential authority – without affecting the desired resilience of the banking group by the home microprudential authority.

6. Conclusion

The joint contribution of well designed microprudential and macroprudential policies to the preservation of financial stability cannot be overstated. At the same time, designing suitable arrangements for

deploying policy instruments in both domains presents challenges. Most have to do with the reliance on a common policy tool – banks’ minimum capital targets – to achieve related but distinct objectives. While both policies aim to ensure banking sector resilience, they define resilience differently and follow distinct approaches (bottom-up or top-down). In addition, macroprudential policies aim to moderate the amplitude of the credit cycle.

Autonomous operation of both policies is feasible and potentially effective under normal or expansionary financial conditions leading to excessive credit growth. However, conflicts can easily emerge in downturns, when credit growth is excessively subdued, as microprudential and macroprudential authorities may envisage mutually incompatible aggregate minimum capital target levels. This may stem from different perspectives regarding the scope of macroeconomic risks that banks’ capital should be able to address, and the importance attached to the impact of minimum capital obligations on banks’ credit policies.

This paper has argued that there is scope to alleviate tensions among policies by integrating macro- and microprudential expertise into stress tests. In particular, more elaborate methodologies that consider the relevance of credit developments when defining the stress test scenario may help achieve a common understanding of capital needs for individual firms and the system as a whole. The stress test’s design should primarily target the probability of occurrence of the adverse scenario rather than a predetermined severity of macroeconomic conditions. In addition, stress test design should take into account the impact of prevailing imbalances in credit developments on the evolution of future banks’ lending dynamics and, therefore, on the likelihood of different macroeconomic scenarios.

In any case, as seen during the Covid-19 crisis, there may be instances in which tighter coordination is required. In that extreme episode, all authorities attached clear priority to the macroprudential objective of preserving credit flows to the real economy. In the future, in less extreme scenarios, the outcome of the coordination could well be tilted to the microprudential side. In particular, in a context in which the impact of minimum capital targets on credit flows could not be well established, a downward adjustment of the desired degree of resilience of the banking sector for the sake of facilitating credit growth might generate unwarranted risks for financial stability. In any case, institutional frameworks should be designed to facilitate the required coordination.

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