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THE COUNTERCYCLICAL CAPITAL BUFFER RATE FOR COVERING THE USUAL LEVEL OF CYCLICAL RISKS IN THE CZECH REPUBLIC

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THE COUNTERCYCLICAL CAPITAL BUFFER RATE FOR COVERING THE USUAL LEVEL OF CYCLICAL RISKS IN THE CZECH REPUBLIC

Miroslav Plašil[1]

This article sets out to present the principal features of the application of a non-zero countercyclical capital buffer rate when cyclical financial risks are their usual levels, and to summarise the main arguments for the macroprudential authority to apply such an approach. It goes on to present two methods for calibrating the non-zero rate for the Czech economy and to discuss the right timing for reaching that rate. Both methods imply a need to create a buffer rate of around 1% when cyclical risks are at their usual level. This rate should be reached within two years after the acute phase of a cyclical contraction or financial crisis has subsided.

1. INTRODUCTION

The countercyclical capital buffer (CCyB) is one of the principal macroprudential tools. It is intended to increase the banking sector's resilience to systemic risks arising during the expansion phase of the financial cycle. High resilience when credit risks materialise gives the sector an additional cushion to absorb credit losses without restricting the provision of credit to the sound part of the private non-financial sector. Maintaining banks' ability to lend to the private sector helps prevent the shock from feeding back from the banking sector to the real economy and causing a spiral between credit losses of banks and worsening financial conditions for firms and households (for more details, see Hájek et al., 2017).

Determining the optimum CCyB rate in real time requires wide-ranging, high-quality analyses and represents a tough decision-making and communication task. According to the guidance of the BCBS (2010) and the recommendations of the ESRB (2014), the main guide to setting the rate is the size of the gap between the credit-to-GDP ratio and its long-term trend as estimated by the Hodrick-Prescott filter. Although an analysis of the total leverage in the economy can be useful, it is not used as a key input to CCyB rate decisions in most countries for data and other reasons. For these purposes, each EU country has designed its own method reflecting national specifics and the degree of prudence that its macroprudential authority has decided to apply when setting the rate.

In previous publications, the CNB has emphasised that it prefers to act with a high degree of prudence in deciding on the CCyB rate and to set a non-zero rate when cyclical financial risks have not yet become significantly elevated and are still close to their usual, standard levels (Hájek et al., 2017; CNB, 2018). The first authority to apply this approach was the Bank of England, and several other countries have since joined it.[2]

This article sets out to explain the principal features of the above approach and to summarise the main reasons that have led the CNB to use it. It goes on to present two methods for setting the optimum rate for covering the usual level of cyclical risks (the "standard rate"[3] for short) in the Czech economy. Both methods imply a need to create a CCyB for domestic

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2 Besides the BoE, the central banks of Lithuania (LB, 2017) and Ireland (O'Brien et al., 2018) have explicitly adopted this approach. However, several other countries, for instance Denmark, have emphasised the need to begin moving the CCyB up early.
3 This rate is sometimes referred to as the "neutral rate". However, this term can be rather misleading, as it suggests some kind of macroeconomic equilibrium. The rate should not be interpreted directly in this sense, even though – as we will show later on in the text – it is linked to some extent with macroeconomic equilibrium in the Czech economy.

exposures of around 1% when cyclical risks are at their usual levels. As well as calibrating the optimum standard rate, the article discusses the suitable timing for starting to create the CCyB and the suitable length of time over which the macroprudential authority should reach the standard rate.

The article is structured as follows. Section 2 describes the main principles of the standard CCyB rate concept and summarises the practical reasons for applying it. Section 3 presents the methods for determining the optimum standard rate and discusses its suitable timing. The final section compares the results of the two methods with the CNB's current practice for setting the CCyB rate and then concludes.

2. THE PRINCIPAL FEATURES OF THE STANDARD RATE CONCEPT

Neither the reasons nor the methodology for applying the standard CCyB rate have been described in detail in the literature to date. The prime reference is a Bank of England methodological document (BoE, 2016), but it is fairly brief and does not contain a detailed guide to the practical implementation of the concept. Therefore, the principal features of this approach are reviewed below and expanded to include the CNB's view on the issue.

The application of the standard rate is based on the principle that the CCyB should start to be created soon after the acute phase of a cyclical contraction, or even a financial crisis, has subsided and banks are generating a reasonable profit to build capital cushions. After the acute phase has been overcome, the financial cycle turns upwards and it again becomes necessary to increase the financial system's resilience to adverse shocks in a timely manner. As the cycle moves into the expansion phase, new cyclical risks linked with rising lending activity and gradually relaxing credit standards start to build up in the financial system. To begin with, these risks are not excessively high. Nonetheless, in the spirit of regulation it is vital to gradually create a capital buffer enabling banks to cover their credit losses when the economy returns to recession, and to maintain a sufficient supply of credit.

The point of the standard rate concept is to start moving the CCyB up in sufficient time and head towards a clear, predefined target, rather than setting the CCyB rate at the standard level immediately after the acute phase of the cyclical contraction ends. This approach should therefore be viewed as a gradual process rather than a one-off act. The rationale for timely and gradual change is to avoid the need to make a sizeable sharp adjustment to the CCyB rate in the future when the cyclical risks have manifested themselves in full and require an immediate (and often quite aggressive) response. If the authority responds weakly to existing cyclical risks, the banking sector may not be resilient enough to withstand a cyclical downturn. On the other hand, a sudden, aggressive increase in the capital requirement may force banks to achieve compliance by adopting unintended strategies incurring high economic costs (Andrle et al., 2017). Instead of topping up their capital in the desired way by retaining part of their profits, banks might prefer to meet the capital requirement by, for example, curbing their lending, restructuring their portfolios or increasing their interest margins in a significant way. When making decisions in such a situation, the macroprudential authority must take simultaneous account of the risk of the banking sector being insufficiently resilient and the risk of macroeconomic costs arising in the form of banks reacting adversely to a sharp increase in the CCyB. The standard CCyB rate allows the authority to ensure timely and sufficient banking sector resilience while incurring minimal macroeconomic costs and facilitating capital planning by banks.

There are also purely practical reasons for applying the standard rate concept. These reasons underscore the problem of correctly assessing the cyclical position of the economy in real time. Applying the spirit of this concept involves simplifying the macroprudential authority's decision-making process and communication strategy at the time when the exact level of cyclical risks is hardest to determine due to the existence of mixed or insufficiently robust signals. In this environment, estimating potential future losses is subject to considerable uncertainty. An inappropriate CCyB rate set by the macroprudential authority can give rise to macroeconomic costs that cannot easily be corrected later on by altering the rate. The standard rate to some extent embodies the increased difficulty of consistently predicting the future at a time of steadily rising risks and ensures that the prudential approach is constantly applied. This approach is also essential given the nature of the tool itself, as banks are usually given 12 months to adjust following the announcement of a new rate. Simplifying the decision-making process by applying the standard rate consists, among other things, in assigning a greater weight to historical experience and patterns observed in the past than to present unclear *ad hoc* signals at times of increased uncertainty.

The application of the standard rate concept does not directly affect the CCyB rate reached at the peak of the financial cycle; it merely represents a different way of setting the rate over the cycle. After the standard rate has been reached, the authority can either continue raising the CCyB rate based on the more robust signals about the credit or property market situation, or maintain this level if the standard rate now delivers sufficient banking sector resilience to cover losses arising from loans granted in the current expansion phase of the financial cycle.

3. CALIBRATION OF THE STANDARD RATE

Two different approaches were used to estimate the optimum CCyB rate and choose the right time to start and end the whole process in the Czech Republic: (i) calibration based on the values of the financial cycle indicator, and (ii) determination of the rate with respect to sustainable credit growth. Both methods apply a pragmatic approach in preference to sophisticated structural models, as the latter are still in their infancy and of questionable usefulness. The approaches are tailored to the Czech economy and are therefore consistent with the above philosophy of relying in the early phase of the financial cycle more on historical experience than on the actual values of the monitored indicators (see also the methodology of the BoE, 2016). Although the two methods use different definitions of the usual level of cyclical risks, they produce similar conclusions as regards calibration and timing.

3.1. Calibration of the standard rate based on the values of the financial cycle indicator

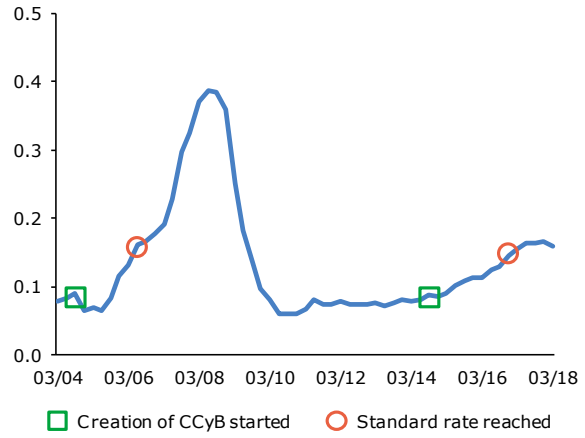
The simplest way of determining the optimum standard rate is based on the values of the aggregate financial cycle indicator (FCI; Plašil et al., 2016). The CNB uses the FCI as an analytical basis for assessing the cyclical position of the economy and also as a tentative guide for setting the CCyB rate (Hájek et al., 2017). The conversion table between the FCI values and the CCyB rate was constructed on the assumption that the historical medians of the sub-indicators entering the FCI calculation correspond to a kind of "normal" situation where the financial cycle is neither significantly subdued nor significantly overheating (see Hájek et al., 2017, pp. 111–112). This definition can be roughly identified with the situation where cyclical financial risks are at their usual levels. According to the conversion table, a rate close to 1% can be regarded as the optimum standard rate for the usual level of risks (the historical

medians of the sub-indicators).[4] Experience from the previous two financial cycles furthermore shows that the period between the macroprudential authority starting to create the CCyB and reaching the FCI value corresponding to a standard rate of 1% lasts around eight quarters (see Chart 1). The target standard rate is thus reached relatively slowly. The pace of growth of the rate is similar to the rule of thumb recommending that the CCyB rate should be raised by 0.5 pp a year after the economy moves into an expansion phase of the financial cycle (Hájek et al., 2017).

CHART 1

The financial cycle indicator and its conversion into the standard rate

(IFC; 0 = minimum, 1 = maximum)

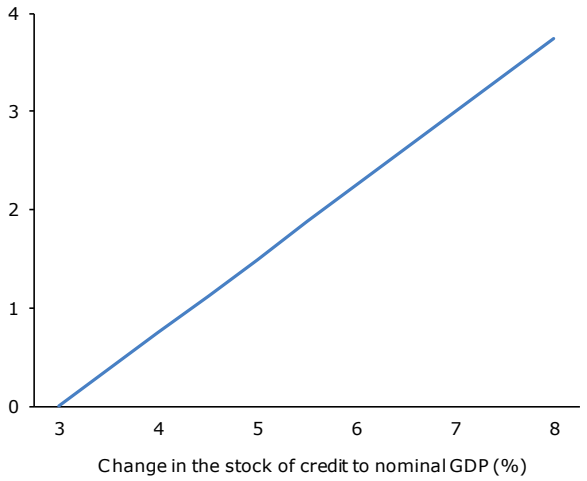


Source: CNB
Note: The standard rate corresponds to the situation where the FCI sub-indicators are at their historical medians (taking into account the strength of the observed cross-correlation structure corresponding to this sub-indicator level). The CCyB starts to be created when the fourth decile of the historical sub-indicator values is reached. The conversion table between the FCI values and the indicative CCyB rate is described in Hájek et al. (2017).

CHART 2

Average annual growth in the credit-to-GDP ratio as a function of the credit dynamics

(x-axis: %; y-axis: average growth in pp)



Source: CNB
Note: The chart depicts average annual growth in the credit-to-GDP ratio in the following 15 years at various credit growth rates assuming a long-run equilibrium nominal GDP growth rate of 4.5%. Credit is net of intercompany loans.

3.2. Calibration based on evaluating sustainable credit growth

The second approach to determining the optimum standard rate is based on evaluating the sustainable level of credit growth. Despite its shortcomings, the ratio of total credit provided to the private non-financial sector to nominal GDP is regarded as the baseline measure of leverage in the economy. The empirical literature shows that excessively high growth in this ratio increases the risk of a financial crisis. A situation where year-on-year growth in the ratio is below 1 pp in the long term is deemed sustainable and relatively normal. By contrast,

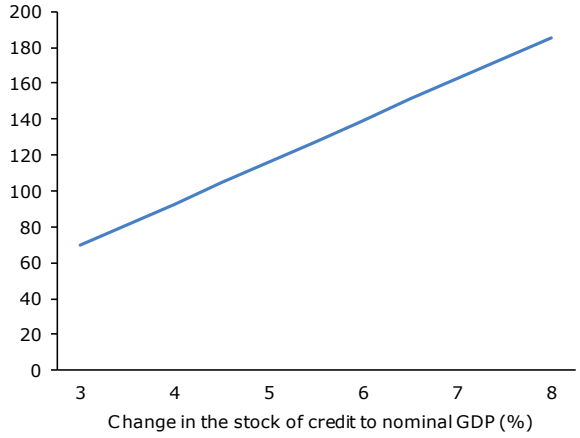
4 The construction of the conversion table is described in more detail in Hájek et al. (2017). The situation where all the FCI sub-indicators are simultaneously at their medians is hypothetical and unlikely to occur in practice. Nonetheless, taking into account the observed cross-correlation structure, the corresponding FCI value for this combination can be obtained and used as a benchmark for the actually observed values of the aggregate indicator. Analogously, the FCI value where all the input sub-indicators are equal to the fourth decile of their historical values is regarded as the right time to start creating the CCyB.

growth of 3 pp a year is generally regarded as a warning signal of a crisis (IMF, 2011). So, assuming a long-term annual nominal GDP growth rate of 4.5%,[5] a situation where change in the stock of credit to nominal GDP is around 4% can be identified as the usual level of cyclical risks in the Czech economy. At this credit dynamics, the credit-to-GDP ratio would increase at a pace of slightly less than 1 pp a year on average over the following 15–20 years (see Chart 2). This credit dynamics simultaneously ensures that the credit-to-GDP ratio converges to a final level of around 90% and is not explosive (see Chart 3).[6] Quarter-on-quarter change in credit of CZK 40 billion, corresponding historically to 3%–4% of quarterly nominal GDP, meanwhile represents the amount at which the output gap in the Czech economy was closing in the past (see Chart 4). Although knowledge of the size of the output gap is not needed to calibrate the standard rate, it is interesting to note that the occurrence of the usual – not elevated – level of cyclical risks in the Czech economy in the past roughly coincided with periods of broad economic equilibrium and an absence of inflation pressures from the domestic economy.

CHART 3

The convergence bound of the credit-to-GDP ratio as a function of the credit growth rate

(x- and y-axes both in %)



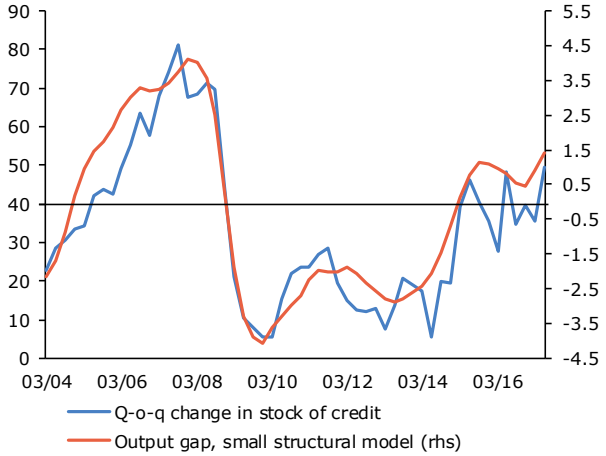
Source: CNB

Note: The chart depicts the level towards which the credit-to-GDP ratio converges at various credit growth rates assuming a long-run equilibrium nominal GDP growth rate of 4.5%. Total credit is net of intercompany loans.

CHART 4

Quarter-on-quarter changes in the stock of credit and the output gap

(CZK billions; right-hand scale: % of potential output)



Source: CNB

Note: Quarter-on-quarter credit growth of CZK 40 billion currently corresponds to approximately 3% of quarterly nominal GDP.

5 The long-run equilibrium real GDP growth rate in the CNB's core forecasting model is currently 3%. As a result of continued convergence, however, this rate can be expected to fall gradually in the future and move closer to that in advanced countries. Given the 2% inflation target, our analysis therefore considers a long-run nominal GDP growth rate of 4.5% (2.5% real growth plus the 2% inflation target). The use of 5% growth (3% plus the 2% inflation target), which is consistent with the current calibration of the core forecasting model, has no material impact on the results of the analysis.

6 The credit-to-GDP ratio converges towards (B/g)*(1+g), where B denotes change in the stock of credit to nominal GDP and g represents sustainable long-run nominal GDP growth (Biggs and Mayer, 2013). Although the level of around 90% corresponding to the current euro area debt ratio does not necessarily constitute a healthy level for the Czech economy to head towards, the speed of convergence would be very gradual and slowing over time under the given conditions. The credit-to-GDP ratio in the Czech Republic would reach the current debt ratio in the euro area in more than 60 years.

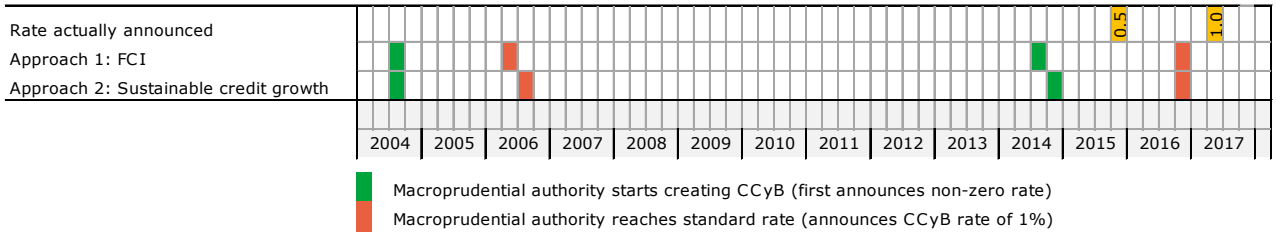
If the moment at which quarterly credit growth in the economy is running at CZK 40–50 billion (or approximately 4% of current nominal GDP) is deemed the right time to start creating the CCyB and the process of reaching the standard rate is phased over eight quarters as in the first method, the total amount of new loans (given a continued similar rate of growth) will be approximately CZK 400 billion (CZK 50 billion x 8 quarters – to that figure it may be appropriate to add partial repayment of the existing credit stock and potentially a small reserve). Given a loss rate of 5%, which, in line with the BoE methodology (BoE, 2016), is set at a slightly higher level than that corresponding to a usual recession, the losses on loans provided in the new cycle would amount to CZK 20 billion (400 x 0.05). The capital buffer needed to cover these losses would again be almost 1 pp of the capital ratio.[7]

4. CONCLUSION

This article discussed the CNB's reasons for applying the standard rate concept and presented the main ideas underlying this approach. Two independent methods employing different definitions of the usual level of cyclical risks were used to determine the optimum standard rate. The results of both methods give rise to a need to set the standard CCyB rate at roughly 1%. The two methods also provide practically identical recommendations as regards when to start creating the CCyB and when to reach the standard rate (see Table 1). Given the different definitions of the usual level of cyclical risks used by the two methods, this recommendation can be considered robust.

TABLE 1

Actual CCyB rate increases and increases consistent with the standard rate concept



Source: CNB
Note: The CNB started to use the countercyclical capital buffer as a macroprudential policy tool in 2015. No CCyB rate was set during the expansion phase of the previous financial cycle (2004–2008).

Although the CNB has yet to explicitly apply the standard rate concept in practice, the approach adopted at the start of the expansion phase of the current financial cycle can clearly be regarded as prudential. By comparison with its actual decisions, it would have reached a rate of 1% just two quarters earlier under the standard rate concept. Likewise, it would have started to create the CCyB slightly sooner than it did in reality. Note, however, that the first increase made by the CNB was one of 0.5 pp. If it had proceeded in gradual steps of 0.25 pp, the lag compared with the standard rate concept would have been negligible.

7 CZK 20 billion currently represents roughly 0.8% of risk-weighted assets. The figures of CZK 400 billion and 5% are largely just a (conservative) approximation and were chosen to simplify the calculation. However, figures reasonably near to the chosen constants still indicate that the optimum standard rate should be close to 1%.

At the time of writing, the applicable CCyB rate was 1.25% and the pending CCyB rate 1.75%.[8] Both were thus above the standard rate, in line with the cyclical risks identified. The concept described in this article will therefore have no effect on the setting of the CCyB rate in the current financial cycle. It should, however, be applied in the expansionary phase of the new cycle.

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8 For the CCyB rates currently in effect, see:
http://www.cnb.cz/en/financial_stability/macroprudential_policy/countercyclical_capital_buffer/index.html.