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**Research Report**

## The countercyclical capital buffer: A cross-country overview of policy frameworks

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# STAFF MEMO

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THE COUNTERCYCLICAL  
CAPITAL BUFFER:  
A CROSS-COUNTRY  
OVERVIEW OF POLICY  
FRAMEWORKS

# The countercyclical capital buffer:

## A cross-country overview of policy frameworks\*

Elif C. Arbatli-Saxegaard<sup>†</sup> and Mohammad Adnan Muneer

August 11, 2020

### Abstract

The countercyclical capital buffer (CCyB) is a relatively new macroprudential tool, but the number of countries that have set a positive buffer level increased significantly over recent years. Furthermore, during the Covid-19 crisis, many countries released their countercyclical capital buffers, marking the first time that the CCyB was used widely in a downturn. In this paper, we provide a comprehensive and systematic overview of the international design of CCyB frameworks, covering a broad set of experiences from 33 countries. We have identified five key areas of focus for our analysis of CCyB frameworks: 1) institutional framework and the use of buffers; 2) objectives and policy over the financial cycle; 3) use of the Basel credit gap and Basel guide; 4) the information basis for setting the buffer; and 5) communication strategy. The frameworks outlined by designated authorities have already started to evolve and it is likely that this will continue as more experience is gained. This paper can be a useful input in that process, summarizing country practices in a comprehensive set of areas relevant for the CCyB policy.

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## 1.0 Introduction

The countercyclical capital buffer (CCyB) is a time-varying capital requirement that was introduced in the aftermath of the global financial crisis, as a part of the new international recommendations for bank capital and liquidity regulation (Basel III). Its main objective is to make banks build up an extra capital buffer in good times, when systemic risk is building up, which can then be used in a downturn to mitigate the risk that banks amplify the downturn, by over-tightening their lending to meet capital requirements.

Members of the Basel Committee on Banking Supervision (BCBS), the European Union (EU)<sup>1</sup> and several other jurisdictions have incorporated the CCyB as a part of their national macroprudential supervision frameworks. The main international guidance on setting the CCyB was outlined by BCBS in 2010 ([Basel Committee on Banking Supervision \(2010\)](#)). In 2014, the European Systemic Risk Board (ESRB) issued its own recommendations and guidelines for setting the CCyB ([European Systemic Risk Board \(2014\)](#)), based on BCBS's earlier recommendations and the implementation in the EU regulation. Both documents provide guidance on the principles that members should follow in designing their CCyB frameworks and a common reference point for setting the buffer in practice to ensure comparability and consistency across countries. However, jurisdictions were also encouraged to exercise their discretionary powers in setting the buffer. As such, countries were given flexibility to design national frameworks that best reflect their circumstances.

Despite being a relatively new tool, international experience with using the CCyB has been building up. Norway and Sweden set positive CCyB rates in their jurisdictions as early as 2013-2014 (Figure 1), followed by several other jurisdictions (Hong Kong, Czech Republic, Iceland, Slovakia, United Kingdom). By the end of 2019, 15 out of 33 countries we cover in this paper had announced positive rates, and 8 of these had announced CCyB rates of 2 percentage points or higher. During the recent global downturn associated with the Covid-19 epidemic, almost all countries in our sample lowered their CCyB rates, marking the first time the CCyB was used as a macroeconomic stabilization tool in several countries at the same time.

In this paper, we provide a comprehensive and systematic overview of the international design of CCyB frameworks, covering a broad set of experiences from 33 countries. We have identified five key areas of focus: 1) institutional framework and use of buffers; 2) objectives and policy over the financial cycle; 3) use of the Basel credit gap and Basel guide; 4) the information basis for setting the buffer; and 5)

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<sup>1</sup>The recommendations have been implemented in the EU/EEA law (Capital Requirements Directive (CRD-IV) and the Capital Requirements Regulation (CRR)).

communication strategy.

The international experience with the use of CCyB and how different countries have designed their frameworks can be particularly useful for other countries that have not yet activated the CCyB or plan to update their existing frameworks.<sup>2</sup> Such an international comparison can also be useful to identify potential international spillovers from domestic CCyB policies.

We draw two main conclusions from our analysis. First, the level of communication about CCyB frameworks differs significantly. Unsurprisingly, countries that have used the CCyB more actively tend to communicate more about their frameworks and decision basis. Furthermore, in most frameworks, the information basis for setting the buffer down is less developed than for building it up, and few discuss the level of the buffer. This probably reflects, to some extent, the limited experience so far with the CCyB.

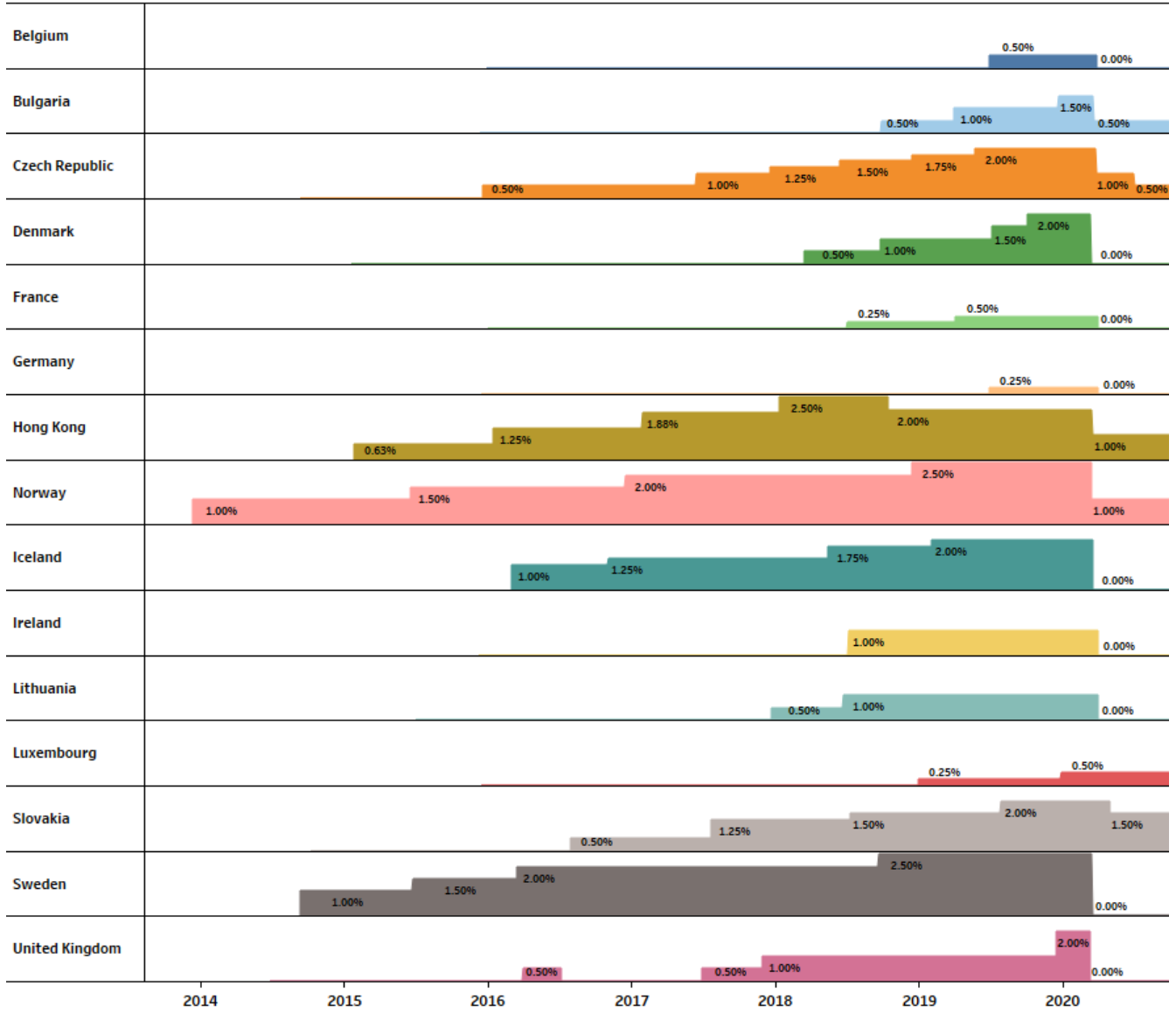
Second, while there are similarities in country frameworks in some core areas, there are also differences. There is, for example, broad consensus on the objectives of the CCyB and the use of a broad set of indicators in guiding buffer decisions. In addition, most country frameworks allow for significant discretion and judgment in setting the buffer, and in practice buffer decisions have relied more on discretion and judgment than on rules and guides. Differences in country frameworks revolve around the use of the CCyB through the financial cycle (e.g., using the buffer asymmetrically over the cycle, early activation and a positive normal level for the buffer) as well as the information basis for buffer decisions (e.g., the use of stress tests). There are also differences in terms of the degree of communication about the buffer, including the use of forward guidance.

To our best knowledge, this is the first systematic study of CCyB frameworks covering a broad set of advanced economies. [Pekanov and Dierick \(2016\)](#) focuses primarily on the use of indicators for setting the CCyB in EU member states. [Bank for International Settlements \(2017\)](#) includes a broad sample of advanced and emerging market economies and covers the use of indicators and buffer guide, the decision process, rules versus discretion, communication and reciprocity of buffer decisions. Our paper expands the analysis in [Bank for International Settlements \(2017\)](#) to include a more comprehensive discussion of buffer policy over the cycle and indicators used to release the buffer. [Babić \(2018\)](#) provides a comprehensive analysis of CCyB frameworks, similar to our paper, but focuses on a subset of European countries. Finally, [Babić and Fahr \(2019\)](#) reviews the calibration of countercyclical capital buffer (CCyB) decisions in a subset of countries participating in the Single Supervisory Mechanism (SSM).

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<sup>2</sup>For example, Australia, the Czech Republic, Denmark, Ireland, Norway and the United Kingdom have already updated their frameworks once.

Figure 1: Announced countercyclical capital buffer rates. 2014Q1-2020Q2



Source: European Systemic Risk Board and Hong Kong Monetary Authority.

Note: The figure shows announced CCyB rates in each jurisdiction. The start date corresponds to the time of activation. Only countries with positive rates are shown.

## 2.0 Country sample and source of information

Our country sample includes 33 advanced economies, composed primarily of countries in Europe. In particular, we cover all 27 member countries of the European Union (EU), Norway, Iceland and the United Kingdom. Outside Europe, we cover Australia, Hong Kong and the United States in our analysis. The choice of our country sample is primarily driven by the availability of information about country frameworks, and whether there are unique elements in national frameworks that are relevant in an international comparison.

Our sample includes all 15 advanced economies which have at some point announced a positive CCyB rate (Figure 1) and 18 countries which have not yet activated the CCyB. The range of experiences in our sample in terms of CCyB setting constitutes a useful basis for analyzing the build-up phase of the buffer. With the recent reduction in CCyB rates across most jurisdictions, our analysis also touches upon country experiences with reducing the buffer.

The primary source of information for our analysis is the national frameworks set out by designated authorities. Our analysis of different frameworks therefore relies only on publicly disclosed documents and statements. We find that most countries have developed a methodological framework. However, they differ in terms of level of detail; for example, whether all of the indicators used in the decision process are communicated and published. In cases where there is limited information, we also consult policy reports, press releases and working papers to fill the gaps. Appendix B gives an overview of the information sources we have used for each country. For analyzing the decision basis for CCyB rate-setting we have also consulted the EU and EEA countries' reporting of the basis for their rate decision to ESRB.<sup>3</sup>

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<sup>3</sup>See [European Systemic Risk Board \(2020\)](#)



## 3.0 Institutional framework and the use of buffers

### 3.1 Institutional framework and decision process

The authority for setting the CCyB rate is often designated to the central bank or the financial regulatory authority<sup>4</sup> (Tables 1 and 2). In some jurisdictions, the government (Denmark, Norway, Poland) or a special inter-agency committee (Finland, France, Iceland, United Kingdom) has the main responsibility. The inter-agency committees are usually set up as a body comprising of high-level officials from central banks, financial supervisory authorities, government agencies and academia. These committees are set outside the central bank in Finland and France, while in the United Kingdom and Iceland the committee resides within the central bank.

Table 1 shows that many national authorities consult other relevant institutions for input into the CCyB decision. For instance, when the designated authority is other than the central bank, they usually rely on the central bank to provide the decision basis (Australia, Finland, France, Germany, Latvia, Luxembourg, Norway). Furthermore, when a special committee or the financial regulatory authority is not the designated authority, they usually have a consulting role in the decision process (Austria, Australia, Germany, Luxembourg, Malta, Norway, Portugal). Furthermore, in Greece, the financial regulatory authority (Hellenic Capital Market Commission) needs to consent to the buffer decision proposed by the Bank of Greece. In Denmark, the Minister for Industry, Business and Financial Affairs is responsible for setting the buffer rate. However, the Systemic Risk Council is given the main responsibility for preparing the decision basis and advice. Likewise, the macroprudential committees in Poland and Romania have a similar role.

Finally, for all EU Member States that are enrolled in the the Single Supervisory Mechanism (SSM), the European Central Bank (ECB) is notified in the decision process. The ECBs' role is to assesses the member states' CCyB rates and, if necessary, propose higher CCyB rates than those applied by the national authority.<sup>5</sup>

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<sup>4</sup>This is often the authority responsible for monitoring the banking sector, e.g., the financial supervisory authority.

<sup>5</sup>Article 5 in the Single Supervisory Mechanism Regulation ([Single Supervisory Mechanism Regulation \(2013\)](#)).

Table 1: Designated authorities for setting the CCyB

Central Bank (C)		Inter-Agency Committee (I)	Financial Regulatory Authority (F)	Government (G)
<i>Board of Governors</i>	<i>Internal Committee</i>	<i>Committee outside the Central Bank</i>	<i>Authority responsible for monitoring the banking sector</i>	<i>Represented by a ministry of financial affairs</i>
Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Greece (F), Hong Kong, Hungary, Ireland, Italy, Lithuania, Malta (I), Netherlands, Portugal (I), Romania (I), Slovakia, Slovenia, Spain, US	United Kingdom, Iceland	Finland (C, G), France (C)	Australia (C, I), Austria (I), Germany (C, I), Latvia (C, G), Luxembourg (C, I), Sweden	Denmark (I), Norway (C, F), Poland (I)

*Note:* Each column shows the designated authority in each country. Some countries consult other authorities in the rate-setting process. These are referenced in parentheses by their abbreviations given in the table header.

### 3.2 Use of buffers

An important factor in the design of capital buffers is the conditions under which banks can use these capital buffers. Under Basel III, upon a breach of the CCyB, there are automatic restrictions on dividends, buy-backs and compensation. These restrictions can act as a disincentive to use the CCyB when the buffer is in place.

This is partially a reason for Canada to use an alternative buffer to the CCyB, called the Domestic Stability Buffer (DSB). DSB is an adjustable pillar 2 requirement that can vary between 0 and 2.5 per cent and is assessed on a semi-annual basis. The main difference between the DSB and the CCyB is that DSB only applies to domestic systemically important banks and because DSB is not a pillar 1 requirement, breaches do not lead to automatic constraints on capital distributions. A downside of the DSB is that it does not apply to foreign banks, whereas the CCyB applies to all banks up to a buffer level of 2.5 per cent under reciprocity rules.

It is also possible to impose restrictions on how banks can use the released capital when the CCyB is

set down. The international guidance from BCBS and ESRB do not take a particular stance on how the released buffers should be used.<sup>6</sup> Similarly, the frameworks we have analyzed in this paper do not take a particular view on the use of buffers when the buffer is reduced. Some of the decisions to reduce buffer rates in the aftermath of the Covid-19 shock, were implemented at the same time as recommendations or requirements restricting dividend payouts (Czech Republic, Norway, Iceland, Ireland, United Kingdom). In some cases, dividend policies were explicitly related to the buffer policy. For example, in the Czech Republic, restrictions on dividends were mentioned as a reason for only partly reducing the buffer. Slovakia, on the other hand, has delayed its decision to reduce the CCyB, waiting for major local banks to decide on their dividends first.

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<sup>6</sup>ESRB states that: "Decisions on the use of any capital surpluses arising from the release of the buffer are at the discretion of the designated or competent authorities." ([European Systemic Risk Board \(2014\)](#)).

## 4.0 Objectives and policy over the cycle

### 4.1 Policy objectives

The main objective of the CCyB, as envisioned in Basel III and described in the international guidance on the CCyB (Basel Committee on Banking Supervision (2010) and European Systemic Risk Board (2014)), is building resilience in the banking sector to mitigate pro-cyclical bank behavior in a downturn:

*"The aim is to ensure that the banking sector in aggregate has the capital on hand to help maintain the flow of credit in the economy without its solvency being questioned, when the broader financial system experiences stress after a period of excess credit growth. This should help to reduce the risk of the supply of credit being constrained by regulatory capital requirements that could undermine the performance of the real economy and result in additional credit losses in the banking system."* (Basel Committee on Banking Supervision (2010))

The main objective of the CCyB therefore relates to its countercyclical use in a downturn and this is clearly stated as the main objective in almost all of the frameworks we consider in this study (Table 2). However, the CCyB can also have a countercyclical effect in an upturn by increasing the cost of credit when systemic risk is building up. Increasing the CCyB can, therefore, help moderate the financial cycle or "lean against the wind". This second benefit is also discussed in the international guidance on CCyB:

*"In addressing the aim of protecting the banking sector from the credit cycle, the countercyclical capital buffer regime may also help to lean against the build-up phase of the cycle in the first place... This potential moderating effect on the build-up phase of the credit cycle should be viewed as a positive side benefit, rather than the primary aim of the countercyclical capital buffer regime."* (Basel Committee on Banking Supervision (2010))

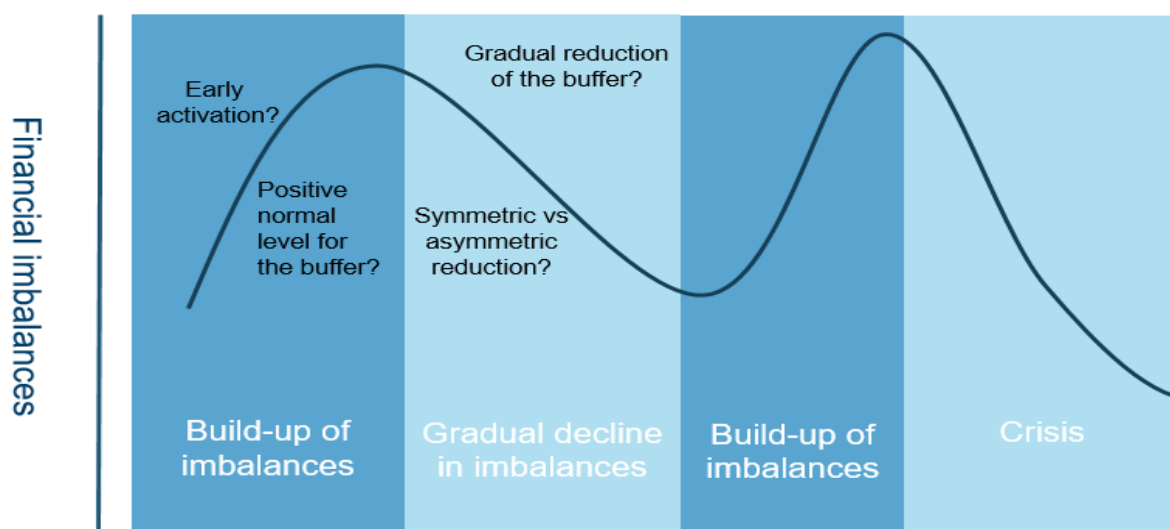
In most frameworks covered in our study, this is referred to as a side effect, and not an objective of the CCyB. Furthermore, Belgium, the Czech Republic, Estonia, Hong Kong, Sweden and the United Kingdom explicitly state that they will not use the CCyB to "lean against the wind" in an upturn. On the other hand, in France, the second objective is defined explicitly as a secondary goal of the CCyB. Accordingly, indicators related to each of these two objectives are identified. Meanwhile, both objectives are mentioned without an explicit discussion of their relative importance in Australia.

## 4.2 Policy over the cycle

An important aspect of the CCyB framework is how jurisdictions plan to vary the capital buffer over the financial cycle. Countries mainly report that they will vary the buffer symmetrically with developments in systemic risk or financial imbalances. This implies that when financial imbalances build-up, the buffer is increased and when imbalances recede, the buffer is reduced. When risks materialize, for example during a period of financial distress, a decision can be made to release the buffer more promptly.

The stylized example in Figure 2 illustrates different phases of the financial cycle and highlights potential policy options for the CCyB. In the rest of this section, we discuss aspects of buffer policy over the cycle for both the build-up and the release phase. Furthermore, we provide a summary of how country frameworks treat policy over the cycle in Table 2.

Figure 2: Stylized example of the financial cycle and CCyB policy



*Note:* The figure gives a stylized example of the financial cycle and how the buffer policy could be used over the cycle.

### 4.2.1 Build-up phase

In the early stages of the financial cycle, an important choice is how early the buffer is activated. Some countries in our sample (Czech Republic, Denmark, Ireland, Lithuania, Norway, United Kingdom) have an explicit early build-up policy in their CCyB frameworks. In these country frameworks, the buffer is activated early in the financial cycle, before imbalances have built up. There are two reasons for this practice. First, building a buffer early in the cycle is a more robust strategy given the uncertainty

associated with measuring financial imbalances and the implementation lags associated with the buffer setting. Second, an early build-up allows for the buffer to be increased more gradually, reducing the costs associated with increasing capital requirements.

The early build-up policy is implemented differently across the before mentioned countries. The Czech Republic, Lithuania and the United Kingdom set a positive normal level for the buffer, which applies in a normal risk environment, i.e., before imbalances have started to build up. On the other hand, Ireland, Denmark and Norway have an early build-up policy based on activating the buffer sufficiently early in the cycle, even if there are yet no signs of excessive credit growth. Compared to the positive normal level policy used in the Czech Republic, Lithuania and the United Kingdom, the decision to activate the buffer is not automatic, and requires an explicit assessment that risks may be building-up, albeit from low levels.<sup>7</sup>

#### 4.2.2 Release phase

In discussing the release phase, one may distinguish between two distinct scenarios where a release of the buffer may be relevant. In the first scenario, the buffer may be reduced reflecting a gradual decline in financial imbalances that have led to the build-up of the buffer in the first place. This is depicted in Figure 2 in the first light blue box. The second scenario involves setting the buffer down in a severe downturn or crisis and relates directly to the main objective of the CCyB, which is to mitigate pro-cyclical bank behavior in a downturn. All frameworks make an explicit reference to this second scenario and state that the buffer would be reduced either fully or partially. Most frameworks have very limited discussion of the release phase, including the circumstances that would warrant a (gradual or immediate) reduction of the buffer. This possibly reflects the limited international experience with reducing the CCyB, at least until recently. International guidance also points to the need for using more judgment in the release phase and the limited scope for relying on individual indicators. We discuss both scenarios and provide an overview of different approaches used in country frameworks and the actual policy experience with setting the buffer down.

**Gradual release.** Most countries do not explicitly discuss different scenarios where vulnerabilities decline gradually, without a sharp recession or crisis. There is also no practical experience with a gradual reduction of the buffer. Although there is limited discussion of this scenario in country frameworks, there is also typically no indication that the buffer policy is meant to be asymmetrical. Potential asymmetric

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<sup>7</sup>In Slovakia, it is mentioned that there is a need to see signs of excessive credit growth before activating the buffer requirement. This is irrespective of whether other variables indicate the build-up of imbalances ([Národná banka Slovenska](#)).

policies could be to not reduce the buffer at all even when imbalances recede or reduce it more gradually.

Hungary, Germany and Norway are the only countries in our sample that explicitly have an asymmetric buffer policy. For example, the Norwegian framework states that "*to maintain resilience, the buffer should not be reduced automatically even if there are signs that financial imbalances are receding*". The rationale is that even if indicators for financial imbalances begin to recede, the risk of a sharp downturn may still be elevated. In the Norwegian framework, reducing the buffer can be considered only after the downward trajectory in financial imbalances continues over a period of time and the outlook for financial stability is good. In the German framework, the buffer rate is gradually lowered only once credit growth has returned to normal and the risks to stability have diminished.

The Hungarian framework has a relatively more extensive discussion of a gradual release of the CCyB rate, including a set of rules that can guide its implementation. These rules are related to two potential risks associated with reducing the buffer rate gradually. First, there is a risk that the buffer is reduced based on an erroneous assessment that systemic risks have receded, while in fact a higher buffer is warranted. In this scenario, it might be difficult to raise the CCyB immediately again due to the twelve-months implementation lag. Second, there is the risk of a premature release, where the buffer is reduced in a close-to-crisis environment. To avoid these two types of errors, Magyar Nemzeti Bank has developed four criteria that must be met in order to gradually reduce the buffer.<sup>8</sup>

**Immediate release.** The CCyB can also be lowered in a severe downturn to increase banks' capacity to lend and ensure access to credit by firms and households. All countries in our sample state that they would release the CCyB in a severe downturn, with loan losses and reduced access to credit.

Indeed during the downturn associated with Covid-19 epidemic, almost all of the countries in our sample that had a positive countercyclical buffer reduced their buffer rate, and typically all the way to zero per cent. However, most of the countries that completely reduced their buffers had relatively small initial buffer rates. Similarly, most countries with higher initial buffer levels only partly reduced their buffer rates. This is the case in Bulgaria, the Czech Republic, Hong Kong, Norway and Slovakia. Luxembourg is the only country that has not so far reduced its buffer in response to the Covid-19 crisis.

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<sup>8</sup>These criteria are: 1) the growth rate of the nominal credit aggregate must have continuously declined in the previous three quarters that preceded the decision; 2) the level of the benchmark CCyB rate four quarters ago is lower than the CCyB-rate to be applied; 3) the CCyB rate has not increased in any of the last four quarters compared to the previous quarter; and 4) the indicator used for prompt release of the CCyB (Factor Based Index of Systemic Stress) has not exceeded the predetermined threshold value during the three months that preceded the decision.

### 4.3 The CCyB level

When the CCyB was introduced many countries were in a subdued risk environment and the financial system was in a post-crisis recovery phase. Hence, assessments around the appropriate buffer level was not discussed in detail. However, several years after the financial crisis, risks have re-emerged in some countries. Almost half of the countries in our sample have activated their countercyclical capital buffers. Some countries have considered the use of a non-zero default CCyB rate that applies in a normal risk environment (Table 3). Furthermore, a subset of these countries have moved close to or reached the upper threshold for the normal setting of the CCyB, defined as 2.5 per cent of risk weighted assets up to which automatic reciprocity is granted. Consequently, considerations around the maximum level of the CCyB became an important buffer policy issue for those countries. In the rest of this section, we discuss how different country frameworks treat the normal and maximum levels of the buffer.

#### 4.3.1 The normal level of the CCyB

A non-zero CCyB default setting, or normal level, means setting a positive buffer level in a standard risk environment, i.e., when risks are neither elevated nor subdued. Very few countries discuss what a possible normal level would be in their frameworks. A positive normal level was first introduced in the UK's CCyB framework, where the FPC has stated that they aim to have the CCyB rate in the region of 1% in "normal times". This strategy is consistent with the FPCs' policy of activating the buffer early in the financial cycle before risks become elevated, as discussed in subsection 4.2.

The normal buffer rate is expected to be kept under regular review and adjusted if the structure of banks' balance sheets – and the financial system as a whole – were to evolve. In the UK's framework, stress testing is one tool that is used to make this assessment. In fact, Bank of England has already revised its assessment of the normal level of CCyB once in December 2019, increasing it from a level in the region of 1 per cent to a level in the region of 2 per cent.

Lithuania and the Czech Republic have also adopted a positive normal level for the buffer. Recently, the Australian Prudential Regulation Authority (APRA) have communicated that they are also considering implementing a normal level policy as part of their ongoing review of the Authorised Deposit-taking Institutions (ADI) capital framework.<sup>9</sup>

Even though Ireland does not operate with a normal level, in their framework, it is stated that when the identified risk indicators have a sustained trajectory reflecting the emergence of financial imbalances, the

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<sup>9</sup>See [Australian Prudential Regulation Authority \(2019\)](#)



buffer rate is expected to be above 1 per cent. On the other hand, the United States is the only country to explicitly state that a 0 per cent CCyB rate would reflect "*an assessment that U.S. economic and financial conditions are broadly consistent with a financial system in which levels of system-wide vulnerabilities are within or near their normal range of values*".

#### **4.3.2 Maximum level**

Among the countries examined Norway, Hong Kong and Sweden have so far implemented the highest buffer requirements, setting their buffer rates at 2.5 per cent before reducing them recently due to the Covid-19 crisis. An important question in the future is therefore whether 2.5 per cent should serve as an upper limit for the buffer. Guidelines given by both the ESRB and the BCBS recommend that the CCyB should be set between 0 and 2.5 per cent. However, when justified, the authorities may set a buffer higher than 2.5 per cent. Most countries mention that the buffer is normally set between 0 and 2.5 per cent (Table 3). However, they do also reserve the option of setting the buffer above 2.5 per cent in their frameworks. Some countries are more explicit and mention that the buffer will only be set above 2.5 per cent in special circumstances (Czech Republic, Hong Kong, Greece, Iceland, Ireland, Norway, Slovenia, Portugal) or if there is severe systemic risk accumulation (Estonia). In general, frameworks do not provide a detailed description of circumstances where a buffer higher than 2.5 per cent may be relevant. Hong Kong is an exception where the government has outlined three conditions to increase the buffer over 2.5 per cent. In particular, the authorities must wait at least six months after the buffer is set at 2.5 per cent, have reasonable grounds for concluding that credit growth has not slowed down significantly during that period, and that the authorities' assessment of system-wide risk requires a buffer exceeding 2.5 per cent. Only Australia and the US have reported that they will not set the buffer above 2.5 per cent.

## 5.0 The use of Basel credit-to-GDP gap and guide

### 5.1 Credit-to-GDP gap

Both the BCBS and the ESRB recommend using the credit-to-GDP gap as a starting point for calibration of the CCyB. The credit gap is among the best early-warning indicators for signalling financial crises.<sup>10</sup> The BCBS's recommended approach to calculating the credit gap is based on the ratio of total credit to nominal GDP (credit-to-GDP ratio). The gap is calculated as the difference between the credit-to-GDP ratio and its long-run trend, which is based on the one-sided Hodrick-Prescott (HP) filter with a smoothing parameter ( $\lambda$ ) of 400,000.

While all jurisdictions are recommended to compute this "standard" credit gap, both the BCBS and the ESRB have emphasized that the performance of the credit gap in signaling systemic risk varies across countries and over time, reflecting differences in financial systems, national economies and data availability among others. Countries are therefore encouraged to compute alternative credit gaps capturing more appropriate measures of credit or GDP, as well as alternative methods for calculating the trend, so that the credit gap indicator better reflects their national circumstances.

In the post-financial crisis period, a particularly pertinent shortcoming of the credit gap has been the filtering methodology. In particular, the filtering method puts a higher weight on the most recent observations, also known as the "end-point problem". For instance, if the underlying time-series ends close to its cyclical high, the filter tends to bias the trend upwards, and vice versa. Consequently, after long credit expansions, the indicator may lead to long periods where measured credit gap is negative.

### 5.2 Alternative approaches to calculating the credit gap

The countries that we review in this paper have made several types of adjustments in adapting the credit gap to reflect their national circumstances (Table 3). We review these alternative approaches under two groups: alternative credit or GDP definitions and alternative methods for computing the long-run trend.

**Credit and GDP definition.** About half of the countries in our study use a more narrow credit definition when they calculate an alternative credit gap. The narrow definition of credit typically involves considering only bank credit. In Belgium, Denmark, France, Germany, Lithuania and Sweden loans from

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<sup>10</sup>Systematic studies of financial crises find that credit booms are leading predictors of the probability and severity of crises. See [Schularick and Taylor \(2012\)](#), [Dell Ariccia et al. \(2012\)](#), [Drehmann et al. \(2011\)](#), [Drehmann et al. \(2014\)](#) and [Jordà et al. \(2013\)](#).

monetary financial institutions is used. Croatia, Hungary, Ireland, Italy, Luxembourg, Malta and Slovakia use a measure of domestic banking system credit. These adjustments are usually justified by the available data sample length and/or the timing of data releases (Belgium, Denmark, Estonia, Germany, Italy, Latvia, Lithuania). In addition, Belgium and Latvia mention that the narrow credit series are more stable than the broader series. The Czech Republic, Ireland and Slovakia mention the existence of structural breaks in their time series as a reason for not using the standard credit definition. The Czech Republic also uses a shorter time series to exclude structural breaks. Hungary adjusts its credit series for exchange rate fluctuations.<sup>11</sup>

Only Croatia, Hungary, Norway, Ireland and Slovakia make adjustments to the GDP definition when calculating the credit-to-GDP ratio. Croatia and Hungary use seasonally-adjusted GDP series. Ireland uses a modified gross national income measure to account for the activities of large foreign-owned multinational enterprises in Irish macroeconomic data. In Ireland, the use of domestic banking system credit also reflects the activities of multinational enterprises. In Norway, both the credit and the GDP series reflect activity in mainland Norway, which excludes the exploration of crude oil and natural gas, transport via pipelines and ocean transport. In Slovakia, the GDP measure is replaced with its long-run trend. This adjustment is made due to the volatile nature of GDP relative to credit, which gives a more robust estimate of the credit-to-GDP gap.

**Trend method.** Most jurisdictions follow the standard approach (i.e., HP-filter) in calculating the credit-to-GDP trend. Alternative trend calculations typically involve adjustments to HP-filter parameters or assumptions. For instance, Hungary uses the two-sided HP filter for a part of its historical credit gap estimates, reflecting its shorter time series. Romania and Poland uses a lower lambda ( $\lambda$ ), which is found to be more appropriate given its shorter credit cycle. In Italy, the trend method is adjusted to obtain a real-time estimate of the two-sided HP-filter. This is done by adjusting the one-sided HP-filter estimate by the historical difference between the one-sided and two-sided HP-filters. This method gives less volatile estimates of the credit gap in Italy and reduces the risk of issuing false positive signals.<sup>12</sup> Finally, some countries extend the standard filtering method by use of forecasts to avoid the well-known end-point problem associated with the HP-filter (Lithuania, Norway, Portugal).

In the German framework, the denominator is adjusted so that a decrease in the level of GDP does not in itself cause the credit gap to increase. Spain also experiments with an alternative technical

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<sup>11</sup>There are also some differences across countries in terms of how intra-group credit is treated in the credit definition.

<sup>12</sup>False positive signals are defined as the buffer reaching its maximum level too early, and/or starting to accumulate the buffer before five years prior to a crisis.

specification to adjust the average duration of credit cycles, which they find gives a more accurate measure of the credit gap.<sup>13</sup> Finally, some countries (Ireland, Hungary and Spain) use multivariate models to estimate the credit-to-GDP gap, which incorporates a broader information set and gives increased economic interpretation to credit gap estimates.

### 5.3 Basel buffer guide

The Basel buffer guide is a mapping from the credit-to-GDP gap to the level of CCyB. It is proposed by the BCBS to provide a common starting point for the buffer calibration. Based on this mapping, the buffer guide increases linearly from 0 to 2.5 per cent, corresponding to a credit-to-GDP gap ranging between 2 to 10 percentage points. Both the BCBS and the ESRB emphasize that there is no mechanical link between the Basel guide and the buffer setting. They recommend using "*guided discretion*" where the benchmark buffer guide serves only as a starting point, and is complemented by information from additional indicators and national authorities' expertise.

Countries that have alternative calculations of the credit-to-GDP gap typically translate them into separate buffer guides in the same manner. It is worth mentioning that several countries also calculate credit gaps disaggregated into household and business credit.

There are four countries in our sample that have adjusted the Basel buffer guide (Hungary, Slovakia, Hong Kong, Czech Republic). Hungary applies a higher threshold of 4 per cent as opposed to 2 per cent for setting a positive buffer rate. This reflects an estimate of the optimal lower threshold based on an analysis using data for Hungary and the scope for further financial deepening which can lead to higher credit-to-GDP gap estimates without necessarily reflecting increased systemic risk. In Slovakia, an aggregate indicator of the financial cycle is used to guide the rate-setting. Similarly, the Czech Republic use an aggregate indicator for the financial cycle which they link to a separate buffer guide. Hong Kong is another country that makes significant changes to its calculation and calibration of the benchmark buffer guide. We discuss the latter three country examples in more detail later in this section.

#### 5.3.1 Use of the Basel guide in practice

To assess how the Basel guide has been used in practice, we conduct two exercises. We first calculate the implied benchmark Basel guide for all the countries in our sample that have, at some point, set a positive

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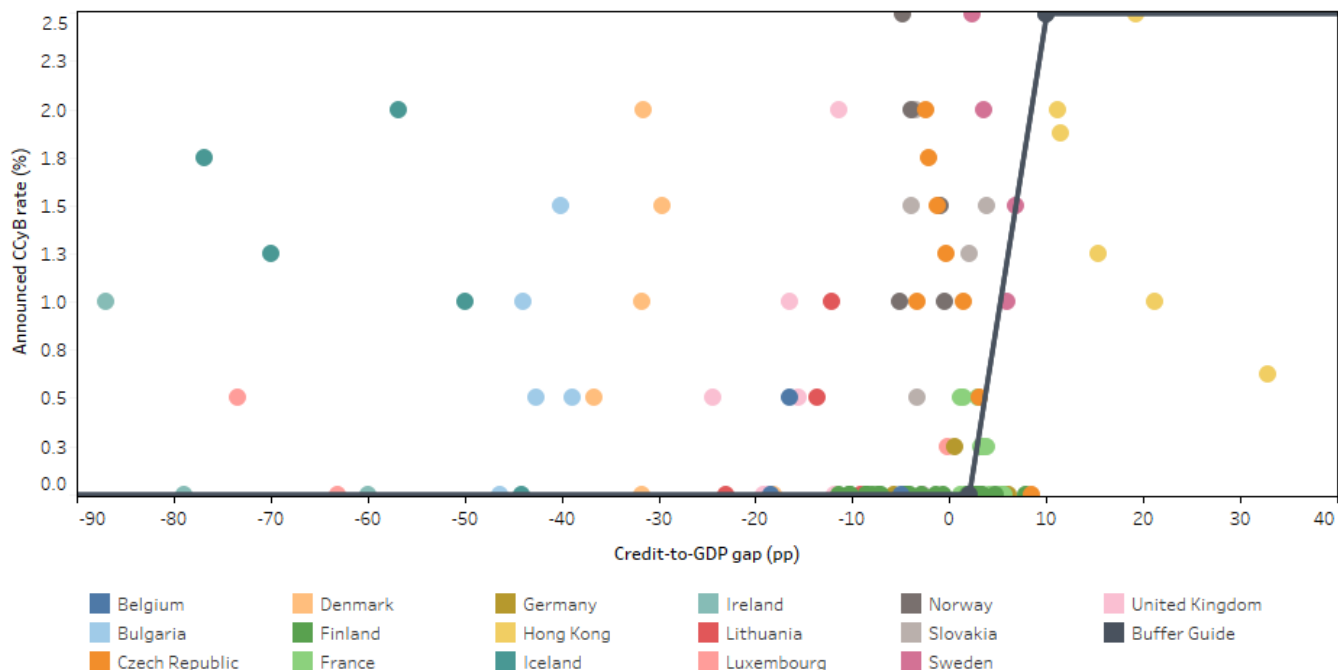
<sup>13</sup>Note that the adjustment made in the Spanish framework is used internally as a part of its set of complementary core indicators.

buffer level and compare the implied Basel guide with the actual announced CCyB rates. Second, we study the extent to which buffer decisions have incorporated the Basel guide in the decision basis. For the latter, we rely on EU and EEA member countries' reporting to ESRB on the rationale for their buffer decisions.

Figure 3 shows that several countries (Belgium, Bulgaria, Denmark, Iceland, Ireland, Lithuania, United Kingdom) have set a positive CCyB rate despite having large negative credit gaps. This suggests that the Basel credit gap has not been perceived as a good indicator to signal a build-up of the buffer. We also observe that several countries (Czech Republic, Finland, France, Hong Kong, Germany, Sweden) have implemented buffer rates that are lower than the benchmark buffer guide. In all these cases, additional indicators and designated authorities' judgement were emphasized for not increasing the buffer rate in line with the benchmark buffer guide.

We observe that only in relatively few instances, have the announced CCyB decision been in line with the implied benchmark Basel buffer guide. These instances are typically associated with the early stages of the build-up phase (Czech Republic, France, Sweden). Several countries have, in fact, referred to the credit gap (standard and country-specific alternative versions) as a useful indicator in the initial activation of the buffer. However, the buffer guide has not been highlighted in later decisions to the same extent. In some cases, the *expectation* of an increase in the credit gap has been used in the decision basis (Belgium, France, Germany). Furthermore, even in cases where the announced buffer rate corresponds to the benchmark buffer guide, the buffer guide was not a dominant factor in the rate justification. For most countries, the use of additional indicators and expert judgement remains more important.

Figure 3: Announced CCyB rate, Credit-to-GDP gap and the implied Basel guide: 2014Q1-2020Q1



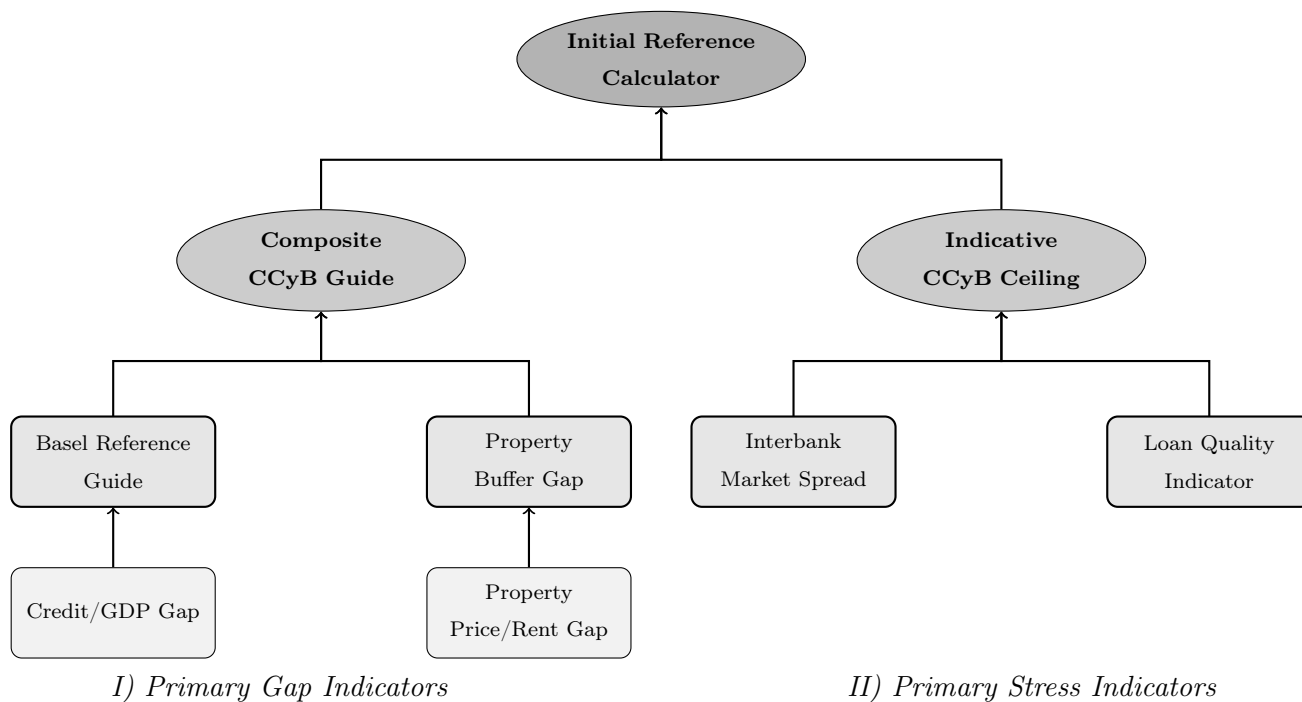
Source: European Systemic Risk Board and Hong Kong Monetary Authority

*Note:* Dots denote different points in time where the announced CCyB rate and the credit-to-GDP gap, calculated using the standard BCBS method, in the same quarter are plotted. Data points may overlap. Data availability differs across countries. Only countries with a positive CCyB rate or past positive credit gap estimates are included. Countries that have applied rates corresponding to the implied Basel buffer guide falls on the black line. Those with rates on the left side of the buffer guide have applied rates above the implied Basel buffer guide. In contrast, those on the right side have applied rates below the implied Basel buffer guide.

### 5.3.2 Alternative benchmark buffer guides in Hong Kong, Slovakia and the Czech Republic

Hong Kong, Slovakia and the Czech Republic each make use of a separate benchmark buffer guide. In Hong Kong, the benchmark buffer guide is called the *Initial Reference Calculator* (IRC) (Figure 4). It consists of several guides that depend on different sets of indicators. The indicators are divided into two categories: gap indicators, which are included in the *Composite CCyB Guide*; and stress indicators, which are included in the *Indicative CCyB Ceiling*. The actual buffer guide (or the IRC) is the minimum of these two guides.

Figure 4: The Initial Reference Calculator in Hong Kong



*Note:* The Initial Reference Calculator (IRC) is based on two separate guides: Composite CCyB Guide and Indicative CCyB Ceiling. The Composite CCyB Guide is based on the credit-to-GDP gap and the price-to-rent ratio gap, both calculated using the standard BCBS methodology for estimating the long-run trend. This guide is primarily used to signal the need to build-up the CCyB since the joint presence of both of these gaps can help capture increasing systemic fragility. The Indicative CCyB Ceiling is based on two stress indicators: the interbank market spread and the loan quality indicator. The interbank market spread reflects the risk appetite by interbank market participants. The indicator is used as a measure of acute and sudden stress, and is based on the 3-Month HIBOR spread over the corresponding risk-free rate. The loan quality indicator is a measure of the deterioration in loan quality within Hong Kong's banking system. This indicator is more relevant when systemic risks play out more gradually. The quarter-on-quarter change in the aggregate gross classified loan ratio of retail banks is used for this purpose. Both of these indicators are used to signal a release of the CCyB rate. The Initial Reference Guide is the minimum of the Composite CCyB Guide and the Indicative CCyB Ceiling.

On the other hand, composite financial cycle indicators are used as an important instrument in setting the CCyB rate in Slovakia and the Czech Republic. Both countries translate the estimate from the indicator to a benchmark buffer guide. In Slovakia, this is called the "cyclogram". The cyclogram aggregates six core variables and seven supplementary variables. These variables are organized around three main categories: banks, customers and cycles.<sup>14</sup> The link to the buffer guide is based on an evaluation of the indicators

<sup>14</sup>Note that a modified cyclogram, which captures an even broader set of categories, has also been developed (Rychtárik and banka Slovenska (2018)).

against their historical distributions. A number between 1 and 9 is assigned to each of the variables depending on their current level relative to their historical distribution and averaged into the final index. The reason for using historical distributions is the fact that it is difficult to set clear nominal thresholds for signaling that a particular variable is moving out of its equilibrium.

Similarly, the Czech Republic's financial cycle indicator (FCI) also covers a wide range of indicators.<sup>15</sup> Furthermore, the indicator takes into account endogenous co-movement between input variables. In addition, the weights are constructed to estimate future loan losses optimally. That is, variables that do not help explain the materialization of credit risk is given minimal weight in the indicator.<sup>16</sup>

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<sup>15</sup>This includes a wide range of financial risks in the real economy including credit growth, property prices, debt sustainability, lending conditions, stock index and current account deficit-to-GDP ratio.

<sup>16</sup>Note that the Czech Republic also has additional indicators that are translated to an implied CCyB rate based on i) stress tests, ii) a rule of thumb, iii) and two additional indicators covering bank vulnerability and total observed cyclical risks, respectively. However, these implied CCyB rates are not necessarily meant to be taken as benchmark buffer guides.



## 6.0 The information basis for setting the buffer

The information basis for setting the countercyclical capital buffer is typically composed of a set of core indicators. Most countries that we survey in this paper highlight a certain set of indicators in their formal frameworks and often publish these indicators regularly together with their decision announcements. In some frameworks, stress tests have also started to play an important role in the information basis for buffer decisions, guiding the appropriate level of the buffer. In this section, we review first the use of indicators and then the use of stress tests in buffer setting.

### 6.1 Indicators used to guide the buffer decision

Both the BCBS and the ESRB recommend using a wide range of indicators in setting the buffer both in the build-up and in the release stage.<sup>17</sup> In the rest of this section, we discuss the indicators used in different country frameworks for both settings separately. Furthermore, in Appendix A.3, we provide a summary of the core indicators used by each country (Table 4) focusing on the following seven categories of indicators: (i) credit indicators; (ii) housing indicators; (iii) household indicators; (iv) business indicators; (v) banking sector indicators; (vi) risk appetite; and (vii) macroeconomic indicators.

Most countries in our sample follow a wide range of indicators, consistent with the ESRB and BCBS recommendations. The number of disclosed set of core indicators used in guiding the buffer rate decision ranges between 6 and 35 and typically includes indicators covering a diverse set of categories (Figure 5).

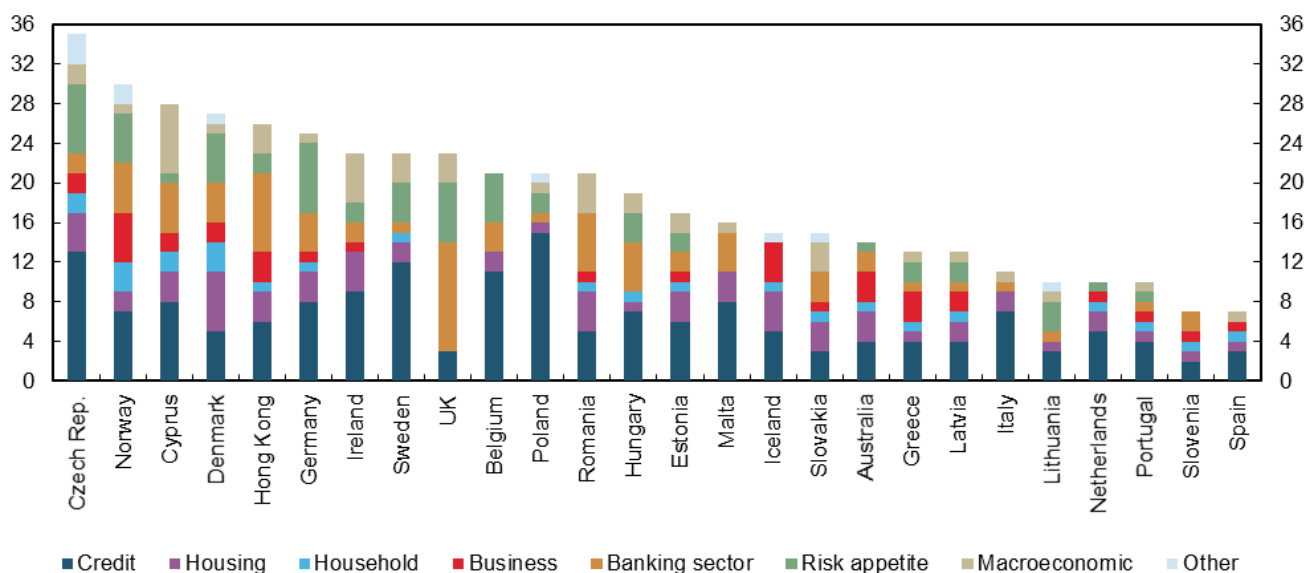
All countries communicate that they monitor an even wider set of indicators in their decision process and that the set of indicators they put weight on is subject to change, reflecting changes in the financial system and associated risks. With improvements in data availability and as more experience is gained with operating the CCyB, new indicators may be introduced to guide the buffer setting. In some countries, the authorities do not publish or disclose a set of core indicators used in addition to the credit gap (Austria, Bulgaria, Croatia, Finland, France, Luxembourg, United States).

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<sup>17</sup>ESRB recommends six categories of indicators that can be useful in the build-up phase of the buffer-setting: overvaluation of property prices, credit developments, external imbalances, strength of bank balance sheets, private sector debt burden, mispricing of risk and models that combine the credit-to-GDP gap and a selection of the above measures. For the release of the buffer, ESRB recommends monitoring indicators that include measures of stress in financial markets, e.g., the spread between money market interest rates or banks CDS premia, and measures of general systemic stress, e.g., a composite stress indicator. BCBS recommends using similar types of indicators.

<sup>17</sup>France has reported that it looks at a set of indicators that include the credit-to-GDP gap based on domestic banking credit, households- and NFCs credit-to-GDP ratio, composite indicators of systemic stress and financial cycle, real estate

Figure 5: Total number of core indicators by category



Source: Calculations based on national authorities' publications and announcements

*Note:* For Slovakia, underlying indicators in its composite indicator (the cyclogram) are also included. Different credit definitions (broad/narrow), transformations (gap/level/ratio) and sector definitions (households/corporations) are considered as separate indicators. Austria, Bulgaria, Croatia, Finland, France, Luxembourg and the United States are not included as they do not disclose the full set of additional indicators used in their frameworks.<sup>18</sup>

### 6.1.1 Indicators used to guide an increase in the buffer

The indicators used in the build-up phase typically involve credit indicators, indicators related to the housing market, indicators capturing vulnerabilities in the household and business sectors, indicators capturing risk appetite and macroeconomic indicators. All countries use total credit-to-GDP ratio and several countries also consider credit growth and the breakdown of total credit into households and businesses. The most frequently used indicators after total credit-to-GDP are house price growth and measures of external imbalances (typically the current account balance) (Figure 6).

Many countries also consider leverage and debt servicing capacity for households and businesses to supplement credit indicators. Commercial property price growth is typically among the core set of

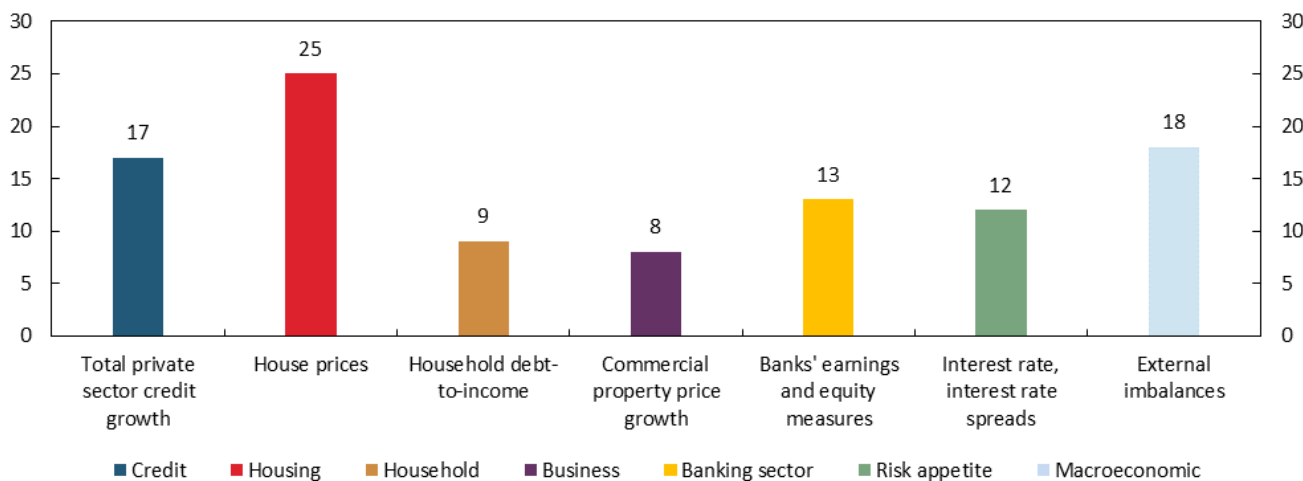
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price valuation metrics, LTV indicators and households' indebtedness among others. Similarly, Finland has reported that it looks at indicators such as the real economy cycle, current account balance, growth rate of loans, risk premiums and vulnerabilities in the banking sector. These indicators are used in addition to the Basel credit gap ([European Systemic Risk Board \(2020\)](#)).

indicators, given the importance of the sector within lending to businesses. Finally, some countries also include credit standards among their set of core indicators to capture the build-up of risk in different sectors.

Indicators that capture risk appetite are typically also used in signaling the build-up of systemic risk. Examples of indicators under this category include interest rate spreads and asset prices (for example, stock market prices). Finally, several countries include macroeconomic indicators related to GDP and unemployment in addition to indicators for external imbalances.

Figure 6: Most frequently used indicators by category, number of countries



Source: Calculations based on national authorities' publications and announcements.

*Note:* The figure shows most frequently used indicators within each indicator category as outlined at the beginning of Section 6.0. Credit-to-GDP gap is excluded as all countries use this indicator following recommendations from BCBS and ESRB. Austria, Bulgaria, Croatia, Finland, France, Luxembourg and the United States are not included as they do not disclose the full set of additional indicators used in their frameworks.

### 6.1.2 Indicators used to guide a release of the buffer

A potential release of the buffer may be relevant under two distinct types of events: i) prompt release of the buffer in case of an adverse shock to the economy; and ii) a gradual release of the buffer as vulnerabilities decline over time. In most frameworks considered in our study, the first case (i.e., "prompt release") is discussed more predominantly. ESRB states that it is difficult to identify indicators that may be used to reduce the buffer when risks from excessive credit growth recede and that in principle, the set of indicators used to signal the build up risks may also inform the decision to gradually reduce the buffer. To date,

there are no examples of countries that have reduced the buffer reflecting a gradual decline in risks.

Only a small number of countries have explicit discussions around the type of indicators that would guide the reduction of the buffer. This potentially reflects the limited experience so far with reducing the CCyB and the fact that the decision to reduce the buffer in a crisis situation needs to rely to a larger extent on expert judgment and a broad information set.

Frameworks that have a discussion of indicators that can guide the release of the buffer in the case of an adverse shock typically put emphasis on two types of indicators: 1) indicators that signal financial market stress (for example, a composite index of stress, CDS spreads or stock market prices); and 2) banking sector indicators (for example, non-performing loans and bank earnings).

The use of market stress indicators (both general market stress and banking sector stress) is consistent with advice from BCBS and ESRB. Such indicators can give early signals of a downturn, tighter financial conditions and potential problems in the banking sector. However, lack of sufficiently long time series make the assessment of the signaling properties of market-based indicators less reliable. Banking sector indicators such as non-performing loans can signal increased need for capital buffers in the banking system and can thus inform the need for a release of the CCyB but these indicators tend to lag market-based indicators of stress.<sup>19</sup>

The weight placed on these two types of indicators vary across countries. In the Australian framework, non-performing loans is identified as the main indicator for releasing the buffer. However, they note that bank share prices can be a useful supplementary leading indicator to assess a downturn trend. Malta uses indicators on the quality of the loan portfolio. The share of loans in the portfolio overdue by more than 30 and 60 days have been defined as the main indicator for this purpose. In Slovakia, use of balance sheet items indicating credit losses is deemed better linked to countercyclical capital buffer objectives compared to indicators based on market stress. Use of loan loss provision and measures of non-performing loans are therefore mentioned as relevant indicators in the Slovak framework. Belgium focuses on measures of market turbulence and loss prospects for the banking sector. Similarly, in Hong Kong's framework the Indicative CCyB Ceiling, which is composed of interbank market spreads and a loan quality indicator, is the key indicator guiding the release of the buffer.<sup>20</sup>

In the Estonian framework, reduction in risk is assessed by using the full set of core indicators, including the indicators for the build-up phase. Among these indicators, growth in credit and asset prices are identified as more informative in identifying turning points in the financial cycle. For timely identification

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<sup>19</sup>With IFRS 9, losses would be recognized earlier, making bank losses a more timely indicator for releasing the CCyB.

<sup>20</sup>See section 5.3.2 for more on Hong Kong's CCyB Ceiling.

of a financial downturn, high-frequency financial stress indicators are used. Share of loans in the portfolio overdue by more than 60 days is used as an indicator for the credit quality of the banks. In the Lithuanian framework, a range of different indicators, including credit growth, growth in real estate prices, bank credit losses and lending margins are mentioned.

In the Norwegian framework, access to credit is named as the key assessment area for a prompt release of the buffer. Access to credit is assessed using a broad information set which includes indicators reflecting: (i) stress in financial markets (both general market stress and stress in the banking sector); (ii) developments in credit and credit practices; and (iii) banks' profitability.

In some frameworks (Estonia and Lithuania), it is mentioned that market-based financial stress indicators may not be as useful reflecting lack of developed financial markets and/or the dominant presence of foreign banks in domestic credit markets. Therefore, in both Estonia and Lithuania, the European Central Bank's CISS indicator is used to assess general systemic stress and CDS premiums of parent banks are used instead. In the Norwegian framework, the CDS spreads of foreign banks with significant operations in Norway are monitored along with the CDS spreads of Norwegian banks.

Until recently, there was limited international experience with reducing the CCyB buffer. In the UK, the buffer was reduced from 0.5 to 0 per cent due to potential economic effects associated with Brexit. In Hong Kong, the buffer requirement was reduced from 2.5 per cent to 2 per cent, reflecting the potential economic ramifications of higher political uncertainty and unrest.

During the recent financial turmoil, many countries reduced their countercyclical capital buffer requirements; reflecting the adverse shock stemming from the Covid-19 pandemic, and the considerable uncertainty associated with the duration and the consequences of the outbreak. In many countries, the decision was anchored on the anticipated effects of the downturn on the performance of loans. Slovakia and Ireland mentioned that the buffer reduction is meant to support the measures taken by the ECB. Sweden and Belgium noted that the release was mainly viewed as a precautionary action.

France and Germany emphasized the use of market stress indicators such as stock market indices and CDS spreads. Hong Kong, Slovakia, and the Czech Republic referred to their alternative buffer guides (see Section 5.0) in their announcement of the release of the buffer; however, these indicators were not fully utilized in rationalizing the release of the buffer. This partly reflects the fact that many banking sector indicators (like provisions and non-performing loans) give useful signals only with a lag. For instance, Slovakia mentioned that for the time being, both the level of provisioning and the non-performing loans do not indicate the realization of risks. Further, Sweden noted that even though the high-frequency

indicators are not showing signs that the credit supply has decreased; it is not clear to what extent this reflects households' and the non-financial firms' actual possibilities for being granted a loan.

## 6.2 Use of stress tests

Several countries discuss the use of stress tests as a useful input in the information basis for setting the CCyB. The Czech Republic, Denmark, France, Germany, Norway, Slovakia, and the United Kingdom are among the countries that have an explicit reference to stress tests in their frameworks.

One reason why only some countries discuss the use of stress tests in their CCyB setting might be that the stress testing tools were relatively new when most CCyB frameworks were developed. Since then, their popularity has increased and several countries note that they use stress tests in their macroprudential policy making.

Stress testing is used by policymakers to analyse the consequences for banks of a pronounced, but conceivable downturn. A cyclical stress test, which reflects developments in vulnerabilities over the financial cycle, is a natural starting point in calibrating the desirable level of the CCyB as it sheds light on whether banks can continue to provide credit to the private sector in the event of a severe downturn. In the Czech Republic a conditional credit loss probability distribution function is estimated, where the potential size of loan losses depends on the current phase of the cycle.

Norges Bank and the United Kingdom also use cyclical stress tests to help calibrate the desirable level of the CCyB. For Norges Bank, stress testing is a key tool for describing how useful it is for banks to hold a buffer capital reserve prior to a crisis.<sup>21</sup> In the Norwegian framework, stress tests are used as an input in calibrating the level of the buffer, including for example if the buffer should be set at a level higher than 2.5 per cent and whether the banking system has capital buffers to weather a severe downturn if the buffer is to be released.

In the United Kingdom, stress tests serve as an important control on the FPC's judgement and discretion. For instance, the use of stress tests was an important input in deciding to raise the buffer after the reduction in the CCyB rate following Brexit.<sup>22</sup> Moreover, stress tests are an important input in assessing the normal level of the CCyB and was a part of the FPC's decision basis when it decided to increase the normal level of the CCyB from around 1 per cent to around 2 per cent.

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<sup>21</sup>Norges Bank (2019) also states that stress testing alone cannot guide optimal level of the buffer, since stress tests do not provide information about the costs associated with high capital requirements.

<sup>22</sup>See Chavaz et al. (2019)

## 7.0 Communication strategy

In this section, we first discuss the frequency of the buffer rate-setting and the way the decisions are communicated. We then discuss if countries communicate about future buffer rates in order to shape expectations, i.e., if they use "forward-guidance" in their communication of buffer decisions. A detailed summary of the frequency and modes of communication around the buffer decisions is provided in Table 5.

### 7.1 Frequency and communication of decisions

The buffer rate is reviewed on a quarterly basis in almost all of the countries in our sample. The only exception is the United States, which reviews the buffer setting bi-annually. Buffer decisions are typically communicated every quarter. Exceptions are Australia and the United States, which only communicate about the CCyB rate-setting on an annual basis as long as the rate remains unchanged.

Decisions are typically communicated through press releases or announcements on the designated authorities' web page. The press releases tend to be concise, and tend to only communicate the announced rate, sometimes with a brief discussion on justification, and the Basel credit-to-GDP gap. The Czech Republic, Latvia, and the United Kingdom tend to have more detailed press releases.

There are also other channels to provide additional information on the decisions; for example detailed decision papers or policy reports (e.g., monetary policy reports or financial stability reports). In decision papers the justification for the decision and an assessment of indicators used in the process are published with the announcement of the current rate. Australia, Estonia, Lithuania, Malta, Portugal and Slovakia are among jurisdictions that have a more detailed discussion around the capital rate decisions, including the indicators used. In Sweden, changing the CCyB rate requires an amendment to the law. Hence, in those instances, a comprehensive decision memorandum is published.

For other countries, more detailed analyses underlying the CCyB rate decisions are provided by the other expert authorities (see Table 1). Further, since central banks are either the designated authority or are involved in the decision process in most of the countries in our study, the CCyB rate-setting is also typically discussed in central bank policy papers (for example, monetary policy reports, financial stability reports or annual reports). Many countries discuss the buffer policy in other policy reports on a regular basis (Table 5).

## 7.2 Use of forward-guidance

Forward guidance in buffer setting policy can be used to increase transparency and anchor expectations about the future path of the CCyB rate. Forward guidance is formally a part of the CCyB frameworks when it applies to communicating a period during which the buffer will not be increased after setting the buffer down. This follows directly from BCBS and ESRB recommendations on the use of the CCyB. Using forward guidance during other times (for example when the buffer is gradually built-up) can have potentially three motives: 1) giving banks more time to adjust; 2) some forms of forward guidance can be used as a way to “lean against the wind”; and 3) generally more transparency about the decision framework.

The discussion around forward guidance and intention of use have been very limited in most frameworks. Denmark is the only country to explicitly incorporate forward guidance as a part of their framework by communicating whether they expect to recommend a higher buffer rate within the next year. On the other hand, in Slovakia and the Czech Republic, it is actively used as a part of their communication strategy. These countries include the expected decision in the forthcoming period as a part of their current buffer decision announcement. In addition, further elaborations are often given if the rate is kept unchanged in the forthcoming period, for example on the conditions under which further increases would be warranted. While this practice is not explicitly discussed in their national frameworks, it seems to have become a part of their communication strategy. Meanwhile, in Hong Kong, forward guidance has been used as part of the national authority’s strategy to increase the buffer rate gradually.

Several other jurisdiction have occasionally used forward guidance. Examples of countries include Estonia, France, Hungary, Iceland, Latvia, Lithuania, Norway, Sweden and the United Kingdom. Some of these countries have given forward guidance with explicit expectations around the future rate. For instance, the FPC in the United Kingdom stated in their 2017-Q2 decision that, absent a material change in the outlook, it expected to increase the buffer rate to 1 per cent at its next meeting.

Other countries have used forward guidance to communicate the low probability of increases in the buffer rate. For instance, both the Czech Republic in 2014 and Latvia in 2017 communicated that it would be unlikely to set a positive buffer requirement over the coming two years. Similarly, Hungary communicated that increasing buffer requirements are unlikely in the next 12 months.

Some countries have discussed the likelihood and conditions for further increases in the CCyB-rate. For instance, when the CCyB was first activated in Iceland, the CCyB was expected to be built-up in line with the upward phase of the financial cycle. Sweden mentioned in their 2017 decision that if the rate at which debt was increasing did not decelerate, the CCyB would be further increased. Several other



countries including Lithuania, France and Norway have occasionally used similar types of forward guidance in their communications about the buffer rate.

## 8.0 Concluding remarks

The CCyB is a relatively new macroprudential tool, but the number of countries that have used it actively has increased significantly over recent years. During the recent economic downturn due to the Covid-19 crisis, many countries released their countercyclical capital buffers, marking the first time that the CCyB was used widely in a downturn.

Overall, there are important similarities in country frameworks, reflecting a common set of international guidelines. There is, for example, broad consensus on the objectives of the CCyB and the use of a broad set of indicators in guiding buffer decisions. Generally, country frameworks allow for significant discretion and judgment in setting the buffer and in practice buffer decisions have relied more on discretion and judgment than on rules and guides. In most frameworks, the information basis for setting the buffer down and the level of the buffer are less developed, reflecting to some extent the limited experience so far.

Differences in country frameworks revolve around the use of the CCyB through the financial cycle (e.g., using the buffer asymmetrically over the cycle, early activation and a positive normal level for the buffer) as well as the information basis for buffer decisions (e.g., the use of stress tests). There are also differences in terms of the degree of communication about the buffer, including the use of forward guidance.

The frameworks outlined by designated authorities have already started to evolve and it is likely that this will continue as more experience is gained. This paper can be a useful input in that process, summarizing country practices in a comprehensive set of areas relevant for the CCyB policy.

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## A Summary tables: Cross-country comparison of the CCyB frameworks

### A.1 Institutional framework, objectives and policy over the financial cycle

Table 2: Decision process, policy objectives and policy over the financial cycle<sup>1</sup>

	Australia	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Germany	Greece	Hong Kong	Hungary	Iceland	Ireland	Italy	Latvia	Lithuania	Luxembourg	Malta	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain	Sweden	UK	US	
<b>Decision process:</b>																																		
- Designated authority	F	F	C	C	C	C	C	G	C	I	I	F	C	C	C	I	C	C	F	C	F	C	C	G	G	C	C	C	C	C	F	I	C	
- Supporting authorities	I/C	I	-	-	-	-	-	I	-	G/C	C	I/C	F	-	-	-	-	-	G/C	-	I/C	I	-	C/F	I	I	I	-	-	-	-	-	-	
<b>Policy objective:</b>																																		
- Building resilience	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y
- Dampen risky behavior	y	-	n	-	-	-	n	-	n	-	y	-	-	n	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	n	n	-	
<b>Policy over the financial cycle</b>	S	-	S	S	S	S	E/N	E	S	S	S	A	S	S	A	S	E	S	S	E/N	-	S	-	E/A	S	S	S	S	S	-	S	E/N	S	

<sup>1</sup> **A:** Asymmetric policy, **C:** Central Bank, **E:** Early build-up policy, **F:** Financial Regulatory Authorities, **G:** Government, **I:** Inter-Agency Committee, **N:** Normal-level, **S:** Symmetric policy, **y:** Yes, **n:** No

## A.2 Buffer level and the use of the Basel credit gap

Table 3: Buffer level and the use of the credit-to-GDP gap<sup>1</sup>

	Australia	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Germany	Greece	Hong Kong	Hungary	Iceland	Ireland	Italy	Latvia	Lithuania	Luxembourg	Malta	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain	Sweden	UK	US
<b>Buffer level:</b>																																	
- Buffer might exceed 2.5% if justified	n	-	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	n
- The normal level of the CCyB	n <sup>23</sup>	n	n	n	n	n	1%	n	n	n	n	n	n	n	n	n	n	n	n	1%	n	n	n	n	n	n	n	n	n	n	n	2%	0%
<b>Use of the credit-to-GDP gap:</b>																																	
- Basel gap	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y	y
- Alternative gap	n	n	y	n	y	y	y	n	y	n	y	y	n	n	y	n	y	y	y	y	y	y	n	y	y	y	y	y	n	y*	n	n	n
- Credit defn.	n	n	y	n	y	y	y	y	y	n	y	y	n	n	y	n	y	y	y	y	y	y	n	n	y	n	n	y	n	n	y	n	n
- GDP defn.	n	n	n	n	y	n	n	n	n	n	n	n	n	n	y	n	y	n	n	n	n	n	n	y	n	n	n	y	n	n	n	n	n
- Trend method	n	n	n	n	n	n	y	n	n	n	n	y	n	n	y	n	y	y	n	y	n	n	n	y	y	y	y	n	n	y*	n	n	n

<sup>1</sup> **y**: Yes, **n**: No, \*Only for internal use

<sup>23</sup>Note that APRA is considering implementing a non-zero CCyB default setting, which applies in a normal risk environment, as part of its ongoing review of the ADI capital framework.

### A.3 The information basis for setting the buffer

Table 4: Summary table of core and additional indicators<sup>1</sup>

Indicators	NO	DK	SE	IS	DE	UK	AU	IT	BE	ES	CZ	SK*	LT	LV	EE	PL	SI	HU	RO	GR	CY	NL	MT	PT	HK	IE	
<b>Credit</b>																											
Total private sector credit-to-GDP	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Household credit-to-GDP	x		x						x							x		x			x	x	x			x	
Business credit-to-GDP	x		x						x							x		x		x	x	x					
Household credit growth	x	x	x	x	x		x		x		x								x		x	x	x		x		x
Business credit growth	x	x	x	x	x	x	x		x		x				x				x		x	x	x		x		x
Total private sector credit growth	x		x	x	x			x	x		x	x		x	x	x	x		x	x			x	x	x		
Other credit indicators									x	x	x			x		x		x					x	x	x		
<b>Housing</b>																											
House prices	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Housing lending					x						x				x						x		x				x
Other housing indicators					x		x				x	x										x				x	
<b>Household</b>																											
Household debt-to-income	x			x			x				x							x	x	x	x	x					
Household debt service	x	x	x		x					x		x		x	x		x								x	x	
Other households indicators	x	x									x																
<b>Business</b>																											
Commercial property price growth	x	x		x			x														x		x			x	x
Business debt multiple	x										x						x			x	x	x					x
Business debt service	x				x					x		x		x	x										x	x	
Other business indicators	x	x					x				x																
<b>Banking sector</b>																											
Leverage ratio		x				x								x	x			x	x	x	x					x	x
Banks' earnings and equity measures	x	x	x		x	x	x		x								x	x				x		x		x	x
Banks' funding and liquidity measures	x					x			x				x				x	x	x			x		x	x	x	
Non-performing loans	x				x		x	x				x								x		x					
Other banking sector indicators						x					x	x				x		x								x	
<b>Risk appetite</b>																											
Stock market prices		x	x		x	x			x		x			x	x	x				x							
Financial Stress Indicator	x	x			x						x		x			x		x				x					x
CDS spread, bond spread	x	x	x		x	x					x		x														
Interest rate, interest rate spreads	x	x	x		x	x			x		x				x				x				x		x	x	
<b>Macroeconomic</b>																											
External imbalances	x	x	x		x	x				x	x		x	x	x	x		x	x	x	x		x	x	x	x	x
Other macroeconomic indicators			x					x			x	x			x				x		x						x
<b>Other</b>																											
Composite indicator	x	x		x							x	x	x			x											
<b>Total number of indicators**</b>	<b>30</b>	<b>27</b>	<b>23</b>	<b>15</b>	<b>25</b>	<b>23</b>	<b>14</b>	<b>11</b>	<b>21</b>	<b>6</b>	<b>35</b>	<b>15</b>	<b>10</b>	<b>13</b>	<b>17</b>	<b>21</b>	<b>6</b>	<b>19</b>	<b>20</b>	<b>13</b>	<b>28</b>	<b>10</b>	<b>16</b>	<b>9</b>	<b>26</b>	<b>23</b>	

<sup>1</sup> Austria, Bulgaria, Croatia, Finland, France, Luxembourg and the United States are excluded from this table as they do not disclose indicators used in the rate-setting process.

\* Including all the aggregated indicators in the Cyclogram. \*\* The total number of indicators may not correspond to the total number of crosses in the table reflecting the fact that there may be several indicators under each category or some indicators may be split into different categories.

## A.4 Communication strategy

Table 5: Communication strategy

	Australia	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Germany	Greece	Hong Kong	Hungary	Iceland	Ireland	Italy	Latvia	Lithuania	Luxembourg	Malta	Netherlands	Norway	Poland	Portugal	Romania	Slovakia	Slovenia	Spain	Sweden	UK	US
Frequency of buffer setting: review	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	BA	
Communication of decision:																																	
- Unchanged	A	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	A
- Format	I	P	I	P	P	P	P	P	I	P	P	P	I	P	P	P	P	I	P	I	P	I	P	P	P	I	P	I	I	I	I	P	P
- Indicators published	y	n	y	n	n	y	y	y	y	n	n	y	y	y	y	y	y	y	y	y	n	y	y	y	y	y	y	y	y	y	y	y	n
CCyB environment routinely discussed in policy reports	n	n	F	-	n	F	F	F	F	F	n	n	n	F	F	F	F	F	F	F	n	F	F	M	F	F	F	F	F	F	F	F	M
Use of forward guidance	-	-	-	-	-	-	y	y	y	-	y	-	-	y	y	y	-	-	y	y	-	-	-	y	-	-	-	y	-	-	y	y	-

<sup>1</sup> **A:** Annual, **F:** Financial stability report, **I:** Decision Paper, **M:** Monetary policy report, **P:** Press release, **Q:** Quarterly, **BA:** Biannual, **y:** Yes, **n:** No



## B Source of information

Table 6: Country-specific sources of information

Country	Type	Source
Australia	Framework	<a href="#">Australian Prudential Regulation Authority (2015)</a>
	Policy statement	<a href="#">Australian Prudential Regulation Authority (2019)</a>
Austria	Legislation	<a href="#">Financial Market Authority (2014)</a>
	Policy statement	<a href="#">Finanzmarktstabilitätsgremium (2017)</a>
	Press release	<a href="#">Finanzmarktstabilitätsgremium (2020)</a>
Belgium	Framework	<a href="#">National Bank of Belgium (2016)</a>
Bulgaria	Framework	<a href="#">Bulgarian National Bank (2020)</a>
	Legislation	<a href="#">Bulgarian National Bank (2014)</a>
Croatia	Press release	<a href="#">Croatian National Bank (2015)</a>
	Legislation	<a href="#">Croatian National Bank (2013)</a>
	Financial Stability Report	<a href="#">Croatian National Bank (2014)</a>
Cyprus	Press release	<a href="#">Central Bank of Cyprus (2015a)</a>
	Policy statement	<a href="#">Central Bank of Cyprus (2015b)</a>
	Legislation	<a href="#">Central Bank of Cyprus (2015c)</a>
	Indicator set	<a href="#">Central Bank of Cyprus (2020)</a>
Czech Republic	Financial Stability Report	<a href="#">Hájek et al. (2017)</a>
	Indicator set	<a href="#">Czech National Bank (2020a)</a>
	Framework	<a href="#">Czech National Bank (2020b)</a>
Denmark	Framework	<a href="#">The Systemic Riskboard (2017)</a>
Estonia	Framework	<a href="#">Eesti Pank (2015)</a>
	Press release	<a href="#">Eesti Pank (2019)</a>
Finland	Bulletin	<a href="#">Kauko et al. (2014)</a>
	Legislation	<a href="#">Bank of Finland (2014)</a>
	Press release	<a href="#">Bank of Finland (2019)</a>

*Note:* The table provides source of information for each country. **Framework** is dedicated papers to explain the jurisdictions CCoB policy. **Press release** is announcements concerning the buffer decision. **Recommendation** is statements from other authorities than the designated authority. **Policy statement** relate to other communication specifically related to the CCoB.

Country	Type	Source
France	Framework	<a href="#">High Council for Financial Stability (2018)</a>
	Policy statement	<a href="#">High Council for Financial Stability (2016)</a>
	Bulletin	<a href="#">Couaillier Cyril and Valerio (2019)</a>
Germany	Framework	<a href="#">Tente et al. (2015)</a>
	Recommendation	<a href="#">German Financial Stability Committee (2019)</a>
	Policy statement	<a href="#">Federal Financial Supervisory Authority (2019)</a>
Greece	Framework	<a href="#">Bank of Greece (2015)</a>
	Press release	<a href="#">Bank of Greece (2019)</a>
Hong Kong	Bulletin	<a href="#">Hong Kong Monetary Authority (2014)</a>
	Framework	<a href="#">Hong Kong Monetary Authority (2017)</a>
Hungary	Framework	<a href="#">Central Bank of Hungary (2015)</a>
Iceland	Recommendation	<a href="#">Financial Stability Council (2016)</a>
	Policy statement	<a href="#">Fjármálaeftirlitið (2018)</a>
	Recommendation	<a href="#">Financial Stability Council (2018)</a>
Ireland	Framework	<a href="#">Central Bank of Ireland (2016)</a>
	Framework revision	<a href="#">O'Brien et al. (2018)</a>
Italy	Policy statement	<a href="#">Alessandri et al. (2015)</a>
	Legislation	<a href="#">Marangoni (2013)</a>
Latvia	Financial Stability Report	<a href="#">Latvijas Banka (2015)</a>
Lithuania	Framework	<a href="#">Bank of Lithuania (2015)</a>
	Legislation	<a href="#">The Board of the Bank of Lithuania (2015)</a>
Luxembourg	Press release	<a href="#">Commission de surveillance du secteur financier (2015)</a>
	Legislation	<a href="#">Comité du Risque Systémique (2016)</a>
Malta	Framework	<a href="#">Financial Stability Department (2018)</a>
	Legislation	<a href="#">Central Bank of Malta (2016)</a>
Norway	Framework	<a href="#">Norges Bank (2019)</a>
Poland	Policy statement	<a href="#">Financial Stability Committee (2016)</a>
	Legislation	<a href="#">Kancelaria Sejmu (2015)</a>
	Policy statement	<a href="#">Financial Stability Committee (2019)</a>

*Note:* The table provides source of information for each country. **Framework** is dedicated papers to explain the jurisdictions CCyB policy. **Press release** is announcements concerning the buffer decision. **Recommendation** is statements from other authorities than the designated authority. **Policy statement** relate to other communication specifically related to the CCyB.

Country	Type	Source
Portugal	Framework	<a href="#">Banco de Portugal (2015)</a>
Romania	Financial Stability Report	<a href="#">National Bank of Romania (2017)</a>
	Policy statement	<a href="#">The National Committee for Macroprudential Oversight (2017)</a>
	Policy statement	<a href="#">The National Committee for Macroprudential Oversight (2018)</a>
Slovakia	Policy statement	<a href="#">Rychtárik and banka Slovenska (2014)</a>
	Policy statement	<a href="#">Rychtárik and banka Slovenska (2018)</a>
	Legislation	<a href="#">The National Council of the Slovak Republic (2001)</a>
	Policy statement	<a href="#">Národná banka Slovenska</a>
	Financial Stability Report	<a href="#">Národná banka Slovenska (2016)</a>
Slovenia	Framework	<a href="#">Banka Slovenije</a>
Spain	Policy statement	<a href="#">Banco De Espana (2016)</a>
	Legislation	<a href="#">Banco De Espana (2019)</a>
	Working paper	<a href="#">Galán (2019)</a>
Sweden	Decision Memorandum	<a href="#">Finansinspektionen (2018)</a>
United Kingdom	Framework	<a href="#">Bank of England (2018)</a>
	Policy statement	<a href="#">Chavaz et al. (2019)</a>
	Policy statement	<a href="#">Bank of England (2019)</a>
United States	Framework	<a href="#">Federal Reserve System (2016)</a>
	Monetary Policy Report	<a href="#">Board of Governors of the Federal Reserve System (2018)</a>
	Legislation	<a href="#">Authenticated U.S. Government Information (2017)</a>

*Note:* The table provides source of information for each country. **Framework** is dedicated papers to explain the jurisdictions CCyB policy. **Press release** is announcements concerning the buffer decision. **Recommendation** is statements from other authorities than the designated authority. **Policy statement** relate to other communication specifically related to the CCyB.