Methodology for setting the countercyclical capital buffer

Material for a meeting of the Financial Stability Committee

Warsaw, March 2024

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Introduction

This document aims to present the methodology used to calibrate the level of the countercyclical capital buffer (CCyB) for the national banking system, for the purposes of a Financial Stability Committee recommendation.

The idea behind the countercyclical capital buffer is discussed in **Chapter 1**. **Chapter 2** presents a method used for the calibration of the countercyclical capital buffer rate using early warning models.

The description of the framework for the application of the countercyclical capital buffer by the Financial Stability Committee is contained in a separate document, *Strategy on the application of the countercyclical capital buffer in Poland*.

1. The idea behind the operation of the countercyclical capital buffer

The countercyclical capital buffer (CCyB) is the basic macroprudential policy instrument. Its general application framework has been harmonised across EU countries in the CRD/CRR regulatory package and in Poland it was implemented in the Act on Macroprudential Supervision.

The mechanism of the application of the countercyclical capital buffer enables imposing a requirement on banks to accumulate additional capital during the build-up of cyclical risk in the financial system. Due to that, it is possible to lift this requirement in the period of risk materialisation or the occurrence of a shock and, consequently, to "release" surplus capital previously accumulated in banks. The capital from the released buffer can be employed by banks to cover the losses while its use does not involve a breach of regulatory or supervisory capital standards. This limits the propensity of banks to reduce their balance sheets (*deleveraging*) and decrease lending (*credit crunch*) in periods of slowdown or shocks. As a consequence, the risk of credit crunch in the economy and the risk of a negative feedback loop between the situation of the banking sector and the economy decreases. The underlying objective of the countercyclical capital buffer – an increase in the resilience of the banking system to cyclical fluctuations in systemic risk – is achieved through two mechanisms of its operation: **(i) increasing bank resilience by accumulating additional capital in the period of stabilisation and recovery in the financial system; and (ii) reducing the potential procyclicality of the impact of capital requirements through the release of a buffer when risks materialise.**

The cyclical aspect of systemic risk results from periodic changes in its level throughout the financial cycle. This risk, among others, takes the form of excessive: (i) leverage, (ii) level and growth of

debt (including lending), (iii) credit risk. The cyclical systemic risk can arise due to, among others, an excessively optimistic assessment of the economic outlook, underestimated risk pricing and rising asset prices, which will drive excessive indebtedness in the economy. However, the high growth rate of lending itself does not imply an increase of systemic risk. Rising loan volumes may also indicate that the outlook for the economy is positive. At the same time, in periods when lending growth is not high in historic terms, an increase in cyclical risk stemming from the other-than-credit aspects of financial market activity may be experienced. Identifying the time at which lending growth or other stresses in the financial system start to trigger systemic risk growth is therefore an important aspect of analysis conducted for macroprudential supervision purposes. In addition, in the absence of macro-financial imbalances, the financial system may experience strong shocks. The extent of these shocks may be substantial for the financial system. A recent example of such an event was the COVID-19 pandemic.

The rate of the countercyclical buffer may change over time – it may be raised during risk build-up and decreased when the risk is reduced or when risks materialise. The aim is to avoid the potential pro-cyclical impact of capital requirements and credit crunch in the economy. This means that it is necessary to monitor risk levels on a regular basis, both in terms of signals confirming the rationale for activating a buffer and its level as well as the buffer's release.

The timely identification of systemic cyclical risk is an essential aspect of the effective use of the CCyB. Early warning models perform this task. They allow to use information from many variables and take into account the interactions between them, enabling the operation of macroprudential policy well in advance. This approach also allows for determining an appropriate level of the buffer.

Positive neutral rate for the countercyclical capital buffer (nCCyB)

It is not possible to identify all sources of risk well in advance, and the scale of the identified risk itself may be incorrectly estimated. This stems both from the complexity of the economic system and the potential occurrence of crisis situations in the financial system even despite the absence of financial imbalances (e.g. COVID-19). This means that if certain shocks materialise, no releasable capital buffers will be available or the level of buffers available will be inadequate, i.e. too low. As a consequence, the financial system may experience a crisis phase without the capital previously accumulated in the form of buffers, representing a source to cover potential losses and enabling the continuation of lending. In fact, under the conditions of the shock and market stigma, the propensity of banks to breach the combined buffer requirement may be limited. Under such circumstances, the macroprudential authority may be deprived of a significant response tool.

For the above reasons, it is reasonable to hold a releasable capital buffer to address cyclical risks that are difficult to predict. **A positive neutral rate for the countercyclical capital buffer (nCCyB) fulfils this role.** It will also apply in the period of standard risk environment, i.e. also outside periods of growing financial imbalances. Holding the nCCyB has several important advantages:

- **firstly**, a positive capital buffer rate increases the resilience of the system in the event of an unexpected, i.e. unforeseeable or difficult to identify, shock affecting the financial cycle;
- **secondly**, activating a capital buffer in the initial phase of the financial cycle involves relatively low macroeconomic costs (the adverse effect of raising capital requirements on lending is weaker than in the period of downturn) and may strengthen the resilience of the banking system well in advance;
- **thirdly**, significant lags may occur between the identification of risks and the implementation of the CCyB while the use of the nCCyB allows to partially mitigate the problem of such a lag;
- **fourth**, the early and gradual imposition of the buffer, coupled with a clearly declared framework for the release and replenishment of the nCCyB, will facilitate banks' capital planning in longer time intervals, which is directly associated with their individual business strategies.[1]

More information on the neutral countercyclical buffer rate in the macroprudential policy worldwide is presented in Box 1.

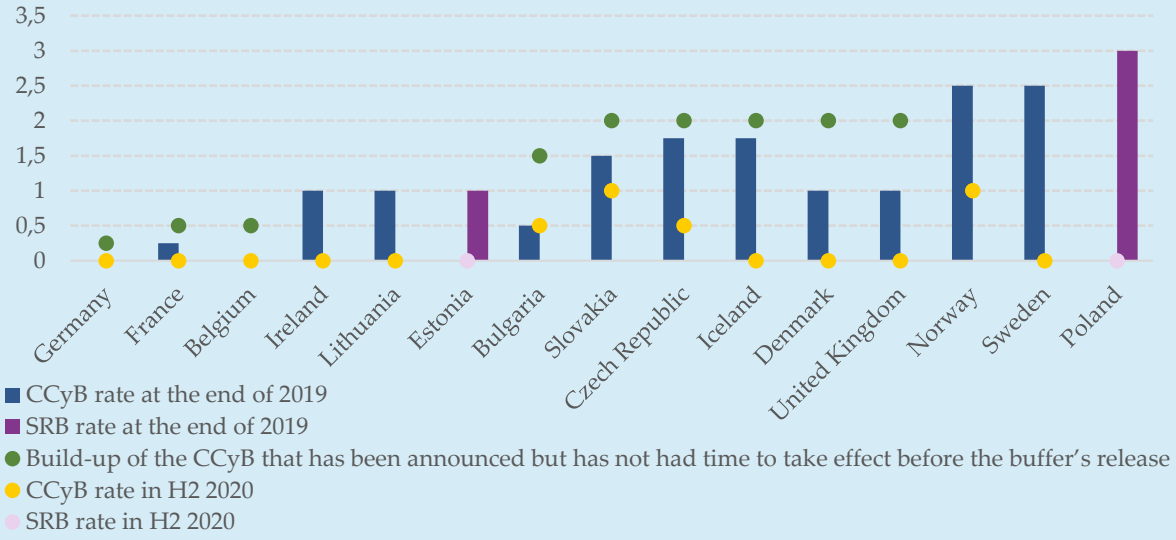
[1] It applies not only to the planned scale of lending, but also to their internal plans relating to sources of raising capital for further development, including plans related to the dividend policy. This may also apply to strategies of competing with other market players and taking into account their plans of mergers and acquisitions in the banking market. It seems that it can additionally support enhancing the market transparency of the activities of individual banks (market discipline) as well as the entire sector.

Box 1. A neutral rate of the **countercyclical capital buffer in international experience**

The countercyclical capital buffer has been applied in EU countries since 2016. Since then, macroprudential authorities have gained experience and many of them have modified their approach to determining the rate of the CCyB. The event that has become a significant impetus for change was the COVID-19 pandemic, a source of shock to the financial system that was difficult to predict in advance.

Historically (in the years 2016-2023), the CCyB was released in thirteen cases in EU Member States. All the cases of the release of CCyBs took place in H1 2020, i.e. at the beginning of the pandemic. **Błąd! Nie można odnaleźć źródła odwołania.**. illustrates the problem caused by the natural lag between the accumulation of risk and the introduction of the applicable countercyclical buffer. Upon releasing of the CCyB, most countries were beginning or were in the middle of a cycle of build-up of the CCyB. In view of the foregoing, upon its release, the buffer was not activated at a level adequate to the scale of the shock. Two countries, i.e. the United Kingdom and Lithuania, announced the application of a nCCyB and introduced the requirement early enough to take effect before the pandemic. In the case of the United Kingdom, until the time of the pandemic outbreak, a nCCyB had been introduced partially – a transition rate of 1% started to apply. The pandemic broke out before the 2% target rate came into force. Consequently, Lithuania and the United Kingdom released all the capital accumulated under the nCCyB upon the pandemic outbreak.

Figure 1. CCyB (and Systemic Risk Buffer) rates before and after the outbreak of the COVID-19 pandemic



Notes: The figure shows countries that released the countercyclical buffer at the beginning of the pandemic. Poland and Estonia, which released the SRB instead of the CCyB due to the pandemic outbreak, are highlighted in purple. In both countries, upon the release the SRB remained at the target level, i.e. there were no increases announced pending entry into force.

Source: ESRB, BIS, national authorities' websites.

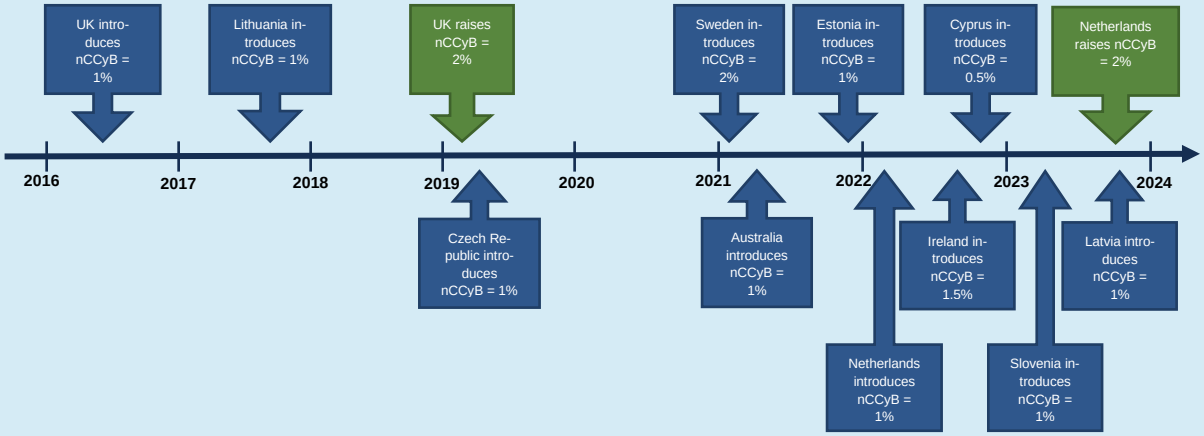
Some EU countries that had not activated the CCyB prior to the pandemic outbreak but had a positive systemic risk buffer (SRB) in place, decided to release this buffer. Poland and Estonia undertook such

measures (see purple bars in **Błąd! Nie można odnaleźć źródła odwołania.**Figure 1). Moreover, the Netherlands reduced the SRB from 3% to 2.5% for ING, to 2% for Rabobank and 1.5% for ABN Amro.

In this context, the issue of the rationale for applying a nCCyB that would be binding for banks over the majority of the financial cycle has become a new strand in macroprudential policy in the EU.

The use of a nCCyB is becoming increasingly common internationally. The United Kingdom was the first country to openly declare its application. Until the time the pandemic outbreak, a nCCyB was applied by two more countries, Lithuania and the Czech Republic. As a result of the pandemic experience, the application of a nCCyB was announced by eight more countries: Sweden, Australia, Estonia, the Netherlands, Ireland, Cyprus, Slovenia and Latvia (as at the end of 2023).

Diagram 1. Timeline for declaring the introduction of the nCCyB



Notes: The arrows approximate the date of the announcement of the introduction of a nCCyB.

Source: ESRB, BIS, national authorities' websites.

In addition to the above-mentioned countries that have explicitly declared the implementation of the nCCyB, two more can be identified whose actions are similar. Denmark and Norway are implementing the approach assuming the activation of the CCyB at an early stage of the financial cycle but have not openly declared the introduction of the nCCyB.

Supervisory authorities apply different various approaches to calibrate the nCCyB. These include, among others, historical loss analyses, stress testing models, impact assessments of buffer release during a pandemic, financial cycle indicators and expert assessments. The importance of individual factors and calibration methods varies from country to country. However, the final result itself in the form of the set nCCyB is quite similar and usually ranges between 1% and 2%.

Calibration of the countercyclical capital buffer requires the specification of three issues:

1. **the timing of the activation of the countercyclical capital buffer** – the decision to impose the buffer should be announced early enough to give banks time to accumulate capital;
2. **the** level of the **countercyclical capital buffe**r – capital accumulated in the form of a buffer should be calibrated to absorb losses and reduce the risk of credit crunch in the economy in the event of a shock;
3. **the timing of the release of the countercyclical capital buffer** – the buffer should be released when it becomes necessary to prevent the potential pro-cyclical impacts of capital requirements. Its subsequent replenishment should be sufficiently distant and predictable, so that banks are willing to employ the capital released by the lifting of the countercyclical buffer requirement.

2. The method of calibration of the countercyclical capital buffer

Early warning models for banking crises (EWI) help to simultaneously define the timing of the activation of the capital buffer and determine its adequate level. Such models use historical data for a large group of countries so as to identify the general characteristics of pre-crisis situations. Based on historical experience, they are intended to give in advance a warning of the potential occurrence of similar emergency situations in the future.

The methodology used by the Financial Stability Committee pools information from multiple "small" models, each based on information flowing from several variables, into a single "large" model through machine learning mechanisms. As a consequence, hundreds of thousands of variables combinations can be used. This reduces the risk of using a single variable or a model, whose characteristics may not reflect such a complicated process as the occurrence of a banking crisis. Analyses performed over the years indicate that while the credit gap[2] remains a useful indicator of the build-up of imbalances in the financial system, other variables may provide better signals, and the pooling of information coming from multiple variables gives much better results on the monitoring of cyclical risk and calibrating the CCyB.

2.1. Early warning models

The purpose of early warning models for banking crises is to identify the combinations of macro-financial variables dynamics that characterised pre-crisis periods in the past. Based on these results, it is possible to draw conclusions concerning the risk of a future crisis.

Using a sample from the years 1998-2021 for dozens of countries (EU and OECD), the EWI model estimates the impact of macro-financial variables and the importance of the level of capital in the banking system for the risk of a financial crisis over a horizon of 7 to 18 quarters ahead. In order to inform well in advance (assuming a lapse of 1 year from the date of the announcement of the buffer until the buffer is in force), taking into account data delays (2 quarters for some data) while the time from the Committee's recommendation to the issuing of the CCyB regulation by the Minister of Finance (assuming 1 quarter), the models aim to warn against a crisis at least 7 quarters ahead. The perspective of the upper limit of the warning horizon of almost 5 years reflects, on the one hand, the long-term process of systemic risk accumulation and the need to respond well in advance and, on the other hand, the limitation of forecast uncertainty as the time horizon increases.

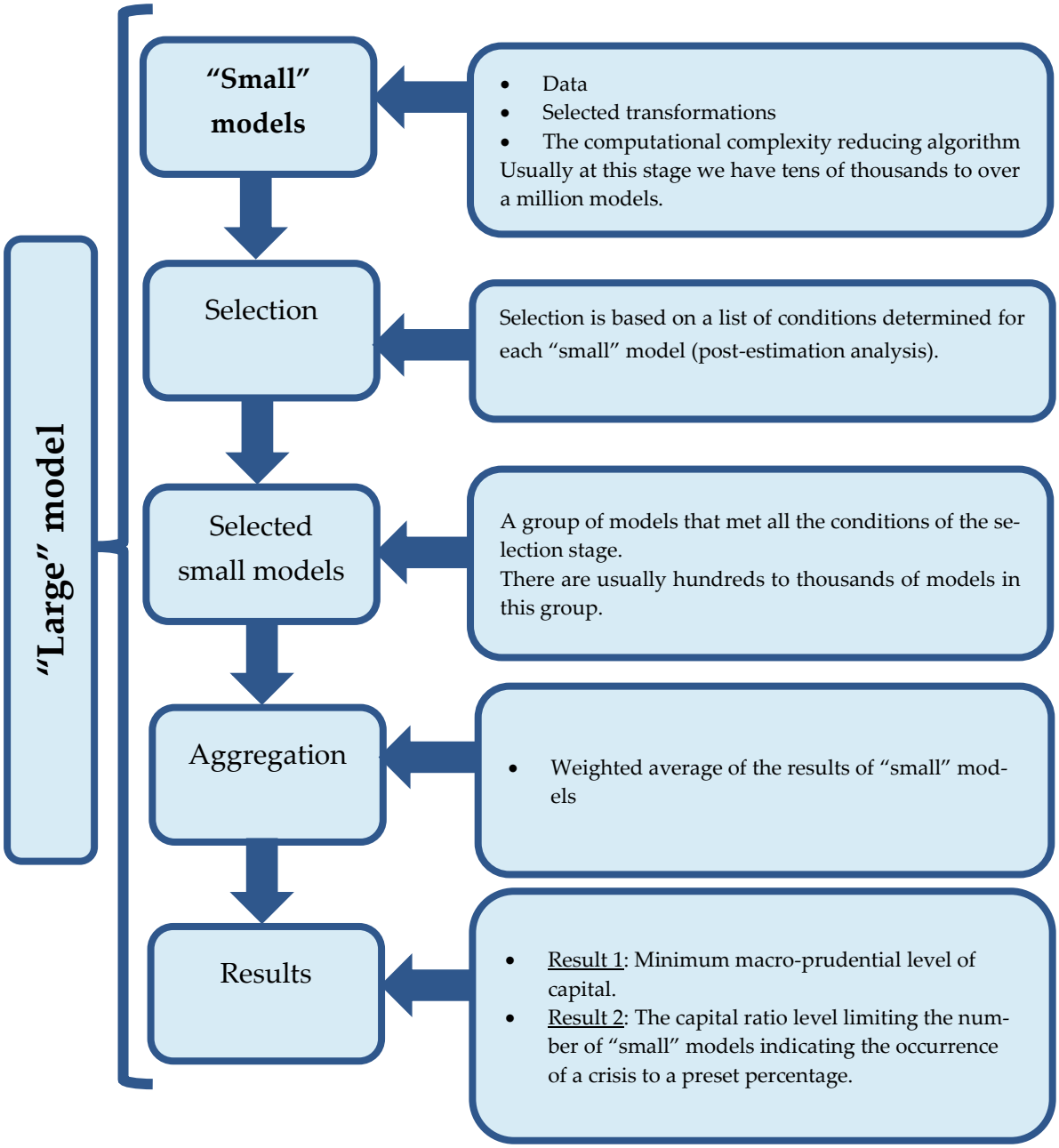
[2] The credit gap represents a deviation in the value of the (credit to non-financial sector to GDP) ratio from the long-term trend.

At the first stage, a considerable number of "small" models (hundreds of thousands) is estimated. Each "small" model is a *logit* model with several explaining variables designed to predict a banking crisis in the nearest future. It is of key importance that the level of the capital ratio in the banking system proves to be the most significant variable determining crisis risk. The inclusion of this variable as one of the explaining variables in each small-scale model enables to determine how changes in the level of capital ratios affect the likelihood of a crisis. In particular, it helps to determine the level of the capital ratio that would be needed to compensate for changes in the systemic risk visible in other macro-financial variables. Information on the relationship between the level of the capital ratio and the risk of a crisis is used at consecutive stages to calibrate the level of the countercyclical capital buffer.

A group of models is subsequently selected from the "small" models, the indications of which are aggregated into a "large" model, incorporating the conclusions from all these models. Selection criteria include, among others, (i) the quality and relevance of the signal as measured by the AUROC[3], (ii) stability over time, (iii) statistical relevance of the parameters; and (iv) inclusion of the capital variable – each "small" model classified in this narrow group of selected models includes information on the level or growth rate of the capital ratio among the variables explained. A distinction between the terms "small" models and a "large" model is presented in Diagram 2.

[3] AUROC (Area Under the Receiver Operating Characteristic (ROC) Curve) is a standard measure used to determine the quality of signals from binary classification models. The higher the AUROC, the higher the probability of the model correctly classifying crisis and non-crisis situations.

Diagram 2. Small models and a large model



2.2. The timing of the activation of the buffer and its level

2.2.1. The timing of the activation of the buffer

As a general rule, the time between the promulgation of the regulation of the Minister of Finance on the CCyB rate in the Journal of Laws and the date of application is one year, although this period may be shortened in special circumstances. This time is intended to allow banks to prepare for meeting the CCyB requirement through, for example, an appropriate dividend policy and capital

management. The purpose of setting such an extended period is to reduce the costs of introducing the buffer for banks.

The analysis of historical EWI model signals indicates that it is justified to confirm that the model indications related to the buffer level have been maintained for at least two consecutive quarters. Thus, the decision to change the CCyB rate based on EWI models takes place only after indications are confirmed in the following quarter.

2.2.2. The level of the buffer

Pursuant to the CRD and the Act on Macroprudential Supervision, the buffer is in principle set in the range from 0% to 2.5%, but a higher rate is possible in justified cases. The analyses performed indicate that periods may occur when higher buffer rates would be justified.

The level of the capital buffer implied from early warning models takes into account the following information: (1) the current average reading of the intensity of cyclical risk and the corresponding average level of the capital ratio (average, i.e. averaging over "small" models) and (2) the level of the capital ratio that limits the crisis signal to a low percentage of "small" models.

The first piece of information is the so-called **Minimum Macroprudential Capital Level (MMCL)**. Referring it to the level of the capital ratio applicable to all institutions (the so-called **Macroprudential Regulatory Capital**, MCR) implies the level of the buffer due to the current cyclical risk identified by the models in average terms.

The second information specifies how much higher the capital ratio should be above the MMCL to reduce the uncertainty about the measurement of cyclical crisis risk. It reflects the prudential aspect of the buffer and is referred to as **a positive neutral rate for the countercyclical capital buffer (nCCyB)**.

The level of the countercyclical buffer implied from this calibration is the higher of the two rates. In formal terms:

$$CCyB = \max\left(MMCL - MRC, PNR\ CCyB\right) \qquad 1$$

Individual categories from Equation 1 are described below.

Minimum Macroprudential Capital Level (MMCL)

Each of the "small" early warning models helps to determine a minimum level of the capital ratio in the banking system that eliminates the signal of a crisis, taking into consideration the intensity of the risk indicated by other variables. The level of this capital averaged over all models is referred to as the **Minimum Macroprudential Capital Level (MMCL)** (see Figure 2).

The higher the level of the capital ratio, the lower the risk of a crisis, therefore, changes in the MMCL reflect changes in the intensity of cyclical systemic risk – an increase in the MMCL means

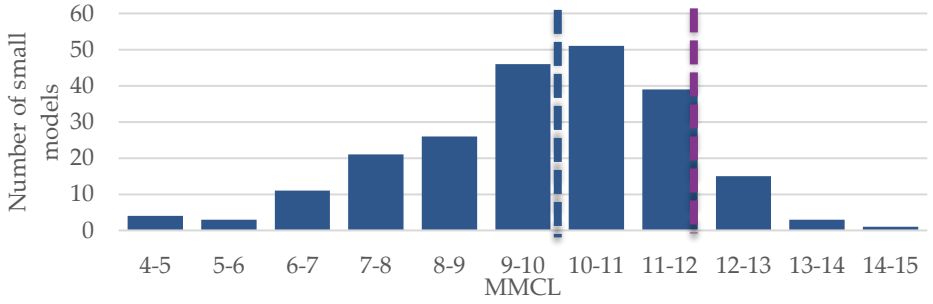
that other variables imply an increase in the intensity of cyclical risk, while a decline in the MMCL indicates a decrease in the intensity of risk identified in other variables.

In formal terms:

$$MMCL = \sum_{i=1}^{n} \left(\omega_i \cdot min \left[\underset{\kappa}{argmin} \left(f_i(X_i, \kappa|\tau) \right) \right] \right) \qquad 2$$

where $f_i(\cdot\,|\tau)$ is a single small logit model whose predictor is the binary variable $\hat{y}_i \in \{0,1\}$, 0 denotes the absence of a forthcoming crisis and 1 denotes a crisis; τ is a threshold determining parameter above which the probability of a crisis predicted by the model $f_i(\cdot\,|\tau)$ is considered as a signal of a forthcoming crisis; X_i is the set of independent variables, other than the capital variable, used to estimate the model $f_i(\cdot\,|\tau)$; κ is one variable or two variables that represent a transformation of the capital ratio $\frac{Tier1}{RWA}$; ω_i is the weight assigned to the model $f_i(\cdot\,|\tau)$ – the weights can be identical or dependent on the AUROC of the model.

Figure 2. Distribution of the MMCL from small models for a specific quarter



Notes: Results for 2019 Q4 for Poland. The model generates the above distributions for all countries and quarters in the sample. One example was selected for practical reasons. A typical figure is presented. The navy blue dashed line illustrates the average of the distribution presented, i.e. the MMCL for Poland in 2019 Q4. The purple dashed line cuts off 10% of the mass of the distribution on the right-hand side – see the subsection on the nCCyB below for more details.

Source: NBP.

The adequate level of the capital ratio in the sector is almost always higher than the MMCL, since it includes additional capital that individual institutions should hold due to idiosyncratic risks (e.g. legal risk of FX loans, O-SII buffers), as well as the capital held on a voluntary basis to manage capital adequacy. Due to these factors, the sector's actual capital ratio tends to be higher than the MMCL (see: the left-hand panel Figure 3). The exception is the period immediately preceding the Global Financial Crisis of 2007-2008, when the capital ratio was decreasing and the cyclical systemic risk was building up rapidly.

Macroprudential Regulatory Capital (MRC)

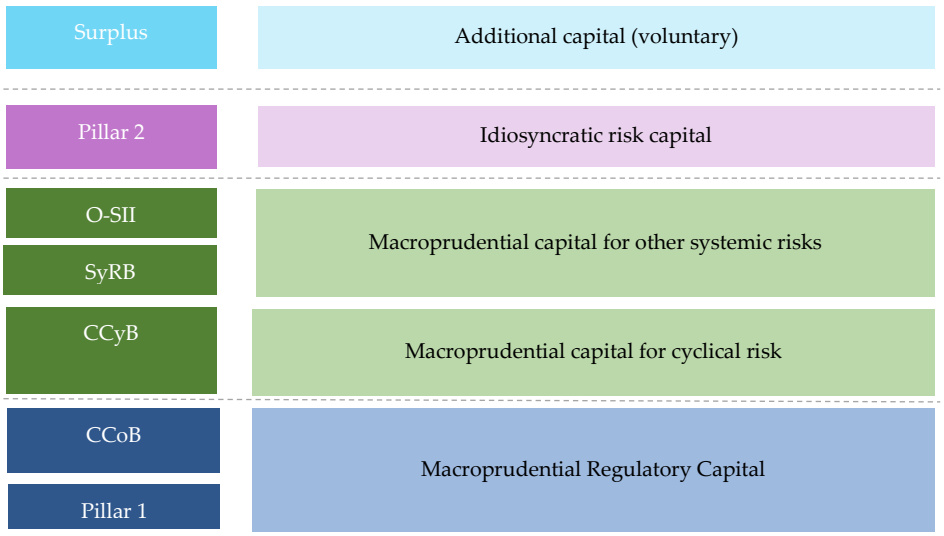
The MRC refers to the capital that all institutions are required to hold for regulatory reasons, regardless of their idiosyncratic risk. Some requirements are general and some are associated with institution-specific risk. For the purpose of the calibration of capital buffers to cyclical systemic risk, only the level of generally applicable requirements is taken into account, excluding the requirements that additionally apply only to specific institutions. This is based on the assumption that individually applicable requirements respond to the idiosyncratic rather than systemic risks.[4]

$$MRC = pillar_1 + CCB \qquad 3$$

where Pillar 1 – the Pillar 1 capital requirements of Tier 1 capital, CCoB – capital conservation buffer of 2.5%.

The buffer's level implied by the first term of Equation **1** (i.e. MMCL-MRC) is shown in Figure 3.

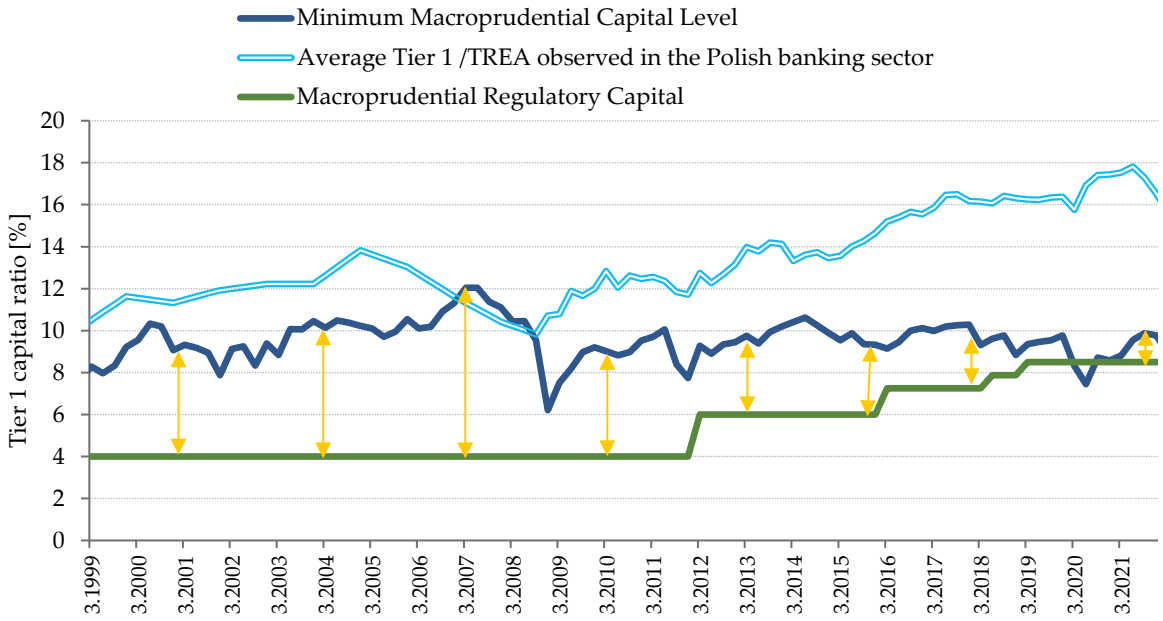
Diagram 3. Relationships between individual capital requirements



Notes: CCyB – countercyclical buffer, SyRB – systemic risk buffer, CCoB – capital conservation buffer, O-SII – systemically important institution buffer.

[4] The exception is the buffer imposed on systemically important institutions (O-SII), which reflects the systemic risk generated by individual institutions. However, it has a structural rather than cyclical dimension and for this reason/is therefore not included in the calibration of CCyB for cyclical risk.

Figure 3. MMCL vs. MRC



Notes: Yellow arrows – the difference between the MMCL and the MRC, illustrate the implied CCyB rate.

Source: NBP.

The CCyB rate implied from the difference between the MMCL and the MRC is based on average indications from the models. It may happen that some sources of risk will not be identified by the models well in advance or the models will omit them altogether, **therefore it is advisable to take into account the uncertainty associated with the measurement of cyclical systemic risk by the models. This is performed by applying the positive neutral rate of the countercyclical capital buffer**, which is the second term of Equation 1.

Positive neutral rate for the countercyclical buffer level – nCCyB

The precautionary calibration of the CCyB in the form of a nCCyB is based on the assumption that it is the capital needed to become resilient against the occurrence of negative events that are difficult to predict, i.e. those that originate from sources that are historically irrelevant to the process of generating the crises.

A risk that is difficult to identify is the risk that will be omitted by the majority of "small" models and consequently, the early warning system will not work effectively enough. In early warning models, it is possible to determine the level of capital at which only a small percentage of models would issue a signal of a forthcoming crisis.

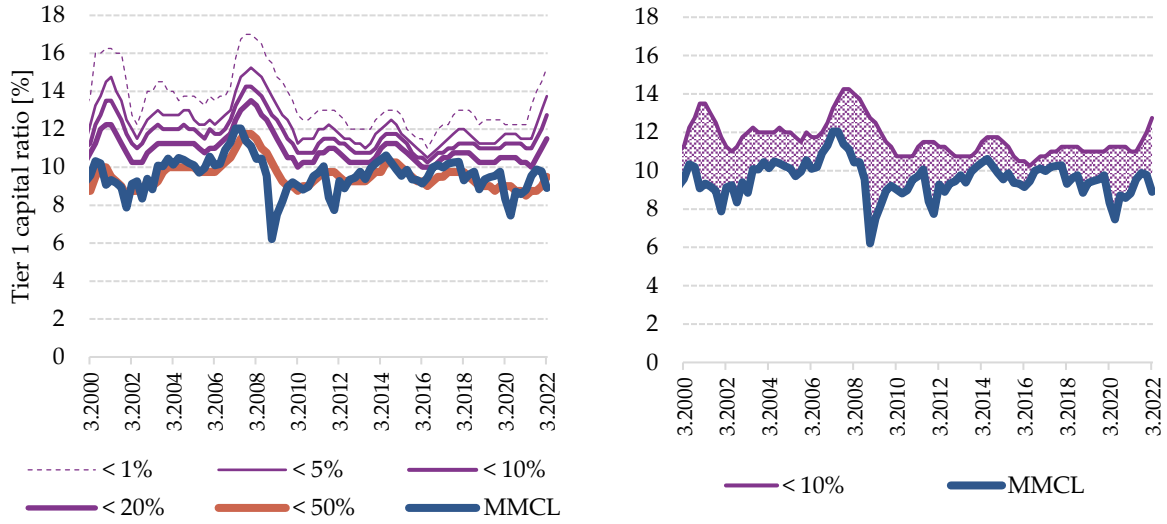
The nCCyB is defined as the averaged difference between the MMCL and the level of the capital ratio which limits a crisis signal to a determined low percentage of small models. This process is illustrated by Figure 4, where the MMCL is shown in the left-hand panel by a thick navy blue

line. The remaining lines indicate the levels of the capital ratio at which only a certain percentage of models signal the risk of a banking crisis in the near future. Since higher capital ratio levels indicate a lower crisis risk, a reduction in the percentage of "small" models signalling a crisis requires *ceteris paribus* an increase in the capital ratio. Therefore, the selection of the percentage of "small" models affects the calibrated nCCyB. The lower this percentage, the higher the calibrated nCCyB.

The threshold percentage of "small" models was set at a level of 10%, which allows for striking a balance between the appropriate level of risk resilience and reduction of the model risk. As the nCCyB is also intended to hedge against risks that may not have historically occurred, the calibration of an appriopriate nCCyB based on models "learned" from historical data should be conservative. Theoretically, one may strive to reduce the percentage of these models to 5%, 1% or almost zero, to make the system resilient to (almost) all the risk identified by the models. However, there is a practical limit to the value of this percentage. The number of 'small' models is large, but it is not unlimited. Limiting the percentage below 10% of "small" models in some periods would mean that the calibration of the nCCyB would be based on indications of a low number of "small" models, thereby exposing itself to the model risk. For this reason, this percentage has been set at the threshold value of 10% − bearing in mind, on the one hand, the validity of a conservative calibration of the nCCyB by setting a low value for the percentage of models and, on the other hand, the problems arising from setting the percentage below 10%.

To ensure the stability of the calibrated nCCyB, the difference between the MMCL and the level of capital which limits the crisis signal to a set percentage of "small" models in each period, is averaged. This process is illustrated on the right-hand panel of Figure 4. The field marked with violet checks shows the difference between the MMCL and the level of capital, which limits below 10% the percentage of "small" models that generate a signal of a forthcoming crisis. **This difference is averaged, resulting in the calibrated nCCyB of 2%.**

Figure 4. Calibration of the nCCyB



Source: NBP.

The calibrated nCCyB should be reviewed periodically, at least once every 3 years. First and foremost, it is reasonable to check whether the previously calibrated nCCyB remains correct before any replenishment of this buffer.

In most situations, the CCyB rate implied on *average* from the models (i.e. MMCL-MRC) will be lower than the nCCyB adopted on a prudential basis. When the cyclical systemic risk builds up – which will be highlighted by an increase in the MMCL – an adequate CCyB rate may exceed a neutral rate and the countercyclical buffer will then be raised. This is schematically illustrated in Diagram 4.

2.3. Release of the buffer

The release of the countercyclical buffer has one objective – to lead to a situation where capital from the buffer can be used to absorb losses, thereby decreasing the risk of a decline in the capital ratios in the banking sector falling below minimum regulatory requirements and thus the risk of credit crunch.

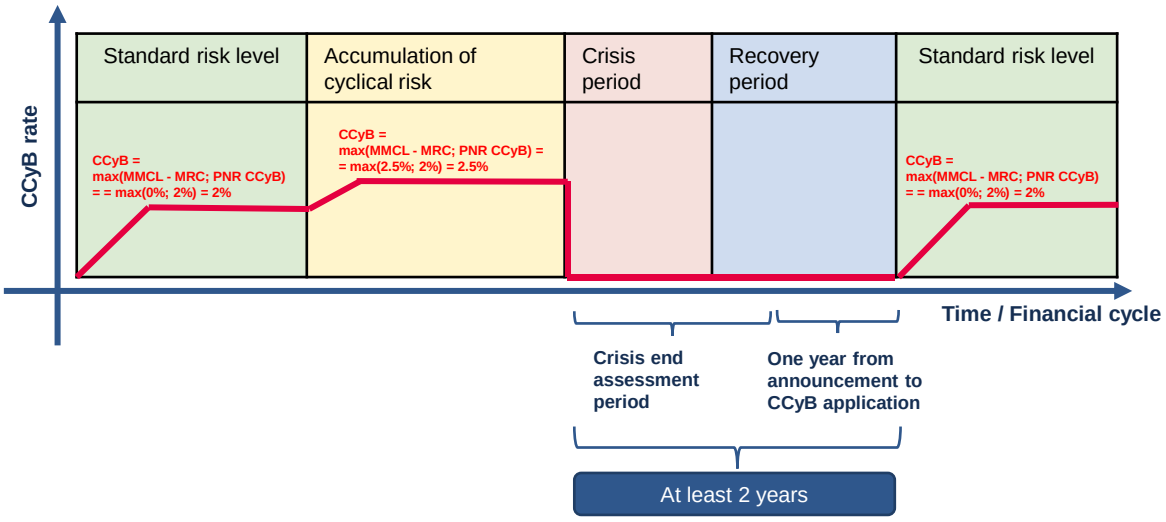
Depending on the nature and magnitude of the shock, it may be reasonable to partially or fully release the buffer. The decision on whether there are grounds to decrease or release the buffer is based on:

- the assessment of the nature and source of the shock;
- the analysis of indicators of stress in the financial system (e.g. CISS);
- the assessment of anticipated losses.

The variables employed to activate the buffer are characterised by inertia and often remain high even during a crisis. Consequently, the activated buffer should also be monitored by means of other indicators that provide current information about the situation in the financial system. These include the Composite Indicator of Systemic Risk[5] (CISS). It measures the current state of financial sector turmoil, reflected in market quotations. It is also reasonable to analyse the financial (current and projected) standing of banks.

The replenishment of a positive countercyclical capital buffer rate in principle takes place no earlier than 2 years after release, maintaining 1 year from the announcement of the replenishment of the buffer. Clear communication to the banking sector of the principle of replenishment of the CCyB no sooner than 2 years after release is intended to create predictable operating conditions for banks. It increases the usability of the released capital for them, as it offers them time to absorb losses and expand lending without fear of breaching combined capital requirements. A diagram summarising the considerations regarding the development of the countercyclical buffer rate throughout the financial cycle is presented in Diagram 4.

Diagram 4. Example of a hypothetical progression of the CCyB over time



Notes: MMCL – Minimum Macroprudential Capital Level, MRC – Macroprudential Regulatory Capital, nCCyB – Positive Neutral Rate for the Countercyclical Capital Buffer.

[5] The monitoring of indicators that provide current information on the crisis is referred to in the recommendations of the European Systemic Risk Board (see, ESRB, "Recommendation of the European Systemic Risk Board of 18 June 2014 on guidance for setting countercyclical buffer rates" (ESRB/2014/1, 2014/C 293/01)).
Monitoring of the CISS is recommended by the ESRB (ESRB/2014/1, 2014/C 293/01, Recommendation D, para. 2). The design of CISS is described in Hollo, D., Kremer, M., & Lo Duca, M. (2012). *CISS – a composite indicator of systemic stress in the financial system*.

Overview

The basic methodology for calibrating the countercyclical capital buffer is based on early warning models for banking crises (EWI). It pools information from many models, thus reducing the risk of using a single model, the form of which may not accurately reflect such a complex process as the occurrence of a banking crisis. Such information is used to determine the timing of the activation of the countercyclical buffer as well as its adequate level.

The calibration of the buffer rate takes into account: (1) the current average measurement of risk by the models, as well as (2) the uncertainty associated with the measurement of cyclical risk. The experience gained over recent years has shown that some cyclical risks are difficult or impossible to identify in advance. As a consequence, the financial system may face a crisis phase without adequate resilience in the form of additional capital to cover losses.

For this reason, it is reasonable to hold a releasable capital buffer for unforeseen risks. The level of the countercyclical capital buffer in connection with such risks is referred to as a Positive Neutral Rate for the Countercyclical Capital Buffer (nCCyB).

The calibration of the nCCyB based on early warning models indicates that 2% is an adequate nCCyB in Poland.

The countercyclical buffer can be raised above the nCCyB when the magnitude of risk identified averagely by the models would imply a higher buffer rate than the current nCCyB. Apart from crisis periods, when the countercyclical buffer may be partially or fully released, the CB rate will not be reduced below the recommended nCCyB.