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(Resolutions, recommendations and opinions)

RECOMMENDATIONS

EUROPEAN SYSTEMIC RISK BOARD

RECOMMENDATION OF THE EUROPEAN SYSTEMIC RISK BOARD

of 18 June 2014

on guidance for setting countercyclical buffer rates

(ESRB/2014/1)

(2014/C 293/01)

THE GENERAL BOARD OF THE EUROPEAN SYSTEMIC RISK BOARD,

Having regard to Directive 2013/36/EU of the European Parliament and of the Council of 26 June 2013 on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms, amending Directive 2002/87/EC and repealing Directives 2006/48/EC and 2006/49/EC ⁽¹⁾, and in particular Article 135 thereof,

Having regard to Regulation (EU) No 1092/2010 of the European Parliament and of the Council of 24 November 2010 on European Union macro-prudential oversight of the financial system and establishing a European Systemic Risk Board ⁽²⁾, and in particular Article 3(2)(b), (d) and (f) and Articles 16 to 18 thereof,

Having regard to Decision ESRB/2011/1 of the European Systemic Risk Board of 20 January 2011 adopting the Rules of Procedure of the European Systemic Risk Board ⁽³⁾, and in particular Article 15(3)(e) and Articles 18 to 20 thereof,

Whereas:

- (1) The pro-cyclical amplification of financial shocks to the real economy through the banking system and financial markets has been one of the most destabilising elements of the global financial crisis. An economic downturn following a period of excess credit growth can lead to large losses in the banking sector and spark a vicious circle. In this situation steps taken by credit institutions to strengthen their balance sheets can constrain credit supply to the real economy, exacerbating the economic downturn and further weakening their balance sheets. This pro-cyclical amplification of shocks highlights the importance of building up additional capital in the banking sector in periods when the risks of system-wide stress are growing. Such an additional capital buffer will help the banking sector absorb unexpected losses while continuing to provide credit to the real economy.
- (2) Measures have been taken to make banks more resilient to pro-cyclical dynamics. In December 2010 the Basel Committee on Banking Supervision (BCBS) published a number of measures to strengthen the regulation of the banking sector. One of these measures, on which the BCBS provided guidance to national authorities, concerns the countercyclical capital buffer. The BCBS's guidance was implemented in the European Union by Directive 2013/36/EU.

⁽¹⁾ OJ L 176, 27.6.2013, p. 338.

⁽²⁾ OJ L 331, 15.12.2010, p. 1.

⁽³⁾ OJ C 58, 24.2.2011, p. 4.

- (3) The countercyclical capital buffer regime under Directive 2013/36/EU follows the principle of 'guided discretion'. According to this principle authorities responsible for setting the buffer rate combine a rules-based approach with the exercise of their discretionary powers when deciding on the appropriate buffer rate. Accordingly, they are required to publish a buffer guide on a quarterly basis as a reference benchmark, but are encouraged to exercise their judgement when setting the buffer rate.
- (4) National designated authorities and the European Central Bank (ECB) (for Member States participating in the Single Supervisory Mechanism) are assigned responsibilities for setting countercyclical buffer rates. Directive 2013/36/EU requires each Member State to designate a public authority or body responsible for setting the countercyclical buffer rate for that Member State. In addition, Council Regulation (EU) No 1024/2013 of 15 October 2013 conferring specific tasks on the European Central Bank concerning policies relating to the prudential supervision of credit institutions⁽¹⁾ assigns specific supervisory tasks to the ECB. In particular, if it deems it necessary, the ECB may apply higher requirements for countercyclical capital buffers than those applied by the national designated authorities. For this exclusive purpose, the ECB is considered, as appropriate, the designated authority and has all the powers and obligations, which designated authorities have under the relevant Union law. However, it would typically be national designated authorities that would be responsible for publishing countercyclical buffer rates.
- (5) Directive 2013/36/EU establishes that the European Systemic Risk Board (ESRB) may adopt recommendations giving guidance to designated authorities on setting countercyclical buffer rates. In particular, the ESRB may advise on principles to guide designated authorities in making their judgements as to the appropriate buffer rates and provide guidance on the measurement and calculation of the credit-to-GDP gap and the calculation of the buffer guide. In addition, the ESRB may provide guidance on the variables that indicate the build-up of system-wide risk associated with periods of excessive credit growth in the financial system and on the variables that indicate that the buffer should be maintained, reduced or fully released.
- (6) The countercyclical capital buffer is designed to help counter pro-cyclicality in the financial system. Capital should be accumulated when cyclical systemic risk is judged to be increasing, creating buffers that increase the resilience of the banking sector during periods of stress when losses materialise. This will help maintain the supply of credit and dampen the downswing of the financial cycle. The countercyclical capital buffer can also help dampen excessive credit growth during the upswing of the financial cycle.
- (7) The buffer guide is not intended to give rise to an automatic buffer setting or to bind the designated authority. Analysis by the BCBS shows that, while the credit-to-GDP gap is a useful starting point in guiding decisions on countercyclical buffer rates, its performance can differ across countries and over time. Given the heterogeneity and dynamic nature of financial systems, the specificities of national economies and material differences in data availability in the European Union, designated authorities should take into account a range of information when assessing the level of system-wide risk and set the buffer rate accordingly. This information should include additional indicators that signal the build-up of system-wide risk associated with periods of excessive credit growth, proxies for the degree of financial intermediation in the economy such as the level of the ratio of credit-to-GDP and qualitative information. The quantitative and qualitative information used for this assessment, including the buffer guide and the additional indicators, form the basis for explaining and justifying decisions on buffer rates.
- (8) Analysis by the BCBS shows that the credit-to-GDP gap and other indicators may sometimes convey misleading information. Designated authorities should be aware of this when exercising their judgement as to the sustainable level of credit in the economy and the appropriate countercyclical buffer rate. Designated authorities should thus periodically reassess the performance of the indicators on which they place most weight.

⁽¹⁾ OJ L 287, 29.10.2013, p. 63.

- (9) When risks materialise, the prompt release of the countercyclical capital buffer can help credit institutions absorb losses while maintaining lending to the real economy and complying with regulatory capital requirements. This countercyclical use of the buffer can mitigate the pro-cyclical behaviour of credit institutions which can otherwise constrain the supply of credit to the real economy. The countercyclical capital buffer can be released more gradually when the downswing of the financial cycle does not coincide with a materialisation of risks and when threats to the resilience of credit institutions from excessive credit growth have receded. Decisions on the use of any capital surpluses arising from the release of the buffer are at the discretion of the designated or competent authorities.
- (10) It is important for the authority setting the countercyclical buffer rate to have a good communication strategy. This helps manage public expectations, plays an important role in coordination between designated authorities, and is essential for the credibility, accountability and effectiveness of macro-prudential policy. Directive 2013/36/EU requires designated authorities to take all reasonable steps to coordinate the timing of their announcements on buffer rates.
- (11) Building a more resilient banking system in the Union entails that designated authorities recognise countercyclical buffer rates set by other Member States. Directive 2013/36/EU establishes a framework for the recognition of the buffer rates of other Member States and for recognition or setting of buffer rates for third countries. In addition to mandatory reciprocity arrangements, designated authorities should generally recognise the buffer rates set by other Member States. Without prejudice to future ESRB recommendations, this Recommendation does not address the actions of designated authorities within the Union in relation to third country countercyclical capital buffer rates.
- (12) The countercyclical capital buffer is part of a suite of macro-prudential instruments. Recommendation ESRB/2013/1 of the European Systemic Risk Board of 4 April 2013 on intermediate objectives and instruments of macro-prudential policy⁽¹⁾ gives an indicative list of instruments that the Member States could assign to macro-prudential authorities. As part of their macro-prudential policy strategy designated authorities should consider when to use the countercyclical capital buffer in isolation, when to use other instruments, and when to combine the countercyclical capital buffer with other instruments.
- (13) Empirical analysis suggests that the credit-to-GDP gap is the best single indicator for the Union as a whole for signalling the build-up of risks associated with the type of crisis that the countercyclical capital buffer is designed to mitigate. The credit-to-GDP gap has been shown to give a robust signal across a range of specifications of the gap. There are a few methods for calculating the gap that show better signalling qualities than the calculation method suggested in the BCBS's guidance, but these tend to be based on narrower credit aggregates and may thus be less robust in the face of financial innovation. The measurement and calculation of the credit-to-GDP gap and the benchmark buffer rate in line with the BCBS's guidance will increase comparability within the Union and outside it.
- (14) In some Member States, the measurement and calculation suggested in the BCBS's guidance may result in a credit-to-GDP gap that does not perform well in signalling the build-up of risks that precede financial crises. National specificities such as differences in the structure and degree of the development of the financial system, and in the quality and availability of credit data, mean that for some Member States some other method for calculating the credit-to-GDP gap than that given in the BCBS's guidance may exhibit stronger signalling qualities. In order to take account of such differences and to allow for other methodologies, designated authorities may — in addition — measure and calculate the credit-to-GDP gap using a method that better reflects the specificities of the respective Member State.
- (15) The methodology set out in the BCBS's guidance for mapping the credit-to-GDP gap to a benchmark buffer rate that serves as the buffer guide is an ad hoc methodology. Empirical analysis of alternative methodologies, while promising, is not sufficiently developed to provide guidance. Member States that measure and calculate the

⁽¹⁾ OJ C 170, 15.6.2013, p. 1.

credit-to-GDP gap using an alternative method, in addition to the methodology published in the BCBS's guidance, should develop and publish a benchmark buffer rate corresponding to that alternative method in addition to the benchmark buffer rate specified in the BCBS's methodology. Member States that measure and calculate the credit-to-GDP gap in line with the BCBS's guidance can also develop and publish an alternative benchmark buffer rate in addition to that arrived at by using the BCBS's methodology.

- (16) Empirical findings suggest that other variables may complement the credit-to-GDP gap for signalling the build-up of system-wide risks related to excessive credit growth in the financial system. Such variables include measures of potential overvaluation of property prices (e.g. commercial and residential real estate price-to-income ratios, price gaps and growth rates), measures of credit developments (e.g. real total credit or real bank credit growth, the deviation from trend in deflated M3), measures of external imbalances (e.g. current account balances as a ratio to GDP), measures of the strength of bank balance sheets (e.g. leverage ratios), measures of private sector debt burden (e.g. debt-service to income ratio) and measures of potential mispricing of risk (e.g. real equity price growth). Designated authorities should take account of such variables in exercising their judgement when setting of the appropriate rate for the countercyclical capital buffer. Combining such variables with the credit-to-GDP gap in a multivariate model has been found to improve signalling performance. Designated authorities may also want to take account of such models.
- (17) Empirical findings suggest that, for the majority of Member States, financial market prices displayed the best signalling qualities to indicate a materialisation of risks that warrant a prompt reduction or full release of the countercyclical capital buffer. Limited availability of sufficiently long time series of such market-based indicators means that the empirical analysis on the release phase of the buffer is less robust than that of the build-up phase. It is also difficult to identify variables to indicate that the countercyclical capital buffer can be gradually reduced when risks from excessive credit growth recede. In principle, variables that perform well in the build-up phase of the countercyclical capital buffer may also inform the decision that the buffer should be maintained, reduced or fully released. These variables may, however, also provide misleading information. For example, the credit-to-GDP gap may not accurately reflect risks if credit has been growing excessively for a prolonged period. As research and experience in the release phase develop, the set of variables indicated in this Recommendation will need to be augmented with further appropriate indicators, as they are identified. Overall, designated authorities need to exercise even greater judgement in the release phase of the buffer than during its build-up phase. This judgement could also be informed by market intelligence, supervisory assessments and stress tests.
- (18) Provided that such data are available in the Member State in question, the monitoring and publication of a minimum set of variables that signal that the countercyclical capital buffer should be built up, maintained, reduced or fully released should promote consistency and transparency on the part of designated authorities. It should not prevent designated authorities from considering further indicators or qualitative information in the light of the specificities of the Member State, nor should it prevent designated authorities placing more weight on certain variables than on others or placing greater weight on qualitative information.
- (19) ESRB recommendations are published after the General Board informs the Council of its intention to do so and provides the Council with an opportunity to react,

HAS ADOPTED THIS RECOMMENDATION:

SECTION 1

RECOMMENDATIONS

Recommendation A — Principles

Designated authorities are recommended to adhere to the following principles when assessing and setting the appropriate countercyclical buffer rates applicable in the respective Member State:

1. Principle 1: (Objective) Decisions on the appropriate countercyclical buffer rate should be guided by the objective of protecting the banking system against potential losses associated with a build-up of cyclical systemic risk, thereby supporting the sustainable provision of credit to the real economy throughout the financial cycle.

2. Principle 2: (Buffer guide) The deviation of the ratio of credit-to-GDP from its long term trend — the credit-to-GDP gap — should serve as a common starting point in guiding decisions on countercyclical buffer rates, most notably in the build-up phase. However, designated authorities should also take into account other quantitative and qualitative information when assessing cyclical system-wide risk and setting the appropriate countercyclical buffer rate. This includes information that reflects national specificities. Designated authorities should explain to the public what information is used, and how it is taken into account in setting the relevant buffer rate.
3. Principle 3: (Risk of misleading information) Designated authorities should assess the information contained in the credit-to-GDP gap and any other relevant variables or models that combine variables, being mindful that the information they provide may be misleading. Designated authorities should take this assessment into account when exercising their judgement regarding the sustainability of credit growth in order to set the appropriate countercyclical buffer rate. The usefulness of these variables and models should be periodically reassessed.
4. Principle 4: (Release of the buffer) Designated authorities should promptly release the countercyclical capital buffer when risks materialise. This can mitigate the pro-cyclical behaviour of credit institutions by helping them absorb losses, while still maintaining lending to the real economy and complying with solvency requirements. When risks do not materialise but are judged to recede, a gradual release of the buffer may be more appropriate. If a designated authority reduces the existing buffer rate, it should decide on an indicative period during which no increase in the buffer rate is expected.
5. Principle 5: (Communication) Designated authorities should develop a clear strategy for communicating their decisions on the countercyclical capital buffer. As part of this strategy, they should establish a mechanism for coordinating with other designated authorities as well as the ESRB. They should also establish transparent stable processes and well-defined channels of communication to key stakeholders and the public.
6. Principle 6: (Recognition of buffer rates) In addition to the mandatory reciprocity arrangements set by Union law, designated authorities should generally recognise the countercyclical buffer rates applied in other Member States. Designated authorities should consider the cross-border implications of not recognising a buffer rate for exposures to another Member State in excess of the mandatory level. When not recognising a buffer rate set by the designated authority of another Member State in excess of the mandatory level, designated authorities should notify:
 - (a) the ESRB;
 - (b) the designated authority setting the buffer rate;
 - (c) the ECB, when at least one of the designated authorities setting or not recognising the buffer rate is from a Member State participating in the Single Supervisory Mechanism in accordance with Regulation (EU) No 1024/2013.
7. Principle 7: (Other macro-prudential instruments) The countercyclical capital buffer is part of a suite of macro-prudential instruments at the disposal of the authorities in the Union. As part of their macro-prudential policy strategy designated authorities should consider when to use the buffer in isolation, when to use other instruments instead of the buffer and when to combine the buffer with other instruments.

Recommendation B — Guidance on the measurement and calculation of the credit-to-GDP gap, calculation of the benchmark buffer rate and the buffer guide

1. Designated authorities are recommended to measure and calculate quarterly a standardised credit-to-GDP gap in accordance with the BCBS's guidance, as specified in Part I of the Annex to this Recommendation.

2. Where designated authorities deem that a different measurement and calculation of the credit-to-GDP gap would better reflect the specificities of the national economy, they are recommended to measure and calculate quarterly an additional credit-to-GDP gap further to the gap calculated in accordance with paragraph 1. When calculating the additional credit-to-GDP gap, designated authorities are recommended to adhere to the following guidance:
 - (a) the method for measurement and calculation should reflect the deviation of the ratio of credit-to-GDP from its long-term trend;
 - (b) the measurement and calculation should be based on empirical analysis of data relevant for the corresponding Member State;
 - (c) any revisions of the method for measurement and calculation of the additional credit-to-GDP gap should be based on a thorough review of the performance of the chosen method in signalling the build-up of risks that are associated with the type of crisis the countercyclical capital buffer is designed to mitigate.
3. Designated authorities are recommended to calculate quarterly the following:
 - (a) a benchmark buffer rate based on the standardised credit-to-GDP gap in accordance with the BCBS's guidance, as set out in Part II of the Annex; and, where applicable; either
 - (b) a benchmark buffer rate based on the standardised credit-to-GDP gap and calculated in accordance with a methodology that differs from that set out in Part II of the Annex where such a methodology is used; or
 - (c) a benchmark buffer rate based on the additional credit-to-GDP gap and calculated in accordance with a methodology that differs from that set out in Part II of the Annex, where the additional credit-to-GDP gap is calculated.
4. Where, in addition to the benchmark buffer rate set out in accordance with paragraph 3(a), another benchmark buffer rate set out in accordance with paragraph 3(b) or paragraph 3(c) has been calculated for a particular quarter, for the purposes of Directive 2013/36/EU designated authorities are recommended to select as a buffer guide the benchmark buffer rate that best reflects the specificities of the respective national economy.
5. As part of the information accompanying the announcement of the countercyclical buffer rate required under Article 136(7) of Directive 2013/36/EU, designated authorities are recommended to publish quarterly on their website:
 - (a) the standardised credit-to-GDP gap and the corresponding ratio of credit-to-GDP;
 - (b) the additional credit-to-GDP gap and the corresponding ratio of credit-to-GDP, where calculated, and justification for the deviations from the formula in Part I of the Annex;
 - (c) the benchmark buffer rate calculated in accordance with paragraph 3(a);
 - (d) the benchmark buffer rate calculated in accordance with paragraph 3(b) or paragraph 3(c), where applicable;
 - (e) the sources of the underlying data and other relevant metadata.
6. As part of the information accompanying the announcement of the countercyclical buffer rate required under Article 136(7) of Directive 2013/36/EU, designated authorities are recommended to explain their reasons whenever they depart from:
 - (a) the selected measurement and calculation of the credit-to-GDP gap as set out in paragraphs 1 and 2, including any of its components;
 - (b) the selected calculation of the benchmark buffer rate as set out in paragraph 3;
 - (c) the selected buffer guide as set out in paragraph 4.

Recommendation C — Guidance on variables that indicate the build-up of system-wide risk associated with periods of excessive credit growth

1. In order to inform their judgement as to the appropriate countercyclical buffer rate, designated authorities are recommended to take account of a range of quantitative and qualitative information that indicates the build-up of system-wide risk associated with periods of excessive credit growth, in addition to the credit-to-GDP gap.
2. When assessing quantitative information, designated authorities should monitor a set of variables that indicate the build-up of cyclical systemic risk. Subject to such variables being available in Member States, this set should include the following:
 - (a) measures of potential overvaluation of property prices (e.g. commercial and residential real estate price-to-income ratios, price gaps and growth rates);
 - (b) measures of credit developments (e.g. real total credit or real bank credit growth, the deviation from trend in deflated M3);
 - (c) measures of external imbalances (e.g. current account balances as a ratio to GDP);
 - (d) measures of the strength of bank balance sheets (e.g. leverage ratios);
 - (e) measures of private sector debt burden (e.g. debt-service to income ratios);
 - (f) measures of potential mispricing of risk (e.g. real equity price growth);
 - (g) measures derived from models that combine the credit-to-GDP gap and a selection of the above measures.
3. If such variables are available and relevant in Member States, designated authorities are recommended to publish at least one of the measures set out in each of the paragraphs 2 (a), (b), (c), (d), (e) and (f) quarterly on their website to accompany the announcement of the countercyclical buffer rate required under Article 136(7) of Directive 2013/36/EU.

Recommendation D — Guidance on variables that indicate that the buffer should be maintained, reduced or fully released

1. In order to inform their judgement as to the appropriate countercyclical capital buffer rate, designated authorities are recommended to take account of a range of quantitative and qualitative information that indicates that the buffer should be maintained, reduced or fully released.
2. When assessing quantitative information, designated authorities should monitor a set of variables that indicate whether the buffer should be maintained, reduced or fully released. If such variables are available in the Member State, this set should include the following:
 - (a) measures of stress in bank funding markets (e.g. the LIBOR-OIS (overnight index swaps) spread, bank CDS (credit default swap) premia);
 - (b) measures that indicate general systemic stress (e.g. a composite indicator measuring stress in the national or EU financial system such as the ECB CISS (Composite Indicator of Systemic Stress) indicator).
3. In order to decide on whether to maintain, reduce or fully release the buffer, designated authorities are recommended to exercise greater judgement when monitoring the variables under paragraph 2.
4. If such variables are available and relevant in Member States, designated authorities are recommended to publish at least one of the variables set out in each of the paragraphs 2 (a) and (b) quarterly on their website to accompany the announcement of the countercyclical buffer rate required under Article 136(7) of Directive 2013/36/EU.

SECTION 2

IMPLEMENTATION**1. Interpretation**

1. For the purposes of this Recommendation, the following definitions apply:

- (a) 'designated authority' means a public authority or body designated by a Member State in accordance with Article 136(1) of Directive 2013/36/EU or the ECB in accordance with Article 9(1) of Regulation (EU) No 1024/2013;
- (b) 'benchmark buffer rate' means a countercyclical buffer rate, calculated in accordance with recommendation B(3);
- (c) 'buffer guide' means a benchmark buffer rate, selected in accordance with recommendation B(4);
- (d) 'credit-to-GDP gap' means the deviation of the ratio of credit-to-GDP from its long-term trend in a particular Member State;
- (e) 'standardised credit-to-GDP gap' means a credit-to-GDP gap measured and calculated in accordance with recommendation B(1);
- (f) 'additional credit-to-GDP gap' means a credit-to-GDP gap measured and calculated in accordance with recommendation B(2);
- (g) 'countercyclical buffer rate' means the rate that institutions must apply in order to calculate their institution-specific countercyclical capital buffer, set in accordance with Articles 136 and 137 of Directive 2013/36/EU or by a relevant third country authority, as the case may be.

2. The Annex forms an integral part of this Recommendation. In the event of conflict between the main text and the Annex, the main text prevails.

2. Criteria for implementation

1. Addressees are requested to report on the actions they take in response to this Recommendation, or adequately justify any inaction. The reports should contain as a minimum:

- (a) information on the substance and timing of the actions taken;
- (b) an assessment of the functioning of the actions taken, from the perspective of the objectives of this Recommendation;
- (c) detailed justification of any inaction or departure from this Recommendation, including any delays.

3. Timeline for the follow-up

1. Addressees are requested to report to the ESRB, the Council and the Commission on the actions they have taken in response to this Recommendation, or adequately justify any inaction, as specified in the following paragraphs.

2. By 30 June 2016 addressees are requested to send to the ESRB, the Council and the Commission a report explaining the measures they have taken to comply with this Recommendation. The recommended measures should apply from the date by which the Member States require the credit institutions in their jurisdiction to maintain an institution-specific countercyclical capital buffer in accordance with Article 130 of Directive 2013/36/EU. The report should include details of measures taken from that date onwards.

3. Addressees are requested to send a report explaining the measures they have taken to comply with this Recommendation every three years.

4. The General Board will decide when this Recommendation needs to be reviewed or updated in the light of experience in setting buffers pursuant to Directive 2013/36/EU or of developments in internationally agreed practices.

4. Monitoring and assessment

1. The ESRB Secretariat:

- (a) assists the addressees, including by facilitating coordinated reporting, providing relevant templates and detailing where necessary the modalities and the timeline for the follow-up;
- (b) verifies the follow-up by the addressees, including by assisting them at their request, and reports on the follow-up to the General Board via the Steering Committee.

2. The General Board assesses the actions and the justifications reported by the addressees and, where appropriate, decides whether this Recommendation has not been followed and the addressees have failed to adequately justify their inaction.

Done at Frankfurt am Main, 18 June 2014.

The Chair of the ESRB

Mario DRAGHI

ANNEX

PART I

METHODOLOGY FOR THE MEASUREMENT AND CALCULATION OF THE CREDIT-TO-GDP GAP IN ACCORDANCE WITH THE BCBS'S GUIDANCE

The standardised credit-to-GDP gap, denoted GAP_t , is measured and calculated as:

$$GAP_t = \text{RATIO}_t - \text{TREND}_t$$

where:

t = end-period date, the period being one quarter;

$\text{RATIO}_t = (\text{CREDIT}_t / (\text{GDP}_t + \text{GDP}_{t-1} + \text{GDP}_{t-2} + \text{GDP}_{t-3})) \times 100 \%$;

GDP_t = gross domestic product of the Member State of the designated authority in quarter t ;

CREDIT_t = broad measure of the stock of credit to the private non-financial sector in the Member State of the designated authority outstanding at the end of quarter t ;

TREND_t = recursive Hodrick-Prescott filtered trend of the RATIO with a smoothing parameter, lambda of 400 000 (*).

(*) The Hodrick-Prescott filter (HP filter) is a standard mathematical tool used in macroeconomics to establish the trend of a variable over time. It is implemented in any standard statistical packages. A one sided, recursive, HP filter ensures that only information available at each point in time is used for the calculation of the trend. The smoothing parameter, generally referred to as lambda in the technical literature, is set to 400 000 to capture the long-term trend in the behaviour of the credit-to-GDP ratio.

PART II

METHODOLOGY FOR THE CALCULATION OF THE BENCHMARK BUFFER RATE IN ACCORDANCE WITH THE BCBS'S GUIDANCE (*)

The size of the benchmark buffer rate (as a percentage of risk-weighted assets) is zero when the credit-to-GDP gap is below or equal to the lower threshold. It then increases linearly with the credit-to-GDP gap until the benchmark buffer rate reaches its maximum level when the credit-to-GDP gap reaches or exceeds the upper threshold.

In formal terms:

if $GAP_t \leq L$, the benchmark buffer rate is zero,

if $GAP_t \geq H$, the benchmark buffer rate is at 2,5 %,

between L and H the benchmark buffer rate is linearly interpolated and equals to $(0,3125 \times GAP_t - 0,625)$

where:

GAP_t is the credit-to-GDP gap defined in the Annex Part I;

$L = 2$ percentage points is the lower threshold;

$H = 10$ percentage points is the upper threshold.

(*) While the benchmark buffer rates increase linearly in line with GDP and can thus take any value between zero and 2,5 %, Article 136(4) of Directive 2013/36/EU specifies that the buffer rate set by the designated authority shall be calibrated in steps of 0,25 percentage points or multiples thereof.