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Prepared by Paavo Miettinen and Erlend Nier

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Executive Summary

Since macroprudential buffers were conceived in the wake of the global financial crisis, experience with using the buffers has been growing, and is now leading to a rethink of how these buffers can be designed and deployed across the financial cycle.

First, in many countries, no buffers were available for a release at the beginning of the COVID-19 shock. The buildup of releasable buffers had typically conditioned on excessive credit growth, as measured by the so-called credit-to-GDP gap. However, the experience suggests that such gaps can stay negative for prolonged periods, especially when previous credit booms keep pushing up the historical trend in such series. As a result, while many countries had a framework in place for the activation of releasable buffers, only a few countries had positive buffers that would have been available for a release at the onset of the recent COVID-19 shock.

The experience also suggests that where releasable buffers had been built up, the release of the buffer worked as intended. The evidence from several countries and regions, including Hong Kong SAR, the United Kingdom, the euro area, and the European Union as a whole, is that capital releases supported the provision of credit to the real economy through periods of stress, by increasing banks' capital headroom over the remaining requirements. In contrast, where there was no release of buffers, and banks were constrained by lack of capital over and above requirements, banks were more prone to amplify shocks.

These experiences are leading the international community to consider the buildup of releasable buffers preemptively as an insurance against stresses that might arise even when the crisis was not owed to a prior episode of excessive credit growth. The benefit is that a releasable buffer is available to cushion the procyclical impact of shocks on banks' provision of liquidity to the economy in periods of stress. Against this, a growing body of theoretical and empirical research suggests that the cost of building such buffers in normal times can be low when implementation proceeds gradually.

A framework that foresees the building of releasable buffers preemptively offers benefits also from the point of view of the governance of macroprudential policy. First, when the framework leads to such buffers being available in periods of stress, this reduces the need on the part of supervisors to exercise "forbearance" on rules governing banks' accounting for nonperforming loans. Second, it eases the burden of proof on macroprudential policymakers who had previously been expected to offer evidence of excessive credit and looming risks before buffers could be implemented.

In such a framework, a (re-)building of buffers need not wait until credit gaps signal a future crisis, but can start as soon as banks are profitable, so that the provision of credit to the economy is not—or, after a crisis, no longer—constrained by capital requirements. Banks are then able to meet new buffer requirements by retaining earnings or by using existing voluntary buffers. While the buffer requirement then reduces banks' latitude to distribute earnings or capital to shareholders, it need not affect the provision of credit to the economy, when such lending is profitable for the banking sector as a whole.

Releasable capital buffers can take the form of a positive baseline or "neutral" setting of the countercyclical capital buffer, or take a more sectoral design, such as a capital buffer for residential real estate exposures or other specific exposures that are deemed to generate substantial macrofinancial risk. Where an active management of the countercyclical capital buffer is deemed too demanding, given the lack of data or capacity, thought can be given to a simple binary design with the buffer set at a prespecified constant positive level in normal times and zero in periods of material stress.

The baseline size of the releasable buffer could key off vulnerabilities in the existing stock of exposures, such as the share of variable rate mortgages, the share of borrowing in foreign currency, or measures of leverage in the household and corporate sectors. Such stock vulnerabilities affect the ability of borrowers to maintain debt service on existing borrowings in the event of adverse shocks, such as increases in monetary policy rates, a drop in output and employment, or changes in the nominal exchange rate. Stress tests are a natural way of assessing the size of the buffers and can also take account of potential gaps in macroprudential tools to control these risks.

Novel analysis contained in this paper suggests that advanced countries stand to benefit from a positive baseline setting of releasable buffers. Emerging market economies may want to aim for an even larger baseline capital buffer, since crises in these countries are less closely tied to prior increases in credit, while exposure to external shocks could be even more important, pointing to benefits of releasable buffers in normal times.

Overall, it can be useful for both advanced and emerging economies to maintain a share of overall capital requirements as a releasable capital buffer. The buffer component can be released in periods of stress, helping to offset pressure on capital that may otherwise curtail the provision of vital credit to the economy. It can be useful to re-build those buffers gradually as stresses abate, allowing banks to meet buffer requirements by retaining profits or using voluntary buffers. Early activation helps ensure that a buffer is available for release in the event of exogenous or external shocks.

Acronyms and Abbreviations

BCBS .....Basel Committee on Banking Supervision

CCB .....capital conservation buffer

CCyB .....countercyclical capital buffer

EME.....emerging market economy

FSAP.....Financial Sector Assessment Program

LIC.....low-income country

NPL.....nonperforming loan

SRB .....systemic risk buffer

1. Introduction

International experience and academic evidence suggest that countries stand to benefit from having releasable capital. The COVID-19 pandemic experience is leading to a growing recognition that having releasable capital buffers in normal times, rather than only at the peak of the financial cycle, is beneficial for financial stability, since they can protect against a range of unforseen shocks. Moreover, as we will discuss, evidence from several countries and regions shows that where buffers were available, their release appears to have been effective in cushioning adverse aggregate shocks for banks whose capital levels were thin, in line with their objective to maintain banks' ability to provide credit to borrowers in periods of stress (BCBS 2010a). In response, one of the elements included in the revised Basel Core Principles (BCBS 2024a) is for laws and regulations to enable supervisors or the relevant authorities to require banks to maintain additional capital in a form that can be released when systemwide risk crystallizes or dissipates.[1]

The Basel Committee on Banking Supervision has supported a voluntary adoption of a positive neutral setting of the existing countercyclical capital buffer (CCyB) as a way of achieving that goal (BCBS 2022a). A positive neutral framework for the CCyB adopts a positive value for the baseline or "neutral" CCyB rate, which is set to zero in the standard Basel framework (BCBS 2010a).[2] Having considered the recent research and the decisions of several countries to adopt a positive neutral CCyB (see Annex Table 1.1), the Basel Committee announced in September 2022 that it supports voluntary implementation of a CCyB at a positive neutral level. This recognizes that while there can be alternative approaches to achieving releasable capital, such as releasable sectoral buffers, adopting a positive cycle-neutral setting for the CCyB is a natural way of achieving the goal of maintaining releasable capital for many countries.

Having a releasable capital buffer—such as the CCyB—in normal times is a useful guard against a range of adverse shocks. Generating a releasable buffer is the main objective of the CCyB, which is meant to enhance the resilience of the banking system, such that a release of the buffer supports the continued provision of credit through adverse conditions (BCBS 2010a). As the COVID-19 experience has demonstrated, such adverse shocks may occur after a period of strong credit growth, but they can also happen without such a prior buildup of financial imbalances.[3] In response, a growing number of countries are implementing positive neutral settings for the CCyB, and several IMF Financial Sector Assessment Program (FSAP) missions have made recommendations for the authorities to adopt a positive cycle-neutral rate.[4]

A framework for a positive neutral capital buffer gives rise to an evolution of the buffer rate through four distinct phases. To reach the neutral level, buffers can start being accumulated when the supply of credit by the banking system does not display, or is no longer displaying, signs of being capital-constrained. The further increase of the buffer beyond the neutral level can then be guided by early warning signals, as vulnerabilities build further, while the decision to release the buffer is aimed at preventing capital requirements from becoming binding during periods of financial stress. The rate will then remain at zero through a recovery phase when banks are digesting losses and capital remains scarce. The appropriate level of the buffer rate, as well as the pace of its accumulation, are important issues that need to be addressed, and this paper offers initial considerations in line with the IMF's overall framework for macroprudential policy (IMF 2014a, 2014b, IMF 2014c).

[1] Releasable capital was added in the additional criteria in Core Principle 16.

[2] As discussed in the Basel framework document, the CCyB will apply equally to all banks with credit exposures to a given jurisdiction.

[3] Behn and others (2023) find that losses borne by banks in previous banking crises are substantial even when the crisis was not preceded by early warning signals based on exuberant development in credit. We build on this in our analysis of losses in banking crises for a larger sample (Box 1).

[4] This includes FSAPs concluded in 2024 for Luxembourg (IMF 2024a), Belgium (IMF 2023b), and Spain (IMF 2024b), as well as in 2023 for Finland (IMF 2023a), the Maldives (IMF 2023c), and Jordan (IMF 2023d). The IMF has also long supported the positive neutral rate in the United Kingdom.

Releasable capital buffers can also be generated through sectoral capital buffer requirements. By design, a CCyB is a "broad-based" macroprudential tool that is applied to all risk-weighted domestic assets. An alternative way of generating releasable capital is the use of sectoral buffers, such as a systemic risk buffer (SRB), that apply to lending to specific sectors and can discourage further lending that may be considered particularly risky (for example, as in Belgium for residential real estate [National Bank of Belgium 2022]). In any event, it can be useful for such sectoral buffers to be explicitly releasable, thereby adding to policy space for a release in periods of stress that can help reduce potential amplification.

Implementing positive capital buffers can be desirable even when monetary policy is tightening. Building capital buffers in an environment of rising monetary policy rates can be useful as it strengthens resilience against future shocks. For example, as interest rates rise and the economy weakens, this squeezes borrowers' debt-service capacity and can cause an increase in household and corporate default rates in the future, calling for an increase in the level of resilience for banks.[5] Tighter monetary policy also tends to boost bank profits, at least initially, by widening margins between lending and deposit rates, thereby enabling banks to build capital from retained earnings at relatively low cost. However, the activation and the pace of tightening of capital buffers should be conditional on the absence of financial stress that leads to banks' provision of credit to the economy being curtailed.

Other things equal, introducing a positive neutral CCyB or other releasable capital buffers would increase overall capital requirements for banks, unless there is scope to offset the increase by reducing other requirements. The main benefit is the introduction of a releasable element in banks' capital requirements that provides scope for a use of that policy space in periods of aggregate stress. Outside of such periods, an increase in capital may serve to reduce the probability of individual bank failures, or runs on individual banks, which can be an additional benefit. As we will discuss, however, some offset can be considered, such as where existing nonreleasable buffers draw on stress tests that are meant to protect against changes in macroeconomic conditions, then reducing double-counting.

The available research suggests that the cost of capital buffer requirements can be moderate. Theory predicts and the available evidence is consistent with a view that increases in capital buffers may not lead to meaningful reductions in loan growth when they are phased in gradually, allowing banks to meet requirements from retained earnings or existing voluntary buffers.[6] The availability of either voluntary buffers or a healthy level of profitability are therefore the main indicators for the start of the buildup of releasable buffers.

The remainder of this paper is organized as follows. We first review the experience since the global financial crisis with building and releasing macroprudential capital buffers, including recent decisions to release the available buffers in response to the stresses from the pandemic. Building on the recent survey by Biljanovska and others (2023), we then review the theoretical and empirical literature that has accumulated over this period and that strengthens the case for explicitly releasable capital buffers even in normal times. We then provide an overview of the issues arising when operating such a framework in practice. This examines questions such as the following: When would countries start building releasable buffers? To what level would neutral buffers be built? How would one go about further increasing the buffers in response to cyclical conditions? When is it time to release the buffers? We finally examine interactions and complementarities with other microprudential and macroprudential mechanisms in achieving the goal of a greater overall resilience to stress of the banking system.

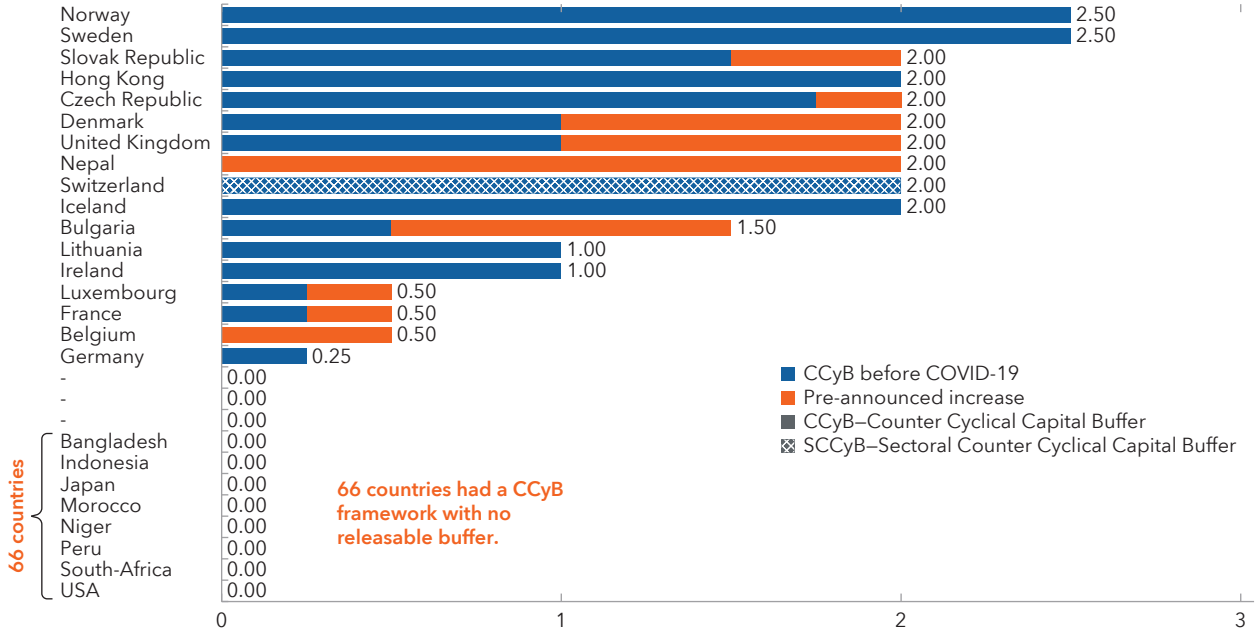
[5] Forward-looking loan loss provisioning frameworks can also contribute to achieving greater resilience to increases in expected default rates, as we discuss in detail in the dedicated section.

[6] Instead, the literature finds that there can be sizable adjustment costs to varying capital requirements in the short term, as discussed in detail subsequently.

2. Lack of Buffers ahead of the COVID-19 Crisis

Only a small number of countries had releasable capital buffers at the onset of the COVID-19 shock. According to IMF data, some 85 jurisdictions introduced a framework for the CCyB since 2016. However, many of these countries had never lifted the buffer rate up from its default setting of zero, and several countries thus entered the COVID-19 pandemic with little, if any, releasable capital. In all, only 17 countries had a positive buffer rate and could use it to provide some relief at the onset of the pandemic (Figure 1).

Figure 1. The Level of the CCyB Before COVID-19[1]
(Percentage points)

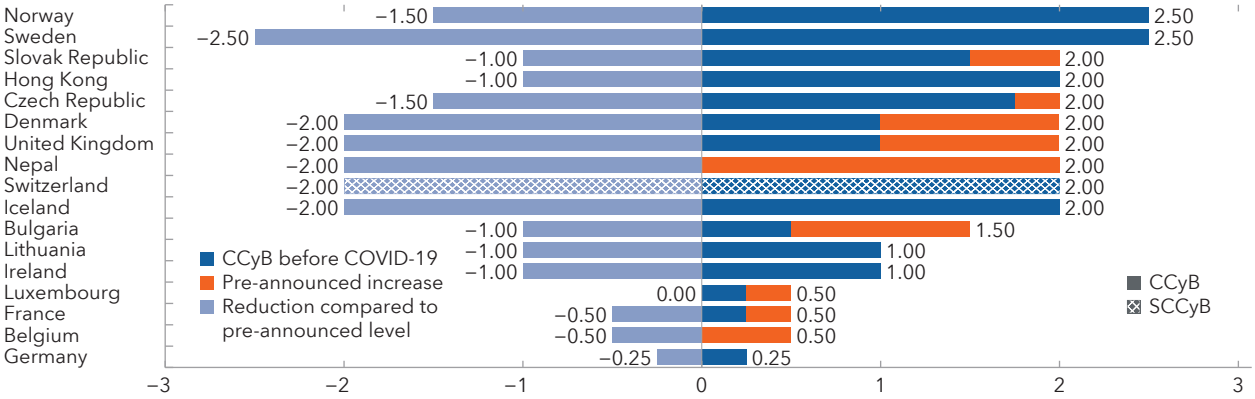


Sources: Country authorities' websites; IMF, Macroprudential Policy Survey; IMF, Policy Tracker; IMF, Financial Supervision and Regulation database; Yale Program on Financial Stability; and IMF staff calculations.
Note: CCyB = countercyclical capital buffer; SCCyB = sectoral countercyclical capital buffer.
[1]COVID-19 pandemic in March 2020.

Countries that had built sufficient policy space used it in the COVID-19 pandemic. The majority of countries that had a positive CCyB rate going into the pandemic released all of their buffer following the COVID-19 shock. Only six countries decided to leave some of their accumulated buffer in place in the aftermath of the shock (Figure 2). This is in line with Bergant and Forbes (2021), who find that the availability of macroprudential buffers was the main constraint for countries in using these buffers. Moreover, countries that tightened macroprudential policy more aggressively before the COVID-19 pandemic, and that eased more during the pandemic, are found by these authors to have experienced less financial and economic stress.

The lack of available buffers ahead of the crisis reflects a view that CCyBs should be set at positive rates only in periods of excessive credit growth. The Basel Committee on Banking Supervision (2010a) guidance emphasized that the main objective of the buffer was for its release to support banks in providing credit to the economy in periods of stress. However, the document also argues that the CCyB was needed as a new tool to mitigate risks from excessive credit growth: its objective was to "protect the banking system against

Figure 2. The Level of the CCyB Before COVID-19 and the Subsequent Relaxation
(Percentage points)



Sources: Country authorities' websites; IMF, Financial Supervision and Regulation database; IMF Macroprudential Policy survey; IMF, Policy Tracker; Yale Program on Financial Stability; and IMF staff calculations.
Note: CCyB = countercyclical capital buffer.

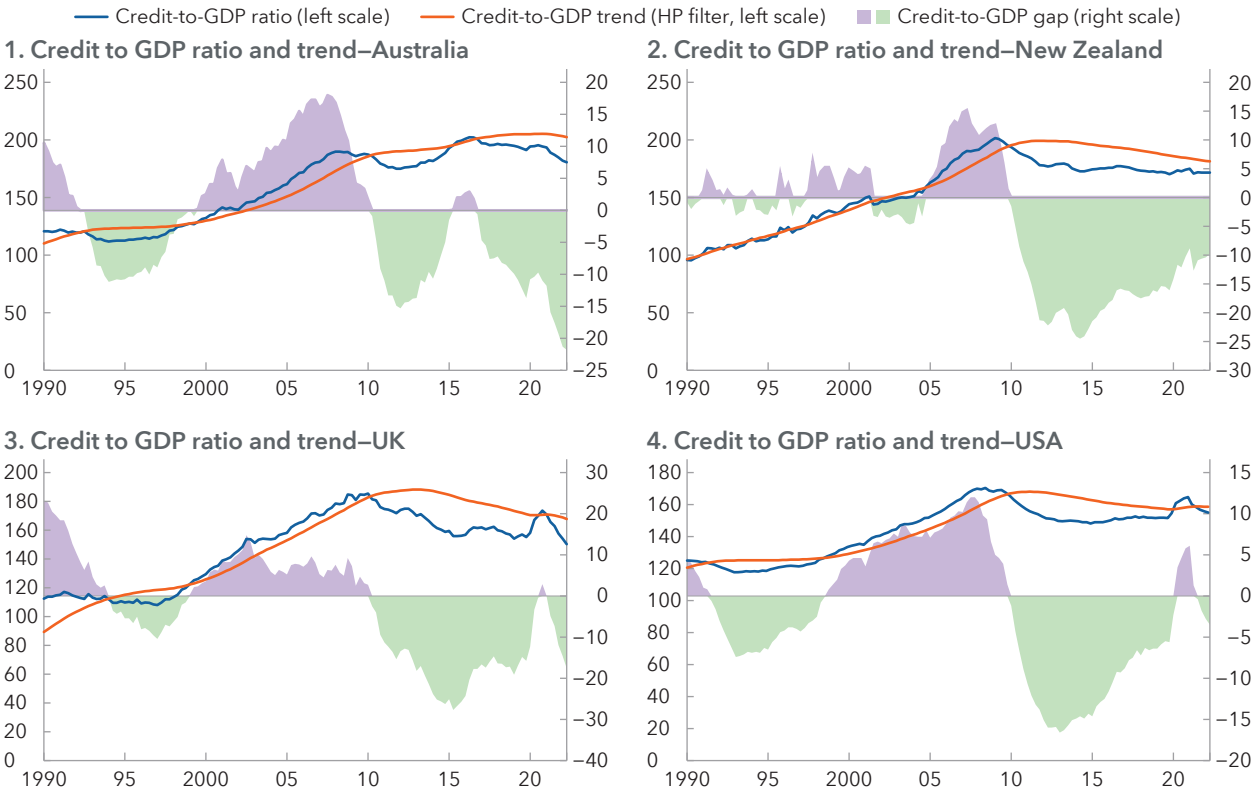
potential future losses when excess credit growth is associated with an increase in systemwide risk." This fails to realize that cyclical systemic risk may not always be associated with increases in credit to the private sector, and that there can be other drivers—such as adverse changes in interest rates, exchange rates, or commodity prices—of cyclical risks.

The emphasis placed on the credit-to-GDP gap as the main measure of excessive credit may have contributed to the lack of buffers. The Basel buffer guide (BCBS 2010a) identified the credit-to-GDP gap as a key indicator for the activation and tightening of the CCyB after the global financial crisis, but it has since become apparent that the "Basel" credit gap can stay negative for a protracted period of time. The parameters for the applied filtering technique were chosen to mimic long financial cycles. This leads to a tendency for negative gaps to arise and to persist when the statistical trend is based on data that includes prior periods of buoyant credit growth (Figure 3), as noted by Baba and others (2020). While many countries use a variety of indicators and approaches to supplement the credit gap in evaluating the financial cycle, in line also with IMF guidance (IMF 2014b), a large majority of countries had kept the CCyB rate at zero for long periods of time, in part because policymakers felt that they could not take action when the credit gap was deeply negative.

As a result, many countries did not build a positive CCyB during the entire period following the global financial crisis, often leaving them without any releasable buffer. Under the Basel III guidance, the CCyB is the only part of the capital structure that is available for release. While the capital conservation buffer (CCB) could be considered as such as well, this buffer technically is not releasable, but only usable. This means that the CCB requirement remains in place for all banks, even as individual banks are permitted to use the buffer. For EU countries, specifically, another candidate for release could have been the SRB. However, the use of the SRB has in the past mainly been for noncyclical risks, therefore limiting the scope for a relaxation in response to aggregate shocks, and its use for cyclical and sectoral risks has only recently been clarified in European legislation. Overall, unless a country had gone through a period of excessive credit growth ahead of the pandemic, it would typically not have had any releasable capital buffers (Figure 3).[7]

[7] In practice, some countries that did not have a positive CCyB resorted to releasing their CCB or SRB, which were in place in many European countries and also outside the European Union.

Figure 3. Credit Gaps in Selected Countries
(Percentage of GDP)



Source: BIS statistics.

3. Positive Neutral Capital Buffers: Benefits and Costs

Setting a positive capital buffer in normal times recognizes that it is difficult to predict periods of stress. The available research after the global financial crisis had pointed to the credit gap as the best single early warning indicator of a banking crisis two to three years out (see, for example, Drehmann and others 2010 and Drehmann, Borio, and Tsatsaronis 2011). However, that indicator does not signal all future crises, and the research pointing toward the credit gap acknowledges that periods of financial stress need not be preceded by a buildup of vulnerabilities as measured by the credit gap, or any other early warning indicator. A positive neutral setting for the CCyB better recognizes that reality by providing a level of insurance against unforeseen periods of stress.

A positive neutral capital buffer can also better position countries to reach the desired level of resilience when there is a buildup of vulnerabilities. When a releasable capital buffer is set at a positive level in normal times, countries are in a better position to reach higher buffer levels that may be needed to manage the aftermath of a credit boom.[8] Starting at a positive level gives authorities more time to observe the evidence on the buildup of vulnerabilities and allows for a more gradual timing of buffer increases, when higher buffers are ultimately needed in the context of a cyclical buildup of vulnerabilities. This eases the management of the buffer, especially since buffer increases are typically subject to long phase-in periods (typically 12 months for tightening decisions).

A positive default setting for releasable buffers may also be preferable from a governance perspective. Political economy considerations might continue to induce hesitation to build buffers, since asking for additional capital can attract opposition on the part of the banking lobby and politicians (Edge and Liang 2020). A positive neutral framework for the CCyB might serve to soften these constraints, since it would imply a larger buffer even outside of periods of excessive credit. This may be preferable to a framework where the burden of proof is with the authorities and is perceived as requiring them to present a tight case of evidence of excessive credit expansion as a precondition for building buffers.

The experience from the pandemic also suggests that buffers were deployed by the authorities as intended and governance issues did not stand in the way of a relaxation during periods of stress. While there can be tension between the macroprudential view of supporting credit extension with a buffer release and the microprudential view of retaining or tightening buffers to protect bank depositors (see IMF 2013), concerns that this would impede the prompt release of the buffer were not borne out. The pandemic evidence suggests instead that the CCyB was used as intended wherever buffer space was available (see Nier and Olafsson 2020; Bergant and Forbes 2021).

A releasable capital buffer can make it less likely for countries to want to resort to regulatory forbearance in crisis times, and it thereby enhances the integrity of the overall prudential framework. In the absence of releasable buffers, the authorities in a number of countries were drawn toward regulatory forbearance in the face of the COVID-19 shock, such as the relaxation of microprudential minima, or the relaxation of standards for the accounting of nonperforming loans (IMF and World Bank 2020; Awad and others 2020). While these measures can offer relief, they may mask actual losses and the true financial position of the bank. Such a reduction of transparency can expose the banking system to significant risk, particularly if the system had preexisting vulnerabilities (Nier 2005). Greater use of a positive neutral CCyB and thereby explicitly

[8] In 2019, the Bank of England argued for a higher positive neutral CCyB rate in its "Financial Stability Report" (Bank of England 2019).

releasable elements of the capital structure could in future reduce the need for countries to resort to such forbearance, thereby helping preserve the integrity of the overall prudential framework (see also Biljanovska and others 2023).

Recent theoretical and empirical advances point to the benefits of maintaining releasable capital buffers through normal times. Lang and Menno (2023) provide a theoretical argument for building a positive neutral CCyB in a model where the impact of a change in bank capital requirements on lending is state-dependent. They show that in normal times and when banks are profitable, a gradual increase in capital requirements has a small impact on lending that works only through a "pricing channel"—more equity in the capital structure leads to a small increase in the weighted average cost of capital that transmits to a small increase in loan rates. However, when banks are capital constrained, a release of capital requirements leads to higher bank lending through a "quantity channel" that can be bigger by a whole order of magnitude. In this framework, the authors also show that bank profitability is the main determinant of the desirability of an accumulation of capital buffers.

A. Benefits of Releasable Capital—Evidence

Empirical research finds that banks want to maintain positive management buffers, or "headroom" through periods of stress. The predictions of recent theoretical research are in line with the observation that banks want to maintain "headroom" above their regulatory buffer requirements, since breaching requirements entails costs—including from enhanced supervisory scrutiny and market stigma (BCBS 2021, 2022b). Studying banks in Europe and the United States, respectively, both Berrospide, Gupta, and Seay (2021) and Couaillier and others (2022a) show that banks that were closer to breaching their capital buffer requirements behaved more defensively and reduced lending more during the pandemic than banks with more comfortable headroom above regulatory buffer requirements. This evidence suggests that when capital buffer requirements are becoming binding, and in the absence of a release, this can contribute to an amplification of economic and financial stress (see also BCBS 2021, 2022b).

Since a release of a capital buffer creates additional headroom, it can promote the continued provision of credit when needed. Studies from several countries and regions where capital buffers had been built ahead of the Covid-19 pandemic find that the release of the capital buffer at the onset of the pandemic supported lending, and that this effect was stronger for banks whose capital headroom was thin.[9] For Hong Kong SAR and the euro area, respectively, Wong and others (2022) and Couaillier and others (2022b) find that buffer releases had the intended effect of supporting the provision of credit, especially for banks that were close to requirements before the release. For the United Kingdom, Mathur, Naylor, and Rajan (2023) find that banks with a lower headroom maintained relatively tighter lending standards for mortgages, and that banks that received a greater capital relief from the CCyB reduction were more likely to maintain their lending to riskier loan categories. Looking at a broader sample of EU countries—including countries outside the euro area—Dursun-de Neef, Schandlbauer, and Wittig (2023), Bedayo and Galán (2024), and Avezum, Oliveira, and Serra (2024) find sizable and significant effects of CCyB releases, again especially for banks that had low headroom over requirements. While the lack of positive CCyB rates around the world makes it harder to identify the effect of individual release decisions, indirect evidence from sustained releases of other capital requirements also points to the effectiveness of providing banks with additional capital space (BCBS 2022b; Couaillier and others 2022b).

Several analyses that predate the pandemic also establish that a capital buffer release can support banks' credit extension in periods of stress. In a growth-at-risk framework using the IMF's integrated macroprudential policy data on macroprudential policy actions, Galán (2024) examined the effects of tightening and

[9] Reflecting the limited experience with the release of the CCyB documented in Figure 2, the empirical results that are available on CCyB or SRB releases are from Hong Kong SAR, EU countries, and the United Kingdom.

loosening actions on growth distributions using quantile regressions. His study documents that releases of capital buffers in periods of financial stress have immediate and important effects in supporting economic growth in the tails of the distribution. In an event study setup, Sivec and Volk (2022) studied the impact of a prudential measure by Slovenian authorities that resulted in a reduction in bank capital requirements (of nearly 1 percentage point of risk-weighted assets on average) around the time of the financial crisis in 2008. They find that following the capital release banks that benefited more from the release were able to sustain higher loan growth to firms: firms borrowing from banks holding a 1 percentage point higher capital buffer after the release received 11 percent more in credit. This study also finds that banks that enjoyed greater relief increased their loan loss provisioning during the period of financial stress, relative to other banks, pointing to a stabilizing role of the buffer release in helping banks absorb losses. More generally, the prepandemic evidence establishes that where banks face loan losses, the cutback in lending is less where available capital buffers are larger (for example, Nier and Zicchino 2008).

Evidence from Spain's experience with dynamic provisions also support the effectiveness of capital buffers. Jiménez and others (2017) studied the effects of countercyclical capital requirements on credit supply in the context of Spanish banks' dynamic provisioning. They find that accumulating provisions ahead of the global financial crisis had only a temporary effect in tightening credit supply and did not affect firm survival, since firms were able to substitute and obtain credit from less affected banks. In bad times, the level of banks' provisioning helped cushion losses and more strongly affected the provision of credit in aggregate, which in turn had real effects in terms of supporting firm survival and employment. Since it was difficult in crisis times for firms to find an alternative source of credit, survival was adversely affected for firms who previously borrowed from banks with lower usable provisions. While this research supports the idea that capital buffers have beneficial effects in periods of stress, as Jiménez and others (2017) explain, the shock affecting Spain was large in comparison to the level of capital built from dynamic provisions, which was eventually depleted.

Overall, the evidence shows that buffer releases can work as intended by regulators and need not be "pushing on a string." While the main benefit of the CCyB was always meant to come from the ability to release the buffer in periods of stress, and stabilizing the provision of credit is its stated role as part of the Basel III banking reforms (BCBS 2010a), a paucity of datapoints on buffer releases ahead of the pandemic led some researchers to question whether a release of buffers would be effective, since it could be "pushing on a string" (for example, Committee on the Global Financial System 2012).[10] For instance, Abad and Garcia Pascual (2022) argue that less-profitable banks may not find it in their interest to voluntarily use their capital buffers to lend more in times of crisis. The evidence that has accumulated points to several reasons why lending in periods of stress can remain profitable, when compared to the alternative of ceasing to lend. First, banks may be subject to contractual obligations to satisfy preexisting credit lines. Banks can find it in their interests to honor such obligations, rather than to renege on them, in order to avoid legal costs and preserve reputational capital.[11] Second, providing liquidity to existing clients can be in a bank's own interest when absent such liquidity provision the client may default on existing loans extended by the bank to such clients.[12] Third, banks can be keen to preserve relationships with existing clients, especially large ones, since these relationships can generate profitable business opportunities in the future.[13] Finally, banks may extend

[10] There can also be a concern that once banks' capital is depleted (due to increased lending or dividend payouts), they could start taking on more risk. However, this was not borne out during the pandemic as capital buffers were supported by a number of other policy measures, including dividend restrictions and fiscal policies, making it difficult to judge whether there was reason to worry.

[11] Kapan and Minoiu (2021) find that, as credit line drawdowns create a liquidity strain, an increase in the risk-weighted assets, and a potential for future loan losses, banks that had large ex ante credit lines tightened their loan supply, especially toward small firms.

[12] For the euro area, Couaillier and others (2022b) find that loans that benefited from the release of buffer requirements were directed at clients whose loans were performing.

[13] Berrospide, Gupta, and Seay (2021) document that in the absence of a release, banks with lower voluntary buffers cut lending to bank-dependent small and medium enterprises while protecting their relationships with large clients. Chodorow-Reich and others (2022) document that large firms drew more heavily on their preexisting credit lines during the pandemic than small firms.

credit also to new customers, since passing up opportunities to lend to credit-worthy customers can mean losing the client to a competitor. Even in periods of stress, banks may be unwilling to cede market share for new bank customers.[14]

Studies find that the provision of credit to the economy overall held up during the COVID-19 crisis, in contrast to the experience of a contraction in such lending during the global financial crisis (BCBS 2021). This absence of adverse amplification may have been due in large part to the generous fiscal support provided by national authorities, the decisive easing of monetary policy, and the increased resilience of the financial system brought about by the reforms following the global financial crisis (Giese and Haldane 2020). Several studies suggest that appropriate macroprudential responses also contributed to this outcome and point to a complementary role of fiscal and macroprudential responses in particular. For instance, the study by Mathur, Naylor, and Rajan (2023) finds that buffer releases were effective in supporting the provision of new mortgages, which were not subject to the UK government's other COVID-19 relief policies. The study by Dursun-de Neef, Schandlbauer, and Wittig (2023) finds sizable and significant effects of CCyB releases on lending in particular for those countries where other government support measures—in the form of loan guarantees—were less generous. This is plausible since loan guarantees would reduce the capital requirement associated with the loan, diminishing the importance of a release of such requirements. The study by Wong and others (2022) also points to complementary roles between the release of the CCyB and targeted loan guarantees for the most affected sectors. Overall, while it is difficult to pin down the relative contribution of buffer releases and other planks of the policy response, these policies are found to have played a positive role in reducing the impact of the crisis (Bergant and Forbes 2021).

While recent empirical findings are consistent with the idea that a release of capital buffers can support bank lending by expanding their available headroom, several caveats should also be borne in mind. One concern is that the COVID-19 crisis was special in that it is known to have generated a strong demand for credit. However, a downturn in economic activity is likely to generate demand for credit also in other crisis contexts, since it leads to an increase in inventories and unsold goods that may require increases in credit, even as business fixed investment and construction are likely to drop. This means that banks may be in demand as providers of liquidity in crisis periods more generally, as documented by Jiménez and others (2017) in the context of the global financial crisis. A second concern is that during the COVID-19 pandemic, the many forms of official support (including monetary and fiscal) may have reduced losses for the banking sector, while restrictions on dividend payouts that were in place in many countries helped maintain or even increase capital buffers through the pandemic. Had losses been higher, the impact of a release of capital buffers may plausibly have been weaker, by inducing a greater reluctance to lend. The impact of the release of buffers could alternatively have been stronger than what was observed, since many more banks would have become constrained by their capital buffer requirements becoming binding. Some research on capital releases that predate the pandemic, such as those during the global financial crisis (for example, Jiménez and others (2017); Sivec and Volk 2022), would suggest that the impact could plausibly have been larger.

B. Costs of Building Buffers

The long-term costs involved in increasing bank capital buffers appear modest based on the available evidence. The Basel Committee collected a number of studies on the costs of introducing additional capital requirements on banks, which establish an upper bound for the cost to the level of GDP in the range of 0.02–0.35 percent for a 1 percentage point rise in the capital ratio (see BCBS 2010b, 2019a). Elliot, Salloy, and Santos (2012) study the long-term impact of Basel III capital requirements and document that the impact on bank lending rates in Europe, Japan and the United States are less than 30 basis points per 1 percentage point increase in capital, in part because the variation in capital is small in relation to assets. Moderate

[14] In line with this, Sivec and Volk (2022) document that the increased lending from a release of buffers during the crisis in Slovenia was directed to firms with relatively better loan repayment history.

impacts are also found by Basten (2020) and Xiao Chen and Friedrich (2023), who study the impact of a percentage point increase in the CCyB for Swiss and Canadian firms, respectively. Basten (2020) finds that CCyB increases mortgage loan rates by eight basis points, while Xiao Chen and Friedrich (2023) find that a CCyB increase results in a decline of 12 to 17 basis points in the growth rate of cross-border lending between Canadian banks and borrowers abroad.

Findings of long-term neutrality of capital structure hold across studies, even as short-term adjustment costs are also well-documented in the literature. A recent Basel Committee on Banking Supervision (BCBS; 2022c) evaluation of Basel reforms found no meaningful evidence of negative side effects of the reforms—including higher capital requirements—on banks' lending and capital costs in the long term. Such long-term neutrality is found to hold, even as short-term adjustments costs are well documented in the literature, especially when increases in requirement occur in periods of stress and actual capital is thin (see, for example, Gropp and others 2019). Some recent studies even suggest that the impact of larger capital requirements on credit provision could be positive in the long term. In particular, Gambacorta and Shin (2016) find in a cross-country bank-level study that a 1 percentage point increase in the equity-to-total-assets ratio reduces the overall cost of debt funding and thereby leads to a 0.6 percentage point increase in annual loan growth. However, some studies (Jiménez and others 2017; Behn, Forletta, and Rhegezza 2024) find that increases in capital requirements can be more binding for smaller banks with less headroom and their lending to smaller firms. This points to some remaining trade-offs for policymakers, even as the release of the capital buffer may equally benefit lending to smaller firms more substantially (see for example, Berrospide, Gupta, and Seay 2021).

These empirical findings are in line with the well-established theory on the cost of capital of banks and corporations. The starting point in this literature is the Modigliani-Miller theorem, which posits that the weighted average cost of capital is a function only of the net present value of the assets—that is, the loans and securities for banks—and is invariant to shifts in the relative share of equity and debt in liabilities (Modigliani and Miller 1958). In models with defaultable debt, an increase in the share of equity in liabilities leads to a reduction in the probability of default of the bank and would thereby lead to a reduction in the cost of its debt finance, in line with the empirical findings by Gambacorta and Shin (2016). And even when equity finance remains more expensive than debt finance, an increase in capital requirements induces small changes in the weighted average cost of capital that affect loan rates only through a "pricing channel" as long as such increases can be accommodated by retaining earnings (Lang and Menno 2023).

Established theory also explains shareholders' reluctance to commit additional equity, even when the social benefit of doing so is positive. The insight of the debt overhang problem (Myers 1977) is that shareholders may be reluctant to commit additional equity since this increases the value of debt claims at the expense of the equity claim (Admati and others 2012). In the presence of this debt overhang effect, shareholders may oppose committing additional equity even when this increases the total value of the bank (Admati and others 2012). As a result, one would expect the stock market reaction to a capital buffer increase to be negative, while banks' bond prices would increase (Gambacorta and Shin 2016). By extension, while running banking firms with additional equity can be optimal for society as a whole, since this reduces systemic externalities in periods of aggregate stress, equity holders may be reluctant to commit new equity when this is benefiting other stakeholders. However, from a policy perspective, both constrained borrowers and society as a whole may be better off when banks are better able to continue lending through adverse shocks.

It is possible for capital requirements to become so high that they seriously affect banks' return on assets, even though most banking systems are likely to operate below this point. When capital requirements are increased, a point can be reached beyond which further increases in capital will start having greater effects on lending. For instance, when the capital requirement seriously constrains the premissible amount of deposit funding, this could make it hard for banks to sustain a profitable business, since banks rely on this in both their lending and payments activities (see, for example, Mester, Nakamura, and Renault 2007). However,

for banking systems where the share of capital in the overall liabilities is modest, a small increase in capital requirements is not likely to have a large adverse effect on profitability, as measured by return on assets, or on loan growth, provided that the adjustment to the higher requirement is managed appropriately.[15]

The effect of an increase in capital buffer requirements on lending are likely to be small where banks are profitable or have built voluntary buffers (see Lang and Menno 2023; Munoz and Smets 2024; Bedayo and Galán 2024; Behn, Forletta, and Rhegezza 2024).[16] If banks are profitable when a new buffer requirement is imposed, banks are able to meet the new buffer requirement by retaining earnings, provided sufficient time is given for the adjustment. Also, if banks have high voluntary buffers when a new macroprudential policy buffer is imposed, banks may reduce the size of the voluntary buffers they want to hold when the new measure is implemented, trusting that the authorities will release the buffer in the event of aggregate stress (Lang and Menno 2023). The impact on total capital levels and lending can therefore be expected to be low in such circumstances. By contrast, if banks are not very profitable, for example, because the banking system is highly competitive, and if banks hold low voluntary buffers, a rapid buildup of buffers could have more pronounced negative effects. Such effects would need to be mitigated by providing additional time when phasing in the requirements. More broadly, these considerations can determine the timing of capital buffer increases toward neutral levels, as we will discuss next.

[15] Note that the return on assets is the appropriate measure of profitability here, as it is measuring profits generated by the asset base. The drawback of the alternative measure of return on equity is that this depends on the capital structure (share of equity in total liabilities), with larger equity mechanically reducing the measure.

[16] For instance, in in a study covering the whole European Union, Bedayo and Galán (2024) show that the costs associated with activating (in terms of lower lending) the CCyB before the pandemic were limited. Such costs were also concentrated in the short term and among banks with smaller voluntary buffers. In a study focusing on capital buffer increases since the pandemic, Behn, Forletta, and Rhegezza (2024) find their impact on lending to be insignificant overall, with some negative effects for banks with small headroom and borrowing firms with a single relationship.

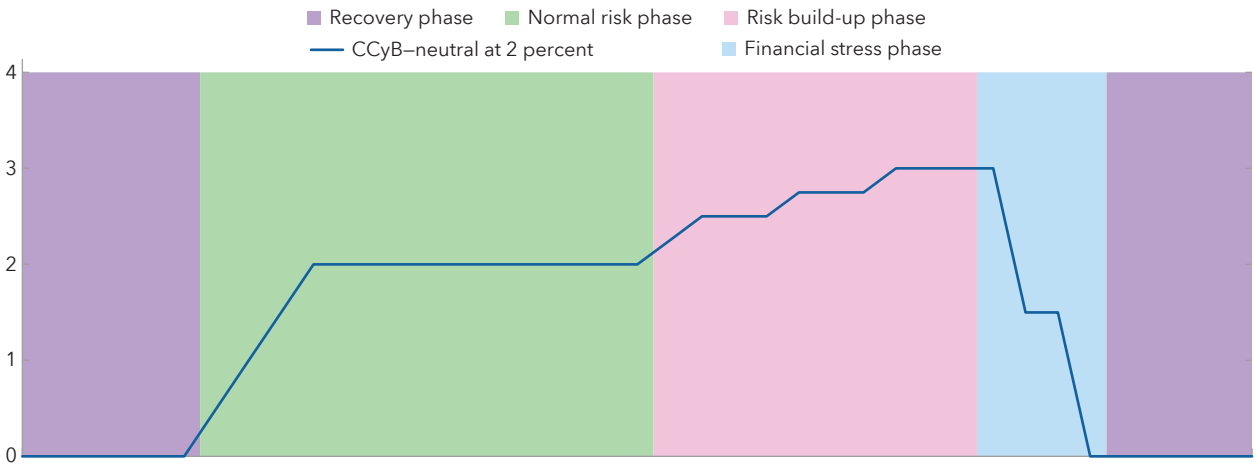
4. How Would the Overall Framework Operate?

This section sets out how a framework involving a positive neutral rate for the CCyB would be operationalized, reviewing questions such as the following: When is it time to build buffers to the neutral level? What determines the size of the neutral level? When is it time to build capital beyond the neutral level? And under what conditions should capital buffers be released? Alternative designs of releasable capital buffers, as well the relationship of releasable buffers with other prudential requirements, are discussed in the next section.

Overall, a positive neutral CCyB framework aims at guiding banks to accumulate additional capital when the cost of accumulating this capital is relatively low, such as when profits are high. Banks then are given access to this extra capital, when the value of having additional capital is greater.[17] This is likely to be the case in periods of financial stress, when banks are pressed for more capital to continue lending, but shareholders would be unwilling to inject capital for fear of this benefiting bondholders. Under the regulatory framework envisaged here, that capital is collected in advance, when building additional capital is still relatively inexpensive for banks.

Under a framework with a positive neutral level of the CCyB, the buffer rate moves through four distinct phases, involving three decision points (Figure 4). When the risk environment is "normal," the CCyB rate would be brought to the neutral level, with the level and pace of increase subject to considerations that are set out in more detail in the following.[18] The CCyB would then be raised beyond the neutral level when cyclical risks are expected to build up further. This second decision point could be informed by a range of early warning indicators that are found to be informative about tail risks—potentially including credit gaps, asset price gaps, and assessments of growth-at-risk. This is followed by the partial or full release of the buffer

Figure 4. An Illustration of the CCyB Evolution



Sources: DeNederlandsche Bank (2022); and authors.
Note: CCyB = countercyclical capital buffer.

[17] This is as in Lang and Menno (2023), where the assumption is that banks can build up their equity through retained earnings but are precluded from issuing equity.

[18] Bank of England (2023) characterizes the environment where the CCyB is around the "neutral" level as one where indicators of underlying cyclical financial vulnerabilities are at or around their long-term historical average and an assessment of banks' resilience to potential and actual shocks suggests they are likely to be able to absorb a shock rather than amplify it." DeNederlandsche Bank (2022) defines a standard risk environment as a situation in which cyclical systemic risks are neither particularly high nor particularly low. Behn and others (2023) provides further examples from euro area countries.

when financial stresses arise, based on observations of tightening financial conditions and incipient deterioration in credit quality. Once the stress period has passed, the CCyB rate would remain below the neutral level through a recovery phase, in which the provision of credit may remain capital-constrained.

Early activation of the CCyB is the main difference between the PNCCyB and the existing CCyB framework, where the buffer is increased only in response to signals of increases in cyclical systemic risk. This ensures that positive buffers are available in normal times and can be released in response to external or other exogenous shocks.

A. When to Release Buffers?

A release of the CCyB is meant to support the continued provision of credit to the economy when the financial system is experiencing a period of stress and regulatory capital requirements are binding (BCBS 2010a). The objective of a release of the buffer is to reduce the risk that credit provision becomes constrained in periods of aggregate stress and turns procyclical, so that banks' response to the requirement comes to undermine the performance of the real economy and results in additional credit losses for the banking system in aggregate.[19]

Accordingly, indicators guiding the release should capture whether capital buffer requirements are becoming binding (IMF 2014a, 2017). A decision to release the CCyB needs to be based on analysis of near-contemporaneous indicators of stress, as well as judgment. Useful indicators include incipient solvency stress on the part of borrowers, such as incipient increases of nonperforming loans and early signs of deteriorating asset quality (see IMF 2014a, 2014b). Since such indicators can be slow moving, market-based indicators of the emergence of solvency concerns (for example, sharp drops in bank equity prices, increases in credit default swap premiums) can be useful as potentially capturing expectations of future deteriorations at an earlier stage. They could also include indicators of liquidity stress on the part of borrowers, which would require an expansion of bank lending to be met, such as when borrowers draw down credit lines with banks. Surveys of bank lending standards can be useful to monitor, especially when such surveys give an indication of whether the provision of lending to household or firms is starting to be constrained by a shrinking capital headroom.[20] If the survey data signal that the CCyB is becoming binding on a substantial share of the financial system and the judgment is that this is affecting the aggregate flow of credit to the economy, then this could be used as a signal to release the buffer.[21]

The release of the CCyB should not be used to manage the business cycle or respond to a reduction in the demand for credit (IMF 2014a). In a cyclical downturn, regulatory capital buffers may not become binding, since a slowdown in output can lead to a reduction in loan demand. As long as banks are not constrained by capital requirements, such as when they have ample headroom over the requirements, the release of the CCyB is not able to generate benefits in the form of lower funding costs or an increase in credit that would support the economy.[22] Moreover, such a release could be counterproductive, because the buffers may be needed at a point in the future when the supply of credit by the banking system is becoming constrained. However, when a downturn results in financial stress that is expected to erode bank capital and may thereby further amplify the decline in the economy, the release would be called for.

[19] There are two broad circumstances where the CCyB would typically be released. One is where the financial system is under stress and needs the support of a full CCyB release to zero that helps banks to continue lending to the economy, while the other is where cyclical risks in the economy have receded, and the CCyB can be brought back to its neutral level.

[20] Banks, Khairnar, and Sian (2024) use lending survey data to identify credit supply shocks that could inform buffer releases. They use the difference between banks' actual lending standards and their expected value given macroeconomic conditions as a proxy for "unwarranted tightening" of these standards that are indicative of a credit supply shock. See also Bassett and others (2014).

[21] Lending surveys do not exist in all countries, and where they exist they are often thought of as aiding monetary policy. However, they could be reasonably simple to add and can be useful for macroprudential decisions.

[22] BCBS (2021) finds that the increase in credit default swap spreads was strongly conditioned by the distance of the banks' capital to requirements.

Communication of the release decision needs to clarify that the release is a precaution that is meant to help banks continue to function normally. It is important for the communication to avoid giving an impression that the release carries new information about risks to the economy. It would instead stress that the main aim of the release is to avoid a situation in which capital buffer requirements are becoming binding on banks, and to aid banks in continuing to perform their functions normally. If used in this way, the release of the CCyB can increase banks' headroom above the minimum requirements and reduce market pressures that would otherwise build as banks approach these requirements.[23]

Moreover, clear communication by the authorities that capital buffers are not going to be rebuilt prematurely is important to ensure the effectiveness of the release in providing confidence for banks in using the buffers. The experience from the pandemic is that banks need assurances that buffer releases will stand for banks to want to use the space provided. In particular, Couaillier and others (2022b) find that a capital release is more effective when communication is able to convince banks that the release will not be reversed for some time. Timebound commitment can be a powerful way of convincing lenders to make use of the buffer, especially if the reactivation is also subject to phase-in (see, for example, the announcement by the Bank of England [2020]). The guidance would also emphasize that the reactivation will take place only when the banking system is profitable enough to rebuild the buffers.

B. When and at What Pace Would Buffers Be Built?

The buildup of capital buffers toward their positive neutral rate would start when the supply of credit to the economy is not, or is no longer, constrained by capital requirements. In particular, the decision to move from a recovery phase to a normal-risk phase would be conditioned on the absence of signals that would support a capital buffer release (as detailed earlier). In essence, banks' provision of credit should not (still) be constrained by capital requirements and the buildup of capital should not be expected to create such constraints. This condition may be satisfied if the banks' profitability is restored to a level that allows the rebuilding and maintaining of voluntary capital buffers.[24] Bank lending surveys as well as market indicators could also help judge this, as explained just above.

The pace of building up the CCyB should reflect benefits as well as adjustment costs. On the one hand, an assessment of substantial stock vulnerabilities—as discussed further in the following—would argue for a faster pace of implementation, in order to build what are missing protections. On the other hand, the pace of increase must take account of the costs to banks of accumulating additional capital and should avoid procyclical effects from increases in buffer requirements weighing on the provision of credit to the economy. These costs can depend on the profitability of the banking system, the availability of existing voluntary buffers, and the ease with which banks can tap additional capital from markets. All of these factors should be considered when deciding on the pace to reach the desired level.

When monetary policy is tightening, it can often still be useful to build additional buffers. The main benefit of this is to protect against risks that may be building up in the context of rising rates, including from increases in defaults and bankruptcies in the household and corporate sectors. In an environment of rising policy rates, the costs of building these defenses would typically be more modest. This is because tighter monetary policy typically boosts bank profitability, at least when rates are increasing from a low level, since the transmission to loan rates often leads the transmission to deposit rates. This effect can help banks build

[23] An analysis of bank funding costs reported in BCBS (2021) finds that the increase in credit default swap spreads in the period from the end of 2019 to March/April 2020 was conditioned by the capital headroom of the banks in the sample. Funding costs rose for those banks who were perceived to have little headroom above the combined buffer requirement and rose much less for banks that had ample headroom.

[24] In line with this, Munoz and Smets (2024) find the welfare benefits of a positive neutral CCyB to be greatest when activation of the buffer conditions on expected increases in bank lending spreads.

additional capital buffers by retaining earnings.[25] Evidence from the most recent interest rate cycle supports the view that policy rate increases can result in a substantial boost to bank profitability through increases in interest margins, even as monetary policy tightening can also put some pressure on banks through losses from long-term securities and increased provisioning requirements (ECB 2024; IMF 2023e). Locking in these profits through higher capital buffer requirements can then be prudent (IMF 2024c).

When increases have some effect in slowing credit, this can be in line with the intended effects of a tight monetary policy, even as excessive tightening of financial conditions should be avoided. When monetary policy tightens, an increased buffer requirement may impart some further tightening of the provision of credit for capital-constrained banks. This effect can be welcome from the point of view of reducing excess aggregate demand. It can also be taken into account by monetary policy by reducing the rate of increase of policy rates at the margin, and as needed. However, policymakers may want to avoid undesirably strong procyclical effects on financial conditions from increased buffer requirements.

Building macroprudential buffers can also be useful when banks' voluntary buffers are high. When voluntary buffers are high, the costs to banks of complying with additional buffer requirements can be very low (for example, Bedayo and Galán 2024; Behn, Forletta, and Rhegezza 2024). The benefit of building macroprudential buffers is then that this can capture some of them with regulatory requirements. This reduces the risk that banks distribute funds to shareholders when capital may well be needed to absorb increases in nonperforming loans that may arise from future shocks and/or more persistently tight monetary conditions.

The pace of increases can also be made contingent on the continued absence of detrimental side effects.[26] Such an approach can establish a baseline pace of increase, by announcing the rate that will be enforced on the banking system after the lapse of a certain period (such as after one, or two years). It can also involve a communication that the policymaker may reconsider this pace and lower the target as conditions evolve. To assess whether a pausing is advisable, policymakers may monitor any emerging evidence that the provision of loans to the real economy shows broad signs of being constrained due to binding capital requirements. This could be judged, for instance, by regular lending surveys. Indications of stress in financial markets can also be taken into account, since a further buildup of buffers will not be advisable if the conditions for a release are met.

C. What Level for the Positive Neutral Rate?

The question of how to determine the appropriate level of the neutral rate of releasable capital buffers is still subject to ongoing research and debate. This section therefore only offers some initial consideration of the types of approaches that could usefully be further developed by macroprudential authorities and IMF staff. International experience can also be a guide, even though each country decision is likely to reflect their specific circumstances (see Annex Table 1.1).[27]

A starting point is the desired benefit of the buffer in generating policy space for the release phase. In particular, when the buffer is small relative to banks' expectation of losses in periods of stress, its release is unlikely to be effective in reducing amplification. A capital release that exceeds banks' expectations of losses has more potential to provide the incentive for banks to continue lending to sound businesses that might otherwise be subject to rationing. Ultimately, the banks' response depends both on the outlook and

[25] The impact of rising policy rates depends on the degree to which interest rates in loan contracts are at fixed versus variable rates, and the size of banks' trading books. While the initial impact can be positive, a tightening in financial conditions can ultimately lead to a rise in nonperforming loans and declining bank profits later in the cycle

[26] For instance, in July 2022 the Financial Policy Committee announced (Bank of England 2022) that it will return the CCyB to the neutral level in one year. At the same time—and in all subsequent communications—the committee said that it monitors the overall economic conditions and risk environment closely given the uncertain outlook and stands ready to vary the CCyB in either direction as appropriate.

[27] BCBS (2024b) examines a range of practices that have been used by different jurisdictions to implement a positive neutral CCyB.

on their desire to maintain some headroom over and above regulatory requirements even through periods of financial stress. Policymakers may want to anticipate these kind of behavioral responses when considering desirable buffer rates.

The setting of the neutral level could key off simple stress tests. As the buffer is intended to avoid amplification of shocks outside of full-blown crises, the level of resilience to aim for could cater for stress events that occur more frequently than the extreme stress events that are typically used to examine the solvency of the banking system (as typically done in FSAP stress tests or in stress tests run by supervisors). In this approach, the stress test would examine losses that could occur from a more standard economic downturn or an adverse development in other variables, and the buffer size calibrated to help the system absorb the loss without this leading to a contraction in loan growth (see, for example, Estrada and Montes 2024). When a stress test is used to evaluate the neutral buffer in this way, it is important for the capital hurdle to account for all nonreleasable buffers that are required in the country (including potentially the CCB and structural SRBs), because of the banks' reluctance to dip into these buffers.[28]

An input to authorities' judgment in setting the neutral buffer could alternatively be peak losses in historical stress episodes. Some countries that have set a positive neutral rate have used the peak of accumulated losses from the past and the lending capacity that a capital release preserves as yardsticks for calibrating the neutral rate.[29] In this approach the neutral rate becomes the base for further increases that occur when cyclical vulnerabilities pick up strongly. The peak in past losses would then indicate the level of capital needed at the peak of the cycle and before the eventual release, while the neutral rate would take account of the time needed to build the buffer up to that peak in light of real-time indicators of buoyant credit conditions.

The distance between expected peak and neutral levels of capital buffers could depend on country-specific circumstances. The desired distance of the neutral buffer from "peak buffers" can include an assessment of the ability of the policymakers to identify the cyclical buildup of vulnerabilities in real time. In some countries, the authorities may be confident that they can identify periods of heightened systemic risks, such as by monitoring early warning indicators and measures of the financial cycle (Bank of England 2019). The calibration of the neutral rate can then make an allowance for the further increases that will be possible under such a policy approach and also include consideration about the phase-in period required after decision to increase the buffer beyond the neutral level.

In some countries, early warning indicators may not be readily available, or they may not be sufficiently reliable to support such active decision making on buffer rates. In such cases, it may be preferable to decide on the degree of resilience that authorities want to have as a buffer against plausible future shocks, without making assumptions about how policymakers would further increase the buffer rate in light of the monitoring in real time of early warning indicators. Such an approach can be preferred in some emerging markets and low-income countries, in which cyclical credit developments may, in any case, be less important as a driver of systemic vulnerabilities (see Box 1 for evidence and further discussion). The expectation that buffer rates would not typically be increased further may in practice translate into higher neutral rates in such countries, even though the cost of carrying these higher buffers would also need to be taken into account, in line with considerations set out in IMF (2014c).

[28] Stress testing approaches have already been applied to the calibration of macroprudential buffers in the Finland (IMF 2023a) and Iceland (IMF 2023f) FSAPs. However, these exercises did not explicitly aim to model a milder adverse scenario than what is typical for an FSAP stress test.

[29] The Dutch central bank's positive neutral buffer corresponds to an amount of bank capital that is equal to half of the peak accumulated losses since the financial crisis (DeNederlandsche Bank 2022). The Bank of England (2019) also estimated a range for the CCyB that would have been needed to absorb losses and sustain lending after the 2007 financial crisis. Both central banks provide an estimate of the losses that a full release their neutral CCyB enables banks to absorb and the amount of lending that it helps sustain to households and firms.

The appropriate size of neutral releasable buffers can depend on an assessment of the stock vulnerabilities that are present in any given country and that may amplify the effect of futures shocks. Where vulnerabilities in the stock of existing debt are assessed as substantial, for example, from high leverage in the household sector, or from a high share of debt that is at variable rates[30] or is denominated in foreign currency, this can argue for higher releasable buffers.[31] Constraints on monetary policy—from the existence of a peg or a currency union—could also argue for larger buffers, given that space for monetary accommodation to support credit under adverse conditions is more limited.

Larger buffers would likely be useful for small open and emerging market economies that are exposed to external shocks.[32] Emerging market economies are often exposed to large and volatile capital flows. These flows can in turn drive up asset prices and domestic credit, especially when inflows lead to an appreciation of the currency, and an easing of domestic financial conditions. This exposes these countries to a risk of a capital flow reversal that can lead asset prices to fall and credit to contract sharply. Similarly, emerging market economies are often exposed to volatile commodity prices. Under such conditions, countries may want to aim for permanently larger capital buffer requirements that are released only in the event of large negative shocks (IMF 2014a, 2014c, 2017).

Novel empirical analysis confirms that losses in past banking crises have been sizable even when the crisis was not preceded by strong increases in credit (Box 1). Extending the findings in Behn and others (2023) to a larger sample, we find this to hold across income groups, including advanced, emerging and low income countries. In advanced economies, in particular, a prior episode of credit expansion is associated with higher peak losses when a crisis materializes. This suggests an approach that sets a neutral level and allows for further increases in the capital buffer when cyclical indicators are gaining strength. In emerging markets and low income countries, by contrast, we find no positive relationship between the strength of credit developments prior to the crisis and the losses that materialize in the crisis episodes that follow. An important reason for this difference could be that crises in EMEs and LICs are more often "twin", or even "triple" crises, potentially involving a currency crisis or a sovereign debt crisis at the same time, or preceding the banking crisis. Anticipating this, neutral levels of releasable buffers could therefore usefully be set higher in these countries when compared to advanced economies, in line with considerations set out in IMF (2014c).

D. When to Increase the Countercyclical Capital Buffer Beyond the Neutral Level?

Once the positive neutral level is reached, authorities may want to consider the need to increase the level of the CCyB on a regular basis, based on an assessment of risks. While such assessments will often be guided by quantitative information (as discussed in the following), increases in buffer rates beyond the neutral level can, in principle, be based on any information that implies that the probability of financial stresses materializing in future has increased relative to the standard risk environment. This can include qualitative information, such as information about developments in other policy areas. For instance, it could include expectations of future increases in monetary policy rates that may yet come to stress borrowers' ability to repay on existing debt. It could also include knowledge of planned structural changes (an example being how the UK Financial Policy Committee's assessment of risks to the financial system was shaped by the prospect of Brexit), or financial sector reforms that may temporarily increase the likelihood of financial disruptions.

[30] In countries with predominantly floating rate loan stocks, higher interest rates feed into borrower distress more quickly, which can make banks more cautious than in countries where borrower loans are at fixed rates. Vulnerability to interest rate hikes would argue for greater resilience of the banking sector that could be achieved with a positive neutral CCyB.

[31] The flow of foreign exchange vulnerabilities can also be managed with sectoral macroprudential measures, as discussed further later.

[32] This is In line with Munoz and Smets (2024), who find the optimal positive neutral capital buffer to be greater for countries that are subject to greater macroeconomic volatility.

Decisions to increase the CCyB beyond the neutral level can draw on early warning indicators. A large literature on early warning indicators has evaluated various indicators' ability to signal increases in the likelihood of a financial crisis several quarters ahead.[33] Based on this, there is broad agreement that, while the credit gap can play a role in assessing cyclical increases in risk, there is value in considering a range of complementary indicators. This can include gap measures that are based on alternative assumptions about the trend in credit (see Baba and others 2020).[34] Useful information can also be obtained from measures of credit growth, asset price deviations from long-term trends, market measures of risk (volatility and spreads), changes in the debt service burden, use of leverage, increased reliance on flighty funding, and widening external imbalances (see IMF 2011, 2014a, 2014b). Moreover, constraints on the availability of data may limit the use of statistical methods in some countries, and in these cases and more generally, very simple indicators, such as indicators of credit growth, can be useful to track.[35]

An increase beyond the neutral level can also be guided by alternative empirical approaches, such as growth-at-risk. Growth-at-risk approaches can be useful to guide buffer decisions as these models map dynamic interactions between credit developments, financial conditions, and the real sector to assess tail risks to output growth. In contrast to early warning models that are based on predicting a binary set of crisis versus no crisis outcomes, growth-at-risk techniques consider the tails of the output distribution, thereby capturing financial amplification effects that can be relevant for the use of buffers even outside of full-blown crises. Specifically, an easing of financial conditions today has been shown consistently to increase tail risks to output growth over the medium term (Adrian, Boyarchenko, and Giannone 2019; Adrian and others 2018; Brandão-Marques and others 2020). More simply, financial conditions, as embedded in growth-at-risk models, can provide helpful information for setting buffer rates.

Countercyclical stress testing approaches can also provide useful information for buffer calibration, where feasible.[36] The Central Bank of Ireland (2022) and Bank of England (2016)[37] have adopted frameworks where a stress test is used to inform the CCyB calibration. In such stress test frameworks, the severity of the stress is varied countercyclically with economic and financial conditions, such that the severity is increased when the policymaker views that the financial cycle is on an upswing and reduced when the financial cycle is recovering after a downswing. This approach has recently been developed further to assess both the size of neutral buffers and the cyclical variation around such buffers (Couaillier and Scalone 2024).

Whatever cyclical risk indicators are being used, decisions on buffer increases should not rely on them in a mechanical way. As has long been established in the literature, the framework should instead allow for judgment that is informed by such indicators. Moreover, such "guided discretion" can be based on a range of indicators and approaches (IMF 2014b). This should make room also for qualitative information to be brought to bear and should not overemphasize a single approach.

A moderation of cyclical risk indicators should not prompt a decrease of the CCyB rate below the neutral level, unless the conditions for a release are fulfilled. The neutral level is best viewed as floor below which the CCyB would not be reduced as a result of changes in cyclical risk indicators when these occur outside of periods of stress (see also ECB and ESRB 2025). First, when the neutral level has been built, a reduction outside a period of stress would needlessly give away resilience that would take time to rebuild. Second, a release of the CCyB below neutral level is unlikely to result in a benefit for the economy when banks are not

[33] See, for instance, Jordà, Schularick, and Taylor (2011); Detken and others (2014); and Tölö, Laakkonen, and Kalatie (2018). For more references, please see IMF (2014a).

[34] For instance, as explained in Tölö, Laakkonen, and Kalatie (2018), when the indicator performance is subject to different prediction horizons or different crisis data sets, no clear ranking across indicators can be obtained in the context of European countries.

[35] See IMF (2011) and Tölö, Laakkonen, and Kalatie (2018). This continues to be in line with the original recommendation for the CCyB. See also BCBS (2010a) and IMF (2014a).

[36] Couaillier and others (2022a) show that banks with capital headroom below the first quartile (slightly over 2 percent) of the capital headroom distribution curtail their lending more than banks with larger capital headroom.

[37] Relatedly, see also Bank of England (2015).

constrained by the capital requirements and can meet loan demand absent the release. Third, changes in cyclical risk indicators may result in overly frequent releases (and increases) in the CCyB outside of stressed conditions. This can reduce the effectiveness of the release when it is needed, as banks become accustomed to seeing through any such changes.

E. Assessing and Addressing Leakage Effects

Under any framework for a CCyB, the potential for leakage effects would need to be assessed and addressed. In jurisdictions where there are bank-affiliated nonbanks, leakage from banks to nonbanks are likely to occur when shareholders can shift lending activities to nonbank entities within the same group in order to circumvent the increase in buffer requirements. Evidence suggests that leakages to nonbanks can also occur when the overall regulatory regime tightens on banks and this favors nonbanks (see, for instance, Buchak and others 2018),[38] or when increases in capital requirements occur in periods of stress (see, for example, Bednarek and others 2023).[39] Leakage can also favor the provision of credit from across the border, especially in jurisdictions with a substantial presence of foreign branches and in the absence of reciprocity agreements with their home authorities.

Consideration should be given to well-known strategies to address leakage effects that amount to expanding the scope of application of macroprudential tools (IMF 2014a). Cross-border leakage can be addressed by reciprocity arrangements that are already included in the BCBS agreement on the CCyB (as set out in Box 2), and such agreements may need to be negotiated amongst non-BCBS members. Where neutral rates differ across countries, the domestic authority could consider applying a higher domestic rate also to outward exposures, but to continue to reciprocate increases and releases that the host authority initiates in response to the prevailing local conditions.

An important way to address domestic leakage to affiliated nonbank lenders is to consolidate capital buffer requirements based on the activities of both banks and nonbank lenders within the same group. An example is increased provision of credit in Croatia by bank-affiliated leasing companies that was addressed by regulations that captured this activity within the scope of the macroprudential tool (IMF 2014a). Moreover, while capital buffer requirements cannot be made to bind on nonaffiliated nonbanks, it is important for other regulatory requirements, such as borrower-based and liquidity tools, to be applied to nonbank providers of credit, in order to maintain a level regulatory playing field.

[38] Other papers documenting leakage from macroprudential policies include Biljanovska and others (2023), Cizel and others 2019, Claessens and others (2023), and IMF (2014d).

[39] The study by Bednarek and others (2023) utilizes the European Banking Authority's recommendation to create temporary capital buffers in 2011.

Box 1. Using Past Crises to Guide the Calibration of the Countercyclical Capital Buffer in Advanced Economies and Emerging Market Economies

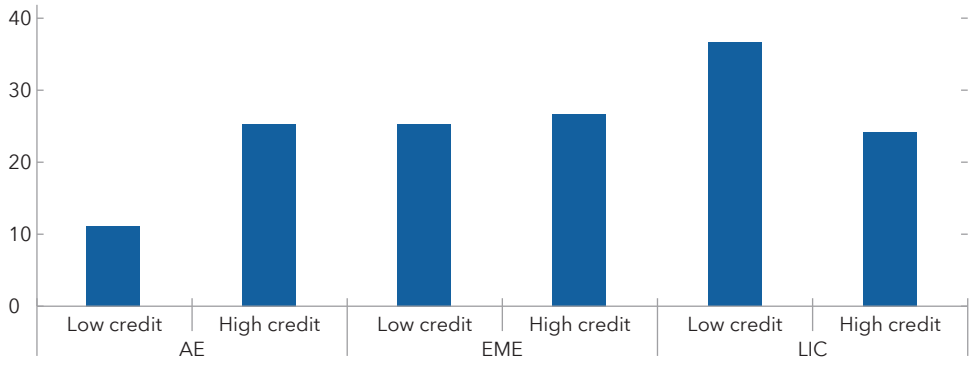
We conduct simple empirical exercises that leverage past crisis experiences to inform on the peak levels of the countercyclical capital buffer, which would typically be above the positive neutral level chosen by the country. Our approach uses nonperforming loans (NPLs) from past financial crises as a proxy for loan losses and links peak NPLs to the peak buffer level that would be required to cover losses. We then examine how peak NPL levels depend on credit growth ahead of the crisis, and examine differences in the strength of this link across advanced economies, emerging market economies (EMEs), and low-income countries (LICs).

We use data from Laeven and Valencia (2020) on past crises' peak shares of NPLs and data from the IMF Monetary and Financial Statistics database, the Bank for International Settlements, and the IMF Financial Soundness Indicators database on credit growth for the crisis countries five years before and after the start of the crisis.[1] Our sample has 27 advanced economies, 29 EMEs, and 11 LICs.

We first deflate the countries' credit with the consumer price index and then calculate the countries' maximum year-on-year real credit growth before the crisis. We categorize a country to be in a low credit growth group if its maximum credit growth before the crisis is below (or at) the median. Otherwise, a country is assigned to the high credit growth group. When looking at the NPLs, we select the maximum peak NPL level for each country from Laeven and Valencia (2020) if the country appears more than once in the data set of banking crises, and we calculate the average peak NPLs for each of the country groups.

We find that peak NPLs in past crises were lower for the advanced economies on average than they were for the EMEs or LICs (Box Figure 1.1). Moreover, while higher credit growth ahead of the crisis is associated with higher peak NPLs in the advanced economies, that association is much weaker for EMEs.

Box Figure 1.1. Systemic Banking Crises: Peak NPLs



Source: Laeven and Valencia (2020).
Note: Countries are divided into low or high credit based on their maximum real credit growth 1 to 5 years before the crisis. AE = advanced economies; EME = emerging market economies; LIC = low-income countries.

[1] We use the data from the IMF Monetary and Financial Statistics database or the Bank for International Settlements as a default, but if data do not exist for the selected period from these sources we use the IMF Financial Soundness Indicators database data for credit growth.

Box 1. *(continued)*

When looking across all crisis episodes, we calculate the correlation between past credit growth and the share of NPLs in total loans to be positive 0.3, while it is just above zero and not statistically significant for EMEs. Overall, though, for advanced economies in particular, this relationship supports the idea that the capital buffer framework could allow for increases in releasable capital buffers in response to strong credit flows, while it suggests that the emphasis could be more strongly on calibrating releasable buffers irrespective of credit developments in the EMEs and developing countries.

For LICs, NPLs have been higher in crises following low credit growth compared to crises following high credit growth. Out of the low credit growth episodes among the LICs, three out of five of these episodes relate to simultaneous banking and currency or banking and sovereign crises. This can help explain the average high NPLs even when average credit growth has been more muted. For instance, ahead of a sovereign crisis, there may be strong increases in bank exposures to the sovereign that we do not capture here, potentially even at the expense of credit provision to the private sector. Moreover, ahead of both sovereign and currency crises, inflation tends to be high, reducing real credit growth that we use to partition the data.

To evaluate the required level of capital buffer, we use the share of NPLs as a proxy for loan losses that would arise from the peak NPLs assuming current balance sheet compositions. To do this, we collected the latest available data from the IMF Financial Soundness Indicators database on the respective countries' total gross loans and divide this by the respective risk-weighted assets.[2] We calculate an average ratio of gross loans to risk-weighted assets for advanced economies, EMEs, and LICs.

We calculate the average peak NPL percentage (from Leaven and Valencia 2022) for the low and high credit growth groups and then multiply it with the averaged gross loans to risk-weighted assets for advanced economies, EMEs, and LICs. To also calculate loss given default, we must account for large differences on how the share of the NPLs would be distributed between mortgages collateralized with residential real estate or collateralized corporate loans on the one hand and uncollateralized exposures on the other. Given that residential real estate portfolios may be larger for advanced economies, we assume that 85 percent of advanced economy NPLs will be recovered, while for the EMEs and LICs we assume that 75 percent of the NPLs will be recovered.[3]

This approach can offer a starting point to evaluate the peak buffers needed to cover the losses. It suggests that on average, in advanced economies a buffer between 3 to 7.5 percent would be needed to cover losses from low or high credit growth crisis respectively (Box Figure 1.2). In EMEs, a 6 to 7 percent buffer would have covered losses in low or high credit crisis periods and in LICs a buffer would need to be between 5 and 9 percent.

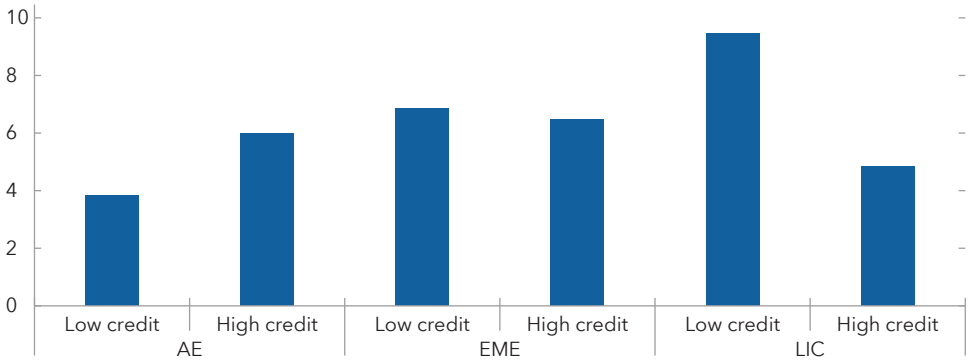
This exercise highlights that for advanced economies it can be useful to assume that buffer levels should respond strongly to credit conditions, even if neutral levels are useful as a starting point. For EMEs, the exercise points instead to an approach that emphasizes larger neutral buffers. The benefit

[2] We used the last available observation for total gross loans and risk-weighted assets from the IMF Financial Soundness Indicators database. The range of dates for the latest observation for total gross loans was 2013:Q4 to 2023:Q3 and for risk-weighted assets was 2018:Q2 to 2023:Q3.

[3] The Basel III reforms (BCBS 2017) include a 25 percent recovery rate for unsecured corporate exposures. The stock of NPLs would typically be more heterogenous and include secured loans and mortgages that may have a higher recovery rate. However, at the peak the loans risk weighting can increase, and this causes an additional burden to the capital ratio. This is not considered here.

Box 1. *(continued)*

Box Figure 1.2. Systemic Banking Crises: Average Loss Estimate as a Share of RWA

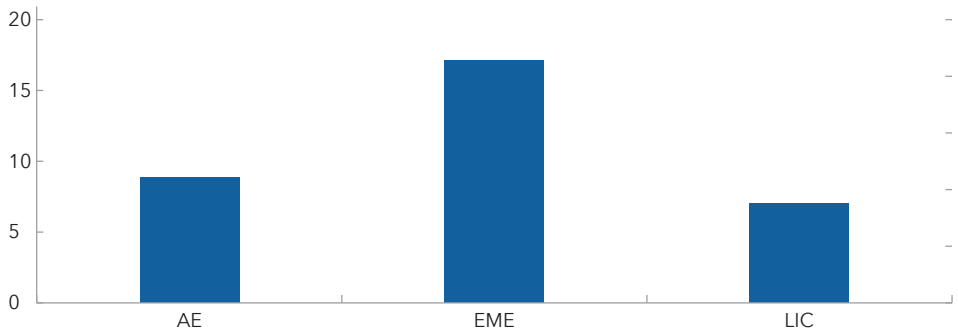


Sources: IMF, Financial Soundness Indicators database; and Laeven and Valencia (2020).
Note: Peak losses as a share of RWA are calculated as (Peak NPL × Average Share of Total Gross Loans to RWA). The Average Share of Total Gross Loans to RWA is calculated as (Total Gross Loans × 15 percent)/RWA for AEs and (Total Gross Loans × 25 percent)/RWA for EMEs. Latest observations for Total Gross Loans and RWA are used. Peak NPL is from Laeven and Valencia (2020). Total Gross Loans and RWA are from the IMF Financial Soundness Indicators database. Countries are divided into low or high credit based on their maximum credit growth one to five years before the crisis. AE = advanced economies; EME = emerging market economies; LIC = low-income countries; NPL = nonperforming loan; RWA = risk-weighted asset.

of releasable buffers, rather than higher minimum requirements, is underscored by further analysis that suggests that the drop in credit growth that occurs in the wake of banking crises is sizable in advanced economies, and even larger in EMEs (Box Figure 1.3).

While the findings are indicative of country differences, the absolute numbers should not be taken at face value, however, since they depend on the assumptions made and the data used. Further analysis with country-specific data is needed to arrive at more robust estimates of buffer needs. For instance, at the level of a single country, a more granular approach, using stress tests, can utilize more

Box Figure 1.3. The Difference Between Average Credit Growth 4 Years Ahead and 3 Years After the Crisis



Sources: IMF, Financial Soundness Indicator database; and Laeven and Valencia (2020).
Note: We compute the difference in average credit growth during the four years before the crisis and three years after the crisis. The difference was calculated for 27 AE, 28 EME, and 9 LIC observations. AE = advanced economies; EME = emerging market economis; LIC = low-income countries.

Box 1. ***(continued)***

information about the banks' current balance sheet composition, as well as default rates and recovery values. Moreover, as discussed in the main text, the positive neutral countercyclical capital buffer would be below the peak level and would depend on the speed with which banks can accumulate capital, as well as authorities' ability to spot emerging vulnerabilities in advance.

Overall, and across all income groups therefore, NPLs and the respective losses can be high even without rapid credit growth, while a crisis can lead to a substantial slowdown in credit to the economy. These findings underscore the need for positive neutral capital buffers in advanced economies and even more so in EMEs.

Moreover, if access to data that can reliably signal incipient vulnerabilities is scarce, it may be better to build resilience with permanently higher capital buffers that will only be released if the country is hit with a shock that cripples the banks' lending capacity (IMF 2014c). While LIC economies are more likely to be hit by currency and sovereign crises, these economies are also likely to benefit from well-capitalized banks to withstand large shocks.

5. Considering the Relationship with Other Capital Requirements

This section considers how releasable capital buffers fit into the overall prudential regime faced by banking firms. For instance, what other mechanisms have been used to counter the procyclicality of bank behavior, where banks shrink provision of credit as a result of shocks? Is a positive neutral rate the only way of generating releasable buffers, or are there alternatives that might be attractive for some countries? Would the addition of releasable capital lead to an increase in overall capital requirements, and is this useful, or can there be offsets that mitigate the overall increase in requirements? How effective can a release of buffers be in the presence of other capital requirements that cannot be released? This section briefly reviews each in turn.

A. Provisioning and Dividend Restrictions as a Complement to Capital Buffer Requirements

Countries have taken a range of approaches to counter procyclicality of capital requirements (BCBS 2022a). One category of such measures are those that target capital ratio *requirements*, such as the releasable capital buffer requirements that are the focus of this paper. Another category are measures that target banks' capital *levels*, including provisioning and capital distribution rules (dividend restrictions).

Many countries have adopted or are adopting an expected credit loss accounting regime for bank provisions. Such a regime is being introduced following the global financial crisis with an aim for banks to recognize credit losses earlier, and before losses are incurred.[40] In the expected credit loss framework (IASB 2014), banks account for expected losses in addition to historical and current losses in their provisioning. Banks need to use forward-looking models to forecast expected future losses, which are then translated into provisions subject also to some degree of management discretion. This leads to impacts on the profit and loss account that come ahead of periods of aggregate stress, thereby reducing the impact that is felt during such periods (BCBS 2022a). The overall effect this has of smoothing profits through the financial cycle can then reduce the likelihood of banks hitting regulatory capital constraints in downturns. Such provisioning for expected loss is useful, but it may not be able to cover all losses that can occur in a downturn. When losses may be larger than expected due to sudden exogenous shocks, a capital buffer requirement can aim to cover such unexpected losses. A releasable CCyB can also help absorb sudden increases in expected credit loss provisions that can arise in the event of such exogenous shocks, thereby supporting banks' ability to provide financing to the real economy through periods of stress.[41,42]

Dynamic provisioning—piloted by Spain— builds countercyclical macroprudential buffers through provisioning rules. Spain implemented a forward-looking "dynamic-provisioning" approach before the global financial crisis that built a buffer of general provisions in periods where lending was expanding and profits were ample, for it to be drawn down in bad times when losses materialize (see Jiménez and others 2017). The dynamic provisions are meant to reduce the need to increase provisions in periods of stress. In principle,

[40] The incurred loss regime was criticized after the global financial crisis due to the procyclicality that resulted from banks recognizing losses that they may have incurred.

[41] There is a tension between the dynamic provisioning and International Financial Reporting Standards 9, since the provisions usually account for expected losses, and dynamic provisions go beyond this.

[42] The financial crisis overwhelmed the buffers that were accumulated through dynamic provisions in Spain, and the country moved away from dynamic provisions with the introduction of International Financial Reporting Standards 9 in the European Union. Dynamic provisioning continues to be used for example in Colombia, Panama, and Peru.

the reserves set aside by dynamic provisions can also be released and made available to be used to cover specific provisions for incurred losses, either in a manner that is tied to a predetermined formula or on a discretionary basis, as took place in some countries during the pandemic (for example, Panama). If the provisioning parameters allow for a sufficient reserves buffer to be accumulated, then the buffer could be released when banks risk getting close to their capital requirements or when specific provisions are rising beyond predetermined levels. However, the parameters for the dynamic provisioning framework almost always set a ceiling for the accumulation of provisions. A releasable capital buffer requirement, such as a CCyB can complement dynamic provisions if that ceiling is too low, or if an additional tool is deemed useful to allow for a more discretionary release of buffers in periods of stress.

A restriction on distributions for the system as a whole can be an effective tool in preserving capital during times of stress. For instance, at the onset of the COVID-19 pandemic, several jurisdictions placed limits on dividend payouts of banks and other financial institutions, in order to preserve capital that might be needed to absorb losses or support the continued provision of credit through the adverse shock. An aggregate restriction on dividend payouts has also been used effectively to complement the release of capital buffers in several jurisdictions, helping to ensure that the release of the capital buffer requirement did not lead to opportunistic increases in payouts to shareholders, but was used instead to support the provision of credit to the economy (Nier and Olafsson 2020).[43] Distribution restrictions imposed on the system as a whole can raise concerns about regulators' knowledge of the actual size of losses that may be forthcoming, and careful communication of the reason for such restrictions is needed, as noted earlier for the release of capital buffers.

Increases in capital buffer requirements may be useful when the goal is to preserve capital to prepare for future stress. Distribution restrictions may be viewed adversely by banks' shareholders and can give rise to legal issues. Unless supervisors have the legal authority to restrict or suspend dividends, the power to set the dividend policy usually rests with the bank's board of directors. Should dividend policy be influenced or imposed by supervisors, either in the context of the operation of bank-specific buffers or in setting system-wide restrictions, shareholders may consider legal actions against decisions to restrict dividends when these restrictions do not have a sound legal basis (Awad and others 2020). Therefore, in normal times and in anticipation of future periods of aggregate stress, increases in capital buffer requirements can be preferred when the goal is to moderate payouts and preserve capital to prepare for future stress.

B. The Countercyclical Capital Buffer and Alternative Releasable Buffers

Countries can consider alternatives to the CCyB in achieving releasable capital. The Basel Committee's revised Core Principles (BCBS 2024a) adds as a desirable element that supervisors or relevant authorities are empowered to require banks to build releasable capital. This provides authorities with discretion to choose the tool that best suits their framework and needs. Authorities' preference for which tool to use to build releasable capital may be affected by the country's macroeconomic conditions or other available macro-prudential tools. The main alternatives to a CCyB, which is a "broad-based" tool affecting all risk-weighted domestic exposures, are sectoral tools or tools that build larger buffers for particular types of exposures.[44]

[43] There is an important distinction between such systemwide dividend restrictions and those that arise from the operation of the CCB. The latter are bank-specific and conditional on how far the bank is dipping into the combined buffer requirement. This feature can give each bank an incentive to avoid dipping into the buffer. The former does not create such incentives, since the systemwide restriction does not condition on any individual bank's buffer use.

[44] An example of a broad-based capital buffer requirement that is not technically a CCyB is the "domestic stability buffer" used by the Canadian authorities.

Countries where vulnerabilities have accumulated in a specific sector can consider a sectoral CCyB. The Basel Committee (BCBS 2019c) lays out the principles for implementing the CCyB on specific sectors. The Swiss authorities have used a sectoral CCyB to guard against vulnerabilities that emerge from exposures to the housing market (see, for example, Swiss National Bank 2022). A sectoral CCyB is similar to the traditional—broad-based—CCyB in that it can be released in the event of aggregate shocks, and such a tool could also be implemented with a positive neutral setting.

Sectoral capital buffers, more generally, can be designed to be releasable in periods of aggregate stress.[45] Use of such tools is already common in Europe, and these tools have often been released where they were available in the context of the COVID-19 shock (for example, in Poland).[46] A sectoral capital buffer affects the capital needed to support lending to a specific sector, making lending to sectors where the buffer is imposed less attractive than outside the buffer implementation. This can generate useful effects on incentives when risks are thought to be more elevated in particular sectors, or when lending to other sectors would suffer from the use of broader buffers. For example, in Belgium (National Bank of Belgium 2022) and Germany (BaFin 2022), a SRB was applied to all real estate exposures. A sectoral buffer can also lean against large exposures, by making the buffer rate increasing in the concentration of exposures to corporates (as in France [High Council for Financial Stability 2023]), or can be designed to increase resilience in the presence of large exposure to the sovereign, as has been recommended in several IMF FSAPs (Italy [IMF 2020], Romania [IMF 2018], South Africa [IMF 2022a]).

Sectoral use of capital buffers can be helpful in increasing resilience where borrower-based tools are not available or not sufficient.[47] For instance, in Germany, authorities implemented a sectoral SRB on loans collateralized with residential real estate, in addition to a CCyB, on concerns of risks from such lending in the absence of borrower-based tools (see IMF 2022b). Sectoral buffers can also apply to loans made in foreign currency and can be particularly useful when borrower-based tools to control indirect credit risk from lending in foreign currency are not readily available or are difficult to apply to corporate loans.

When risks from particular exposures are known, it can be useful to combine a sectoral buffer with a broad-based CCyB. While sectoral buffers can cater for known sources of risk, broad-based buffers can be useful to protect against a range of risks that are not fully known or anticipated, potentially including health-related risks (such as the COVID-19 pandemic), risks from natural disasters, wars, and so on. Moreover, in the presence of heterogeneity of business models, the release of sectoral capital buffers may support primarily those banks that are more heavily exposed to the targeted risk. The release of a broad-based buffer would benefit all banks in the system in proportion to their risk-weighted assets, potentially generating bigger effects for the system as a whole. A combination of a sectoral buffer and the broad-based CCyB (as in Germany [BaFin 2022], and recommended in the Belgium [IMF 2023b] and Luxembourg [IMF 2024a] FSAPs) may then strike a better balance than a reliance on targeted buffers only.

In some jurisdictions, an active management of the CCyB may be difficult due to lack of data and adequate capacity, then favoring a simpler binary design. In many emerging markets and low-income countries, a CCyB framework may not yet have been implemented because it was judged operationally too demanding, requiring, for instance, the tracking of credit to GDP gaps when such series are not available or too short

[45] Changes or floors to risk weights that are used to calculate bank capital ratios could also be used to increase capital requirements for sectoral risks. However, a buffer is a more straightforward to implement and vary. Once set, risk weights tend to become hard-wired in banks' risk management frameworks and are then not as easy to relax. Risk weights also serve microprudential functions and can be subject to international minima.

[46] After the revision of the European Union's Capital Requirement Directive (Capital Requirements Directive Article 133) in 2019, the SRB can be built to cover broad-based risks in the time dimension, with the intention to release the buffer. It can alternatively be used in a more targeted manner to cover sectoral risks, such as those from residential real estate. The revision to the Capital Requirements Directive also clearly distinguishes between the roles for the SRB and other buffers in the EU legislation to avoid an overlap in the application of buffers.

[47] It can be argued that when a country has implemented borrower-based tools that increase resilience for their part, there is less need for building capital buffers. See also Valderrama (2023).

to compute reliably. In these cases, consideration can be given to a simpler design with only two possible settings for the capital buffer: the buffer would be set at a (positive) neutral level prevailing most of the time, and zero in periods of substantial aggregate stress. Such a design recognizes that in general it is easier to identify the conditions for a release of capital buffers than it is to assess a cyclical buildup of vulnerabilities. Of course, the authorities would have the latitude to change the positive buffer level in line with perceived changes in the risk environment, such as changes to the external risks faced by the country.

Implementation of releasable buffers can be feasible under any approach that is used for determining minimum capital requirements. Buffers would always need to be expressed as a fraction of risk-weighted assets. However, implementation of a buffer framework does not require the supervisor or the banks to be able to implement sophisticated approaches to determine risk-weighted assets (such as the internal ratings–based approaches). Instead, implementation of releasable buffers requires implementation of supervisory mechanisms to enforce the buffer requirements, as well as a decision-making process for their release.

C. The Relationship between the Countercyclical Capital Buffer and the Capital Conservation Buffer

The CCB and the CCyB are complements and share the objective of absorbing losses in time of stress. While the CCyB is meant to protect economic activity in periods of aggregate stress, the CCB allows banks to dip into buffers in case of bank-specific or idiosyncratic losses, enabling a laddered supervisory response as losses increase. In a number of countries, especially in low-income countries, CCBs may have been implemented—usually amounting to a maximum of 2.5 percent of risk-weighted assets—and released at the onset of the pandemic. This is contrary to the Basel Framework and additional guidance that does not foresee a release of this tool (BCBS 2019d). And while a CCB could be designed as releasable in principle, a release of the CCB removes an important supervisory instrument to control individual banks during potentially long periods of stress.

Outside periods of aggregate stress, the positive neutral CCyB protects against idiosyncratic run risks that may arise in the presence of uninsured deposits. Outside of the release phase, a positive value of the CCyB adds to the combined buffer requirement consisting of both the CCyB and the CCBs. The combined buffer functions as an expanded CCB that is required at combined levels greater than 2.5 percent, with dividend restrictions kicking in when banks dip into this combined buffer requirement. Such a larger buffer requirement can be useful to protect against idiosyncratic risks (such as operational risks) faced by individual institutions and reduce the run risk faced by weaker institutions. Run risk came back into the focus of the policy discussions in the wake of the runs on smaller US banking institutions in the spring of 2023 in the context of the turmoil from losses on long duration securities (BCBS 2023).

This reasoning is in line with recent theory that points to the value of bank capital in reducing run risk at banking firms. Drechsler and others (2023) model the impact of interest rates on banks' liquidity risks. They argue that banks hedge their interest rate risk with their deposit franchise value, which is increasing in interest rates. However, when interest rates increase and banks' asset values decline, this also exposes the bank to run risk on its uninsured deposits. One way in which this can be addressed is for banks to issue more capital as interest rates rise. This result suggests that the CCyB could act as a useful complement to the CCB in normal times. The positive neutral CCyB could also reduce the need for increases in deposit insurance coverage, as banks are better equipped to withstand losses.

In countries where high minimum requirements are meant to buffer heightened macrofinancial risk, consideration can be given to making a part of those requirements explicitly releasable.[48] In some emerging market and developing economies, minimum requirements that go beyond Basel serve microprudential objectives. They could, for example, compensate for weak risk management, poor data quality, or weak institutional arrangements for debt collection. In other emerging market and developing economies, the objectives of higher requirements can be to protect the banking system from elevated external vulnerabilities or heightened macroeconomic volatility, and hence are more macrofinancial in nature. In the latter case, the authorities could consider replacing some of the requirement that goes beyond Basel minima with a more explicitly releasable capital buffer.

D. Neutral Countercyclical Capital Buffers and Bank-Specific Buffers Driven by Stress Tests

Several jurisdictions are using stress tests to inform supervisory guidance on bank-specific capital expectations. This includes the "Pillar 2 Guidance" on capital buffers in the euro area as well as the "Stress Capital Buffer" in the United States, which keys off an annual stress test run by the Federal Reserve with the largest banking institutions. According to BCBS (2019b), stress test results are commonly used to assess capital adequacy in all Basel member jurisdictions, even as the integration of the results into supervisory capital expectations differs across countries.

Supervisors may want to take account of the presence of a positive neutral CCyB when calibrating bank-specific expectations on capital based on these stress tests. Where supervisory stress tests cover risks from a cyclical variation of capital in response to changes in macroeconomic conditions, it is natural for bank supervisors to take into account the implementation of a positive neutral CCyB rate when calibrating bank-specific capital expectations. The supervisory guidance could continue to be based on bank-specific risk characteristics, and it could also be guided by stress tests. However, where a supervisory stress test is applied in normal times, it may want to assume the release of the CCyB in the stress scenario. That is, the "hurdle rate" that is applied in stress tests to gauge the effects of the macro scenario on capital would assume that, while banks would be expected to continue to meet CCBs and any additional requirements for systemically important institutions, the expectation that banks would have to meet the CCyB would fall away in a period of aggregate stress.

Such an approach ensures that Pillar 2 requirements and the CCyB target different risks, as intended by the Basel Framework. When the supervisory overlay takes account of the fact that macroeconomic risks are already accounted for in the positive neutral buffer, it avoids double-counting of the same risks that is generally deemed undesirable when subjecting banks to a range of requirements.[49] The Pillar 2 buffers, as applied, for example, in the euro area and the United States, would continue to be heterogenous and positive even if the aggregate CCyB has been released. Equally, bank-specific increases in such Pillar 2 buffers for idiosyncratic reasons would still be possible and legitimate in a situation that calls for a broad-based release of capital buffers to sustain lending.

[48] As noted in Nier and Olafsson (2020), some countries have in place additional capital requirements on top of the Basel minimum, and those may be candidates for easing if they have the role of systemic add-ons.

[49] The Bank of England (2015) describes their approach to setting the systemwide and bank-specific buffers, where the systemwide buffers are set first and the supervisor sets individual bank buffers, subsequently taking into account the systemwide buffers.

E. Neutral Countercyclical Capital Buffers and Leverage or Resolution Requirements

It is increasingly recognized that the release of capital buffers can lead to unweighted capital requirements becoming the binding constraint. Where unweighted capital requirements are important, this can undermine the effectiveness of the buffer release. For instance, in advanced economies where banks allocate credit to portfolios with low risk weights (for example, mortgages), the lowering of a CCyB could result in the leverage ratio requirement becoming a binding constraint. Similarly, additional capital requirements that flow from the framework for the resolution of systemically important institutions (total loss absorbing capital requirements) can become the binding constraints for systemically important institutions.

The presence of unweighted capital requirements would need to be accounted for when calibrating the releasable capital buffer. A larger buffer may be chosen if the effectiveness of the release would otherwise be hampered by unweighted requirements (see also Herrera, Scalone, and Pirovano 2024). More work is needed at the international level to ensure that the release of buffers is effective and not hampered by unweighted requirements.[50]

[50] BCBS (2022a) discusses how parallel minimum requirements may come to restrict the use of buffers. European Systemic Risk Board (2022) discusses the options of linking the leverage ratio buffer to risk-weighted buffers or removing the multiple use of capital across different capital requirements to facilitate better buffer usability. European Systemic Risk Board (2021) discusses further options to improve the usability of buffers that result from overlap of capital buffers and minimum requirements. Leitner and others (2023) evaluate how a positive neutral CCyB would impact buffer usability in the euro area.

Box 2. Positive Neutral Countercyclical Capital Buffers and Reciprocity

The Basel framework stipulates that the countercyclical capital buffer (CCyB) should be determined at the national level for all exposures to borrowers in that country. It mandates international reciprocity of CCyB rates up to 2.5 percent of risk-weighted assets, such that the same CCyB rate applies to exposures of foreign banks. While this implies an upper bound to mandatory reciprocation among Basel Committee on Banking Supervision member countries, authorities may choose CCyB rates above 2.5 percent. Reciprocation of such CCyB decisions could also take place on voluntary basis—with the framework in place across the European Union and operated based on recommendations by the European Systemic Risk Board serving as an example.

It is worth noting that the positive neutral CCyB framework gives rise to higher reciprocated capital levels allocated by foreign firms than the conventional zero-neutral CCyB framework. First, foreign firms can be expected to fully reciprocate the positive neutral level (assuming this is below 2.5 percent). Second, if the rate chosen by the host country tracks above 2.5 percent, foreign banks operating in the country must hold at least 2.5 percent of capital for the exposures in the destination country, even if voluntary reciprocity is not forthcoming. If the CCyB starts from a lower level, the reciprocated capital will therefore ultimately always be less than in a positive neutral framework.

Countries that are not Basel members and have a significant presence of foreign branches therefore want to make sure that reciprocation arrangements are well established. When there is a significant presence of foreign branches or cross-border lending, the authorities may want to make sure that reciprocity arrangements are in place to sustain a level playing field in the banking sector following CCyB decisions. Often it is the case, however, that supervisors want to maintain close scrutiny of the banks operating in the country and require that they establish a presence as a subsidiary. This removes the need for reciprocation, since the chosen capital buffers can be directly enforced on these banks.

6. Conclusion

Based on the arguments set out in this paper, many country authorities will want to consider building a baseline level of releasable capital. Releasable buffers are likely to be useful for a broad range of countries, including advanced economies and emerging market economies, to contain a procyclical drying up of credit in the event of aggregate stress. Outside of the release phase, such buffers can also provide valuable additional resilience against idiosyncratic shocks and lessen the likelihood of runs on weaker institutions when they are applied to all banks.

A positive neutral CCyB framework is a key means to build releasable capital. In such a framework, the default setting of the CCyB is positive rather than zero. Cyclical increases in systemic risk, as measured using early warning indicators, or other indications that risks will increase in future, could lead to increases in the buffer rate from its neutral setting. When financial conditions deteriorate and banks face capital constraints that hinder lending, a release of the buffer is appropriate and should be maintained until such stresses have resolved. As the authorities release capital buffer requirements, they could also consider advising banks to refrain from profit distributions.

Other ways of generating releasable capital can also be considered. The authorities may prefer a sectoral buffer, which can be generated by the sectoral CCyB or an SRB. Such buffers can be useful where vulnerabilities emanate from particular exposures, such as loans collateralized by residential real estate, loans in foreign currency, or exposures to the sovereign. Targeted use of such buffers can also reduce the vulnerability over time. In countries where an active management of the CCyB based on a cyclical indicator, such as the credit gap, is not feasible or where such indicators are not assessed as reliable, consideration can be given to a simpler broad-based buffer that would not be varied actively unless the conditions for the release of the buffer are met.

Implementation of releasable buffers should not wait for elevated readings of the credit gap. Reliance on the credit gap or other cyclical indicators runs the risk that capital buffers are not available or are not large enough in periods of stress. Instead, implementation can start as soon as the conditions for a release are not or are no longer met, and the supply of credit by the banking system is not otherwise constrained by a lack of capital. Where the system is profitable, or voluntary buffers are already available, releasable capital buffers can often be built at little cost. Careful consideration would be given to the phasing in of new requirements, in a manner that buffers are built gradually from retained earnings, thereby avoiding procyclical effects from an increase in buffer requirements.

The analysis of the appropriate "neutral" buffer rate would focus on vulnerabilities in the existing stock of bank exposures rather than cyclical early warning indicators. Stock vulnerabilities can arise, for example, from a prevalence of variable rate loans that render debt service burdens sensitive to a tightening of local currency interest rates. They can also arise when a large share of existing debt is denominated in foreign currency, then inducing sensitivity of debt service burdens to changes in exchange rates. Where vulnerabilities in the stock of existing financial liabilities are assessed as substantial, this can argue for higher releasable buffers in normal times.

Stress tests are a natural way to assess the desirable size of releasable buffers quantitatively. While historical losses can be a useful starting point, stress testing approaches can better condition on the range of vulnerabilities that are identified in the current stock of existing exposures. Such tests could model the risk factors that affect the debt service burdens of borrowers—including households and firms, and potentially the sovereign—and assess what capital buffers are needed in the event of the relevant stress for banks to be able to continue lending without them breaching CCBs and domestic systemically important bank buffers.

Larger buffers would likely be useful for small open and emerging market economies that are exposed to external shocks. Emerging market economies are often exposed to volatile commodity prices and volatile capital flows that lead to swings in local currency premiums and exchange rates, increasing the benefit of capital buffer requirements. Constraints on monetary policy—from the existence of a peg or a currency union—could also argue for larger buffers, given that space for monetary accommodation to support credit under adverse conditions is more limited. The evidence on losses in past banking crises presented in this paper also suggests that emerging market economies may want to aim for larger neutral capital buffer requirements, when compared to the average advanced economy.

Overall, it can be useful for many countries to have some share of total capital requirements designated as a releasable buffer. For some countries, this would mean adding an additional releasable buffer on top of the existing capital requirements. Existing voluntary buffers or strong bank profitability can make such increases in total requirements readily achievable. For others, some existing capital requirements could be redesignated to be releasable as long as this can be done in a manner that satisfies minimum standards.

Annex 1. Countries with a Positive Neutral Countercyclical Capital Buffer

Annex Table 1.1. Early Adopters of a Positive Neutral CCyB Rate
(Including Links to Policy Documents or Press Releases[1])

Armenia	1.5 percent	Latvia	1 percent
Australia	1 percent	Lithuania	1 percent
Cyprus	0.5 percent	New Zealand	1.5 percent
Czech Republic	1 percent	The Netherlands	2 percent
Chile	1 percent	Poland	2 percent
Estonia	1 percent	Portugal	0.75 percent
Greece	0.5 percent	Slovenia	1 percent
Hong Kong SAR	1 percent	South Africa	1 percent
Hungary	1 percent	Spain	1 percent
Iceland	2–2.5 percent	Sweden	2 percent
Ireland	1.5 percent	United Arab Emirates	0.5 percent
Georgia	1 percent	United Kingdom	2 percent

Source: Authors and country documents or press releases.
Note: Information as of January 2025. CCyB = countercyclical capital buffer.
[1] Some of the countries are transitioning toward the neutral rate.

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