Directorate General Financial Stability, Regulation and Resolution

01.10.2024

Revision of the framework for setting the countercyclical capital buffer in Spain

Briefing note

Summary

The Banco de España has revised its framework for setting the countercyclical capital buffer (CCyB). The key change under the new framework is that a positive CCyB rate of 1% will be set when cyclical systemic risk is found to stand at a standard level (an intermediate level between high and low risk). Once activated, the requirement for banks to build up that CCyB level will be gradually phased in over several years.

This revision of the CCyB-setting framework follows the recommendations of the European Systemic Risk Board (ESRB) and was warranted by the experience gained from the use of this capital buffer over the past decade in Spain and other countries. Furthermore, the framework is aligned with the most recent guidance on the use of the CCyB issued by the Basel Committee on Banking Supervision (BCBS) to authorities in all jurisdictions, and also follows the recommendation to set a positive neutral CCyB rate included in the International Monetary Fund (IMF) Staff Concluding Statement of the 2024 Article IV Mission.

Indeed, recent experience shows that banks are reluctant to use non-releasable buffers to absorb losses. This can have procyclical effects on lending during downturns in the macro-financial cycle, particularly at banks with little capital headroom above minimum regulatory requirements. In order to avoid such procyclicality, it is important to have capital buffers that can be released by the authorities during economic downturns to increase that capital headroom. The main releasable capital buffer available in Spanish regulations is precisely the CCyB.

Under the previous framework, the CCyB was only activated when cyclical systemic risks were found to be high. According to the indicators used by the Banco de España, such risk levels have never been reached in Spain over the last decade, and therefore the CCyB has never been activated. In consequence, banks have been unable to use this releasable capital buffer to cope with the shocks and heightened uncertainty witnessed in the recent period.

As noted above, under the revised framework the CCyB will be activated when a standard level of cyclical systemic risk (an intermediate level between high and low risk) is identified.

Activating the CCyB at an earlier stage will allow banks to build up more releasable capital and do so more gradually, thereby minimising the associated costs. The release of the CCyB by the authorities during economic downturns will make it easier for banks to absorb their adverse impact. All of this will help to reduce the cyclical volatility in the Spanish financial system and the Spanish economy. The CCyB will thus support the macroeconomic stabilisation objective.

The CCyB is a flexible tool, meaning decisions to activate the buffer can be adjusted or reversed based on any relevant incoming information. Once the buffer is deactivated, the Banco de España will announce its expectations for the subsequent rebuilding of the CCyB, which in any event will take place gradually once the cyclical systemic risks have returned to a standard level.

In addition, on the basis of past experience, the new framework expands the list of indicators used to identify the level of cyclical systemic risk.

1 The existing CCyB framework

The CCyB is the main macroprudential tool available under current regulations in the European Union (EU) and Spain to address the cyclical/time dimension of systemic risk. Available to authorities since 2016, this requirement was designed by the BCBS (2010) to be imposed on banks in response to a heightening of systemic risks, for subsequent release should those risks materialise.

The countercyclical design of the CCyB is intended to strengthen the banking sector's solvency when cyclical systemic risks build up while also mitigating their escalation. Meanwhile, by releasing this buffer when the risks materialise, the authorities make additional loss-absorbing capital available to losses. Thus, the CCyB makes it easier for the banking sector to continue to provide financing to the real economy in crisis situations. Therefore, the activation and release of the CCyB helps to reduce the volatility in the macro-financial cycle.

As the evidence available shows, the fact that the CCyB is a releasable capital buffer improves its usability by banks compared with other requirements.[1] Indeed, broadly speaking, higher capital ratios allow banks to meet credit demand more readily, particularly in adverse environments. However, the evidence also shows that it is not just banks' capital levels that matter; so too does their capital headroom above regulatory requirements (the voluntary capital buffer).[2] Banks with greater headroom tend to extend more credit in adverse macroeconomic situations.[3] Releasing the CCyB automatically increases the voluntary buffers, which banks can then use.

In practical terms, the macroprudential authorities reach decisions on activating and releasing the CCyB based on cyclical systemic risk monitoring.

In accordance with current legislation,[4] the Banco de España's CCyB setting is grounded on three considerations:

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[1] In particular, once the buffer has been released, banks can use the built-up capital to meet a pre-existing CCyB requirement without this constituting a breach of regulatory requirements, and therefore without incurring automatic supervisory restrictions.

[2] Specifically, the term voluntary buffer refers to banks' solvency ratio levels in excess of micro and macroprudential requirements and guidance: P1, P2R, combined buffer requirement and P2G. The combined buffer requirement includes the capital conservation buffer and the systemically important institutions buffer (both non-releasable), along with the CCyB and the systemic risk buffer (both releasable).

[3] See, for instance, Berger and Bouwman (2013) and Gambacorta and Shin (2018) for evidence of a positive relationship between bank capital and credit supply. In terms of capital requirements, BCBS (2022) and Bedayo and Galán (2024) find a greater supply of credit from European banks with more headroom above the combined buffer requirement, both prior to and in response to the pandemic. Berrospide, Gupta and Seay (2021) and Couaillier, Lo Duca, Reghezza and Rodriguez d'Acri (2022) also provide evidence of a larger credit supply from such banks during the initial stages of the pandemic in the United States and Europe. For a review of the theoretical and empirical literature on the effects of capital requirement levels, see Thakor (2014).

[4] Directive 2013/36/EU has been transposed into Spanish legislation in Law 10/2014 and its implementing regulations. In particular, CCyB setting in Spain is regulated in detail in Article 61 of Royal Decree 84/2015 and in Rules 8 and 9 of Banco de España Circular 2/2016, which completes the adaptation of Spanish law to Directive 2013/36/EU and Regulation (EU) No 575/2013.

a the "buffer guide", which should transparently reflect the credit cycle and the risks due to any excessive credit growth in Spain, duly take into account the specificities of the Spanish economy and be based on the deviation of the credit-to-GDP ratio from its long-term trend (known as the credit-to-GDP gap) as the main reference indicator;

b ESRB Recommendations;

c any other variables that the Banco de España considers relevant.[5]

Under the cyclical systemic risk monitoring framework in force prior to this revision, the Banco de España (in line with ESRB recommendations)[6] analysed a series of quantitative indicators in addition to the credit-to-GDP gap, which included alternative measures of cyclical credit imbalances and indicators of price imbalances in the residential real estate market and of external imbalances.[7]

Under this framework, the CCyB was activated when these indicators signalled a high level of systemic risk.

Following the ESRB recommendations, the Banco de España periodically reassesses the effectiveness of its CCyB framework. This framework may need adjustment for various reasons. First, the evidence built up over the years may shed light on the suitability of the indicators used to measure cyclical systemic risks. Likewise, this evidence may improve the cost-benefit analysis for the activation and release of the CCyB at different stages of the macro-financial cycle. Second, the methodology may need to be adapted for any structural changes that the economy or the financial sector undergo over time.

Indeed, the Banco de España's CCyB framework has evolved since its introduction in 2016 in light of the evidence built up:

- Certain shortcomings were identified in the main reference indicator (the credit-to-GDP gap), as defined by the BCBS. In particular, due to the approach used to calculate the long-term trend of the credit-to-GDP ratio, it takes a long time for this trend to reflect persistent changes in the credit-to-GDP gap. In consequence, the credit-to-GDP gap gives positive or negative signals for lengthy periods of time which might offer a highly misleading picture of the build-up or materialisation of cyclical systemic risks. As a result, the Banco de España developed a credit-to-GDP gap adjusted to the duration

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[5] See Rule 9 of Banco de España Circular 2/2016.
[6] See Recitals 7 and 8 and Principles 2 and 3 of Recommendation A, in ESRB Recommendation 2014/1.
[7] For details of these indicators, see the CCyB indicators file published each quarter by the Banco de España on its website and Castro, Estrada and Martínez Pagés (2016).

of the credit cycle in Spain that mitigated these shortcomings, along with a series of complementary cyclical risk assessment models.[8]

- The outbreak of the COVID-19 pandemic in 2020 and its particularly adverse impact on economic activity also revealed that the credit-to-GDP gap did not flag the right signals when there was a sharp drop in GDP, the denominator of the ratio.[9] As a result, the Banco de España has given greater weight to analysis based on the complementary indicator of developments in the output gap,[10] which signals the Spanish economy's macroeconomic cyclical position. According to the empirical evidence, during the initial phase of economic recoveries the output gap tends to lead the credit gap, whereas the opposite is true when growth is in full swing. This makes the case for activating the CCyB when the economic cycle moves into an expansionary phase as a means of reducing the probability of an over-extension of credit in the future.[11] For this reason, the output gap and other macroeconomic variables play a key role in cyclical systemic risk monitoring.

2 The revision of the CCyB framework

This revision aims to adapt the CCyB framework to the new empirical evidence and latest theoretical developments.[12]

First, these analytical developments show that it is appropriate to activate the CCyB when cyclical systemic risks are at a standard level. That is, when these risks stand at an intermediate level, neither particularly high nor low (with the latter level typically associated with the materialisation of risks), rather than only being activated when these risks are at a high level, as has been the practice to date.

Activating the CCyB at an earlier stage will allow banks to build up larger buffers of releasable capital, which can then be released by the macroprudential authorities in economic downturns. Thus, the new framework will help to reduce the cyclical volatility in Spain's financial system and economy.

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[8] See Galán (2019) and "Box 3.2. Calculating the credit-to-GDP gap and financial cycle duration in Spain" in the Banco de España's Spring 2019 *Financial Stability Report* for more details on the adjusted credit-to-GDP gap, and Galán and Mencía (2021) for details of other model-based indicators.

[9] The fall in GDP and the economic policy response to the health crisis – which involved significant use of State-backed loans – prompted a very marked increase in the credit-to-GDP gap, which reached high positive values, providing a misleading signal of the build-up of credit imbalances. For a more extensive discussion, see, for example, "Chapter 3. Systemic risk and prudential response to COVID-19" in the Banco de España's Spring 2021 *Financial Stability Report*. For more general information on such misleading signals, see Principle 3 "Risk of Misleading Signals" in BCBS. (2010). "Guidance for national authorities operating the countercyclical capital buffer", December.

[10] Cuadrado and Moral-Benito (2016). The output gap is the percentage difference between the actual and potential level of GDP. A positive output gap is associated with excess demand relative to the economy's efficient productive capacity. Conversely, a negative output gap signals excess productive capacity.

[11] Hernández de Cos. (2019). "A framework for the CCyB". Opening address at the Second Financial Stability Conference (Banco de España/CEMFI), 3 June.

[12] As highlighted in Hernández de Cos. (2023). "The role of macroprudential policy in the stabilisation of macro-financial fluctuations". Opening address at the Conference on Financial Stability/Banco de Portugal, 3 October.

Moreover, it is not always possible to accurately identify high levels of cyclical systemic risk and therefore it would be prudent to pre-empt such situations. Activating the CCyB when cyclical systemic risks are at a standard level addresses this issue. This pre-emptive approach also allows the buffer to be activated more gradually, giving banks more leeway in meeting the requirements. This should minimise the costs of activating the CCyB.

The review conducted by the Banco de España is consistent with a number of recent initiatives led by international organisations and fora, along with authorities in other Member States, to address similar issues as those faced by the Banco de España with the CCyB framework.

On the global front, the BCBS published a newsletter in 2022 stating that its 2010 guidance on the CCyB left open the possibility of implementing a positive cycle-neutral CCyB rate when risks are judged to be neither subdued nor elevated.[13]

Meanwhile, the ECB has repeatedly encouraged increasing releasable macroprudential space while avoiding procyclical effects. Specifically, it has envisaged building up a positive rate for the CCyB when cyclical systemic risk is at an intermediate level.[14]

More recently, in their concluding statement of the 2024 Article IV mission for Spain,[15] the International Monetary Fund (IMF) staff recommended implementing a positive neutral CCyB rate to enhance the resilience of the financial system so that it can give greater support to economic growth, even in downturns.

A number of EU national authorities have already reviewed their respective CCyB frameworks, with many of them activating this buffer for standard risk levels, taking into account their specific national macro-financial circumstances. Some of these circumstances are also applicable in the case of Spain, such as the need for prudence owing to the difficulty that arises on occasion in estimating the exact position of the macro-financial cycle, and the benefits of building up the CCyB at an early stage to ensure that banks have greater headroom during this process (see Chart 1).

[13] BCBS. (2022). "Newsletter on positive cycle-neutral countercyclical capital buffer rates".
[14] See, for example, ECB Financial Stability Review, November 2023. Also, ECB. (2023). "A positive neutral rate for the countercyclical capital buffer – state of play in the banking union".
[15] "Spain: Staff Concluding Statement of the 2024 Article IV Mission" (April).

Chart 1
Macroprudential capital buffers in European countries (a)(b)
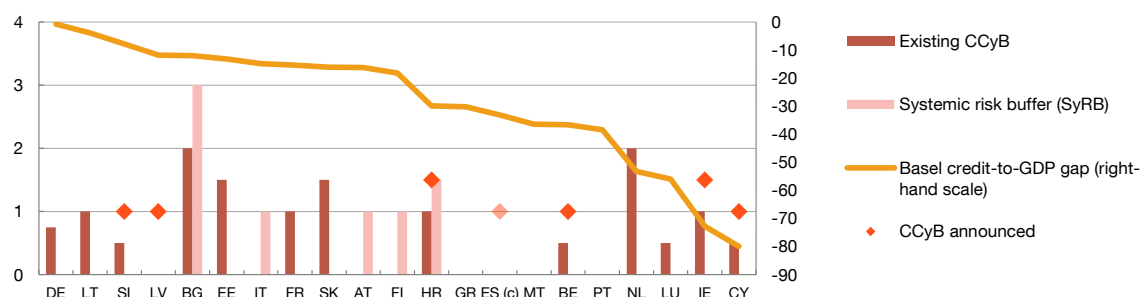
SOURCE: ESRB.

a. The systemic risk buffer includes both general SyRBs and those applicable to domestic exposures (Italy). This buffer, which can only be found in European legislation, is included here because it is also releasable and therefore forms part of the macroprudential space available to the authorities. The sectoral SyRBs of countries that have activated them are not included as these address risks specific to certain sectors. The value of Austria's SyRB refers to the maximum of an established range (0.25%-1%). Data on the credit-to-GDP gap at December 2023.
b. Countries considered: DE (Germany), LT (Lithuania), SI (Slovenia), SK (Slovakia), FR (France), EE (Estonia), LV (Latvia), FI (Finland), IT (Italy), BG (Bulgaria), AT (Austria), HR (Croatia), ES (Spain), GR (Greece), PT (Portugal), BE (Belgium), NL (Netherlands), LU (Luxembourg), MT (Malta), CY (Cyprus) and IE (Ireland).
c. The pale diamond for Spain corresponds to the CCyB rate in a situation where cyclical systemic risks are at a standard level under the revised framework, to initially be implemented over several years.

Aside from the general considerations outlined above, the new CCyB framework is chiefly warranted by some aspects specific to the Spanish economy.

In particular, the Spanish economy is characterised by the high volatility of its financial cycle: both the credit expansion and credit correction phases are more intense than in the main European countries (see Chart 2). Moreover, Spanish credit institutions play a key role in fomenting this pattern, given their high weight in the financing of the economy.[16] This high financial cycle volatility appears to have led to the real business cycle being more volatile in Spain than in other European countries.[17]

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[16] Indeed, according to Laeven and Valencia (2018), Spain is one of the few European countries to have suffered more than one banking crisis in the last 50 years. Sweden and Slovenia have also had two banking crises in that period.
[17] Jimeno and Santos (2014).

Chart 2

Volatility of the credit-to-GDP and output gaps in Spain and other European countries (a)
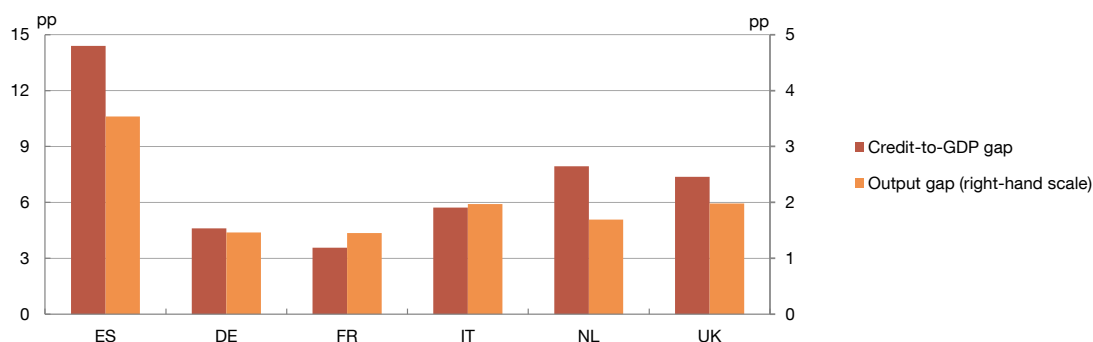
SOURCES: IMF and Banco de España.

a. The volatility depicts the standard deviation of the series with quarterly data from 1990 and 2019. The output gaps represent the difference between observed and potential GDP of each country. Countries considered: Spain (ES), Germany (DE), France (FR), Italy (IT), Netherlands (NL) and United Kingdom (UK).

Activating the CCyB at an earlier stage will increase the amount of releasable capital available and thus help dampen the volatility of the financial and economic cycles. In this respect, macroprudential policy can complement the role of monetary and fiscal policies with regard to their macroeconomic stability objective. This is particularly important in the euro area, as it has a single monetary policy but, in the absence of a permanent common fiscal capacity, has only national fiscal policy to counter the negative effects of economic shocks. While relevant to all euro area member countries, these considerations are especially pertinent to countries such as Spain whose macro-financial cycle exhibits higher than average volatility.

The available evidence bears out the advantages of having a flexible CCyB that can be released over the macro-financial cycle.[18] Specifically, it finds that the costs of building up the CCyB when cyclical systemic risks are at a standard level (i.e. neither very high nor low) are small, and negligible if the buffer is activated gradually. In any event, the cost of building up such a buffer is much smaller than the benefits of releasing it during downturns.[19]

For instance, in a study covering the whole EU, Bedayo and Galán (2024) show that the costs (in terms of lower lending) of the decisions taken to activate the CCyB before the pandemic were limited. Such costs were also concentrated in the short term and among banks with smaller voluntary buffers. Following the outbreak of the pandemic, however, releasing this capital buffer enabled them to restrict their

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[18] See footnote 3, Bedayo and Galán (2024), Galán (2020) and Estrada et al. (2024).
[19] The availability of more capital during downturns would reduce systemic risk in the banking sector, as measured by SRISK (Broto, Fernández Lafuerza and Melnychuk, 2022), and the probability of risk events (Galán, 2021).

lending less. The benefit, which outweighed the cost of activating the buffer, was especially significant and longer lasting for banks with smaller voluntary buffers.

These findings are borne out by estimated growth-at-risk models[20] (Adrian, Boyarchenko and Giannone, 2019, Galán, 2020, Estrada et al., 2024). Specifically, it is estimated that activating the CCyB when cyclical systemic risks are at a standard level has limited effects on GDP growth, particularly in a setting, like the present, of high bank profitability and if the buffer is activated gradually. But being able to release the buffer should systemic risks materialise would significantly enhance GDP growth. These results are confirmed when other methodologies are applied (Estrada et al., 2024).

3 Revised framework for monitoring cyclical systemic risks and setting the CCyB rate for a standard risk environment

The description of the revised framework is organised into three sections:
- First, the cyclical systemic risk monitoring framework is described. This framework draws on a set of 16 key indicators, grouped into four dimensions, and is based on a methodology that generates an individual and aggregate evaluation of the indicators' risk level. This information is complemented by an analysis of other relevant qualitative and quantitative information, including additional quantitative indicators.
- Second, the appropriate CCyB rate is determined for a standard level of cyclical systemic risk, drawing on simulations of capital charges in the Spanish banking sector in the face of adverse cyclical shocks of varying intensity, based on past experience.
- Lastly, a description is given of how the CCyB would operate in practice, taking into account the cyclical position of the economy and the financial sector.

3.1 Cyclical risk monitoring framework

Determining the cyclical phase of the macro-financial variables and their most likely future path is a key element of how the CCyB operates. Taking into account the multidimensional nature of cyclical systemic risk and the uncertainty associated with its identification, a comprehensive approach, including a two-stage analysis, is followed.

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[20] Unlike traditional econometric models, which can be used to obtain the projected average distribution of the variable in question, growth-at-risk models can project the entire statistical distribution of the variable, which can be used to obtain the projections associated with each percentile. Growth at risk refers to the projection of the lowest percentiles, on the left tail of the distribution.

In the **first – quantitative – stage**, 16 key indicators are considered. These indicators have been grouped into four blocks, representing the four risk analysis dimensions considered relevant (see Table 1 and Annex 1 for more details on the definitions of each indicator):

i) macroeconomic indicators;[21]
ii) macro-financial indicators;[22]
iii) financial market indicators;[23]
iv) banking system financial indicators.[24]

Also included are four complementary indicators that proxy the situation of credit institutions' solvency, liquidity, efficiency and funding costs.[25]

Table 1
Key indicators for monitoring cyclical systemic risk

		Latest data observed	Previous observation	1-year projection
Macroeconomic indicators	Output gap	0.20	-0.02	0.27
	Annual change in real GDP	2.02	1.93	1.74
	Unemployment rate	11.76	11.84	
Macro-financial indicators	**Adjusted credit-to-GDP gap**	-9.13	-8.82	-3.62
	Credit intensity	-4.41	-5.96	2.02
	Debt service ratio	18.16	18.26	16.59
	Rate of change, credit to households and firms	-3.32	-4.34	1.65
	Econometric models of credit imbalance	[-9,7 -2,8]	[-8,7 -2,3]	[-10,9 -4,1]
	Rate of change, house prices	4.14	4.36	2.68
	Indicators of price imbalances, real estate sector	3.77	3.53	0.19
Market indicators	**Systemic risk indicator (SRI)**	0.04	0.11	
Banking system indicators	ROE	12.44	12.59	
	NPL ratio	3.54	3.56	
	Net interest income to total assets	2.33	2.32	
	Price-to-book value	0.71	0.69	
	ROE Spain	11.30	11.39	
Memorandum items	CET1 ratio	13.21	13.07	
	LCR	186.28	179.19	
	Cost-to-income ratio	0.43	0.44	
	Cost of bank liabilities	2.07	1.83	

SOURCES: INE and Banco de España.

Note: The "latest data observed" column refers to December 2023, and the "previous observation" column to September 2023. For the indicators that are negatively correlated with the macro-financial cycle (the unemployment rate and the systemic risk indicator (SRI)), the position of the high and low risk levels would be the opposite of that described in the colour code. The one-tail indicators are the debt service ratio and the non-performing loans (NPL) ratio. In the second column, the indicators that were already included in the cyclical systemic risk monitoring framework previously in force are highlighted in bold.

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[21] Economic activity and labour market indicators.
[22] Indicators concerning financial aggregates, such as bank credit, and their interaction with macroeconomic variables.
[23] This financial indicator is disaggregated from the rest owing to its particular usefulness for contemporaneously measuring the materialisation of risks in the financial markets.
[24] Indicators calculated on the basis of the consolidated and individual accounting information reported by credit institutions to the Banco de España.
[25] These indicators include: the CET1 solvency ratio, the liquidity coverage ratio (LCR), the cost-to-income ratio (ratio of operating expenses to gross income) and the average cost of bank liabilities.

As Table 1 shows, and in accordance with current legislation, the credit-to-GDP gap, adjusted to the characteristics of the Spanish economy, will continue to be a key monitoring indicator. However, given its limitations (outlined in Section 1), it will be evaluated jointly with the other indicators. Nevertheless, high levels of the credit-to-GDP ratio will continue to receive special attention in determining whether there is a high level of cyclical systemic risk.[26]

Similarly, the output gap will continue to be particularly important in the new framework, as it directly captures the economy's position in the real business cycle and is capable of predicting the credit cycle.

The level of cyclical risk resulting from each indicator is classified into three categories (low risk, standard or intermediate risk and high risk). To do this, the indicator's present value is compared with its historical distribution:

- In the case of indicators that are positively correlated with the macro-financial cycle,[27] a large deviation upwards (above the 75th percentile) or downwards (below the 25th percentile) from their historical midpoint (50th percentile) will determine whether risks are at a high level or in materialisation territory (low risk), respectively. Conversely, when indicators are between the 25th and 75th percentiles, the risks are defined as being at a standard level (i.e. neither very high nor very low).

- In the case of indicators that are negatively correlated with the macro-financial cycle,[28] the positions of the high and low risk levels are the opposite of those described in the foregoing point.

- Moreover, owing to their very nature, two of the indicators[29] only signal the existence of high risks when they are above the 75th percentile. It is therefore understood that the risks are at a standard level in the rest of the distribution.

- Lastly, in the case of some banking system indicators (return on equity (ROE), ratio of net interest income to assets and price-to-book value ratio), values below the 25th percentile would be indicative of banks finding it difficult to build up capital buffers without significantly affecting their financial intermediation work. That is to say, they would indicate situations where the costs of activating the CCyB would be significant.

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[26] As described in Section 1, high levels of the credit-to-GDP gap should not automatically be interpreted as indicative of a high level of cyclical systemic risk. The upsurge in this metric at the start of the COVID-19 pandemic is illustrative of this situation.
[27] Output gap, annual change in real GDP, adjusted credit-to-GDP gap, credit intensity, rate of change in credit to households and non-financial corporations, econometric models of credit imbalance, rate of change in house prices and indicators of price imbalances in the residential real estate sector.
[28] Unemployment rate and SRI.
[29] The debt service ratio and the banking sector's NPL ratio for operations in Spain.

These indicators are aggregated[30] at the level of each risk analysis dimension to obtain four composite indicators, which in turn can be combined to give an overall composite indicator (see Charts 3 and 4).

Chart 3
Composite indicators by risk bucket (a)
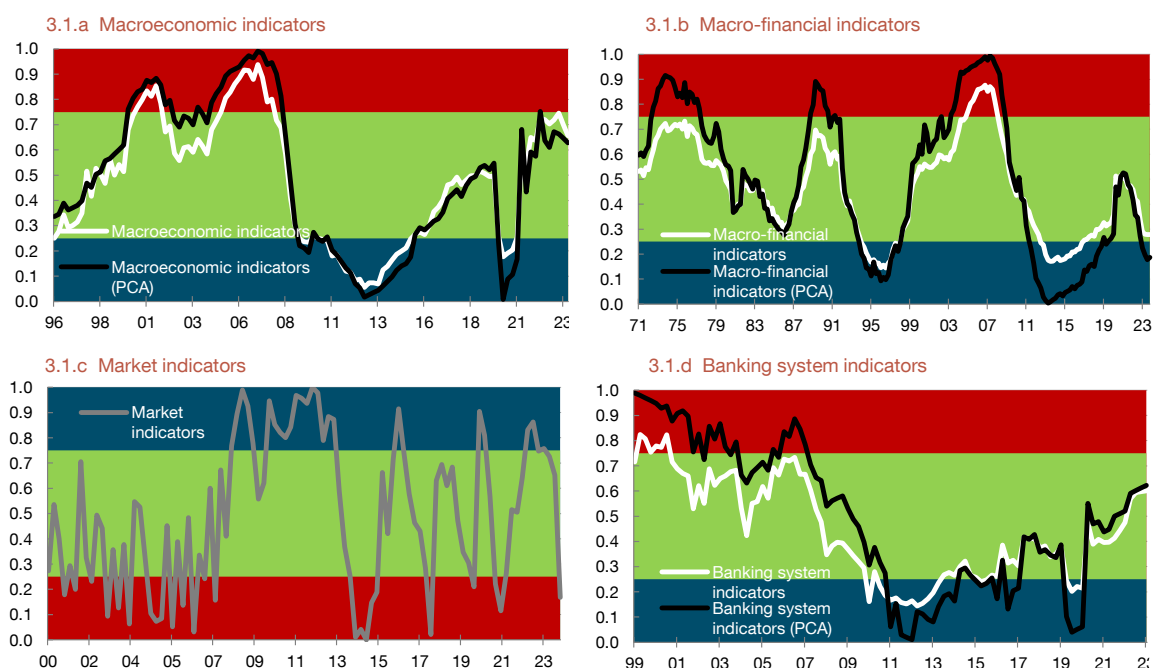
3.1.a Macroeconomic indicators

3.1.b Macro-financial indicators

3.1.c Market indicators

3.1.d Banking system indicators

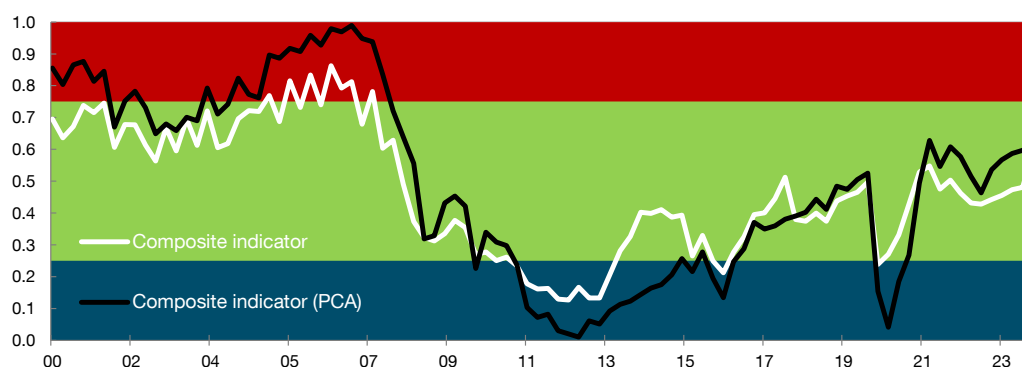SOURCES: Datastream, INE, Banco de España and own calculations.

a. Data updated at December 2023. The white lines show aggregation using simple averages and the black lines aggregation using principal component aggregation (PCA). The SRI aggregates 12 financial market variables in accordance with the methodology described in Box 1.1 of the May 2013 FSR. Each indicator is defined on a scale of 0 to 1 according to the percentile vis-à-vis its historical distribution. The colours depict low (blue), standard (green) and high (red) levels of cyclical systemic risk, and in the case of the banking system indicators, the capital generation capacity.

In general, the appropriate time to build up the CCyB would be when (i) the overall indicator is at a standard level, (ii) the composite indicators of at least two of the dimensions are also at a standard level, and (iii) the banking system indicators do not point to low capital generation capacity.

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[30] Various forms of aggregation (simple averages, principal components, etc.) have been used, with very similar results. The financial markets indicator distills information from the four most representative segments of the Spanish financial markets (money market, government debt market, equity market and financial intermediaries) and is designed such that the indicator increases when there is stress simultaneously in all four segments. For a detailed explanation of the methodology used in this indicator, see Box 1.1 of the May 2013 Financial Stability Report (FSR).

Chart 4

Overall composite indicator (a)

SOURCES: Datastream, INE, Banco de España and own calculations.

a. Data updated at December 2023. The white line shows aggregation using simple averages and the black line aggregation using principal component aggregation (PCA). The indicator is defined on a scale of 0 to 1 according to the percentile vis-à-vis its historical distribution. The colours depict low (blue), standard (green) and high (red) levels of cyclical systemic risk.

Compared with the Banco de España's previous buffer-setting framework, this analysis incorporates two new developments:

- First, it provides an integrated quantitative indicator of macro-financial indicators that were already monitored by the Banco de España in accordance with the applicable regulations[31] (for instance, the credit-to-GDP gap and output gap, credit intensity, credit and house price imbalance indicators, the debt service ratio).

- Second, it incorporates additional indicators that are also compatible with the applicable regulations, notably those that proxy the banking sector's capacity to generate capital. And it adds in basic macro-financial metrics (GDP growth and house price growth) to increase the robustness of the analysis vis-à-vis the statistical assumptions of more complex gap-based indicators.

In a second stage, the complementary information available, including qualitative information, will be analysed in order to ratify or correct the preliminary result obtained previously.

In general, this exercise will depend on the specific economic juncture in Spain (including the projections of the indicators used in the first stage, consistent with the Banco de España's forecasting exercises, and also its qualitative classification of risks to financial stability).

In any event, in this stage some aspects will be analysed on a recurring basis.

Specifically, banks' capacity to comply, at any given time, with the CCyB once it is activated, with minimum adverse effects on credit and activity, will be subject to

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[31] See Rule 9 of Circular 2/2016.

particular analysis. The key inputs for this purpose would include assessment of the existing voluntary buffers and of banking sector profitability forecasts (see Chart 5). Moreover, once the buffer is released, owing either to materialisation of cyclical systemic risks or to the impact of adverse shocks on the financial system, this analysis will also guide expectations as to the future reactivation of the buffer and how gradual the build-up required of banks will be.[32]

Chart 5
Composition of CET1 ratio and profitability of Spanish credit institutions

CET1 ratio and its breakdown for Spanish banks (a)

Profitability of Spanish banks (b)
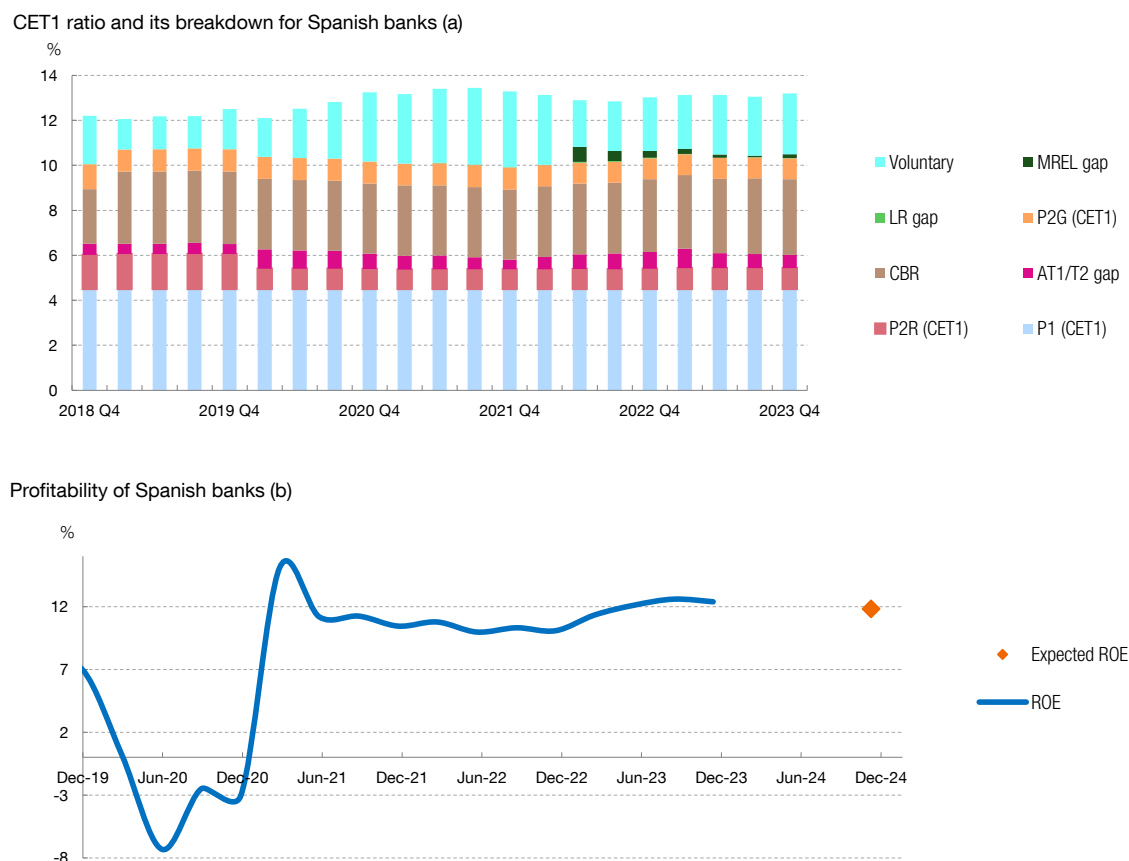
SOURCES: Banco de España and Refinitiv.

a. All the capital requirements shown are in terms of Common Equity Tier 1 capital (CET1). P1: minimum capital requirements (Pillar 1); P2R: additional capital requirements (Pillar 2 requirement); AT1/T2 gap: CET1 that needs to be used to meet minimum T1 and total capital requirements in the absence of sufficient AT1 or T2 capital; CBR: combined buffer requirements (capital conservation, systemic risk, countercyclical, G-SIB or O-SIB others); P2G: Pillar 2 guidance; LR gap: leverage ratio requirements (CET1 that needs to be used in the absence of sufficient AT1) over the aforesaid prudential requirements; MREL gap: minimum MREL requirements (CET1 that needs to be used in the absence of sufficient eligible liabilities or AT1 or T2 capital) over the aforesaid requirements, calculated only for significant entities. Voluntary: CET1 over the capital requirements and P2 guidance.
b. The ROE forecasts for 2024 are the average of the IBES forecasts (obtained through Refinitiv) for the six main listed Spanish credit institutions, at December 2023, weighted by carrying amount.

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[32] As the left-hand panel of Chart 5 shows, voluntary buffers currently account for around 2.5% of risk-weighted assets (RWAs). Moreover, according to market expectations (see right-hand panel of Chart 5), banks' future profitability is expected to decline from its 2023 levels, albeit remaining high by historical standards.

One new aspect to be regularly assessed in this second stage will be the macroprudential policy stance, using a methodology developed by the ESRB[33] based on median growth and growth at risk. Median growth is taken as the midpoint of the estimated future growth distribution of a variable (50th percentile), while growth at risk is the growth that would occur in an adverse risk materialisation scenario (low percentiles, on the left tail of the distribution). The distance between projected median GDP growth and its growth at risk is considered an important measure of the magnitude of cyclical systemic risk, with a larger gap between the two suggesting that, when risks materialise, GDP growth will shift further from its most likely levels. The empirical evidence shows that, when activated in standard or high risk situations, macroprudential tools are able to narrow this gap, especially because they improve growth at risk, i.e. the growth that would occur in an adverse scenario (Galán, 2020).

Lastly, the complementary information to be analysed in this second stage will include additional information on bank lending to households and non-financial corporations in Spain (especially new loans) and on the current account balance of the Spanish economy.

3.2   Setting the level of the CCyB in a standard risk level environment

The level of the CCyB is determined on the basis of the results of multiple simulations[34] of the Spanish economy's response to various adverse cyclical shocks[35] and the associated capital consumption of the Spanish banking system, estimated through stress tests.[36] The severity of the shocks has been calibrated according to historical experience.[37]

The results of these simulations are provided in Chart 6. An external cyclical shock to the Spanish economy results in an estimated capital consumption by credit institutions of between 0.1 pp and 0.4 pp. Meanwhile, the impact of domestic cyclical shocks to the Spanish economy, whether financial or real, is associated with higher capital consumption, of between 0.3 pp and 1.1 pp. If external and domestic cyclical shocks were to materialise simultaneously, the estimated capital consumption would range between 0.4 pp (for a combination of mild shocks) and 2 pp (for a combination of severe shocks).

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[33] ESRB (2024).

[34] The model used was the MTBE, which has a long tradition at the Banco de España.

[35] The shocks were classified into three groups: (i) external; (ii) real domestic; and (iii) financial.

[36] To this end, the Banco de España's FLESB tool (Forward-Looking Exercise on Spanish Banks) was used.

[37] Specifically, the average impact on real GDP of a severe cyclical shock of external origin is estimated at 0.7 standard deviations, with an approximate probability of occurrence of slightly less than 25%. The combination of severe confidence and financial domestic shocks would result in an average drag on GDP growth of around 1.5 standard deviations, with an approximate probability of occurrence of 6%. In the most extreme case, the combination of also severe domestic and external shocks would result in an average drag on real GDP of 2.1 standard deviations, with an approximate probability of occurrence of 2% according to historical experience. The mild shocks considered would result in smaller reductions in GDP growth, but would have a higher probability of occurrence.

Chart 6

Aggregate impact of the simulated scenarios on the CET1 ratio of the banking system (a)
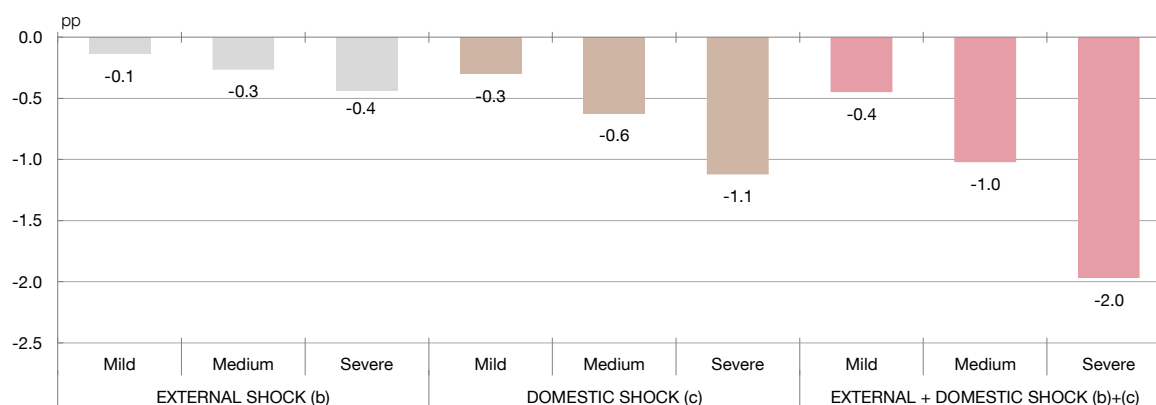
SOURCE: Banco de España.
a Impacts are defined as the differences in the banking system's expected CET1 ratio at the end of the projection horizon (2023-2025) between each scenario and the baseline scenario.
b. External shock stemming from falling global markets and rising international oil and natural gas prices.
c. Domestic shock, combining (1) financial elements: interest rate rises (in short-term reference rates, long-term government debt and bank rates), and declines in credit, stock prices and house prices; and (2) real elements: negative consumption, housing investment and capital investment shocks.

Estimating the impact on bank capital of the combined materialisation of mild domestic and external shocks is considered an appropriate benchmark for setting the CCyB for a standard cyclical systemic risk environment. Such shocks are plausible in this context where cyclical systemic risks are neither very high nor low. The estimated impact, in the order of 0.5 pp of the CET1 ratio, represents a sufficiently high proportion of the banking system's solvency to be of systemic importance. According to the estimates reported in Chart 6, in the absence of domestic shocks this buffer level would also enable the impact of medium and severe external shocks to the Spanish economy to be absorbed. It could also absorb medium to severe isolated domestic shocks.

The CCyB in terms of total risk-weighted assets (RWAs) is calculated as the average of the CCyBs established by the authorities of the various jurisdictions in which banks operate, weighted by the relative share of their risk-weighted exposures in each jurisdiction. This means that a CCyB rate of 1% in Spain would contribute 0.5 pp to the CCyB at consolidated level. Based on these analyses, it is therefore proposed that the CCyB should be 1% for a standard level of cyclical systemic risk.

When cyclical systemic risks are high, they are more likely to materialise and have a much higher impact. In consequence, in that setting, the CCyB level should be higher than in a standard systemic risk situation.

In any event, any significant change in the structural conditions of the Spanish economy and the financial system (in particular the banking sector) or further methodological developments would require the Banco de España to recalibrate the CCyB level set for a standard cyclical systemic risk environment.

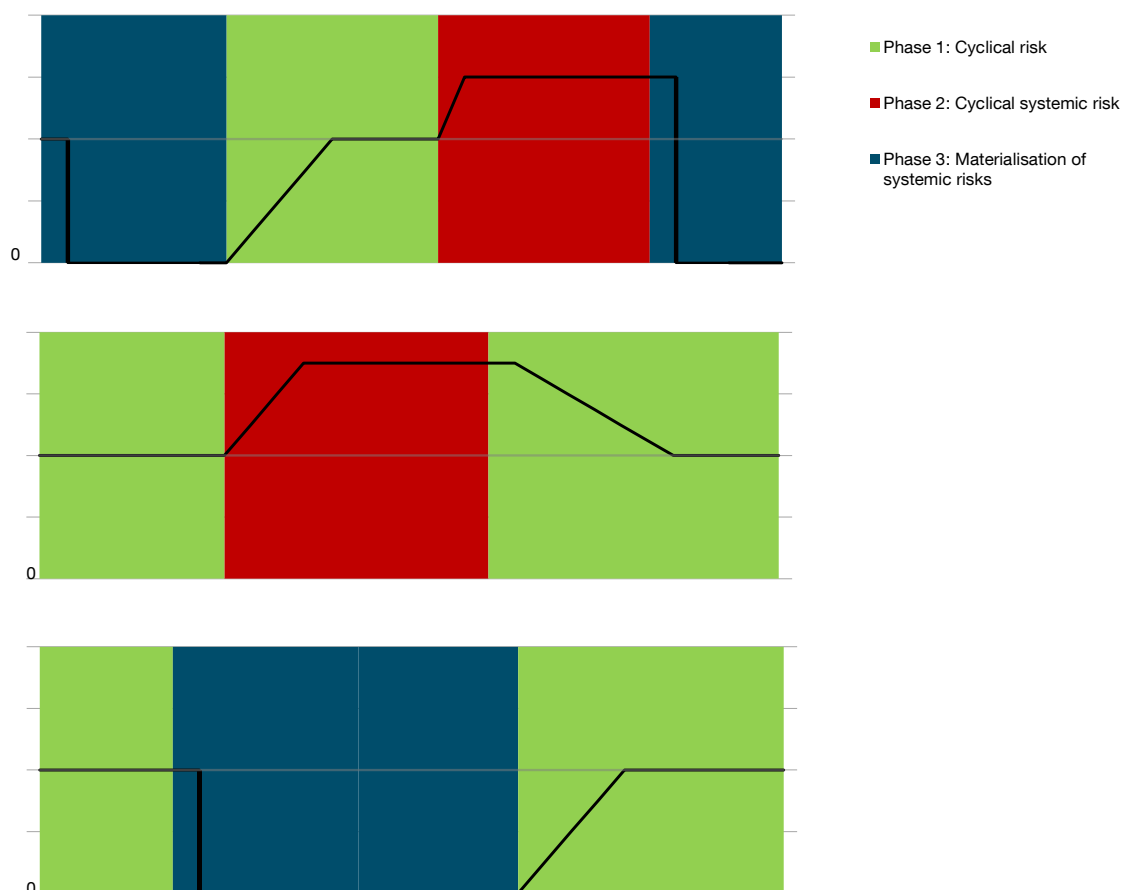### 3.3 Operation of the CCyB over the macro-financial cycle

The following illustrates how the CCyB operates over a hypothetical complete macro-financial cycle (see scenario 1, Chart 7):

- In the initial situation it is assumed that systemic risks have already materialised. The risk of cyclical systemic shocks is therefore low, meaning that the available macroprudential space has been freed up (the starting level of the CCyB is equal to 0). At this point, the Banco de España would make public its expectations regarding the reactivation of this buffer, which would not take place until cyclical systemic risks had reached a standard level.

- It is assumed that cyclical systemic risks subsequently start moving towards a standard level, i.e. the economy enters a phase where they are neither particularly high nor low. At this level of risk the CCyB will be built up gradually, depending on the state of the economy and the banking sector. Moreover, the legislation requires that a period of one year elapse from the date the CCyB is set before it becomes applicable,[38] and that it should be set quarterly, in steps or multiples of 0.25 pp. During this gradual reactivation process, decisions may be amended or reversed on the basis of new relevant information that may be received, in line with the flexible nature of the CCyB.

- In the process beginning in May this year to set, for the first time, a positive level for the CCyB required of Spanish banks in a standard cyclical systemic risk environment, the plan drawn up by the Banco de España provides for this 1% to be reached in two steps of 0.5 pp. These steps would be activated in 2024 Q4 and 2025 Q4, so that they become effective in 2025 Q4 and 2026 Q4, respectively. In this period, this initial plan may also be modified or reversed on the basis of new relevant information received.

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[38] This period may be shortened in duly justified exceptional circumstances, but the macroprudential authority may always reverse its decision and allow the CCyB to be released if circumstances arise during the period leading up to the application of the requirement that make this advisable.

Chart 7

Illustration of the activation and release of the CCyB under three scenarios

- Phase 1: Cyclical risk
- Phase 2: Cyclical systemic risk
- Phase 3: Materialisation of systemic risks

Source: Banco de España.

- The 1% CCyB requirement for standard-level cyclical systemic risks would remain unchanged until vulnerabilities begin to build up, significantly increasing the probability or impact of cyclical systemic risks (high risk level), or risks materialise that entail losses and capital consumption for banks (low risk level). In the first case (scenario 1 in Chart 7), the CCyB requirement would be raised to above 1%.[39] If, however, cyclical systemic risks materialise, the accumulated CCyB would be released immediately, normally in full.[40] Once the consequences of the crisis have been absorbed and cyclical systemic risks have returned to a standard level, the process of rebuilding the CCyB would start, following the same steps as described in the previous paragraphs.

- If the measures taken to mitigate cyclical systemic risks when they are high (in particular, increasing the CCyB rate above 1%) take effect and these risks

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[39] At this stage, it would also be possible to activate other macroprudential tools in combination with or alternatively to the CCyB, depending on the nature and severity of the systemic risk.
[40] While there may be circumstances in which the release is partial, the most common practice is a full release.

start to dissipate, the course of action would be that shown in scenario 2 in Chart 7. The accumulated CCyB would be gradually released until it returns to the 1% level set for a standard level of cyclical systemic risks. This release should be done with the necessary prudence, taking into account the new relevant information that becomes available, in order to prevent any resurgence of cyclical systemic risks.

- A third possibility is illustrated in scenario 3 in Chart 7. If, with the CCyB set at the default level for a standard level of cyclical systemic risks (1%), any adverse shock arises leading to systemic losses for the banking sector, the existing CCyB would be immediately released, usually in full, so that banks can absorb the impact and continue to provide financing to the real economy.

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Annex 1. Detailed definitions of indicators

Output gap

The output gap is the difference between the observed level of Gross Domestic Product (GDP) and its potential level. The methodology used at the Banco de España to estimate potential output is based on the production function (Cuadrado and Moral-Benito, 2016).

Annual change in real GDP

Year-on-year rate of change in GDP in real terms.

Unemployment rate

The number of people unemployed as a percentage of the total workforce.

Adjusted credit-to-GDP gap

The adjusted credit-to-GDP gap uses a different calibration from that proposed by the BCBS[41] and the ESRB.[42] Specifically, the modified statistical filter uses a smoothing parameter (lambda) of 25,000 (instead of 400,000), to better reflect the average duration of the credit cycle in Spain over the last 140 years. For more details, see Galán (2019).

Credit intensity

Calculated as the annual change in lending to the non-financial private sector divided by cumulative GDP over the last four quarters.

Debt service ratio

This indicator aims to capture leverage in the non-financial private sector and is the ratio of payments of interest and principal to aggregate disposable income. Accordingly, it measures the proportion of disposable income used to service debts.[43]

Rate of change of credit to households and firms

Year-on-year rate of change of nominal credit to the non-financial private sector.

Econometric models of credit imbalance

These are (semi-)structural unobserved component models (UCMs) and vector error correction (VEC) models for quantification of credit imbalances drawing on macro-financial variables (GDP, interest rates and house prices). For more information, see Galán and Mencía (2021) and Box 3.1 of the November 2018 *Financial Stability Report*, Banco de España.

Rate of change of house prices

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[41] BCBS Guidance for national authorities operating the countercyclical capital buffer, December 2010.

[42] Recommendation ESRB/2014/1 of 18 June 2014 on guidance for setting countercyclical buffer rates.

[43] The indicator used here was first proposed, in the context of early warning indicators for financial crises, by C. Castro, A. Estrada and J. Martínez (2014), "The countercyclical capital buffer in Spain: an exploratory analysis of key guiding indicators", in *Revista de Estabilidad Financiera* - Banco de España, and is currently considered one of the main reference indicators together with the credit-to-GDP gap.

Year-on-year rate of change in nominal house prices.

Indicators of price imbalances in the real estate sector

Four indicators are assessed that seek to capture deviations in residential real estate prices from their long-term level: (i) real house price gap; (ii) house price-to-disposable income gap; (iii) house price imbalance vis-à-vis the level implied by long-term disposable income and mortgage rate trends; and (iv) long-term house price imbalance vis-à-vis the level implied by prices in previous periods, disposable income, new mortgage rates and tax variables. The first three indicators calculate the gaps vis-à-vis long-term trends using the same statistical filter as that used for the credit-to-GDP gap. The fourth indicator is derived from econometric model estimations.

Systemic risk indicator (SRI)

The SRI aggregates 12 individual stress indicators (including volatilities, interest rate spreads, maximum historical losses) of four segments of the Spanish financial system (money market, government debt market, equity market and financial intermediaries). The effect of cross-correlations is taken into account to calculate the SRI, such that it registers higher values when the correlation between the four markets is high (when there is a high – or low – level of stress in all four markets at the same time) and lower values when the correlation is low or negative (when stress is high in some markets and low in others). As it is a contemporaneous indicator, the SRI may be particularly useful for guiding deactivation of the CCyB.

ROE (Return on equity)

Annualised consolidated net income in the year to date divided by average equity, in accordance with the EBA definition (average of the previous year-end value and the year-to-date value).

ROE Spain

Annualised net income in the year to date divided by average equity, in accordance with the EBA definition (average of the previous year-end value and the year-to-date value), taking into account only business in Spain.

NPL ratio

Ratio of non-performing loans to total loans with counterparty in other resident sectors in business in Spain.

Net interest income to total assets

Net interest income in the year to date divided by total assets, in accordance with the EBA definition (average of the previous year-end value and the year-to-date value).

Price-to-book value

Ratio of stock price to book value in the banking sector market index.

CET1 ratio

Ratio of Common Equity Tier 1 (CET1) capital to risk-weighted assets.

Liquidity coverage ratio (LCR)

Ratio of high quality liquid assets to net expected cash outflows under a liquidity shock over a 30-day period.

Cost-to-income ratio

Ratio of operating expenses to gross income.

Cost of bank liabilities

Ratio of financial costs to average financial liabilities.