The BCBS proposal for a countercyclical capital buffer: an application to Belgium

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Introduction

One of the striking outcomes of the recent financial crisis has been a change in the focus of prudential regulation, from a narrow concern with the resiliency of individual institutions (the “micro-prudential” approach) to a broader preoccupation with the entire financial system (the “macro-prudential” approach). The crisis clearly demonstrated that focusing only on the solvency of individual institutions does not guarantee the resilience of the financial system. Indeed, the new banking regulatory framework, “Basel III”, which has been put in place in response to the crisis, includes both macro-prudential and micro-prudential elements. (1)

One of the concerns of the macro-prudential approach is to limit the build-up over time of systemic risk, as a result of generalised, pro-cyclical behaviour among financial institutions. In order to address the instability that such behaviour can create and the potential negative impact on the real economy, the Basel Committee on Banking Supervision (BCBS) proposes the use of countercyclical capital buffers (CCBs), which will be determined at national level for all credit exposures to counterparties in that country. National authorities will require banks with credit exposures in countries where credit growth is excessive to build buffers, which can then be drawn down in the ensuing downturn. The CCB will lie “on top” of another, time-invariant buffer, called the conservation buffer, which banks may also draw down in downturns. (2)

Internationally active banks with credit exposures in various countries will face a countercyclical capital buffer which is a weighted average of the countercyclical buffers for all countries where they have credit exposures. International application of such a reciprocal policy regime will ensure a level playing field across jurisdictions and banks. The regulatory framework foresees a gradual implementation of the CCB between 1 January 2016 and 31 December 2018. During the implementation period, the size of the maximum buffer will gradually increase so that, from 2019 onwards, national authorities may impose a capital buffer of up to 2.5% of total risk weighted assets if they deem it necessary. (3)

Determination of the level of the CCB is not a mechanical exercise, but will involve judgment on the part of national authorities, who will need to determine when lending to counterparties in their country is excessive (which would trigger a build-up of the buffer) and when the buffer should be released. As a benchmark, the BCBS suggests using the ratio of total credit to GDP and the degree of variation of this ratio from its long-term trend. This variable has been judged to be the most robust, among a series of other variables, in signalling a build-up of systemic risk in most countries.

In the coming years, national authorities must prepare for the implementation of the CCB policy. This article considers the question of application of the CCB policy to Belgium. As a starting point, it examines the behaviour of the benchmark “credit-to-GDP guide”. This is a useful exercise, as it provides the foundation for a careful analysis of credit growth and its association with systemic risk in most countries.

(1) BCBS (2010b).
(2) The same conditions as for the conservation buffer apply with respect to definition of capital and restrictions on distribution of profits in the case where a bank does not meet its actual buffer requirement.
(3) Under exceptional circumstances, national authorities may also set a buffer higher than 2.5% of total risk weighted assets.
risk. The article sheds some light on the behaviour of the credit-to-GDP guide and the role of different parameters in determining the timing and level of CCBs. The article then discusses the need for making use of information beyond the ratio of credit to GDP, and the role of judgment and discretion in determining the CCB. Specifically, as an illustration the article considers variations in credit growth across households and firms, and their implications for the setting of CCBs.

The article is organised as follows. Section 1 provides a summary of the BCBS proposal, discussing the principles underlying the CCB policy and explaining the benchmark credit-to-GDP guide. Section 2 examines, as a starting point, the level of the CCB that would result from a strictly mechanical application of the benchmark method to Belgium. It then extends the analysis by considering a decomposition of total credit into credit to households and credit to non-financial firms. It explores the implications of this decomposition for the determination of CCBs. Section 3 concludes.

1. The BCBS guidance for a countercyclical capital buffer policy

In order to help national authorities to prepare the operation of the CCB policy, the BCBS has published a guidance document. In this document, the BCBS lays out the principles for operation of the buffer, and proposes a credit-to-GDP guide, which is a benchmark method for calculating a buffer using the credit-to-GDP ratio and deviations from its long-term trend. The credit-to-GDP guide is useful for national authorities as a starting point and serves as a benchmark for comparing buffer decisions across jurisdictions. Ultimately, it will be important that authorities identify their own optimal approach to determining a buffer by using judgment in line with the principles set out by the BCBS.

1.1 The principles underlying the operation of the countercyclical capital buffer

What are the principles that national authorities should apply in operating the countercyclical capital buffer? In the guidance document, the BCBS lays out five main principles which determine the overall objectives of the buffer regime and provide overall guidance for the implementation of a buffer policy:

1. **Objective.** The overall objective of CCBs is to ensure that the banking system has an additional buffer of capital to absorb potential losses when excessive credit growth has led to an increase in systemic risk. The CCB is not meant to manage the credit cycle, although it may have a beneficial side effect in dampening the build-up of excessive credit. Since the CCB may have implications for monetary, fiscal and other public policies, it is necessary to evaluate sufficient supervisory, macroeconomic and financial information to ensure that buffer decisions are consistent with these other policies.

2. **The credit-to-GDP guide as common reference guide.** The credit-to-GDP guide is a useful starting reference point for authorities because it is closely linked to the objectives of the CCB and work by the BCBS suggests its usefulness in simulations for many jurisdictions. Having a common reference point also facilitates communication and benchmarking of buffer decisions across countries and jurisdictions. However, national authorities should use any additional information, variables or other specifications of the guide that are relevant for the assessment of the sustainability of credit growth. Ultimately, the credit-to-GDP guide is useful as a benchmark tool, but judgment and discretion will play an important role in the buffer decision for each country. Thus, the credit-to-GDP guide ultimately does not need to play the dominant role in the information used to take buffer decisions. At the same time, it should not be completely ignored.

3. **Risk of misleading signals.** A careful assessment of the information contained in the credit-to-GDP guide, or any other information, should be performed to help ensure the accuracy of the signal. In this respect, a broad set of additional information could be used for consistency checks – such as asset prices, funding spreads and CDS spreads, credit condition surveys, real GDP growth, and data on the ability of non-financial entities to meet their debt obligations on a timely basis.

4. **Prompt release.** In times of systemic stress, the buffer needs to be released promptly to avoid the risk of credit supply being constrained by capital regulation. Where credit growth slows and systemic risk recedes in a benign fashion, the buffer may be released gradually.

5. **Other macro-prudential tools.** The CCB is an important instrument in a suite of macro-prudential tools at the disposal of the authorities. If excess credit growth has led to an increase in systemic risk, authorities should deploy the buffer, possibly in tandem with other macro-prudential tools. In circumstances where excessive credit growth is limited to specific sectors, alternative tools, such as loan-to-value ratios, income gearing limits, or sectoral capital buffers, could be employed, without triggering the CCB.

(1) BCBS (2010a).
1.2 Description of the credit-to-gdp guide

Previous analysis has shown that the credit-to-GDP guide proposed in the guidance document works reasonably well to determine the buffer in the upswing part of the financial cycle. However, it is not a good indicator of the manifestation of systemic risk occurring with a downturn. The release of the buffer should therefore be decided in a discretionary manner, to capture the typically sudden nature of systemic risk manifestations. This section describes the benchmark procedure for the build-up of the buffer and then highlights some of the issues related to the release of the buffer.

1.2.1 The benchmark procedure for the build-up of the buffer

The mechanical benchmark procedure comprises both the choice of a conditioning variable and a calculation method to map the evolution of the conditioning variable into a buffer decision.

1.2.1.1 The choice of the conditioning variable

Why has the BCBS chosen the credit-to-GDP ratio as the conditioning variable? In principle, the buffer method could use any conditioning variable which is a good indicator of the upswing part of the financial cycle where the financial system potentially builds up systemic risk. Aggregate macroeconomic variables, such as GDP and overall credit related variables, are natural candidates, but variables related to banking sector activity (e.g. data on lending, profit and losses or cost of funding to banks) could also be used. To a varying degree, all these variables have some explanatory power with respect to the financial cycle and the build-up of systemic risk. The crucial requirement, though, is the ability of the conditioning variable to indicate accurately the gradual build-up of systemic risk over of a time span of several years. In this respect, analyses performed by BCBS economists have suggested that conditioning variables based on credit measures perform best in a range of countries. Specifically, a conditioning variable based on the credit-to-GDP ratio and deviations from its long-term trend (the gap) appears to be the most robust specification in a sample covering 36 countries and 25 crises. (2)

A conditioning variable based on credit also has the advantage of being directly related to the objective of the buffer to protect the financial system from losses in a downturn following excessive credit growth. The availability of credit is a main determinant of the financial cycle – in the upswing of the cycle, credit typically expands, and a decline in credit is often symptomatic of a credit crunch. The credit-to-GDP ratio is mainly a statistical normalisation to account for the fact that credit demand and supply grow in line with the size of the economy.

1.2.1.2 The mechanics of the CCB calculation

The mechanics of calculating a capital buffer via the benchmark method consist of three steps: 1) calculating the credit-to-GDP ratio; 2) calculating the credit-to-GDP gap as the deviation of the actual ratio in a given quarter from its trend; and 3) calculating a capital buffer based on the gap.

Calculating the credit-to-GDP ratio

For the calculation of the ratio, nominal levels of GDP and of the stock of total credit to the private sector should be used. The guide suggests using a broad measure of credit to the private sector, comprising all lending by domestic and foreign financial institutions (as well as by market sources) to households and non-financial corporations (the private sector) in a given country. A major advantage of such a definition is that it is neutral to shifts of credit from banks to non-banks. Hence, the credit specification is less likely to be distorted by certain market developments (for instance, securitisation where a bank shifts loans from its balance sheet to a special purpose vehicle). A broad definition of credit also recognises that banks can suffer from a credit crisis even if the build-up of credit has occurred through market sources, such as high-yield bonds. The ratio will be calculated each quarter and is defined as a percentage.

From the credit-to-GDP ratio to the credit-to-GDP gap

The credit-to-GDP gap is the difference between the actual credit-to-GDP ratio and its long-term trend. If the gap is positive, the credit volume per GDP has grown above its long-term trend, possibly indicating excessive lending by the financial system and an increase in the level of systemic risk. If the gap is negative, the credit volume is below its long-term trend and the level of systemic risk stemming from total credit is likely to be low.

In order to calculate the gap, a long term trend must first be calculated. The method uses the Hodrick-Prescott (HP) filter to establish the long-term trend; the gap can

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(1) A reason why the credit-to-GDP ratio is not suitable to indicate a downturn is that it often continues to rise for some time after a downturn. This may be due to a fall in GDP (the denominator of the ratio); or credit may continue to rise and contract only later on.

(2) See Drehmann et al (2010). The authors reviewed variables from the three groups – aggregate macro-economic variables; banking sector activity; and cost of funding to banks – in different forms (levels, growth rates, deviations from trend) to identify the best-suited specification.

(3) The guidance document, page 10.
then easily be calculated as the difference between the actual ratio and the trend. The HP filter is widely used to establish the trend of macro-economic time series data. Basically, the HP filter decomposes a time series into a cyclical and a trend component and allows for a “penalisation” of variations of the trend. The penalisation factor is denoted as lambda: for lambda equal to zero, variations of the trend are not penalised and the HP trend line follows the actual data. For lambda equal to infinity, variations of the trend receive an infinite penalty and the HP trend line approaches a straight linear trend line. In other words, the higher the lambda the higher and flatter the trend line becomes. The BCBS proposes to set lambda at 400 000, on the grounds that data is quarterly and credit cycles tend to be longer than business cycles (the usual value for lambda for quarterly data that follows the business cycle is 1600). The trend is calculated in “real time”, that is, only information available at the point of calculation should be used (1). The gap is defined in percentage points, for instance if the long term credit-to-GDP ratio is 80% but the actual credit-to-GDP ratio is 85%, the gap is equal to 5 percentage points (pp).

Threshold values of the credit-to-GDP guide are used to define the range of the gap at which the buffer should be turned on. The lower threshold (denoted as L) defines the level of the gap above which the buffer is turned on. It thus serves as an indicator of when indebtedness becomes high and when there are some early concerns about systemic risk. If the gap rises above the lower threshold, the buffer should be increased. How fast the buffer should be increased and when it should reach its maximum is defined by the upper threshold, denoted as H. Between L and H, the size of the capital buffer increases linearly, reaching 100% at H. (2) Hence, the lower threshold is to determine the size of the capital buffer and the speed at which this buffer reaches the maximum level for the countercyclical buffer.

What are the main considerations for national authorities in setting the thresholds? An important consideration is that the threshold L should be set low enough to allow for a gradual build-up of the buffer. Ideally, the threshold should be set such that the buffer will be turned on 2-3 years before a significant downturn. This allows for a gradual increase in the buffer over the following quarters (if the gap widens), and also takes into account the fact that banks have one year to comply with any change in the level of the buffer. Reviewing the pattern of the gap across 27 countries and instances of crises, the BCBS has set L at 2 pp and H equal to 10 pp. Hence, the capital buffer increases linearly from 0% when the gap rises above 2 pp until it reaches 100% at a gap of 10 pp. For any gap greater than 10 pp, the capital buffer of course remains at 100%. Figure 1 illustrates the method.

![Figure 1](image)

**Figure 1** Calculation of the capital buffer (% of maximum buffer size)

<table>
<thead>
<tr>
<th>Capital buffer</th>
<th>L=2pp</th>
<th>H=10pp</th>
<th>Gap (pp)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

It should be noted that the determination of the thresholds, particularly L, may give rise to a trade-off between the timely detection of a credit bubble and an increase in the risk of turning on the buffer when systemic risk remains low. Specifically, a low threshold L implies that the buffer will be turned on more frequently. The guide will then probably perform well in predicting a crisis, but it will also give rise to «false alarms», i.e. situations where the buffer is turned on but the growth of credit turns out to be benign. (3) Again, national authorities must use their judgment to find the right balance and to come to an agreement concerning how often a buffer should be turned on. The trade-off between timely detection of a credit bubble and “false alarms” would call for back-testing of the credit-to-GDP guide, not only against the current crisis but also against a longer period of “normal” times or previous crises (if any) to find a balance.

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1. Technically speaking, the filter is used in a one-sided manner using an expanding window of data as proposed by the guidance document. It is well known that the HP suffers from an end-point bias which matters when the HP filter is used in real time. In going forward, the robustness of the HP filter should be evaluated and techniques to reduce the end-point bias could be considered.

2. Specific implementations of the buffer policy may also stipulate a stepwise increase in the buffer (for instance, dividing the buffer into 10 steps, such that an overall buffer of max 2.5% could be approached in steps of 0.25%). This would not change the calculation or the principle of the buffer in a substantial way.

3. The guidance document, page 11.
1.2.2 The release of the buffer

Since the rationale of the buffer is to protect the banking system from losses stemming from manifestations of systemic risk following excessive credit growth, the buffer should be released if banks suffer losses which pose a threat to financial stability, or if there are problems in the financial system elsewhere which have the potential to disrupt the flow of credit, undermining the performance of the real economy and ultimately inflicting losses on banks. The buffer can then be used by banks before they have to deplete their normal capital.

In principle, the same variables used for the build-up of systemic risk could be used for determining the release of the buffer. However, the credit variable has been shown to fail to signal manifestation of systemic risk in a timely manner. The BCBS therefore proposes to use other variables for the release of the capital buffer. In general, market information such as CDS spreads and asset prices appear to be better suited due to their ability to signal manifestations of systemic risk in good time. However, the origins of such manifestations and losses to banks are another important consideration for the release of the buffer. If one or several internationally active banks in a given country are experiencing losses, the origins could stem from exposure to domestic counterparties or to foreign counterparties. The market-based indicators would most often reflect the aggregate exposures of the bank to several jurisdictions, and additional information would then be needed to pinpoint the source of stress. If the losses are due to domestic counterparties, then there could be good reason for releasing the buffer. (If the losses are due to foreign counterparties and if enough banks in the foreign country are also experiencing losses, then the authorities in that country will likely release the buffer for credit exposures in that country.) Most importantly, national authorities will need to use a significant amount of discretion and judgment to identify situations where the buffer for their jurisdiction should be released.

1.3 The reciprocal nature of the CCB policy

The determination of the buffer at national level is justified by the fact that financial cycles differ across countries. For example, credit growth may be excessive in one country, while other countries are experiencing average or below-average levels of credit. However, national determination of CCBs has implications for internationally active banks with credit exposures in several countries.

In particular, in order to ensure a level playing field across domestic and foreign banks, the application of the buffer will follow the principle of jurisdictional reciprocity. According to this principle, authorities determine the buffer for credit exposures to counterparties in their country. The home supervisory authority of an internationally active bank then ensures the determination of the bank’s total countercyclical capital buffer by implementing the buffer stipulated by each country’s authority for the bank’s credit exposures to counterparties in that country. The home supervisor is not permitted to set a buffer for credit exposures to a foreign country that is below the buffer stipulated by the authorities in that country. However, the home supervisor may require a higher buffer for foreign exposures if it deems such a buffer necessary.

This jurisdictional reciprocity thus ensures that foreign banks do not have a competitive advantage in a given country, since their home supervisory authorities cannot undercut the buffer set by the authority for that country. Similarly, this principle also contributes to the potential of CCBs to limit the excessive growth of credit, since a buffer decision for one country applies to all banks with credit exposures in that country.

2. First steps in the development of a CCB policy for Belgium

A natural starting point in the context of developing a CCB policy is to apply the credit-to-GDP guide to Belgium. This allows a first calculation of the potential CCB and an illustration of the benchmark method, but also lays the foundations for a more judgment-based approach that takes into account the country-specific characteristics of the economy and the financial system.

2.1 Back-testing of the credit-to-GDP guide

In order to “back-test” the credit-to-GDP guide, it is first necessary to establish whether a buffer would have been appropriate for past crises. After that, the guide can be applied and the performance of the credit-to-GDP guide

(1) See the guidance document, page 5.
(2) Specifically, home supervisor must not set a buffer below the host authority’s buffer unless the latter sets a buffer above 2.5%. In this case, the home supervising authority is only required to set a buffer of 2.5% for exposure to counterparties in the host authority’s country.
(3) The BCBS has also applied the credit-to-GDP guide in simulations for Belgium. However, the credit variable used by the BCBS for Belgium is quite narrow (credit provided by Belgian financial institutions to the Belgian private sector). We use a broader definition of credit here, which is conceptually more appropriate and is indeed suggested in the BCBS guidance document. However, the broad credit measure is calculated from financial accounts data, which may be subject to significant, retroactive revisions. In contrast, the narrow credit measure can be directly obtained from banks’ supervisory reporting, in a timely and reliable fashion. This suggests that, in practice, both measures should be monitored. We also discuss a decomposition of the credit variable (see Section 2.2), which has not been done by the BCBS.
can be assessed. Using data on credit volumes, we calculate the credit gap and the buffer for the last 7-8 years. (1)

2.1.1 Crisis identification

Since the buffer is determined at national level for exposures to domestic counterparties, it is important to identify losses to banks which stem from such exposures. For example, one cannot take for granted that the recent financial crisis would have warranted a buffer on Belgian credit counterparties: arguably, the crisis originated primarily from losses associated with subprime mortgages in the US.

When testing the credit-to-GDP guide across a set of countries including Belgium, the BCBS adopted the identification of banking crises used by Reinhart and Rogoff (2009). (2) These authors rely on evidence on bank runs that lead to “the closure, merger or takeover by the public sector of one or more financial institutions and, if there are no runs, the closure, merging, takeover, or large-scale government assistance of an important financial institution (or group of institutions) that marks the start of a string of similar outcomes for other financial institutions”. According to this definition, the only banking crisis to hit Belgium in recent decades was the current crisis, starting in mid 2008 with the government support to Fortis and the subsequent support to KBC and Dexia. However, it cannot be taken for granted that such a definition of crisis is optimal for the purpose of the CCB policy. The losses to these banks may have been due to losses on credit to foreign counterparties, in which case there would have been no need to set a positive CCB for Belgian counterparties. The box below addresses this issue by analysing the Belgian loan losses ratio for Belgian banks. The analysis highlights the difficulty of identifying losses on credit to Belgian counterparties and suggests that, contrary to the BCBS simulations, a buffer may not have been warranted in Belgium in the period prior to 2008. However, a more exhaustive analysis of the sources and magnitudes of losses stemming from domestic credit counterparties would be necessary to draw a firm conclusion.

(1) As explained below, data availability constrains our ability to estimate the gap and the buffer over a longer historical period.
(2) Reinhart and Rogoff (2009).

Box 1 – Identification of manifestations of systemic risk in Belgium for the purpose of the capital buffer

Since the buffer applies to domestic credit exposures, it is important to identify manifestations of domestic systemic risk, i.e. the risk that stems from lending to counterparties in a given country. In order to verify whether there has indeed been a manifestation of systemic risk stemming from exposure to Belgian counterparties in the

FIGURE 2 LOAN LOSS PROVISION RATIO, BELGIAN BANKS

Source: NBB.
current crisis, data on loan impairments reported by Belgian banks under “Schema A” is used. The data are on a solo basis (hence excluding foreign subsidiaries of Belgian banks) and are limited to Belgian legal entities. Since the data include foreign branches of Belgian banks, the measure is only an imperfect approximation to domestic exposures. Figure 2 provides information on the loan loss provision (LLP) ratio, which is defined as the flow of net impairments on loans to total loans.

The figure shows that the LLP ratio did indeed reach in 2008/2009 and 2010 global highs for the observation period 2005-2010, rising steeply from low levels in the preceding years. This suggests that systemic risk associated with exposures to Belgian counterparties may have materialized. The peaks in the loan loss provision ratio in 2008/2009 and in 2010 are caused by two of the largest four Belgian banks and are also due to losses which ultimately stem from foreign counterparties. These data thus tentatively suggest that manifestations of systemic risk stemming from Belgian counterparties were rather low and did not warrant a positive buffer. However, the question of whether systemic risk has materialized in a given country is a complex one. More analysis of other indicators would need to be undertaken in order to draw a definitive conclusion. The difficulty of identifying the sources of manifestations of systemic risk highlights some of the challenges authorities will face in calculating a capital buffer on the basis of the location of the counterparties of internationally active banks.

2.1.2 The calculation of the capital buffer using the credit-to-GDP guide

2.1.2.1 A review of credit and GDP volumes

It is useful to review the underlying data for the benchmark guide to the CCB, namely Belgium’s credit level and nominal GDP (see Figure 3) before calculating the ratio, the long-term trend, the gap and the buffer. In accordance with the BCBS recommendation, the credit variable is broadly defined, including all credit extended to Belgian households and non-financial corporations. (1)

Figure 3 shows that GDP has risen constantly in the last 18 years and only experienced a short period of contraction in the wake of the current crisis. The level of credit has risen as well, overtaking GDP volume in around 1997. Credit rose sharply at the end of 2007 and, contracted slightly in 2008.

Figure 4 shows the credit-to-GDP ratio and the long-term trend. (2) The data reveal that the credit-to-GDP ratio increased in the 1990s and remained almost constant in the years 2001-2007 (as can also be seen in Figure 3).

The specific nature of the HP filter and the choice of the lambda imply a high trend level in recent years, owing to the period of a prolonged rise in the credit-to-GDP ratio in the 90s. For these reasons, the strong credit growth in 2007 only pushed the credit-to-GDP ratio slightly above the trend. The fact that the ratio has remained above the

FIGURE 3 GDP AND CREDIT IN BELGIUM

(€ billion)

<table>
<thead>
<tr>
<th>Year</th>
<th>GDP</th>
<th>Credit</th>
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<tr>
<td>1994</td>
<td>100</td>
<td>150</td>
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<tr>
<td>1996</td>
<td>150</td>
<td>200</td>
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<td>1998</td>
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<tr>
<td>2006</td>
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<td>450</td>
</tr>
<tr>
<td>2008</td>
<td>450</td>
<td>500</td>
</tr>
<tr>
<td>2010</td>
<td>500</td>
<td>550</td>
</tr>
</tbody>
</table>

Source: Belgostat. Note: GDP as the sum of the last 4 quarters, credit as the stock at end of quarter.

(1) The credit variable comprises securities other than shares (F3 according to the European System of National and Regional Accounts (ESA 95) classification) and loans (F4 according to the ESA 95 classification) extended to Belgian households and non-financial corporations. The variable comprises thus credit from a wide range of sources: Belgian and non-Belgian banks and other financial corporations (e.g. securitisation vehicles), debt markets as well as foreign non-financial corporations. Note that the credit variable provides actual rather than committed values in the case of committed credit such as credit lines.

(2) In order to calculate the long-term trend using an HP filter and a lambda of 400000, 10 years of historic data is needed for a robust trend estimate, according to the BCBS guidance document. Since data on credit in Belgium are only available from 1992, a robust trend and gap can only be established from 2002 onwards.
The trend in 2009/2010 is also due to the fact that GDP has experienced a period of contraction.

2.1.2.2 The baseline capital buffer calculation

Given the movement in the gap and the parameters for the lower and upper thresholds (L at 2 pp and H at 10 pp) specified in the guidance document, the capital buffer can readily be calculated. See Figure 5 for the gap and the associated buffer.

Since the gap never rose above 2 pp before early 2008, the buffer, had it been in effect, would have been nonexistent or very small prior to the crisis. While the graph suggests that the buffer should have been turned on again in the end of 2008, this would have been in the middle of the crisis, and authorities would likely already have taken a decision to release, or at least not to continue building, the buffer. This illustrates the point discussed above that indicators other than the credit-to-GDP guide should be used for the decision to release the buffer. Thus, the credit-to-GDP guide would not have stipulated the build-up of a sizeable buffer before the crisis. This would have been a correct signal, assuming that there were no manifestations of systemic risk stemming from Belgian counterparts. If we were assuming that a buffer would have been warranted for Belgium for the crisis starting in 2008, the buffer would have needed to be turned on in 2005-2006. Hence, the timing of the buffer would not have been appropriate in this case.

How should these results be interpreted? According to Principle 3 of the BCBS guidance document, the risk of misleading signals should be carefully analysed. If, as the discussion in the Box tentatively suggests, there were no domestic origins of the recent crisis, then the absence of a pre-crisis buffer, due to a low credit-to-GDP gap as revealed in Figure 5, would have been completely appropriate. On the other hand, if the crisis did coincide with a manifestation of domestically generated stress, then a buffer would have been warranted, in which case the credit-to-GDP gap may not be the best indicator to use for signaling the build-up of domestic stress.

In order to analyse these questions further, it is useful to examine additional information. A host of other variables, such as those highlighted in Principle 3 of the BCBS guidance document, could be used to corroborate or challenge the implications of Figure 5. An analysis of such information would also help to make an assessment of whether the benchmark credit guide is a reliable indicator for Belgium, and to what extent additional judgment and discretion should be applied. (1)

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(1) Indeed, the result of the buffer calculation also depends crucially on the specific parameters chosen (\( \lambda \), \( \text{L} \), \( \text{H} \)). Choosing parameter values to “back-fit” the credit-to-GDP guide should be accompanied by additional data to minimise the risk of misleading signals. However, the overall important issue is to reach an informed opinion – the credit-to-GDP guide may or may not play an important role for this.
2.2 Towards the use of judgment: decomposing the credit variable

The discussion above raises the question as to whether a mechanical application of the credit-to-GDP guide for setting CCBs Belgium is optimal. This suggests that a deeper analysis could be useful. We undertake a first step of such an analysis by segmenting the credit variable into two main components: credit to households (HH credit) and credit to non-financial corporations (NFC credit). In principle, such a sectoral analysis may be valuable since different sectors within an economy often tend to exhibit different trends. Empirical evidence indeed suggests that excessive indebtedness varies across sectors, implying that each sector should be analysed separately.\(^1\) There is also evidence of the important role that the household sector can play in the build-up phase of a crisis.\(^2\) Analysing HH- and NFC credit-to-GDP data is straightforward and also complies with Principle 2 of the BCBS guidance document, which suggests complementing the credit-to-GDP guide with additional information.

Figure 6 shows the trend in HH credit and NFC credit as components of total credit. These data reveal continuous and smooth growth of HH credit, while NFC credit growth appears to be more volatile, and stalling in the wake of the crisis.

![Figure 6](image)

**FIGURE 6** NFC CREDIT AND HH CREDIT AS COMPONENTS OF CREDIT (€ billion)

Source: Belgostat.

Figure 7 depicts the HH credit-to-GDP and NFC credit-to-GDP ratios and their corresponding trends. The total credit-to-GDP ratio is depicted as well. Both the actual credit volumes and the long-term trends of HH credit and NFC credit add up to their respective aggregate counterparts.

![Figure 7](image)

**FIGURE 7** CREDIT-TO-GDP, NFC CREDIT-TO-GDP AND HH CREDIT-TO-GDP AND THEIR RESPECTIVE TRENDS (%)

Source: Belgostat. Note: the dashed line indicates the trend with less than 10 years of data history.

Figure 8 below shows the gap associated with the respective credit-to-GDP series. Since the actual volume and the long-term trend of the components are additive, the gaps associated with HH and NFC credit also add up to the gap associated with the overall credit-to-GDP ratio. The HH credit-to-GDP gap has risen from 2004 onwards. The NFC credit-to-GDP gap, in contrast, has been significantly positive in the last seven years only in the last quarter of 2008 and in the first half of 2009, and that is due in part to a contraction of GDP. Taken together, Figures 7 and 8 demonstrate that the fact that credit to nonfinancial firms has remained below its trend explains why the buffer based in aggregate credit-to-GDP measure would not have been turned on in the 2-3 year period preceding the crisis.

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\(^1\) See McKinsey (2010). A conclusion of the report is that a granular view on sectors is a necessary (but not sufficient) condition for a meaningful analysis of risk stemming from high system-wide leverage. The report provides examples of sustainable high credit-to-GDP ratios, and low credit-to-GDP ratios which were followed by a crisis.

\(^2\) See Mian and Sufi (2010). They show that household leverage is a powerful statistical predictor of the current crisis in the US. A conclusion of the analysis is that focusing on household finance may be crucial to address macro-economic fluctuations and regulation.
How should this information be used for formulating a CCB policy? The analysis of the subcomponents of credit may serve as a starting point for a more granular assessment of the level of systemic risk.

Regarding the use of the credit-to-GDP guide for sectors, it is easy to calculate a potential capital buffer on the basis of either the HH or the NFC credit-to-GDP gap. Figure 9 shows the capital buffers that would be set on the basis of each of these respective measures. A measure based on NFC credit would not have triggered a buffer before the crisis, while a measure based on HH credit would have done so 2-3 years before the crisis. (1)

These observations suggest that the information on the differing performance of the HH and NFC credit variables could be used as a starting point for further analysis. For instance, is there a build-up of systemic risk stemming from credit to Belgian households? For households, risks associated with the housing market are the most relevant. Hence, an analysis of whether there is a housing bubble or a deterioration in lending standards could provide important information concerning the sustainability of HH credit levels. For instance, information on the affordability of houses (house price-to-income ratios), house price-to-per-capita GDP and other relevant variables could be used (see also Principles 2 and 3 of the BCBS guidance document).

On the other hand, in the case of excessive credit growth in certain sectors, a capital buffer may not be the best policy option, as the BCBS suggests in its guidance Principle 5. Other policy tools may be more appropriate. For instance, a cap on loan-to-value ratios could be used as an alternative policy to dampen credit growth in the housing sector.

3. Concluding remarks

The goal of this article is to shed some light on the issues that national authorities face in preparing for the implementation of the countercyclical capital buffer policy that has been included in the Basel III framework. The article begins with a description of the countercyclical capital buffer policy. The BCBS guidelines for this policy set out general principles and also propose a specific rule (the credit-to-GDP guide) as a benchmark, or starting point. This article applies the credit-to-GDP guide as proposed by the BCBS and asks whether use of this guide would have implied “turning on” a countercyclical capital buffer prior to the crisis and whether it would have been desirable to do so. Several observations emerge.

(1) For the calculation, the thresholds L and H are assumed to be the same as for the benchmark method, namely 2 pp and 10 pp.
First, mechanical application of the credit-to-GDP guide may produce incorrect signals; i.e., requiring a build-up of a countercyclical capital buffer when systemic risk is not increasing, or failing to trigger a build-up of a buffer when systemic risk is rising. The risk of misleading signals can be significant; however, proper back-testing is made difficult by the fact that crises are rare events. A brief examination of the data for Belgium suggests that there may have been no periods of significant stress in the financial system generated by excessive lending during the entire period for which data are available to test the credit-to-GDP guide. This suggests that judgment and discretion will be important for decisions relating to CCBs, and authorities will likely want to make use of information from a broad range of sources. This also raises the question as to whether all relevant data are available in a timely manner. National authorities may choose to employ an indicator system (a “risk dashboard”) displaying all potentially relevant information on systemic risk that could be induced by excessive credit. The availability of a broad range of information from various sources (macro-economic, supervisory information) will also be important, since CCBs must be viewed in context with other public policies, such as fiscal and monetary policies.

Second, as CCBs are only one tool in the suite of macro-prudential tools, authorities may want to consider alternative policy options. In particular, alternative policies (such as caps on loan-to-value ratios) may be the most desirable options in cases where excessive credit growth appears to be limited to certain sectors. Authorities will obviously need to balance the costs and benefits of all of the various policy options. Particular attention may need to be paid to possible unintended consequences relating to the use of the generalised countercyclical capital buffer.

Finally, in order to develop further the CCB policy for Belgium, more analysis will be needed to test the robustness of the credit-to-GDP-guide and any other potential measures that may be relied upon for making decisions to trigger or to release the buffer. As no theory exists to guide such decisions, authorities will need to examine many possibilities. This article proposes, as a reasonable starting point for such an analysis, a more granular assessment of credit exposures. In addition, cooperation and coordination at the EU and global levels will also be important in order for authorities to exchange information, develop best practices and to ensure that the global application of the CCB policy preserves a level playing field for banks across all countries.
References


