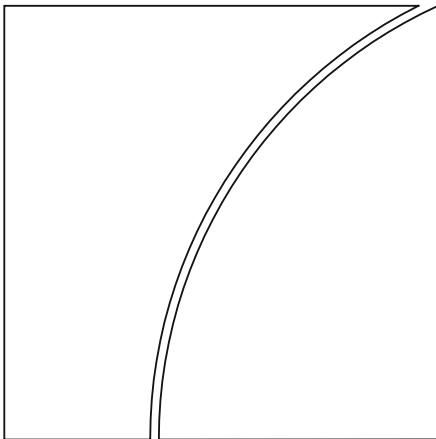


Basel Committee on Banking Supervision



Guiding principles for the operationalisation of a sectoral countercyclical capital buffer

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Guiding principles for the operationalisation of a sectoral countercyclical capital buffer

Introduction

The BCBS (2010a) common set of standards known as “Basel III”¹ introduced a countercyclical capital buffer (CCyB) regime, which was phased in from 1 January 2016 and became fully effective on 1 January 2019. National authorities can put in place a countercyclical buffer requirement to ensure the banking system has an additional buffer of capital to protect it against potential future losses related to downward phases of credit cycles and to help maintain the flow of credit in the economy without the banking sector’s solvency being questioned.

The sectoral countercyclical capital buffer (SCCyB) may be a useful complement to both the Basel III CCyB and existing targeted instruments in the macroprudential toolkit.² While a bank’s additional capital requirements following an activation of the CCyB depend on its total RWA, the SCCyB is a more targeted measure: it allows national authorities to temporarily impose additional capital requirements which directly address the build-up of risks in a specific sector. As such, the impact of SCCyB depends on sectoral credit RWA and hence on how exposed a bank is to the targeted credit segment (eg residential real estate loans).

Analyses carried out by the Basel Committee’s standard-setting and research-based working groups consider that sectoral macroprudential tools are a useful complement to the existing macroprudential toolkit, when systemic risk is confined to specific credit segments.³ Historical episodes of financial crises show that imbalances on credit and asset markets are often confined to a specific market segment that can give rise to systemic risk. In addition, non-financial corporate and mortgage credit cycles are often not well synchronised, indicating the benefits for separate tools addressing these segments. In an environment of confined imbalances, targeted tools are (i) more effective as they help build up resilience early and in a targeted manner; (ii) more efficient in terms of minimising unintended side effects, ie they have a better cost-effectiveness ratio and (iii) easier to execute than broader-based tools, ie they could help to reduce potential inaction bias. Moreover, many sectoral tools exist only for some sectors, in particular the real estate segment. In this regard, the SCCyB appears as a particularly convenient tool as it builds on the existing CCyB framework and can be applied to sectors other than real estate. Despite these advantages, several challenges associated with sectoral macroprudential tools remain, including potential spillovers to other credit segments, an increased complexity of the framework and the need for an overall risk assessment identifying both broad-based and more targeted cyclical systemic risks to financial stability.

This document aims at supporting jurisdictions willing to implement a SCCyB by facilitating a consistent implementation across them. Importantly, as the following guidance is not accompanied by a corresponding inclusion of a SCCyB in the Basel standards, these principles are only relevant for jurisdictions that voluntarily choose to implement a SCCyB at a national level.

¹ See <https://www.bis.org/publ/bcbs189.pdf>.

² See <https://www.bis.org/bcbs/publ/wp36.pdf>.

³ See <https://www.bis.org/bcbs/publ/wp32.pdf> and <https://www.bis.org/bcbs/publ/wp36.pdf>.

Guiding principles

Since the SCCyB is a refinement of the Basel III CCyB, many elements of the Basel III CCyB framework can be adapted for its use at sectoral level, but important differences remain.

*Principle 1: **(Objectives):** In taking buffer decisions, national authorities should be guided by the primary objective of the SCCyB, namely 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 faced with losses related to the unwinding of sectoral cyclical imbalances.*

Similar to the Basel III CCyB, the SCCyB's primary objective is to enhance banks' resilience to sectoral credit losses in cyclical downturns without their solvency being questioned, while simultaneously maintaining the flow of credit in the economy. Moreover, by affecting the relative capital charge of different credit segments, the SCCyB may help to contain the build-up of sectoral cyclical imbalances.

*Principle 2: **(Target segments):** National authorities should define a small number of target segments. These segments should be (i) potentially significant from a financial stability perspective and (ii) prone to cyclical imbalances. If jurisdictional reciprocity is deemed important, then to facilitate voluntary reciprocation the target segment should be defined in a way that ensures its replicability by jurisdictions other than the home jurisdiction.*

In line with the SCCyB's primary objective, an effective operationalisation of the SCCyB would require that the SCCyB targets only those credit segments that are of systemic importance from a national financial stability perspective. In this regard, a potential target segment should be significant relative to the total size of the national banking system, whereby size may refer to volume, RWAs, riskiness or any other reasonable metric. In order not to pre-empt the application of the Basel III CCyB, the defined target segments should not be framed too broadly.

In addition, the credit segment should be prone to cyclical imbalances. Qualitative and quantitative analysis conducted by the Basel Committee could provide meaningful insights into which credit segments the SCCyB could target in line with the principle outlined above. Total real estate lending and its two sub-segments, residential (eg mortgage) and commercial real estate, as well as non-real estate related private non-financial corporate and household (eg consumer) lending met the criteria for most countries, although other countries mentioned a desire to target other segments.

Given that the SCCyB is not part of the Basel standard, the recognition of buffer rates is based on voluntary reciprocity arrangements between jurisdictions. Jurisdictional reciprocity ensures that the application of a targeted tool does not distort the level playing field between domestic banks and foreign banks with exposures to counterparties in the same jurisdiction. Work conducted by the Basel Committee's working groups finds that several jurisdictions report significant cross-border exposures for at least one of the possible target segments listed above. As such, jurisdictional reciprocity seems likewise important for targeted policy measures as for the Basel III CCyB. In this regard, the authority setting the SCCyB requirement could initiate a request for such a reciprocity agreement by other jurisdictions if deemed important. Importantly, any reciprocity arrangement does not entail any transfer of power between jurisdictions; the power to set and enforce the SCCyB regime will ultimately rest with the home authority of the legal entity carrying the credit exposures.

Principle 3: (Interaction with the Basel III CCyB): Depending on the situation, national authorities may wish to either activate the SCCyB or the Basel III CCyB, or to activate both buffers simultaneously. An activation of the SCCyB instead of the Basel III CCyB should be based on an assessment demonstrating that imbalances are confined to a specific credit segment. When national authorities consider switching between the SCCyB and the Basel III CCyB and vice versa, a smooth transition should be ensured. This may include allowing both buffers to be activated simultaneously, in which case national authorities should ensure that the adding up of buffer rates does not result in double counting of risk.

The SCCyB and the Basel III CCyB can be seen either as substitutes or as complements, depending on the situation. The activation of a SCCyB instead of a Basel III CCyB is particularly appealing when confined imbalances are combined with low economic growth, high uncertainty about future economic developments or subdued credit growth in other credit segments. In such an economic environment, the advantages of targeted tools, namely their effectiveness, efficiency and ease of communication become particularly relevant.

When deciding upon the activation of a SCCyB instead of the Basel III CCyB, national authorities should also take into account the possible role of spillovers to other credit segments. If macroprudential policy targets a specific credit segment, activities may migrate to other segments: this could be positive if risks are better allocated, but it could also mean that imbalances are propelled elsewhere in the system (imbalance spillovers). Another challenge relates to potential loss spillovers to untargeted segments. Even without imbalance spillovers the unwinding of sectoral imbalances, when large enough, can affect untargeted sectors in terms of generating additional losses. When there are signs of significant imbalance spillovers or a high probability of loss spillovers, national authorities should consider whether the SCCyB provides sufficient resilience against imbalances in this sector and consider giving preference to activating the Basel III CCyB.

Authorities' view on which buffer is the preferred tool may change over time, based on national authorities' overall risk assessment. National authorities may consider (i) switching between the SCCyB and the Basel III CCyB, or, (ii) activating both a SCCyB and Basel III CCyB at the same time. The latter may for example be appealing when there are signs that sectoral imbalances are slowly spreading to other segments (see also Annex). Regarding the transition from using one buffer to using the other buffer, different options exist. Ideally, the two buffers should be treated as additive complements. A reconciliation mechanism can ensure that the adding up does not result in risks being double counted (see Annex for technical details).

In certain situations it might also be preferable to activate two SCCyBs at the same time. For example, considering a situation in which imbalances are confined to the real estate segment, with imbalances in the commercial real estate segment being considerably higher than in the residential real estate segment, national authorities may want to simultaneously activate two SCCyBs. This may still prove more effective than activating either a single SCCyB on a broader segment category (ie total real estate) or the broad-based Basel III CCyB. When deciding to activate more than one SCCyB across different credit segments rather than for two sub-segments, national authorities should provide reasoning, also with a view to possible spillovers to other credit segments. Overall, national authorities should be aware that activating more than two SCCyBs at a given time, instead of the Basel III CCyB, will be a considerable communication and accountability challenge.

Principle 4: (Indicators for guiding SCCyB decisions): National authorities should identify a transparent set of indicators that have the ability to act as early warning indicators for sectoral imbalances in their home countries and are associated with an increase in system-wide risk in the financial system.

Mainly due to limited internationally consistent data available at the sectoral level, the common reference guide adopted for the Basel III CCyB may not be a sensible option for a SCCyB framework. In taking SCCyB decisions, national authorities should rather identify a broader set of indicators on which a

SCCyB framework could be built. In this regard, national discretion based on the best available information may play a greater role compared to the Basel III CCyB.

Following the relevant empirical literature and BIS guidance provided in context of the Basel III CCyB, meaningful indicators can broadly, but not exclusively, be categorised as credit volume indicators (eg credit gap and credit growth measures), asset price indicators (eg price to income or price to rent measures) and risk indicators (eg affordability, credit conditions and credit-spread measures).

*Principle 5: **(Calibration):** National authorities should ensure an adequate calibration of the tool. An adequate calibration is key that the SCCyB can achieve its objectives.*

Work conducted by the Basel Committee's standard-setting and research-based working groups could serve as an initial guidance for the calibration, suggesting that the SCCyB may have to be set at a level higher than 2.5% of sectoral RWA at the peak of the sectoral credit cycle, in order to ensure that the objectives are met.⁴ Figures above 2.5% may appear large when compared to the 2.5% calibration defined in the context of the Basel III CCyB (reciprocity cap), but SCCyB buffer levels are expressed in terms of sectoral RWA and hence, they are much smaller when expressed as a fraction of total RWAs.⁵ The situation may, however, differ across jurisdictions and segments targeted by the SCCyB.

*Principle 6: **(Release):** National authorities' decision to promptly release the SCCyB when sectoral cyclical risks materialise should allow banks to absorb losses and maintain lending to the real economy. When sectoral cyclical risks do not materialise but are judged to recede more slowly, a gradual release of the buffer may be more appropriate.*

While a gradual release of the SCCyB could, in principle, be guided by the same indicator set as for the build-up of the SCCyB, a prompt release likely requires the monitoring of higher-frequency information (eg financial market prices based indicators). In addition, in the prompt release scenario, judgement is likely to play a more important role, as an indicator-based prompt release may be limited by availability of data both in the cross-section as well as in the time-series (eg frequency) dimension. In their overall risk assessment, national authorities should consider the implications of any decision to release the CCyB, SCCyB or both. A release of the SCCyB could also be considered when the sectoral risk declines in relative terms to overall cyclical risk in the economy.

*Principle 7: **(Communication):** National authorities should integrate their decision-making on the SCCyB into their strategy for communicating their decisions on the Basel III CCyB. As part of this strategy, they should also establish a transparent communication on their assessment of broad-based versus more targeted cyclical systemic risks in the financial system to key stakeholders and the public (overall risk assessment).*

One crucial element for taking SCCyB decisions relies on national authorities' overall risk assessment of broad-based versus sectoral cyclical systemic risks to the financial system, including national authorities' assessment on possible spillovers to other credit segments. In this regard, it would not only be important to integrate decisions on the SCCyB into the communication process established for the Basel III CCyB, but also explain to relevant stakeholders and the public on their reasoning (i) to use the SCCyB in isolation, (ii) to use other instruments instead of the buffer and (iii) to combine the buffer with other instruments. In addition, a timely communication of buffer decisions would be important to ensure that national authorities in other jurisdictions can prepare for the voluntary reciprocation of the SCCyB.

⁴ Among others, this follows an assessment of historical losses during severe sectoral crisis periods and projected losses under severe stress scenarios.

⁵ This can be illustrated by a simple example: Assuming a bank with 50 mortgage RWA in country A and 50 mortgage RWA in country B and total RWA of 500. The share of total mortgage RWA in total RWA is 20%. If country A activates a SCCyB and sets its level to 10% the requirement would correspond to $10\% \times 0.2 \times 0.5 = 1\%$ of total RWA.

BCBS Member jurisdictions which have implemented a SCCyB at national level or plan to apply such a tool in future may consider establishing a mechanism for coordinating with other BCBS Member jurisdictions. As experience is gained with the SCCyB at national level, this would ensure an exchange of information among BCBS Member jurisdictions and facilitate a harmonised implementation of the SCCyB in the absence of a corresponding Basel standard.

Annex

The interaction between the SCCyB and the Basel III CCyB

According to the Basel III rules text, designated authorities can impose additional capital requirements of up to 2.5% of total RWA if they judge a period of excess credit growth to the private nonfinancial sector to be leading to the build-up of system-wide risk.⁶ An important design characteristic of the Basel III CCyB is that once activated, the additional capital requirements are imposed on total RWA. Thus, the additional capital requirements depend only on a bank's total exposure. Neither the size of the credit exposure relative to total exposure, nor the distribution of the credit exposure across the different credit segments, plays a role.⁷ This ensures that the additional resilience built up within the system through the Basel III CCyB's activation is directly related to the total exposure, accounting for the fact that the bursting of a bubble may lead to a general downturn, thereby also affecting other credit and non-credit exposures. At the same time, this leads to a situation where banks with very different shares of credit exposures in total exposures are subject to identical CCyB requirements. By comparison, the SCCyB is expressed in terms of sectoral RWA, and the resulting additional capital requirements are thus much smaller when expressed as a fraction of total RWAs.

By imposing the additional capital requirement on total RWA the Basel III CCyB does not affect the relative capital charge and therefore pricing of different segments of loans. A potential side benefit of operating the Basel III CCyB is that it may lean against the build-up of excess credit in the first place, particularly if the bank's capital situation is tight⁸. Additional requirements imposed on already capital constrained banks could limit their ability to provide credit. Given its targeted nature, the SCCyB is more likely to help with taming the procyclicality⁹ of sectoral credit compared to the Basel III CCyB.

Operationally, the two buffers can be seen either as substitutes or as complements, depending on the situation. Table 1 below illustrates some potential examples assuming a framework that would allow both the Basel III CCyB and the SCCyB to be activated simultaneously.

Table 1: Examples for interaction of a SCCyB with the Basel III CCyB

Single sector	Broader economy	Potential use of SCCyB and Basel III CCyB
Exuberant. Even in a downturn, losses are likely to be contained to this sector.	Normal.	- SCCyB set at X%, Basel III CCyB at 0.
Exuberant. In a downturn, losses may spread to other sectors causing wider-spread disruption.	Low growth environment. High uncertainty about future economic developments.	- SCCyB set at X%, Basel III CCyB at 0.
Exuberant. In a downturn, losses may spread to other sectors causing wider-spread disruption.	Normal.	- SCCyB set at X%. - Basel III CCyB at small level: Y%.

⁶ Authorities may go beyond 2.5%. However, mandatory international reciprocity is limited to a countercyclical buffer up to 2.5%. Further reciprocation of the buffer is possible on a voluntary basis.

⁷ The distribution across countries, however, is important.

⁸ Basel Committee on Banking Supervision (BCBS, 2010): "Basel III: A global regulatory framework for more resilient banks and banking systems", December 2010 (revised June 2011).

⁹ A term which is generally used to refer to the mutually reinforcing ("positive feedback") mechanisms through which the financial system can amplify business fluctuations and possibly cause or exacerbate financial instability.

Exuberant. In a downturn, losses are likely to spread to other sectors causing wider-spread disruption.	Strong growth environment. Signs that imbalances in the initial sector have spilled over to other segments.	- SCCyB set at X%, Basel III CCyB at medium level Z%.
Exuberant. In a downturn, losses are likely to spread to other sectors causing wider-spread disruption.	Booming economy. Imbalances in other segments have built up to a level that are equally (or almost) problematic as in the initial sector.	- SCCyB set at 0%, Basel III CCyB at elevated level W%.

There are several possible ways for a SCCyB to interact with the Basel III CCyB if authorities wish to switch from using one buffer to also, or exclusively, using the other buffer. However, ideally, any interaction between the two tools would respect the following principles:

Capital requirement principle: When increasing the level of either the SCCyB or the Basel III CCyB the total capital requirements at the individual bank level should not decrease.

Marginal cost principle: When increasing the level of either the SCCyB or the Basel III CCyB the marginal costs of providing credit to any credit segment should not decrease.

Risk counting principle: Risks should neither be omitted nor double counted.

Bearing these principles in mind, three different interaction options have been developed and discussed by work stream members:

- the two buffers are substitutes, ie only one buffer can be activated at any given time,
- the two buffers are complements with a max function,
- the two buffers are additive complements with a reconciliation mechanism designed to avoid a double counting of risk.

Only the last option whereby the SCCyB and the Basel III CCyB are additive complements, was considered to fulfil the above-mentioned criteria. For this reason, a presentation of how the SCCyB and Basel III CCyB can work together focusses solely on this option.

The Basel III CCyB and SCCyB as additive complements

The additive complements approach of interacting the SCCyB with the Basel III CCyB is one that allows for the simultaneous activation of the buffers, if needed. In the case that the buffers are activated together, the SCCyB acts as an add-on to the Basel III CCyB. A reconciliation mechanism ensures that adding up buffers does not result in a double counting of risks. As such, SCCyB requirements are derived by applying only the difference in the SCCyB and the Basel III CCyB rates to sectoral exposures, if positive. Bank-specific capital requirements for banks in home jurisdiction i and for countries $j = 1, \dots, N$ that have agreed to reciprocate sectoral exposures in that jurisdiction can be formalised as follows:

Bank-specific capital requirements =

$$\left(\sum_{country\ i} CCyB\ rate_i * \frac{relevant\ credit\ RWA_i}{relevant\ credit\ RWA_{Total}} \right) * total\ RWA \quad + \quad Basel\ III\ CCyB$$

$$\left(\sum_{country\ i} \max\{(SCCyB\ rate_i - CCyB\ rate_i), 0\} * relevant\ SRWA_i \right) \quad SCCyB$$

For illustration, consider the following example: A SCCyB is activated to 3% to address sector-specific risks. As imbalances become more widespread, resulting in a broad-based credit boom, national authorities additionally impose a Basel III CCyB requirement of 1%. For any increase in the Basel III CCyB this option requires a reduction in the SCCyB add-on by an offsetting amount. In this example, this means that the effective SCCyB rate is reduced to 2%. Without the offsetting reduction in sectoral requirements,

any increase in the Basel III CCyB would automatically increase total requirements on SRWA, resulting in a double counting of risks.

To demonstrate the mechanism and the properties of the additive complement option a numerical example is used to calculate institution-specific capital requirements for two hypothetical banks. Each bank holds a different proportion of total credit and sectoral credit exposure on their balance sheets: Bank 1 is a mortgage-specialised bank, while Bank 2 holds a diversified loan portfolio. Mortgage credit is chosen as an example sector where cyclical systemic risk might emerge. To emphasise the impact that different balance sheet compositions can have on the resulting buffer requirements, both banks have the same amount of total RWA. Table 2 below shows the RWA distribution of each bank, respectively.

Table 2: RWA distribution of two hypothetical banks

		Bank 1: Specialised Bank	Bank 2: Diversified Bank
Domestic RWA	Mortgages	100	40
	Other loans	40	80
	Non-credit exposure	10	30
Foreign RWA	Mortgages	10	10
	Other loans	30	10
	Non-credit exposure	10	30
Total		200	200

To explore how a SCCyB interacts with the broader based Basel III CCyB, two different domestic scenarios and an international scenario can be considered:

- (i) A **sectoral-risk scenario** where the banks are operating in an environment in which imbalances are first confined to one specific sector, requiring the activation of a SCCyB. With time, the imbalances become broader based as they spill over into other credit segments. The leakage of risks into other credit segments justifies the activation of the Basel III CCyB.

It is assumed that, in reaction to the build-up of sectoral imbalances on the mortgage and real estate markets, the designated authorities activate a hypothetical SCCyB to 4% of domestic RWA related to mortgage loans (sectoral RWA). For the two hypothetical banks this implies the following:

Bank-specific buffer requirements =

$$SCCyB\ rate_{domestic} * SRWA_{domestic} \quad \text{domestic SCCyB}$$

	Bank 1: Specialised Bank	Bank 2: Diversified Bank
SCCyB (4%)	4% * 100 = 4	4% * 40 = 1.6

As imbalances become more widespread, resulting in a broad-based credit boom, designated authorities may additionally activate the Basel III CCyB to 2.5% of total RWA. The corresponding capital requirements then amount to:

Bank-specific capital requirements =

$$Max \{(SCCyB\ rate_{domestic} - CCyB\ rate_{domestic}), 0\} * SRWA_{domestic} + \quad \text{domestic SCCyB}$$

$$CCyB\ rate_{domestic} * \frac{relevant\ credit\ RWA_{domestic}}{relevant\ credit\ RWA_{total}} * total\ RWA$$

domestic Basel III CCyB

	Bank 1: Specialised Bank	Bank 2: Diversified Bank
SCCyB (4%) +	(4% - 2.5%) * 100 +	(4% - 2.5%) * 40 +
CCyB (2.5%)	2.5% * (140/180) * 200 = 5.4	2.5% * (120/140) * 200 = 4.9

- (ii) A **broad-based risk scenario** where imbalances are first broad based and then shift to a specific credit segment. Broad-based risks are addressed through the use of the Basel III CCyB. However, as risks become more confined, the SCCyB activated to target sector-specific imbalances.

In the broad-based risk scenario, it is assumed that imbalances are initially widespread. The Basel III CCyB is activated and set at 2.5% of RWA. Correspondingly, the capital requirements amount to:

Bank-specific capital requirements =

$$CCyB\ rate_{domestic} * \frac{relevant\ credit\ RWA_{domestic}}{relevant\ credit\ RWA_{total}} * total\ RWA$$

domestic Basel III CCyB

	Bank 1: Specialised Bank	Bank 2: Diversified Bank
CCyB (2.5%)	2.5% * (140/180) * 200 = 3.9	2.5% * (120/140) * 200 = 4.3

Now, if imbalances continue to develop further albeit only in one specific sector, the designated authorities may decide to additionally activate the SCCyB to 4% of domestic sectoral RWA.

Bank-specific capital requirements =

$$CCyB\ rate_{domestic} * \frac{relevant\ credit\ RWA_{domestic}}{relevant\ credit\ RWA_{total}} * total\ RWA +$$

domestic Basel III CCyB

$$Max \{(SCCyB\ rate_{domestic} - CCyB\ rate_{domestic}), 0\} * SRWA_{domestic}$$

domestic SCCyB

	Bank 1: Specialised Bank	Bank 2: Diversified Bank
CCyB (2.5%) +	2.5% * (140/180) * 200 +	2.5% * (120/140) * 200 +
SCCyB (4%)	(4% - 2.5%) * 100 = 5.4	(4% - 2.5%) * 40 = 4.9

- (iii) An **international scenario** where imbalances also build up abroad leading authorities in both jurisdictions to activate a Basel III CCyB/SCCyB.

Now suppose the foreign jurisdiction experiences a housing boom and the designated authorities activate a SCCyB on mortgage loans to 1%. If reciprocity arrangements were applied, capital requirements would amount to

Bank-specific capital requirements =

$$CCyB\ rate_{domestic} * \frac{relevant\ credit\ RWA_{domestic}}{relevant\ credit\ RWA_{total}} * total\ RWA +$$

domestic Basel III CCyB

$$MAX \{(SCCyB\ rate_{domestic} - CCyB\ rate_{domestic}), 0\} * SRWA_{domestic} +$$

domestic SCCyB

$$MAX \{(SCCyB\ rate_{foreign} - CCyB\ rate_{foreign}), 0\} * SRWA_{foreign}$$

foreign SCCyB

Assuming unchanged buffer requirements in the home jurisdiction (2.5% for the Basel III CCyB and 4% for the SCCyB) this would result in the following capital requirements.

	Bank 1: Specialised Bank	Bank 2: Diversified Bank
Domestic CCyB (2.5%) +	2.5% * (140/180) * 200 +	2.5% * (120/140) * 200 +
Domestic SCCyB (4%) +	(4% - 2.5%) * 100 +	(4% - 2.5%) * 40 +
Foreign SCCyB (1%)	1% * 10 = 5.5	1% * 10 = 5

Now, suppose the foreign authority adds a CCyB of 0.5% as imbalances are starting to leak also to other credit segments.

Bank-specific capital requirements =

$$CCyB\ rate_{domestic} * \frac{relevant\ credit\ RWA_{domestic}}{relevant\ credit\ RWA_{total}} * total\ RWA + \text{domestic Basel III CCyB}$$

$$Max \{(SCCyB\ rate_{domestic} - CCyB\ rate_{domestic}), 0\} * SRWA_{domestic} + \text{domestic SCCyB}$$

$$CCyB\ rate_{foreign} * \frac{relevant\ credit\ RWA_{foreign}}{relevant\ credit\ RWA_{total}} * total\ RWA + \text{foreign Basel III CCyB}$$

$$Max \{(SCCyB\ rate_{foreign} - CCyB\ rate_{foreign}), 0\} * SRWA_{foreign} + \text{foreign SCCyB}$$

	Bank 1: Specialised Bank	Bank 2: Diversified Bank
Domestic CCyB (2.5%) +	2.5% * (140/180) * 200 +	2.5% * (120/140) * 200 +
Domestic SCCyB (4%) +	(4% - 2.5%) * 100 +	(4% - 2.5%) * 40 +
Foreign CCyB (0.5%) +	0.5% * (40/180) * 200 +	0.5% * (20/140) * 200 +
Foreign SCCyB (1%)	(1%-0.5%) * 10 = 5.7	(1%-0.5%) * 10 = 5.1

There are several advantages to adopting the additive complements option for interacting the Basel III CCyB and the SCCyB. First, all of the principles outlined as providing the ideal interaction between the Basel III CCyB and the SCCyB are respected. Second, in line with the buffers' objectives, considering the buffers as additive complements ensures that resilience in the banking system is built up beyond that under the other options considered. Of course, it has to be acknowledged that the CCyB framework's complexity increases with the introduction of a SCCyB.