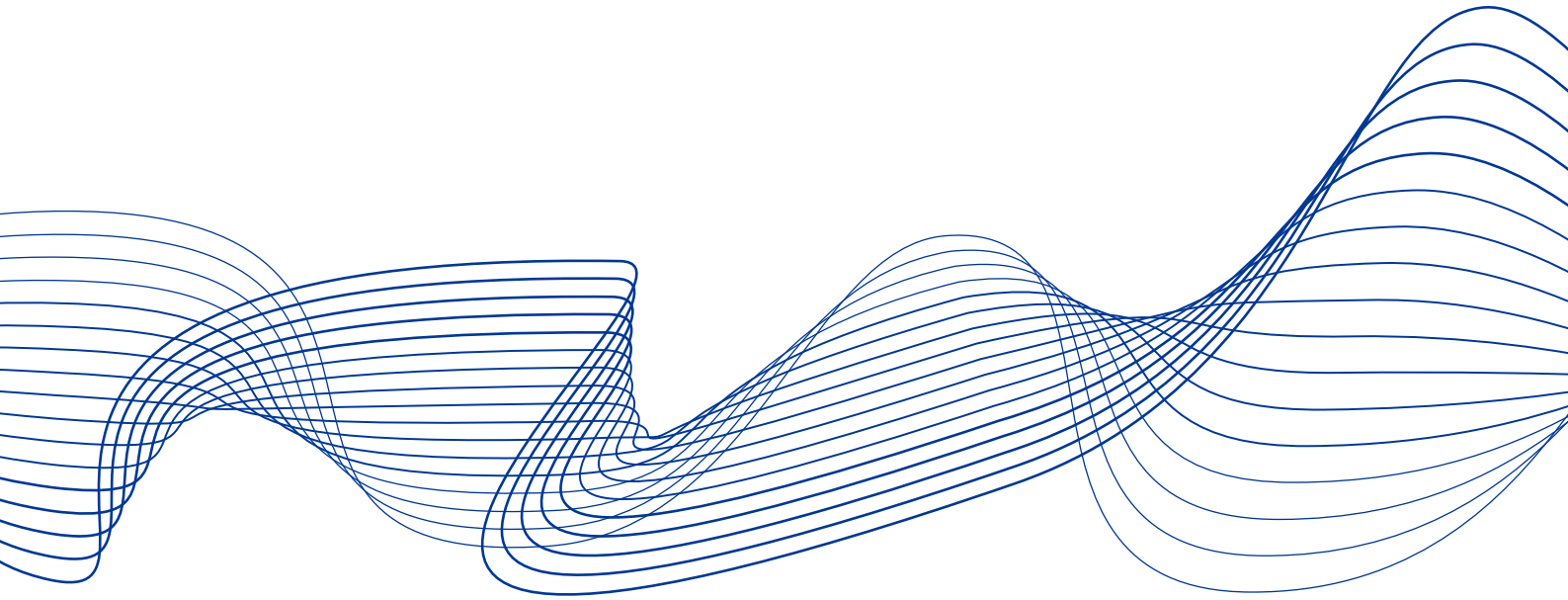
Report of the Analytical Task Force on the overlap between capital buffers and minimum requirements

December 2021



ESRB
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Executive summary

Capital buffers are key macroprudential policy instruments. Regulatory capital buffers ("the buffers") were introduced after the global financial crisis to mitigate systemic risk. Buffers help to ensure the resilience of banks and to conserve their capital by placing constraints on distributions if buffers are breached. Unlike minimum requirements, buffers can be drawn down when losses have to be absorbed during times of stress and are replenished thereafter. Using buffers may thus cushion the financial cycle, especially in the case of the countercyclical capital buffer (CCyB), which is designed to be released by the authorities in a downturn.

Banks might not always be able or willing to use their buffers. For the purpose of this report, the "usability" of buffers and excess capital means that banks are able to deplete their buffers without triggering a breach any parallel minimum requirements. The minimum requirements include the leverage ratio (LR), the minimum requirement for own funds and eligible liabilities (MREL) or the risk-weighted capital framework for the upcoming leverage ratio buffer for global systemically important institutions (G-SIIs), also referred to as the G-SII buffer. Even if buffers are usable from this perspective, banks might be unwilling to use them. Banks' willingness to use buffers is beyond the scope of this report and may also depend on factors other than buffer usability.[1] However, investigations into banks' willingness to use buffers need to take into account potential regulatory impediments that might be an important reason why banks do not use buffers. Thus, both the ability and the willingness to use buffers may limit the capacity for buffers to cushion shocks.

When buffers overlap with parallel minimum requirements, buffer usability is inevitably constrained. EU banking regulation ("the banking package")[2] establishes three parallel frameworks, each with minimum capital requirements: (1) the risk-weighted capital requirements framework aimed at increasing the resilience of banks; (2) the supplementary leverage ratio requirements constraining the build-up of leverage, mitigating the risk of destabilising deleveraging processes and safeguarding against model risk and measurement error; and (3) the framework to facilitate the resolution of failed banks without putting public funds at risk. These three frameworks apply simultaneously, with each of them playing an important role in contributing to the resilience of the banking system. However, the banking package also allows multiple uses of capital across these three frameworks, which in some instances includes the buffers. Where this is the case, only those buffer resources that do not simultaneously count towards a parallel minimum requirement

1 For a discussion on banks' willingness to use buffers, see, for example, "**Newsletter on buffer usability**", Basel Committee on Banking Supervision, Basel, 31 October 2019, and *Macroprudential Bulletin*, Issue 11, European Central Bank, Frankfurt am Main, October 2020. The willingness to use buffers was also analysed by the Macroprudential Analysis Group (MPAG)/ Macroprudential Policy Group (MPPG) Expert Group dealing with banks' responses to the crisis and policy effectiveness.

2 The banking package comprises Capital Requirements Directive V (Directive (EU) 2019/878 of the European Parliament and of the Council of 20 May 2019 amending Directive 2013/36/EU as regards exempted entities, financial holding companies, mixed financial holding companies, remuneration, supervisory measures and powers and capital conservation measures, (OJ L 150, 7.6.2019, p. 253) and the corresponding Capital Requirements Regulation II (Regulation (EU) 2019/876 of the European Parliament and of the Council of 20 May 2019 amending Regulation (EU) No 575/2013 as regards the leverage ratio, the net stable funding ratio, requirements for own funds and eligible liabilities, counterparty credit risk, market risk, exposures to central counterparties, exposures to collective investment undertakings, large exposures, reporting and disclosure requirements, and Regulation (EU) No 648/2012, OJ L 150, 7.6.2019, p. 1), the Bank Recovery and Resolution Directive II (Directive (EU) 2019/879 of the European Parliament and of the Council of 20 May 2019 amending Directive 2014/59/EU as regards the loss-absorbing and recapitalisation capacity of credit institutions and investment firms and Directive 98/26/EC, OJ L 150, 7.6.2019, p. 296) and the Single Resolution Mechanism Regulation II (Regulation (EU) 2019/877 of the European Parliament and of the Council of 20 May 2019 amending Regulation (EU) No 806/2014 as regards the loss-absorbing and recapitalisation capacity of credit institutions and investment firms, OJ L 150, 7.6.2019, p. 226).

are usable. This report examines the usability and effective releasability of buffers by analysing the interaction between the combined buffer requirement (CBR)[3], the upcoming G-SII leverage ratio buffer and the minimum requirements under each of the three frameworks.

The regulatory framework is multi-restrictive by construction. The different minimum requirements have different purposes and their combined effect is to achieve a more resilient banking sector. Without such multi-restrictiveness, each individual requirement would have had to have been set at a higher level to achieve the same loss-absorbing capacity in terms of capital in the system, i.e. a minimum capital. With minimum restrictions in many dimensions and rules that allow the multiple use of capital for buffers and minimum requirements across the frameworks, one consequence is that buffers may not always be fully usable for all banks.

The conceptual analysis below gives a stylised overview of how the regulatory interactions could limit buffer usability. The driving factors in limited buffer usability are: (i) the legal provisions laying down which equity and liabilities can be counted towards the different minimum requirements and buffers; (ii) the relative size of the different requirements in nominal terms; and (iii) a bank's balance-sheet structure. Relevant balance-sheet characteristics in this regard are the composition of assets and liabilities, the risk weight density of assets[4] and the size of off-balance-sheet items. This report is the first to look at the interactions within the regulatory framework from a macroprudential perspective, where usability of buffers is an important precondition for effective policymaking. Macroprudential authorities may need to bear these interactions in mind when deciding on the calibration of macroprudential buffers.

The conceptual analysis also reveals that the regulatory system has become complex. While the leverage ratio and MREL have made the financial system more resilient and safer, their addition alongside the risk-weighted prudential framework has also increased complexity due to regulatory interactions. This report is the first to conceptualise and empirically assess the interaction among the three parallel frameworks. Reducing this complexity and increasing transparency, where possible, could facilitate the understanding and analysis of buffer overlap by regulators and market participants alike. Any potential changes to the EU regulatory framework should comply with international minimum standards.

Still, for the macroprudential framework to be effective, facilitating the usability of buffers within the multi-restrictive framework is important, not least when a macroprudential authority releases a buffer. The effectiveness of a buffer release depends on whether it translates into excess capital that banks can use to continue to provide credit to the real economy. Banks drawing down released buffers are not subject to distribution restrictions as they would be if they breached buffer requirements. Under the current framework, the CCyB is intended to be released in a crisis. A CCyB release is ineffective if the released capital is simultaneously tied up by a parallel

[3] The combined buffer requirement (CBR) consists of the capital conservation buffer (CCoB), the buffers for systemically relevant financial institutions (G-SIIs and other systemically important institutions – O-SIIs), the systemic risk buffer (SyRB) and the countercyclical capital buffer (CCyB). The CCyB can be released by the designated authority.

[4] "The risk weight density is the aggregate risk-weighting of a bank's entire credit risk exposures." See Kok, C., Müller, C., Ongena, S. and Pancaro, C., "**The disciplining effect of supervisory scrutiny in the EU-wide stress test**", *Working Paper Series*, No 2551, ECB, Frankfurt am Main, May 2021.

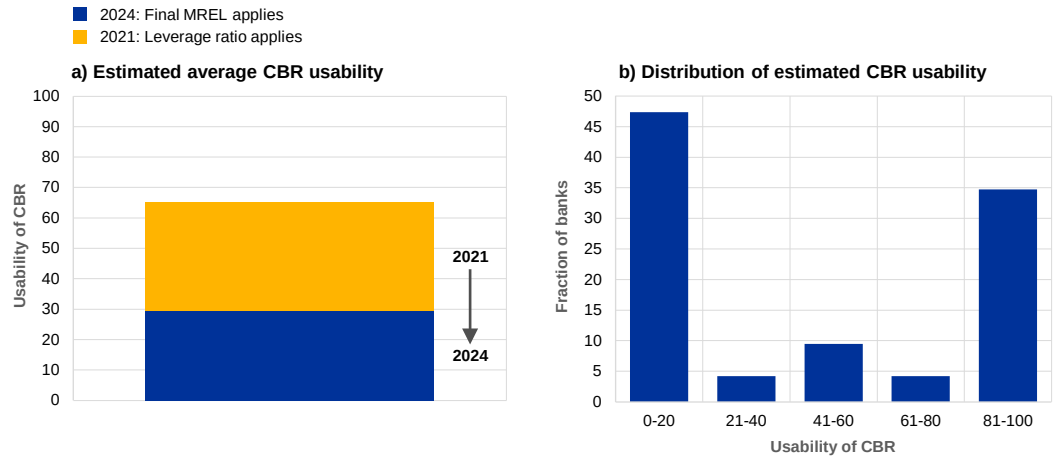
minimum requirement. The same also holds true for any potential release of any other capital buffers.[5]

Empirical analysis suggests that buffer usability could be limited in some EU Member States by the leverage ratio and may further decline once MREL rules apply. Depending on banks' portfolio adjustments in the years ahead, the analysis suggests that the usability of buffers may be considerably constrained for a material number of banks in several jurisdictions. The analysis considers buffer usability from the perspective of CBR in the risk-weighted capital stack. This is a natural starting point for the assessment of impediments presented by parallel requirements. A complementary view, also focusing on CBR in the MREL stack and which might lead to higher indications of buffer usability, is noted in Box 2.

The results show, however, substantial heterogeneity across regions, across countries and in particular across bank types.[6] As regards regional and international heterogeneity, the leverage ratio tends to pose a greater constraint for buffer usability in western and northern European banks than in southern and central eastern Europe. When the MREL is also factored in, aggregate buffer usability may decline further in all regions. Panel A in the chart below shows the estimated average usability of the CBR in our baseline scenario. As regards bank heterogeneity, CBR usability varies significantly across banks (see Panel B). Around one-third of the banks examined are estimated to have full or a very high level of CBR usability, but for more than half of the banks use of the CBR would seem to be substantially constrained if not totally impossible.

Chart 1
CBR usability – baseline scenario

(in percent)



Notes: In Panel A the usability of the CBR is weighted according to banks' nominal CBR. The baseline scenario assumes closed shortfalls and a minimum management buffer of at least 1% of risk-weighted assets in 2024 when the final MREL rules apply. Funding needs are assumed to be closed with the cheapest available funding source. Panel B shows the distribution of CBR

[5] The usability of the whole CBR is important. Removing impediments to banks' ability to use a released CCyB might be especially conducive to avoiding undesirable potential deleveraging if banks were more willing to use a released buffer to sustain lending as opposed to other buffers that were not released. Empirical evidence on this is currently not clear.

[6] The following regions are covered: Northern Europe.: DK, FI, IS, NO, SE; Western Europe.: AT, BE, DE, FR, IE, LU, NL; Southern Europe: CY, ES, GR, IT, MT, PT; Central Eastern Europe (CEE): BG, CZ, EE, HR, HU, LT, LV, PL, RO, SI, SK.

usability in the baseline scenario. The sample is based on 95 European parent banks for which we have the data to calculate the interaction between the CBR and both the leverage ratio and the resolution framework (MREL).

Banks using internal ratings-based approaches (IRBA) tend to be affected more than banks using the standardised approach (SA) to calculate risk-weighted assets. The reason for this is that IRBA banks usually have lower risk-weighted densities. On average, buffer usability for IRBA banks is estimated to be 27%, compared with 67% for SA banks. As systemically important institutions (SIIs) often apply the IRBA, their buffer usability is lower compared with non-SIIs.

The analysis assesses the overlap with expected future regulatory requirements based on end-2019 data on bank balance sheets, risk-weighted assets and leverage ratio exposures and using dynamic balance-sheet assumptions to bridge the time gap. This means that caveats apply and that buffer usability may evolve as banks adapt to the changing regulatory landscape, in particular with respect to MREL and the remaining elements of the Basel III finalisation package that will apply later.

The analysis of the different scenarios assumed is robust and therefore informative about the trends for buffer usability. The baseline estimation of the usability of the CBR assumes that banks will close any leverage ratio and final MREL shortfalls using the cheapest available funding source and will also maintain a management buffer of at least 1% of risk-weighted assets. This scenario yields a buffer usability of 29% on aggregate. This result does not change by more than 3 percentage points in either direction if the funding assumption or minimum management buffer in the baseline scenario is altered. However, the estimated usability of excess capital in the risk-weighted capital stack is more sensitive to the scenario assumptions. Nevertheless, against the backdrop of future regulatory developments, monitoring buffer usability going forward is important – including with a view to gaining greater insight into the sensitivity of buffer usability over the financial cycle.

Full implementation of the Basel III package under EU law is a high priority and will improve buffer usability. The final Basel III Accord would impose a limit on the extent to which banks using internal models can reduce their model-based risk weights ("output floor"). While this will also reduce the overlap for IRBA banks, it might not fully eliminate the overlaps.[7] This will be particularly important for banks with low risk-weighted densities, which are typically western and northern European banks, i.e. those on average most affected at present by the limitations on buffer usability.

Other forthcoming regulatory changes will also affect the nature and magnitude of interactions between buffers and other parallel requirements. The forthcoming Pillar 2 leverage ratio requirements, if applied by the supervisory authorities, may increase the overlap with the combined buffer requirements for banks with low risk weight density, but might increase the usability of total buffers for global systemically important institutions (G-SIIs) when the G-SII leverage ratio buffer comes into effect in 2023. Furthermore, banks can influence the overlap between the combined buffer requirements and MREL through their choices for the composition of liabilities when closing MREL shortfalls in coming years. However, limited buffer usability will not be

[7] The intention of the output floor is to reduce excessive variability of risk-weighted assets, to enhance the comparability of risk-weighted capital ratios between banks and to ensure that banks' capital requirements do not fall below a certain percentage of capital requirements derived from the application of standardised approaches.

a transitional phenomenon, as the overlap stems from allowing banks to use the same capital both for the buffers and for the minimum requirements.

A newly developed interactive simulation tool has been provided to authorities to allow them to investigate the interaction between buffers and minimum requirements. The ESRB Analytical Task Force on the overlap between capital buffers and minimum requirements (ATF) has developed a tool that allows parameters such as balance-sheet characteristics and capital requirement calibrations to be set, thereby enabling authorities to calculate buffer usability and run policy simulations. The updated final version has additional features for uploading input data, allowing authorities to carry out buffer usability analysis based on bank-level datasets. It is available as a comprehensive R package that could be extended further through software updates.

Any potential measure to increase the usability of buffers should maintain the balance between the existing minimum requirements. Increasing the usability of buffers by reducing the effectiveness of the minimum requirements in any other dimension might undermine the overall resilience of the banking sector and change the balance between the existing minimum requirements.

The report provides a neutral description of potential mitigating options should policymakers deem a reduction in overlaps to be necessary. Reflecting the ATF's analytical mandate, the report sets out options designed to inform decision makers without taking a stance or assessing their relative merits, shortcomings and feasibility from a political perspective. The mitigating options are, however, consistent with the principle that improvement in buffer usability should not inhibit achievement of the objectives of the parallel frameworks and, ideally, should also enhance consistency without further increasing the complexity of the regulatory system.

While the authorities could implement some of the mitigating options within the current legal framework, others would require legal changes to be made. These measures could also be combined. It should be noted, however, that full or significantly improved buffer usability would require changes to the interactions and therefore necessitate legal change. In any event, transparency and information sharing among authorities are important prerequisites for assessing and addressing impediments to buffer usability that result from the overlaps. Bank-specific information on all applicable requirements and eligible resources should thus be available to microprudential and macroprudential authorities as well as to resolution authorities.

When considering potential mitigating options, a cost-benefit analysis would need to be done. This report takes the first step by estimating the capital impact of the options, where possible, without taking a stance on the desirability of regulatory or policy actions. Some options might affect all banks but could be tailored to banks with limited usability, based on the existing powers and tools of the authorities. Other options could include harmonised rules in the Single Market that would only target banks with limited buffer usability. A complete analysis and policy assessment are beyond the scope of the Task Force and are left to other fora at international and European levels. The costs for banks of complying with any of these options could also be included in a future analysis.

The findings of the report may inform effective macroprudential policies and upcoming reviews of the regulatory framework. Empirical results highlight the fact that buffer usability may be restricted in certain regions and countries and for certain banks, which might, in turn, limit the

extent to which macroprudential buffers would absorb losses and support the provision of key services in a downturn. While recognising the advantages of a multi-restrictive framework, policymakers need to be aware of the implications of these parallel requirements for buffer usability. Regulators and standard setters are invited to consider the findings in their deliberations on the functioning of the macroprudential framework while likewise adhering to the single market principle.

Disclaimer:

This report has identified technical options which are looked at from a macroprudential angle, in line with the ESRB mandate. It is important to note that these technical options are assessed solely with regard to their effectiveness in terms of increasing buffer usability or reducing overlaps and that they do not take into account the impact on other frameworks (prudential and resolution). Overlaps are an inherent and intended feature of parallel requirements that are explicitly designed as backstops. They have been chosen by international and European regulators to allow the multiple use of capital across prudential and resolution frameworks.

The technical options in this report shall not be seen as policy recommendations. The ESRB underlines, however, that capital buffers are a key instrument of macroprudential policy and their usability is important for effective policy-making. Therefore, the ESRB considers that the evolution of overlaps should be monitored over time, in view of ongoing adjustments in banks' capital structures and possibly changes in risk weight densities.

1 Introduction

Capital buffers are a cornerstone of the European macroprudential framework. They were developed as part of the risk-weighted capital framework.[8] The introduction of additional minimum requirements that apply in parallel – leverage ratio and MREL – created a multi-restrictive framework aimed at making the banking system safer by constraining the build-up of banks' leverage and introducing additional safeguards against model risk and measurement error, as well as by facilitating the orderly resolution of distressed banks without putting public funds at risk. However, the fact that capital buffers can be counted towards parallel minimum requirements has also raised concerns about the ability to use these buffers, and thus the effectiveness of the macroprudential policy framework in ensuring resilience in a going concern as well as in supporting lending in a crisis and in limiting the procyclicality inherent in banks' decision-making. In this report, we analyse the regulatory interactions that may limit the usability of buffers and their materiality for European banks. This analysis is without prejudice to the other objectives of the regulatory framework as laid out above.

The capital buffers are intended to shield the financial system, and in consequence the real economy, from systemic risks. Capital buffers have two main purposes. First, they improve the resilience of banks by requiring them to hold additional capital against the sources of systemic risk. To align banks' incentives with the need to avoid imprudent depletion of buffer capital, restrictions on distributions apply when buffers are not met. Second, buffers are intended to cushion shocks as losses can be absorbed during times of stress and buffers can be replenished afterwards. Banks can, therefore, run down or dip into (i.e. "use") these buffers instead of deleveraging or de-risking. The positive impact of sustaining credit flows in crises can be substantial from both the macroeconomic and financial stability perspectives.

Only that part of the CBR not tied into a parallel minimum requirement can be drawn down to absorb losses during times of stress, thereby cushioning the financial cycle. This report analyses how the minimum requirements laid out in the banking package affect banks' ability to use buffers. Two key concepts are used in this report:

1. Ability to use buffers ("usability") in this report means banks' ability to deplete regulatory buffers, and excess capital, without simultaneously breaching a parallel minimum requirement;

2. "Effective releasability" means that a buffer release effectively frees up capital that is not simultaneously tied into a parallel minimum or buffer requirement. In fact, a buffer must be "usable" in order to be effectively releasable. Therefore, "effective releasability" is a special case of usability for buffers that are intended for release by a policymaker (especially the CCyB).

The ability to use or effectively release buffers is distinct from the willingness of banks to use buffers. Even if buffers are usable from the regulatory perspective, banks might be unwilling to dip into the usable buffers because of fear of stigma or of enhanced supervisory scrutiny or to avoid

[8] Subsequently, buffers were also introduced into the leverage framework. Leverage ratio buffers for G-SIIs will be introduced in 2023 and the European Commission is mandated under CRR II to assess, by December 2020, the merits of introducing a leverage buffer for O-SIIs.

restrictions on distributions. Willingness to use buffers is beyond the scope of this report.[9] However, the ability to use buffers is also a precondition for willingness, so ultimately both ability and willingness are crucial to buffer usability.

The banking package introduces new requirements as well as revising those currently in place with the aim of further strengthening the resilience of EU banks. The package comprises the Capital Requirements Directive and the corresponding Regulation (as amended by CRD[10]/CRR[11]), the Bank Recovery and Resolution Directive (as amended by BRRD[12]) and the Single Resolution Mechanism Regulation (as amended by SRMR[13]). The package incorporates the international standard on total loss-absorbing capacity (TLAC[14]) into EU legislation[15] in revising the minimum requirement for own funds and eligible liabilities (MREL)[16], as well as parts of the Basel III international regulatory framework for banks[17], including a binding minimum leverage ratio (LR) requirement. Furthermore, the banking package clarifies the scope and adjusts the calibration of risk-weighted capital buffers and introduces a leverage ratio buffer for G-SIIs. If not stated otherwise, the descriptions and analyses in this report focus on the regulatory landscape after these new legislative acts are fully phased in (which is planned for 2024).

These three parallel frameworks (risk-weighted capital requirements, leverage ratio and MREL) have different objectives but interact with each other (Table 1). Prudential regulation (CRD V/CRR II) is primarily aimed at ensuring banks are sufficiently resilient (going concerns), while the regulation of resolutions (BRRD II/SRMR II) is designed to manage the failure of banks in an orderly manner (gone concerns). Prudential regulation imposes risk-weighted capital requirements that demand capital commensurate with the riskiness of banks' assets, while the leverage ratio serves to restrict the build-up of excessive leverage and provides additional

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9 The BCBS is analysing the "willingness" to use buffers and has reaffirmed the usefulness of buffers as a loss-absorbing mechanism "**Newsletter on buffer usability**", Basel Committee on Banking Supervision, Basel, 31 October 2019. In the European context, the MPAG/MPPG expert group on monitoring banks' responses to the crisis and policy effectiveness and the ESRB drafting team on removing disincentives in the use of macroprudential buffers are dealing with the issue of banks' willingness to use buffers. In addition, *Macroprudential Bulletin*, Issue 11, European Central Bank, Frankfurt am Main, October 2020, discusses the willingness to use buffers extensively.

10 Directive (EU) 2019/878 of the European Parliament and of the Council of 20 May 2019 amending Directive 2013/36/EU as regards exempted entities, financial holding companies, mixed financial holding companies, remuneration, supervisory measures and powers and capital conservation measures (OJ L 150, 7.6.2019, p. 253).

11 Regulation (EU) 2019/876 of the European Parliament and of the Council of 20 May 2019 amending Regulation (EU) No 575/2013 as regards leverage ratio, the net stable funding ratio, requirements for own funds and eligible liabilities, counterparty credit risk, market risk, exposures to central counterparties, exposures to collective investment undertakings, large exposures, reporting and disclosure requirements, and Regulation (EU) No 648/2012 (OJ L 150, 7.6.2019, p. 1).

12 Directive (EU) 2019/879 of the European Parliament and of the Council of 20 May 2019 amending Directive 2014/59/EU as regards the loss-absorbing and recapitalisation capacity of credit institutions and investment firms and Directive 98/26/EC (OJ L 150, 7.6.2019, p. 296).

13 Regulation (EU) 2019/877 of the European Parliament and of the Council of 20 May 2019 amending Regulation (EU) No 806/2014 as regards the loss-absorbing and recapitalisation capacity of credit institutions and investment firms (OJ L 150, 7.6.2019, p. 226).

14 "**Principles on Loss-absorbing and Recapitalisation Capacity of G-SIBs in Resolution. Total Loss-absorbing Capacity (TLAC) Term Sheet**", Financial Stability Board, Basel, November 2015.

15 Regulation (EU) 2019/876 of the European Parliament and of the Council of 20 May 2019 amending Regulation (EU) No 575/2013 as regards leverage ratio, the net stable funding ratio, requirements for own funds and eligible liabilities, counterparty credit risk, market risk, exposures to central counterparties, exposures to collective investment undertakings, large exposures, reporting and disclosure requirements, and Regulation (EU) No 648/2012 (OJ L 150, 7.6.2019, p. 1) and Directive (EU) 2019/879 of the European Parliament and of the Council of 20 May 2019 amending Directive 2014/59/EU as regards the loss-absorbing and recapitalisation capacity of credit institutions and investment firms and Directive 98/26/EC (OJ L 150, 7.6.2019, p. 296).

16 TLAC has been transposed as a Pillar 1 MREL requirement for G-SIIs in EU legislation.

17 "**Basel III: A global regulatory framework for more resilient banks and banking systems**", Basel Committee on Banking Supervision, Basel, December 2010 and "**Basel III: Finalising post-crisis reforms**", Basel Committee on Banking Supervision, Basel, December 2017.

safeguards against model risk, measurement errors and misspecification of risk weights. Under the resolution framework, MREL ensures sufficient loss-absorbing and recapitalisation capacity, based on own funds and eligible liabilities, to facilitate the resolution of a bank. All these parallel requirements apply at the same time.

Table 1

Overview of the parallel frameworks established in the banking package

Framework	Purpose	Applicable	Composition
Risk-weighted capital requirements	Covering risks with adequate capital based on risk weights.	Already applicable (some reforms still to be implemented: the Fundamental Review of the Trading Book reporting requirements, input and output floors).	Common equity Tier 1 (CET1), partly additional Tier 1 (AT1) and Tier 2 (T2)
Leverage ratio	Avoiding excessive leverage; safeguarding against model risk and misspecification of risk weights.	Minimum requirement: mid-2021; G-SII buffer: 2023.	Tier 1 (T1) capital (CET1 and AT1)
MREL	Ensuring sufficient loss absorption and recapitalisation capacity to safely resolve banks in crisis.	Currently, binding targets under BRRD/SRMR; intermediate targets 2022 and final targets 2024 under BRRDII/SRMRII.	Own funds and eligible liabilities (CET1, AT1, T2, subordinated eligible liabilities and other eligible liabilities)

The regulatory rules result in "multiple use" of capital across parallel frameworks, which may constrain buffer usability if the same unit of capital is used for buffers and parallel minimum requirements. This also applies to the CCyB and other buffers for potential release, as any release would be ineffective in freeing up capital if banks rely on the same units of capital to meet the parallel minimum requirements that are necessary to ensure a minimum loss-absorbing capacity.

Given the concern about limited usability of capital buffers due to overlapping parallel requirements, the Analytical Task Force on the overlap between capital buffers and minimum requirements (ATF) was asked to set out the interaction between buffers and minimum requirements and to assess the materiality of buffer limitations. In particular, the ATF was asked to examine the usability of capital buffers, both across Member States and business models and over the financial cycle. This report focuses on the regulatory landscape after implementation of the banking package. Where implementation of a banking package component is pending, we have used working assumptions about how the legal provisions may affect the interaction between minimum requirements and capital buffers. Legislative changes that are not part of the banking package but are part of the global accord on Basel III finalisation were considered in the ATF's work to the extent possible. For example, input and output floors might have positive effects for buffer usability but this would depend on how they are implemented in European law.[18]

[18] Under the Basel framework the output floor must be fully phased in by 1 January 2028 and is only relevant for banks using the internal ratings-based approach. It takes as its reference the risk weights applying under the standardised approach for credit risk, and its effect is thus limited if the risk weights applying under the standardised approach are low.

The ability to use buffers and excess capital is investigated both conceptually and empirically. First, usability is explored conceptually by explaining interactions that may arise in the regulatory set-up after implementation of the banking package. Next, regulatory interactions are assessed empirically based on bank-level data at end-2019 as well as by using dynamic balance-sheet assumptions, including over the financial cycle to the extent possible. Given the necessity of using assumptions and proxies for some variables, caveats apply. However, the results based on the various specifications and assumptions are robust and informative about the tendencies for buffer usability.

The ATF was also mandated to elaborate on mitigation options if the implications were found to be sufficiently material to be detrimental to the effectiveness of the macroprudential framework. Mitigating options are set out in a neutral way, reflecting the analytical focus of the ATF.

2 Interaction of minimum requirements and capital buffers

The interactions between minimum requirements and capital buffers depend on (i) the legal provisions concerning the multiple use of capital, (ii) the relative size of the different requirements, and (iii) the balance-sheet structure of the individual banks including off-balance-sheet items. This section sets out the conceptual background for understanding the interactions. First, an overview of the minimum and buffer requirements is given as well as the definition of excess capital used for the purpose of this report (see Annex A1 for the details and legal basis for these requirements). Second, the mechanics of their interactions are introduced using stylised examples. Finally, the section concludes with an overview of factors affecting buffer usability.

2.1 Description of the minimum requirements and capital buffers

(a) Minimum requirements

Minimum requirements under the risk-weighted capital framework, the leverage ratio framework and the MREL framework apply in parallel. While they serve different purposes, their commonality is to ensure a minimum loss-absorbing capacity at all times. In this way, the combination of these requirements reinforces the resilience of the banking system. In the case of MREL this also includes recapitalisation capacity, i.e. for gone concerns. Minimum requirements comprise (i) a Pillar 1 component common to all institutions, or a subset of institutions (in case of MREL); and (ii) an institution-specific Pillar 2 requirement (P2R). Within each framework, P2R is ranked above the Pillar 1 component in the stacking order for loss absorbency, but below the buffers for the respective framework (not applicable to MREL as there are no MREL buffers). In contrast to buffers, banks have to fulfil minimum requirements at all times.

For risk-weighted minimum capital requirements the amount of capital should be proportional to the riskiness of each asset, as measured or implied by the corresponding risk weights. Under the CRR, minimum Pillar 1 requirements (P1Rs) impose a minimum CET1 capital ratio of 4.5% of a bank's total risk exposure amount (TREA) – i.e. its risk-weighted assets (RWAs) –, a Tier 1 (the sum of CET1 and AT 1) capital ratio of 6% of RWAs and a total capital ratio (the sum of T1 and T2) of 8% of RWAs.[19] In addition, supervisors may impose a bank-specific P2R on top of the P1Rs.[20]

A minimum leverage ratio was introduced as a measure supplementary to risk-based capital requirements. The leverage ratio helps to tackle risks from the build-up of excessive leverage and any misspecification of regulatory and internal model-based risk weights, insufficient inclusion of

[19] Article 92(1) CRR.

[20] Under CRD V, at least 75% of P2R must be met using Tier 1, of which 75% should be CET1. This mirrors the requirements for Pillar 1.

off-balance-sheet items or contingent leverage. It places an absolute restriction on the size to which individual bank balance sheets and off-balance-sheet items can grow for a given level of capital. As in the risk-weighted framework, the minimum LR comprises a common Pillar 1 component and an institution-specific Pillar 2 requirement set by supervisors. Both have to be met with Tier 1 capital. Pillar 1 is set at 3% of the total leverage ratio exposure measure (LR-EM), a denominator largely based on total assets and off-balance-sheet items.[21] Table A1 in Annex A1 provides an overview of both the risk-weighted and leverage ratio-based minimum requirements.

MREL aims to ensure sufficient loss-absorbing and recapitalisation capacity if a bank fails. This facilitates the implementation of a resolution strategy to meet public policy objectives, such as preserving critical functions, avoiding significant adverse effects on financial stability or avoiding recourse to taxpayers' money. MREL is set by resolution authorities. It reflects expectations as to how that bank's failure would be dealt with, in particular whether it would be liquidated under normal insolvency proceedings or resolved using resolution tools. For that reason, MREL is composed of two components: (i) the loss absorption amount (LAA), set for all banks to cover losses relating to the failure of a bank; (ii) an additional recapitalisation amount (RCA) that applies to all banks for which resolution is necessary in the public interest in order to ensure compliance with regulatory capital requirements following resolution.

MREL was introduced in the BRRD and amended by the banking package. First, a distinction between different types of banks, namely G-SIIs, top-tier banks (TTBs), fished banks and all other banks is introduced, each type being subject to different requirements in line with the proportionality principle.[22] Second, there is a new statutory minimum MREL for G-SIIs, TTBs and fished banks that incorporates the international TLAC standard for G-SIIs (using prudential regulation terminology, this statutory minimum requirement can be referred to as a Pillar 1 requirement). MREL, as set by resolution authorities, can go above these statutory minima.[23]

MREL is expressed as two ratios to be met in parallel: as a percentage (i) of risk-weighted assets (RWAs), and (ii) of the total exposure measure used for the purpose of the leverage ratio (LR-EM). Table 2 provides an overview by bank category of the MREL (hereinafter referred to as MREL-RW when expressed as a percentage of RWAs and as MREL-LR when expressed as a percentage of LR-EM). Resolution authorities may also apply a subordination requirement in terms of total liabilities and own funds (TLOF), which is, however, expressed in LR-EM and incorporated into the MREL-LR when communicated to banks. This report analyses the interaction between buffers and MREL-TLOF separately from MREL-LR to better identify how regulation interacts. MREL should be met with own funds and eligible liabilities, eligibility therefor being specified in the CRR and the BRRD. Importantly, MREL Pillar 1 requirements need in general to be met with own funds and/or subordinated eligible liabilities. Additional subordination requirements exist for G-SIIs, TTBs and fished banks, but could also be imposed on other banks. The subordination requirement is relevant for buffer usability as it may require own funds if subordinated liabilities are not

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21 Under Articles 92(1)(d), 429(3) and (4) CRR.

22 Top-tier banks (TTBs) are resolution entities – other than G-SIBs – in resolution groups with total assets above €100 billion. A smaller bank that is the resolution entity of a resolution group with total assets below €100 billion might also be made subject to the same treatment as TTBs, at the discretion of the resolution authority, if that bank was reasonably likely to pose a systemic risk in the event of its failure (commonly, but not legally, referred to as a "fished bank"). See e.g. BRRD II recital 10 or Article 45c(6).

23 Using prudential regulation terminology, MREL Pillar 2 is the difference between MREL calibrated as the sum of the loss absorption and recapitalisation amount and Pillar 1. For banks for which MREL Pillar 1 is not applicable, MREL corresponds to the sum of the loss absorption and recapitalisation amount.

(sufficiently) available, and thus presents an additional potential constraint for buffer and excess capital usability aside from the MREL-LR.

MREL is set at the level of the resolution entity (or point of entry), that is to say at the level of the entity to which resolution measures, including bail-in provisions, may be applied. The resolution entity, together with its subordinated institutions, form a resolution group[24], the non-resolution entities in that group having internal MRELs imposed to ensure that losses are upstreamed to the resolution entity. Given that prudential requirements and capital buffers can also be applied to banks that are not resolution entities themselves and thus not subject to (external) MREL, interaction between the buffer and internal MREL may also arise. An analysis of the interaction between capital buffer and internal MREL is beyond the scope of this report.

Table 2

MREL for different types of banks under BRRD II and CRR II

	G-SIIs	Top-tier banks	Fished banks	Other banks
Definition of an entity that is subject to MREL*	G-SIIs under Art. 131 CRD V	Banks that belong to resolution groups with total assets > €100 billion	Banks that are deemed by the resolution authority to be reasonably likely to pose systemic risk in the event of failure	All other banks
MREL-RW	The level is set individually by the resolution authority with the intermediate target to be met by 2022 and the final target to be met by 2024; the statutory minimum requirement (so-called Pillar 1 requirement) is as follows:			
	16% by 2019; 18% by 2022	13.5% by 2022	13.5% by 2022	No statutory minimum requirement
MREL-LR	The level is set individually by the resolution authority with the intermediate target to be met by 2022 and the final target to be met by 2024; the statutory minimum requirement (the so-called Pillar 1 requirement) is as follows:			
	6% by 2019 6.75% by 2022	5% by 2022	5% by 2022	No statutory minimum requirement
Subordination requirements **(1) and (2) to be met at the same time**	(1) Statutory minimum requirement (see above) to be met with subordinated liabilities			At the discretion of the resolution authority: part of the MREL up to max. (8% TLOF; standard formula****) under certain conditions (by 2024). Intermediate targets apply from 2022
	(2) part of the MREL equal to 8% TLOF by 2024 (exemptions and derogations may be applicable***) Intermediate targets apply from 2022	(2) part of the MREL equal to 8% TLOF (up to 27% RWAs**) by 2024 (exemptions and derogations may be applicable***) Intermediate targets apply from 2022	(2) part of the MREL equal to 8% TLOF by 2024 (exemptions and derogations may be applicable***) Intermediate targets apply from 2022	

** Applies to banks that are resolution entities. Resolution entities have to comply with MREL at resolution-group consolidated level, Institutions that are not themselves resolution entities should comply with internal MREL in line with Article 45f BRRD II. The idea is to pre-position loss-absorbing and recapitalisation capacity so that losses are upstreamed from the subsidiary to the resolution entity to which resolution measures would apply (point of entry). Internal MREL applies at individual level unless a waiver is granted by the resolution authorities.*

*** If access to a resolution financing arrangement is not considered an option under the resolution plan.*

**** There is a possibility that the 8% TLOF requirement might be reduced for a Pillar 1 bank based on Article 45b(4) BRRD provided the conditions of Article 72b(3) CRR are met. The requirement may be increased for Pillar 1 banks based on Article 45b(8) BRRD under certain specific conditions. A G-SII may be granted a degree of leeway as regards compliance with its Pillar 1 requirement based on either Article 72b(3) or (4) CRR II permitting the use of senior instruments (up to 3.5% of*

[24] See Article 2(1)(83a) and (83b) BRRD.

RWAs as of 1 January 2022 or of liabilities which rank pari passu or are senior to non-eligible liabilities, provided the latter do not exceed 5% of the institution's own funds and eligible liabilities) always provided this would not result in a major risk of creditors incurring greater losses than they would if the institution were wound up under normal insolvency proceedings (the so-called "no creditor worse off" principle).
***** The standard formula determines the default MREL if not set otherwise by resolution authorities.*
Notes: For MREL expressed in terms of RWAs and applying the standard formula, LAA corresponds to a capital adequacy ratio of 8% (risk-weighted Pillar 1) plus additional own funds requirements (risk-weighted Pillar 2), while the recapitalisation amount (RCA) corresponds to Pillar 1 and Pillar 2 risk-weighted capital requirements applicable after implementation of the preferred resolution strategy and a market confidence charge corresponding to the default CBR amount minus the CCyB (adjustable downward/upward). For MREL expressed in terms of LR-EM and applying the standard formula, LAA corresponds to a minimum leverage ratio of 3% (Pillar 1), while RCA corresponds to the Pillar 1 leverage ratio requirement after implementation of the preferred resolution strategy. When setting MREL, resolution authorities can deviate from the standard formula as regards the RCA in order to take into account the profile of the group after resolution, including changes to the balance sheet arising from the losses incurred and the post-resolution Pillar 2 requirement.

(b) Capital buffers

Five risk-weighted capital buffers constitute the combined buffer requirement (CBR).[25] All capital buffers are aimed at strengthening the going-concern loss absorbency of the banking system, although each having specific objectives. The capital conservation buffer (CCoB) of 2.5% of RWAs is a constant capital cushion above risk-weighted minimum requirements. The buffers for G-SIIs and other systemically important institutions (O-SIIs) target structural systemic risk by reducing the externalities associated with the "too big to fail" status of systemically important institutions. The highest currently populated G-SII buffer bucket is 2.5% of RWAs and the O-SII buffer in the remit of national authorities can be up to 3% of RWAs or higher.[26] The systemic risk buffer (SyRB) addresses systemic risks not already covered by macroprudential requirements in the CRR or by CCoB, CCyB and the G-SII/O-SII buffers. In addition to being applicable to either the entire or a subset of the banking sector, SyRB can now be applied to total RWAs or to a subset of risk-weighted exposures. The CCyB targets cyclical systemic risks associated with credit growth and is designed to be released when the credit cycle turns. The capital buffers forming the CBR have to be met with CET1 and are cumulative. Exceptions are the G-SII and O-SII buffers, where the higher-of-the-two principle applies. The CCoB and the CCyB apply on an individual and a consolidated basis, whereas the O-SII buffer and SyRB can be applied on an individual, consolidated or sub-consolidated basis and the G-SII buffer can be applied on a consolidated basis only.[27]

CRR II introduces an LR buffer for G-SIIs. In addition to the minimum LR requirement (Pillar 1 and P2R-LR), G-SIIs need to meet a Tier 1 LR buffer equal to the LR-EM multiplied by 50% of the applicable risk-weighted G-SII buffer rate. The G-SII LR buffer serves as a non-risk-weighted measure supplementing the G-SII buffer and will apply as of 1 January 2023.

In contrast to minimum requirements, all capital buffers can as intended be utilised in crisis situations. To reduce incentives to deleverage in times of stress, banks can run down buffers,

[25] Definition of CBR under Article 128(6) of Directive 2013/36/EU. Details of each of the capital buffers can be found in Table A3 of Annex A1 to this current document.

[26] O-SII buffer rates above 3% can be set, subject to approval by the European Commission.

[27] Where an O-SII is a subsidiary of either a G-SII or an O-SII which is an EU parent institution and subject to an O-SII buffer on a consolidated basis, the buffer that applies at individual or sub-consolidated level to the O-SII must not exceed the lower of (i) the G-SII or O-SII buffer rate applied to the group at consolidated level and 1% of RWAs, and (ii) 3% of RWAs or the rate authorised by the European Commission.

subject to restrictions on distributions. The consequences of buffer breaches are therefore milder than the consequences of breaching minimum requirements (see Box 1 for an overview).

Some buffers are designed to be "released", that is to say lowered or removed by the regulatory authority when risks materialise. In issuing a release decision, authorities formally grant banks a dispensation from the need to fulfil a specific buffer requirement. The release is aimed at increasing banks' excess capital to absorb losses. This is envisaged for the CCyB and potentially the SyRB if the risks behind the introduction of the SyRB materialise. In contrast, the CCoB, O-SII and G-SII buffers (as well as the G-SII LR buffer) can be used by banks, but these buffers are not designed to be released in times of crisis.

Box 1

Consequences of a breach of minimum and buffer requirements

As a general principle, the consequences of a breach will be proportionate to the circumstances and to the authorities' judgement on how the situation is likely to develop.

Minimum capital requirements

The LR (3% Pillar 1 and Pillar 2 that allows authorities to impose additional requirements for leverage) and the risk-weighted "total supervisory review and evaluation process (SREP)[28] capital requirement" (TSCR) (i.e. the risk-based Pillar 1 plus the risk-based Pillar 2 requirements) are minimum requirements to be met at all times, including in stressed conditions. If they are no longer met, the competent authorities need to consider intervening, including the application of early intervention (Article 27 BRRD) and supervisory (Article 104 CRD V) measures and, in extremis, withdrawal of authorisation (Article 18(d) CRD V). A breach of minimum capital requirements should also be considered in determining if an institution is failing or likely to fail (Article 32(4)(a) BRRD II).[29]

MREL

MREL is a minimum requirement that institutions have to meet at all times, including in stressed conditions. If MREL is no longer met, its breach entails a wide array of possible measures (Article 45k BRRD II). These measures extend from powers to address or remove impediments to resolvability, through distribution restrictions, supervisory and early intervention measures to administrative penalties. Resolution (or competent) authorities are obliged to address the breach by taking at least one of the above measures. They may also carry out an assessment of whether the institution is failing or likely to fail in accordance with Article 32, 32a or 33 BRRD II. Meeting MREL is not listed as a requirement for continuing authorisation of an institution under Article 18 CRD V.[30] The resolution and supervisory authorities are required to consult each other when exercising their respective powers.

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28 The SREP is an exercise in which the supervisor determines bank-level Pillar 2 add-ons.

29 See Article 104 CRD V (supervisory measures), Article 27 BRRD (early intervention measures), and paragraphs 541 and 542 of the "Guidelines on common procedures and methodologies for the supervisory review and evaluation process (SREP)", *GL on common procedures and methodologies for SREP*, EBA/GL/2014/13, European Banking Authority, 19 December 2014, for the specifics of the TSCR.

30 However, supervisors retain the discretion to withdraw authorisation for different reasons over and above the TSCR and LR.

Buffer requirements

A breach of buffer requirements is treated differently from a breach of the above minimum requirements. To restore its compliance with the buffer requirements, a bank is asked to submit a capital conservation plan (Article 142 CRD V) and to limit distributions until the buffer is again met. The competent authority needs to approve the capital conservation plan. A breach of the CBR or LR buffer entails automatic distribution restrictions (Articles 141, 141a, 141b CRD V). This is referred to as the maximum distributable amount (MDA) in the case of the CBR and leverage ratio related maximum distributable amount (L-MDA) in the case of the G-SII LR buffer.

If a bank continues to meet the CBR as well as its prudential requirements but does not meet the CBR when stacked on top of MREL-RWA (hereinafter referred to as the CBR-M), restrictions to distributions are not automatic[31]. The resolution authority, after consulting the competent authority, is required to assess whether to exercise this power in the light, inter alia, of the reason for that breach, its duration and its magnitude as well as its impact on resolvability (Article 16a(2) BRRD). If the breach lasts nine months or more, the resolution authority, after consulting the competent authority, must impose restrictions on distributions (maximum distributable amount related to MREL – M-MDA) except where at least two of a set of conditions are fulfilled (Article 16a(3) BRRD). These include, inter alia, the condition that the failure is due to serious disruption of the functioning of financial markets leading to broad-based financial market stress and/or market closure, and the condition that the imposition of restrictions would lead to negative spill-over effects for part of the banking sector, thereby potentially undermining financial stability.

(c) Excess capital and Pillar 2 guidance

Both the risk-weighted capital framework and the LR framework include institution-specific Pillar 2 guidance (P2G), which is a legally non-binding capital expectation above the CBR and the LR buffer. In the risk-weighted capital framework, P2G should be set at a level appropriate to cover the additional expected capital depletion in an adverse stress test scenario at the very least as compared with a baseline scenario. Failure to meet the P2G triggers heightens supervisory attention, which is a much milder consequence than would be the case in the event of a breach of a minimum requirement or the CBR.[32] Similarly, in the LR framework a supervisory expectation (P2G-LR) for excess capital can be set. The required quality of capital for P2G is not defined by CRD V, but as it is intended to absorb losses before capital buffers, we assume it needs to be met with CET1.[33] As the consequences of breaching the P2G are milder than for breaching capital buffers, P2G is treated as part of excess capital in this report.

Besides the regulatory buffers, the usability of excess capital might be limited as well. Banks hold excess capital in addition to minimum requirements and regulatory buffers. Excess capital above each of the risk-weighted, leverage and MREL requirements differs. To keep the analysis tractable, only CET1 in excess of the CBR from the perspective of the risk-weighted capital stack is

[31] This situation can be seen as CBR capital in the prudential stack needing to be used to meet MREL-RWA, which is a minimum requirement and thus has precedence over CBR. Therefore, as a consequence of MREL-RWA, buffers might be breached earlier than they would be if no parallel MREL framework was in place.

[32] When an institution stops, or is likely to stop, meeting the P2G, it will be the subject of intensified supervisory dialogue. The institution will be expected to provide the competent authority with actions aimed at restoring compliance with P2G.

[33] This is the case under the SSM for instance.

considered as excess capital. Therefore, capital in excess of CBR is not usable if it is used to meet any leverage ratio or MREL.

2.2 Interaction between minimum requirements and capital buffers across frameworks

In general, one unit of capital can be counted towards parallel requirements, i.e. risk-weighted capital requirements, leverage ratio requirements and MREL.[34] Table 3 summarises the double-counting of buffer capital under current rules. If capital allocated to capital buffers is both permissible and needed to meet minimum requirements in a parallel framework, those buffers cannot absorb losses without simultaneously breaching a minimum requirement. Where this is the case, the usability of buffers is partially or fully limited. Consequently, the ability of macroprudential policy to limit a procyclical response by banks in downturns is constrained. Even the usability of excess capital above capital buffers could be restricted by parallel minimum requirements.

The usability of capital buffers (and excess capital) hinges on the relative size of the applicable requirements in nominal terms, the type of own funds (e.g. capital quality) and the composition of banks' assets and liabilities. In the order of loss absorption, CET1 absorbs losses first. Consequently, risk-weighted capital buffers are defined in CET1. Any overlap that may restrict their usability must therefore stem from parallel minimum requirements that the bank needs to cover with CET1 capital. Thus, it is important to compare only the CET1 component of requirements. CET1 components may be an explicit part of the requirement (as in the case of risk-weighted Pillar 1 and Pillar 2 capital requirements) or result from a bank having insufficient lower-quality capital or eligible liabilities to fulfil requirements (risk-weighted AT1 and T2 capital requirements, leverage ratio, MREL) without recourse to CET1. For example, the leverage ratio can be met with CET1 and AT1.[35] If a bank has sufficient AT1 to fully comply with the leverage ratio requirement, no CET1 needs to be used for the leverage ratio and therefore no overlap with risk-weighted capital buffers occurs. In contrast, if the bank has insufficient AT1 to meet the leverage ratio in full, the remaining part of the leverage ratio would need to be met with CET1 and an overlap between the CET1 component of the leverage ratio requirement and risk-weighted capital buffers may arise.

[34] Note that this applies across frameworks, while within the risk-weighted capital and LR framework CRD V/CRR II ensure that there is no double counting of capital for the purpose of maintaining capital buffers or for meeting minimum capital requirements (Pillar 1 and P2R).

[35] In the order of loss absorption, CET1 bears losses first. Therefore, CET1 investors require greater remuneration and banks have an incentive to meet their requirements from the capital of the lowest quality allowed in order to save on refinancing costs.

Table 3

Overview of permissible multiple use of capital

		CET1 and T1 capital used to meet minimum requirements			
		Minimum requirements			
	Buffer	Min-RW	LR	MREL-RW	MREL-LR*
Capital used to meet buffers	CBR (CET1)	No[1]	Yes	No[1]	Yes[3]
	G-SII LR buffer (T1)	Yes	No[2]	Yes[4]	Unclear[2]

*Notes: "Yes" indicates that the same unit of capital can be used to simultaneously meet the capital buffer indicated in the buffer column and the requirement indicated in the minimum requirement column, giving rise to multiple use of capital and creating possible limitations on buffer usability. "No" indicates that such multiple use is not allowed and a limitation on buffer usability cannot arise. * Including MREL-TLOF; [1] Article 128 CRD; [2] Article 92 1a CRR states that "Tier 1 capital that is used to meet the leverage ratio buffer requirement shall not be used towards meeting any of the leverage-based requirements set out in this Regulation and in Directive 2013/36/EU, unless explicitly otherwise provided therein". Based on the interpretation given in the Commission Notice relating to the interpretation of certain legal provisions of the revised bank resolution framework in reply to questions raised by Member States' authorities 2020/C 321/01 (OJ C 321, 29.9.2020, p. 1-35), double counting of the G-SII LR buffer towards MREL-LR (and MREL-TLOF) is permitted but different legal interpretations may be possible given the ambiguity of the legal provision. For reasons of space, the empirical analysis in this report uses the interpretation given in the Commission Notice, without taking a stance on it, therefore the permission of multiple use is denoted as "Unclear" in this table; [3] Article 45b(6) BRRD; [4] no provision on multiple use; according to Recital 15 CRD, "institutions should also be able to use any CET1 capital that they use to meet their leverage-related requirements to meet their risk-based own funds requirements, including the CBR".*

Stylised examples in CET1 terms explain the basic mechanics by which minimum requirements may constrain the usability of buffers. Our starting point is the risk-weighted capital framework, which we subsequently juxtapose against the LR and then the MREL framework. This allows us to analyse any overlap with the CBR to be met with CET1 as well as any additional excess CET1 in the risk-weighted capital stack. We then analyse the usability of the CET1 component of the G-SII LR buffer in the event of a bank having insufficient AT1 by setting it against the risk-weighted minimum requirements and MREL.

Not all interactions set out below are relevant for every bank. While interactions between the CBR and the LR are relevant for all banks, interactions between the CBR and MREL may only be relevant for banks whose resolution plan envisages resolution. For banks for which liquidation under normal insolvency proceedings is envisaged, the MREL is in principle equal to the minimum capital requirements and thus only the interaction between the CBR and leverage ratio may become relevant. For systemically important banks and in general for banks whose resolution is in the public interest[36] and for which resolution using resolution tools is thus envisaged, MREL additionally comprises a recapitalisation amount and an interaction with the CBR may arise as well. The interactions arising from the LR buffer are currently relevant only for G-SIIs.

(a) Interaction between risk-weighted capital buffers and the LR

Capital used for risk-weighted capital requirements may also be used to meet LR requirements. This limits buffer usability if, in nominal terms, the CET1 component of the minimum LR (MR-LR) is higher than the CET1 component of the risk-weighted minimum capital requirement (MR-RW). The CET1 component of MR-RW as a percentage of risk-weighted assets is equal to

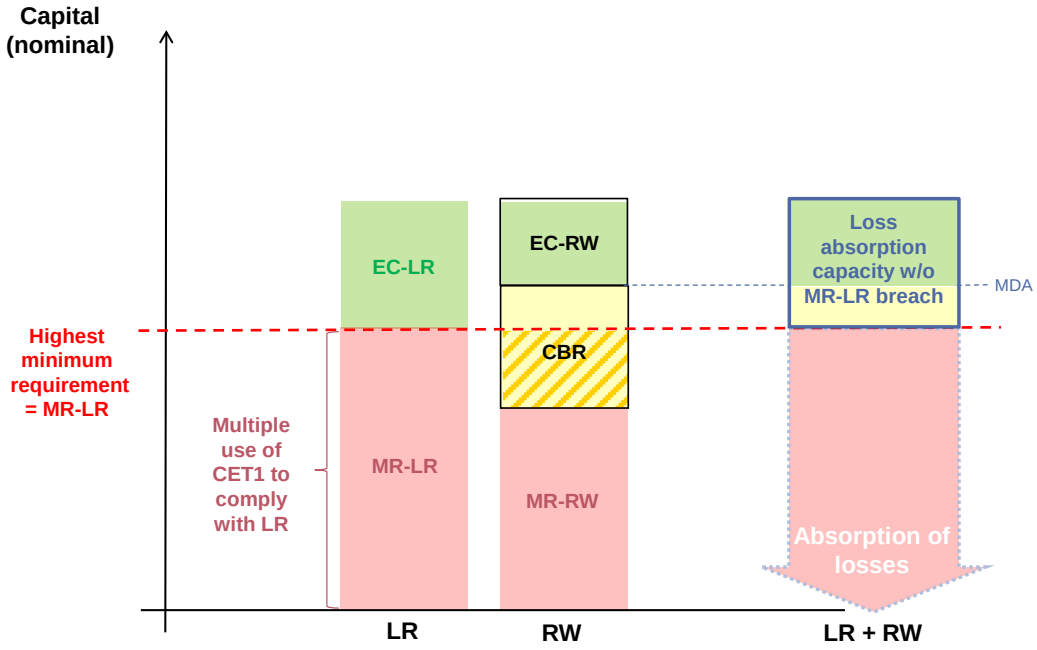
[36] See Article 32(5) BRRD and Article 14 SRMR.

4.5% (Pillar 1) plus CET1-P2R plus any CET1 that needs to be used to meet minimum Tier 1 and total capital in the absence of sufficient AT1 and T2 capital (referred to as the AT1/T2 gap).[37]

Figure 1 compares the stacking order of capital in the risk-weighted capital framework (RW) with that in the LR framework (LR) for a situation in which MR-LR is higher than MR-RW. The stacking order determines the sequence in which capital layers absorb losses. Following a colour-coded traffic light system, capital is allocated to excess capital including P2G (green), capital buffers (yellow) and minimum requirements (red). In the risk-weighted capital framework (the RW bar) excess capital (EC) and P2G (EC-RW) cover losses first (green), followed by the CBR (yellow) and MR-RW (red). In the LR framework (the LR bar) MR-LR comprises leverage-based Pillar 1 and P2R, with P2G-LR and excess capital stacking above (EC-LR). As mentioned above, in analysing buffer usability we have focused on the CET1 components of the respective requirements in our charts and discussion. The relative sizes of the elements are for illustrative purposes, chosen solely to show how buffer usability may be limited. They do not relate to any particular set-up in the EU banking sector.

Figure 1

Stylised interaction between the CBR and the minimum leverage ratio



Notes: All components are expressed in CET1 terms. EC-LR = excess capital (LR capital stack), MR-LR = minimum requirements P1 + P2 (leverage ratio capital stack). The CET1 component from MR-LR results from the T1-LR requirement minus available AT1 capital. EC-RW = excess capital (risk-weighted capital stack), CBR = combined buffer requirement, MR-RW = risk-weighted minimum requirements (risk-weighted capital stack) comprising P1 + P2 and the AT1/T2 gap, MDA = maximum distributable amount threshold. The figure assumes that the MR-LR is the highest minimum requirement. The bank in the example is not subject to a G-SII leverage buffer. The yellow shaded area in the RW stack indicates the non-usable part of the CBR.

[37] In other words, the CET1 component of MR-RW is max. {4.5% RWAs; 6% RWAs – AT1; 8% RWAs – AT1 – T2) in the absence of any Pillar 2 requirement. This can also be seen as 4.5% RWAs + max {0; 1.5% RWAs – AT1, 3.5% – AT1 – T2), where the maximum term is referred to as the AT1/T2 gap. Including the Pillar 2 requirement complicates the formula but the logic remains the same.

If, as depicted in this example, in nominal terms MR-LR exceeds MR-RW (red horizontal line), an overlap between MR-LR and CBR arises. Accordingly, the orange shaded part of the CBR cannot absorb losses without breaching the MR-LR. The block arrow on the far right-hand side captures the order of loss absorption and the components of capital resources when taking the interaction of the risk-weighted framework and the LR framework into account. The capital available to absorb losses without breaching a minimum requirement equals the green and yellow part. The dashed horizontal blue line indicates the trigger for the MDA restrictions when the CBR is breached.

Higher amounts of CET1, AT1 or T2 capital affect the ability to use buffers differently. In principle, CBR usability improves if CET1 MR-RW increases or MR-LR is met with capital other than CET1. The bank in Figure 1 has insufficient AT1 to fully meet its LR requirement and possibly also insufficient AT1 or T2 to fully meet the respective components of the risk-weighted minimum requirements. A higher level of available CET1 would increase excess capital in both the LR and RW bar but would not change the overlap between CBR and MR-LR in Figure 1. Higher AT1 capital would free CET1 in the LR stack (shrinking the red part and increasing the green part in the LR bar). The impact of more AT1 capital on buffer usability would depend on whether or not it would also free up equivalent CET1 in the RW stack (shrinking the red part and expanding the green part in the RW bar). If CET1 in the RW stack is not freed up, the additional AT1 will reduce the overlap. CET1 is not freed up when the bank already has enough AT1 and T2 to meet the respective permissible components of total capital requirements. If CET1 is freed up, the additional AT1 will not change the overlap. In contrast, a bank that increases its T2 capital could free up any CET1 previously needed to meet the T2 components of the risk-weighted requirements. As a result, MR-RW would shrink[38] but not MR-LR given that T2 cannot be counted towards meeting leverage ratio requirements. The overlap with CBR (and excess capital) would therefore increase, as less CET1 from MR-RW is available to meet MR-LR.

(b) Interaction between risk-weighted capital buffers and MREL-LR[39]

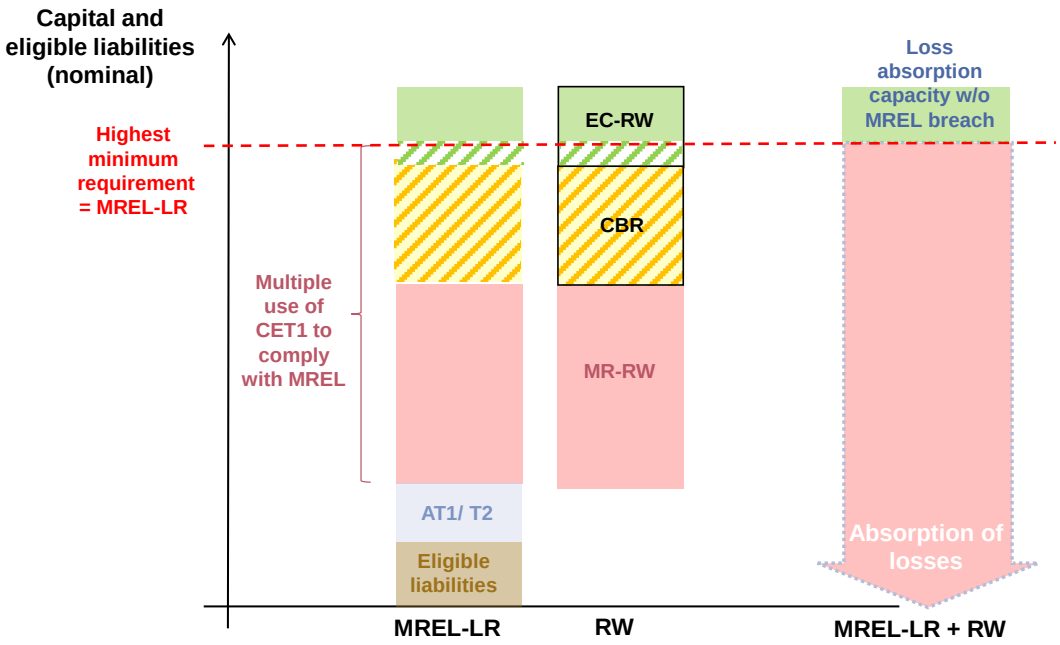
Capital from the CBR and excess capital in the risk-weighted capital stack can be counted towards MREL-LR. If a bank relies on capital used to meet the CBR to also meet MREL-LR, buffer usability is impaired. Figure 2 depicts the situation of a hypothetical bank whose MREL is above the minimum capital requirements and where MREL-LR is the highest minimum requirement.

[38] However, there is a limit to this effect given that at least 4.5% + 0.5625 · P2R has to be met with CET1.

[39] The MREL interactions are mainly relevant for banks subject to resolution. Otherwise, MREL is likely to be equal to the minimum capital requirements.

Figure 2

Stylised interaction between CBR and MREL-LR (and by analogy MREL-TLOF)



Notes: All components in the RW stack are expressed in CET1 with notes identical to Figure 1. Eligible liabilities = available eligible liabilities. The figure simplifies from possibly different consolidation levels. The figure assumes MREL-LR to be the highest minimum requirement. Green and yellow shaded parts indicate capital resources in excess of minimum requirements in the RW framework.

Buffer usability would be restricted if the CET1 component of MREL-LR (red, yellow and green part of the left-hand bar below the red dashed line) exceeds the CET1 component of the risk-weighted minimum requirement (red part of the RW bar). The remaining part of MREL-LR is assumed to be fulfilled with AT1 and T2 capital (blue area) that can also be counted towards the respective components of the AT1/T2 capital requirements, as well as eligible liabilities (brown area). As indicated in the order of loss absorption (block arrow), only a small capital layer would be available to absorb losses without breaching MREL, therefore the usability of the CBR (and/or excess capital) is impaired when capital from the CBR (and/or excess capital) is used to comply with MREL-LR as well.

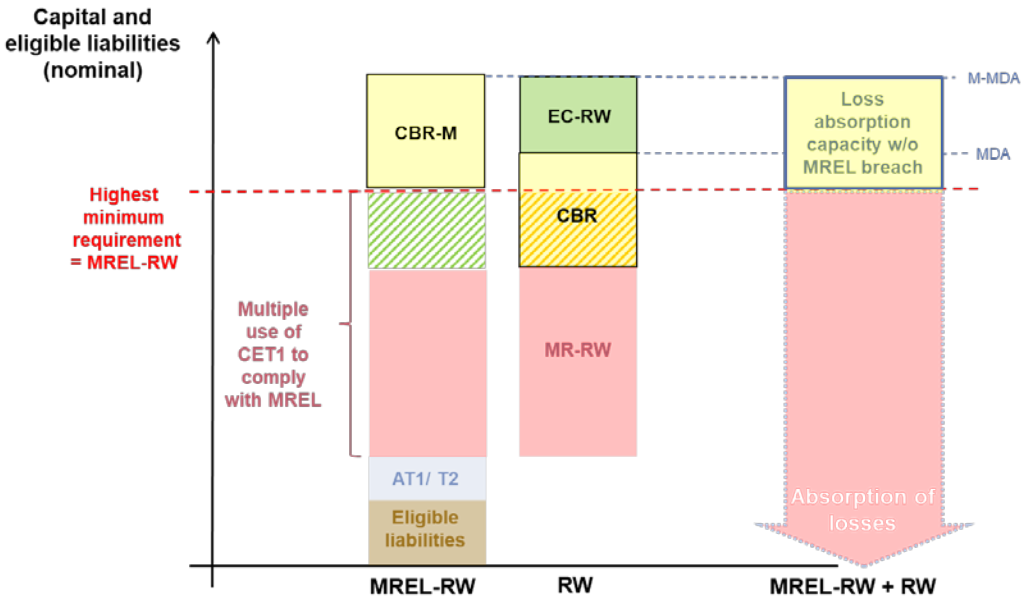
Similarly, the CBR might be restricted by MREL-TLOF. As with MREL-LR, the CBR does not stack on top of MREL-TLOF, which is a non-risk-based requirement that is incorporated into MREL-LR when communicated to banks given current practice, but analysed separately in this report to better identify how regulation interacts. Therefore, the interaction between the CBR and MREL-LR is, in principle, the same as with MREL-TLOF. Only capital and subordinated eligible liabilities can be used to meet MREL-TLOF. Banks with insufficient subordinated eligible liabilities and AT1/T2 to meet MREL-TLOF must therefore employ CET1, which may, in some cases, constrain CBR usability. This is illustrated in Figure 2 by assuming that only subordinated eligible liabilities are included in the brown area in the MREL-LR bar, which also applies to any MREL-LR statutory minimum requirement (see Table 2).

(c) Interaction between the risk-weighted capital buffer and MREL-RW[40]

Capital used to comply with MREL-RW cannot be used for the CBR but can comprise excess capital that stacks above the CBR. As multiple use of CBR capital with MREL-RW is not allowed, the CBR stacks on top of MREL-RW (denoted as CBR-M) and remains fully usable. However, as not only minimum capital requirements (MR-RW) but also capital in excess of buffers (EC-RW) can be counted towards MREL-RW, total loss-absorbing capacity above minimum requirements is reduced and CBR-M may be breached earlier than the CBR in the capital framework (since MREL-RW is higher than MR-RW for banks subject to resolution). Again, we focus on the CET1 components of the respective requirements to analyse any overlap between MREL-RW and risk-weighted buffers and excess capital. In Figure 3 the MREL-RW requirement is the highest minimum requirement in the sense that its CET1 component (green shaded and red box in left bar) exceeds the minimum CET1 capital requirements (red box in RW bar). In this example, all the excess capital in the RW stack is used to meet MREL-RW.

Figure 3

Stylised interaction between the CBR and MREL-RW



Notes: All components in the RW stack are expressed in CET1 terms. The notes from Figures 1 and 2 apply. CBR-M = combined buffer requirements on top of MREL-RW, M-MDA = maximum distributable amount threshold based on MREL (see Box 1). The figure simplifies from possibly different consolidation levels and MREL-RW is the highest minimum requirement. Green and yellow shaded parts indicate capital resources in excess of minimum requirements in the RW framework.

The interaction of EC-RW with MREL-RW could restrict the usability of excess capital in the RW stack and a breach of CBR (CBR-M) may arise earlier. Locking part of excess capital from the RW stack into MREL-RW is a natural consequence when banks meet MREL with CET1 instead of eligible liabilities. As capital in excess of the risk-weighted capital requirements is used to comply with MREL-RW, it stacks below the CBR-M layer on top of MREL-RW, and CBR-M then absorbs

[40] The following MREL interactions are relevant for banks for which resolution is necessary in the public interest, i.e. the resolution plan envisages resolution and not liquidation.

losses first. As a result, excess capital in the RW bar (EC-RW) is not usable if no excess MREL eligible resources other than CET1 are used to meet CBR-M, as in this example. The total loss absorption amount above minimum requirements equals the size of CBR-M rather than the sum of CBR and EC-RW when considering the RW framework only. A breach of CBR-M may lead to restrictions on distributions, which are not automatic (see Box 1). Once losses deplete capital resources to the level of the excess capital layer in the risk-weighted capital framework, automatic restrictions on distributions associated with a breach of the CBR are triggered (MDA). If losses exceed the size of the CBR (and thus CBR-M), the minimum requirement determined by MREL-RW would be breached. Furthermore, the interaction between EC-RW and MREL-RW may affect the implications of a buffer increase. In this example with no excess capital above CBR-M, an increase of the CBR would trigger an early breach of CBR-M. This may also be the case if the bank had more MREL resources, as an increase in the CBR other than the CCyB increases both CBR-M and the MREL-RW requirement.[41]

(d) Effect of higher eligible liabilities and own funds on MREL and buffer usability

More AT1, T2 or eligible liabilities tend to improve buffer usability with respect to MREL-LR and make a CBR-M breach on top of MREL-RW less likely. An increase of AT1, T2 or eligible liabilities would free up any CET1 needed to meet MREL. In Figures 2 and 3 this moves the CET1 component in the MREL stacks upwards as banks now able to fulfil MREL to a greater extent from other eligible resources. Consequently, the overlap of the CET1 components of MREL (if any) and risk-weighted capital requirements decreases with higher eligible liabilities and with AT1 and T2 in excess of what is required to meet the risk-weighted minimum capital requirements.[42] This would have a positive impact on the usability of excess capital and buffers from the perspective of the risk-weighted capital stack.

In contrast, more excess CET1 tends to increase excess capital and its usability but has no impact on the interaction between CBR-M and the CBR. CET1 in excess of requirements stacks on top of MREL, CBR-M and CBR and increases total loss-absorbing capacity but does not affect the interaction between CBR-M and the CBR. In the order of loss absorption, this new layer of excess capital rather than CBR-M is now the first line of defence. MDA and M-MDA thresholds, and thus the spread between both, remain unchanged.

(e) Effect of the G-SII LR buffer on buffer usability

The G-SII leverage buffer gives rise to four additional considerations for buffer usability. First, it might compensate for limited CBR usability in banks with low risk-weighted densities. Second, it might result in stricter MDA limits. Third, its usability might be limited by risk-weighted capital requirements or MREL. Fourth, its usability will be materially inhibited if it is met with AT1 as opposed to CET1.

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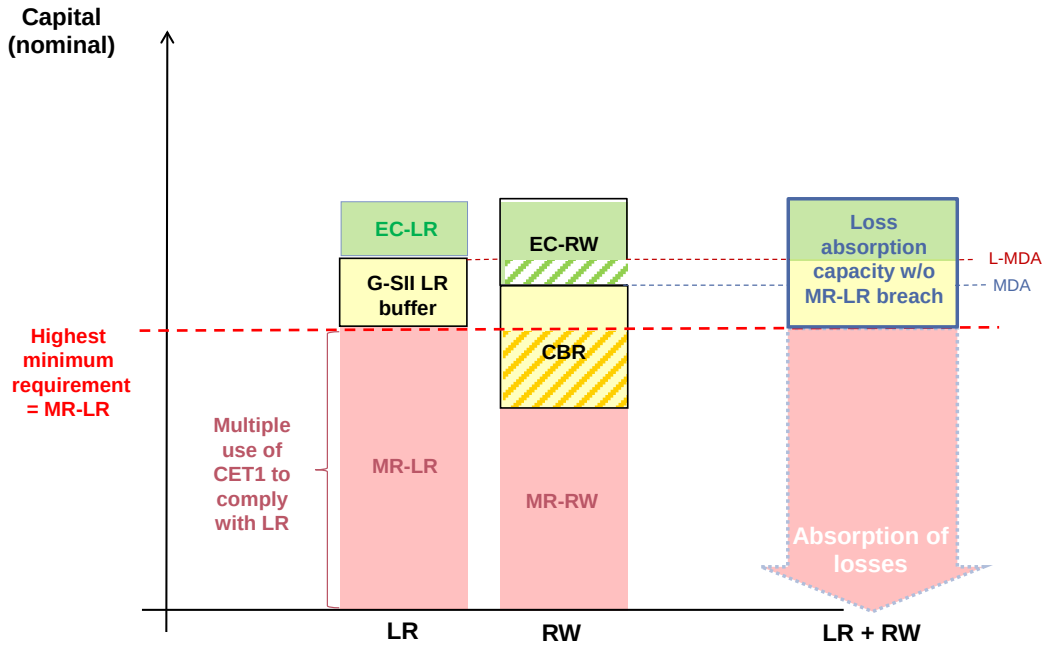
41 MREL-RW increases because the size of the market confidence charge (MCC), which is a component of the MREL-RW requirement, depends on the size of the CBR minus the CCyB (see Annex A1).

42 Higher AT1 and T2 used to meet risk-weighted T1 and total capital requirements would decrease the CET1 component of the minimum requirement in both the MREL and RW bars, leaving the overlap unchanged, but increasing excess capital in both stacks and total loss absorption capacity (similar to a CET1 increase).

The G-SII LR buffer[43] does not directly constrain CBR usability but may give rise to stricter distribution limits which, in turn, may restrict the effective releasability of buffers and the use of excess capital. In Figure 4 we consider the same case as in Figure 1 except that the bank now is assumed to be a G-SII that needs to comply with the G-SII LR buffer. While usability of the CBR is here restricted by its overlap with the minimum leverage ratio (MR-LR), it is not limited by its interaction with the G-SII LR buffer. However, because the sum of MR-LR and the G-SII LR buffer is larger than the sum of MR-RW and the CBR, part of excess capital is used to meet the G-SII LR buffer (shaded part of EC-RW) and restrictions on distributions determined by L-MDA kick in before the CBR is breached. The upside is that more capital might stay within the bank to be available in a crisis. The downside is that a release of risk-weighted buffers would not, in the case shown in Figure 4, free up excess capital as it needs to be used to meet the G-SII LR buffer, which is not releasable. Nevertheless, this capital is still available to cover losses in a going concern. If the LR buffer is breached, however, it needs to be restored in accordance with the requirements of the CRD.

Figure 4

Interaction between the G-SII LR buffer and minimum risk-weighted requirements



Notes: All components expressed in CET1 terms. The notes from Figure 1 apply. The CET1 component from the MR-LR and G-SII LR buffer results from the respective T1-LR requirement minus available AT1 capital. L-MDA = maximum distributable amount with respect to the leverage ratio capital stack. The green shaded area in the RW stack indicates the part of excess capital that is bound by the G-SII LR buffer. The relative sizes of the elements are for illustrative purposes and do not relate to any particular set-up in the EU banking sector.

If the G-SII LR buffer towers above the CBR, as shown in Figure 4, the G-SII LR buffer (partially) compensates for the limited CBR usability and increases capital requirements. In Figure 4, the CBR is only partially usable due to its overlap with MR-LR. However, banks meeting

[43] This buffer is intended to restrict excessive leverage for G-SIIs. As it represents a non-risk-based measure supplementary to the risk-weighted G-SII buffer, it is not expected to be released in times of stress.

the G-SII LR buffer at the onset of a crisis can use the entire G-SII LR buffer to absorb losses, which to some extent restores total usable regulatory buffer capital. In this static setting the G-SII LR buffer is associated with lower excess capital. From a more dynamic perspective, banks might have an incentive to increase excess capital to ensure headroom above requirements.

If the G-SII LR buffer does not tower above the CBR, unlike in Figure 4, the G-SII LR buffer would hardly have any effect on the usability of the CBR. In this case, the use of excess capital would not be affected by L-MDA. When the G-SII LR buffer and the CBR are both breached, L-MDA might, however, be more constraining than MDA due to the mechanism of staggered restrictions of distributions. This would be the case if the buffer breach is higher as a percentage of the G-SII LR buffer than of the CBR. This "double breach" of buffers and the relatively binding nature of the MDA restrictions could also be considered as a type of constraint on the usability of buffers, albeit less stringent than the constraints posed by a parallel minimum requirement.

Usability of the G-SII LR buffer might, however, be restricted by parallel MREL or risk-weighted capital requirements. Capital used to meet the G-SII LR buffer can be fully counted towards MREL-RW. Depending on the CET1 components of MREL-RW and the minimum leverage ratio, the usability of the G-SII LR buffer might be limited. The interaction with MREL-LR is less clear to date as policy development is ongoing (see Table 4). If the G-SII LR buffer can be counted towards the whole MREL-LR requirement, the interaction would be the same as with MREL-RW. If multiple use is permitted only with respect to the institution-specific part of MREL-LR but not the statutory minimum requirement, the interaction becomes more complex. For the sake of brevity, stylised examples for the MREL interactions are not shown here. However, they are taken into account in the simulation tool and empirical analyses. Also in the case of the G-SII LR buffer, higher eligible liabilities and T2 capital reduce the risk or the magnitude of an overlap between the CET1 components of the G-SII LR buffer and MREL. There could also be an overlap between the G-SII LR buffer and risk-weighted minimum requirements if MR-RW is larger than MR-LR, which could be the case for banks with higher average risk densities. This would restrict the usability of the G-SII LR buffer. However, the relevance of this case is currently quite limited because banks with higher risk-weighted densities would, in all likelihood, have a CBR larger in nominal terms than the LR buffer, which would subsequently limit the probability of the LR framework becoming binding for these banks.

Note that, unlike the CBR, the G-SII LR buffer is a Tier 1 requirement, which lowers its going-concern usability. The minimum leverage ratio, the G-SII and the G-SII LR buffer have to be met with Tier 1 capital. However, the AT1 component of Tier 1 may not be capable of bearing losses in a going concern as the minimum write-down or conversion trigger for AT1 with 5.125% of RWAs under Basel III is probably too low to be triggered in a going concern. In addition, to our knowledge, the write-down power conferred on resolution authorities, which inter alia allows for write-down and conversion of AT1, has never been applied outside resolution in a going concern.[44] It is therefore unlikely that that part of the buffer met with AT1 would be available to absorb losses in a going concern. Hence, to calculate buffer usability we focus on that part of the buffer that an institution needs to meet with CET1. The usable share of the G-SII leverage buffer is then the usable part of

[44] See Article 59 BRRD: "Resolution authorities [are required to] exercise the write down or conversion power [...] when one or more of the following circumstances apply: (a) [...] conditions for resolution […] have been met [...], (b) the appropriate authority determines that unless that power is exercised in relation to the relevant capital instruments, the institution [...] will no longer be viable."

its CET1 component, i.e. not blocked by parallel minimum requirements, relative to the overall LR buffer.

A summary of factors affecting buffer usability

As the previous sections identified a wide range of factors that influence buffer usability, this section provides a comprehensive overview of those drivers. While it provides an indication of which factors tend to improve or worsen buffer usability, the actual impact on buffer usability is conditional on the calibration of requirements and resources in the banking sector.

Average risk weight density is a primary driver for buffer usability. Higher density increases the likelihood that risk-weighted requirements, rather than non-risk-weighted requirements, will be more binding. Since the CBR stacks on top of risk-weighted requirements while the leverage ratio buffer sits on top of non-risk-weighted requirements, the CBR tends to be more usable when risk-weighted density increases. The opposite is true for leverage ratio buffers.

For a bank with a given average risk weight density, the usability of the capital buffer depends on the specific regulatory requirements, the bank type and balance-sheet parameters. Table 4 shows the impact of an increase in selected parameters depicted in the columns (capital requirements and available own funds and eligible liabilities) on the usability of the CBR and excess capital (EC) as well as the G-SII LR buffer. An upward arrow indicates that an increase in the parameter tends to reduce the interaction between the minimum requirements and buffers, associated with an increase in buffer usability (green fields), all else being equal. A downward arrow indicates a likely increase in interactions and therefore a decline in buffer usability (red fields). Grey fields and a dash mean no impact.

Table 4

Factors affecting the usability of the CBR, excess capital in the RW stack and the LR buffer

	Increase in capital requirements				Increase in own funds and eligible liabilities			
	P2R	CBR without CCyB	CCyB	P2R-LR	CET1	AT1	T2	Eligible liability
Usability of CBR								
MR-LR	↑	↑	↑	↓ (1)	-	↑ (2)	↓ (3)	-
MREL-LR	↑	↑	↑	-	-	↑ (2)	↑ (4)	↑
MREL-TLOF	↑	↑	↑	-	-	↑ (2)	↑ (4)	↑
MREL-RWA	-	-	-	-	-	-	-	-
Usability of EC								
MR-LR	↑	↑	↑	↓ (1)	↑	↑ (2)	↓ (3)	-
MREL-LR	↑	↑	↑	-	↑	↑ (2)	↑ (4)	↑
MREL-TLOF	↑	↑	↑	-	↑	↑ (2)	↑ (4)	↑
MREL-RWA	↓ (1)	↓ (1)	↓ (1)	-	↑	↑ (2)	↑ (4)	↑
Usability of LR buffer								
MR-RW	↓	-	-	↑ (1) and/or (5)	-	↓ (2) and/or (6)	↑ (3)	-
MREL-LR	-	-	-	↑ (1) and/or (5)	-	↓ (6)	↑ (4)	↑
MREL-TLOF	-	-	-	↑ (5)	-	↓ (6)	↑ (4)	↑
MREL-RWA	↓ (1)	↓ (1)	-	↑ (5)	-	↓ (6)	↑ (4)	↑

Notes: Green = improvement in buffer usability; red = decline in buffer usability, grey = no effect on buffer usability. Arrows indicate whether the usability of the CBR/ EC/LR buffer increases (upward arrow) or decreases (downward arrow) with respect to the overlap with the listed minimum requirement. The direction of interaction sometimes depends on the initial balance-sheet composition, as explained in the following superscripts: (1) if it increases the CET1 component of the minimum requirement; (2) in excess of what is needed to close any AT1 gap; (3) up to the amount needed to close any T2 gap; (4) in excess of what is needed to close any T2 gap; (5) if it increases the CET1 component of the LR buffer; (6) if it decreases the CET1 component of the LR buffer.

At a given average risk weight density, higher risk-weighted capital requirements and AT1 capital tends to increase the usability of CBR as the overlap with the leverage ratio decreases. Higher requirements move the CBR in the risk-weighted capital stack upwards (P2R column in Table 4) or expand the CBR (CBR w/o CCyB and with CCyB columns) so that the overlap with the leverage ratio declines. The amount of eligible liabilities would affect neither the leverage ratio nor the risk-weighted capital requirements stack. A higher amount of AT1 would tend to lower the amount of CET1 that needs to be used to comply with the leverage ratio, while higher T2 may reduce the usability of the CBR (see Section 2.2 (a) for a description of the mechanics). More CET1 would improve the usability of EC but not of regulatory buffers for a given level of the requirements. A higher leverage ratio minimum requirement (P2R-LR) increases the overlap with the CBR if a bank has insufficient resources to meet P2R-LR from AT1 only. Likewise, the same mechanics apply to the interaction between EC and the leverage ratio.

As to MREL-LR and MREL-TLOF, the usability of CBR tends to improve with the level of the P2R, CBR, total and subordinated eligible liabilities and AT1 and T2 capital. In Figure 2 and

Table 4, we assume MREL requirements for a bank for which resolution instead of liquidation is envisaged if it is assessed to be failing or likely to fail. The usability of CBR (and EC) with respect to MREL-LR or MREL-TLOF increases with higher risk-weighted capital requirements, as the overlap declines. The same holds true for a higher amount of available eligible liabilities and of AT1 and T2 capital in excess of any AT1/T2 gap in the risk-weighted minimum requirements (see Section 2.2(d)). Banks for which the resolution plans envisage liquidation under normal insolvency proceedings may only be affected by the interaction with the leverage ratio.

Related to MREL-RW, more available AT1 and T2 capital and eligible liabilities would increase the usability of EC and therefore mitigate the risk of an early breach of CBR-M, which remains fully usable on top of MREL-RW. The higher eligible liabilities as well as AT1 and T2 in excess of any AT1/T2 gap in the risk-weighted minimum requirements, the less CET1 that overlaps with capital requirements would be needed to fulfil MREL-RW (see Section 2.2(d)). In contrast, a higher P2R increases MREL-RW more than it increases minimum requirements in the risk-weighted capital requirements stack. This is because the level of P2R affects both the loss absorption and recapitalisation amount of MREL-RW (see Table A2 and Annex A1), thus making it more likely that excess capital would be required to meet MREL-RW. As to the level of the regulatory capital buffer, a higher CBR reduces "excess capital" that can be used to meet MREL and increases the MREL requirement itself through the MREL market confidence charge (by default, MCC equals the CBR minus CCyB). A higher CCyB increases the CBR but not the MCC and thus not MREL-RW. As EC decreases, while all else remains equal, the amount needed to meet MREL-RWA increases (with the CBR) or stays the same (with the CCyB) and the usability of EC decreases in relative terms.

The larger the G-SII buffer relative to other buffers within the CBR, the more likely it is that the LR buffer would, in nominal terms, be higher than the CBR. In this case, the LR buffer would increase overall (risk-weighted and non-risk-weighted) buffer requirements, and possibly their usability, for G-SIIs with low average risk-weighted densities. However, if the LR-based capital requirements including the LR buffer overlap with the CCyB and EC, the LR buffer would reduce the effective releasability of the CCyB and the usability of EC in risk-weighted terms (i.e. in terms of dividend distributions) while at the same time EC and buffers would still be available to cover losses without infringing minimum requirements.

Box 2

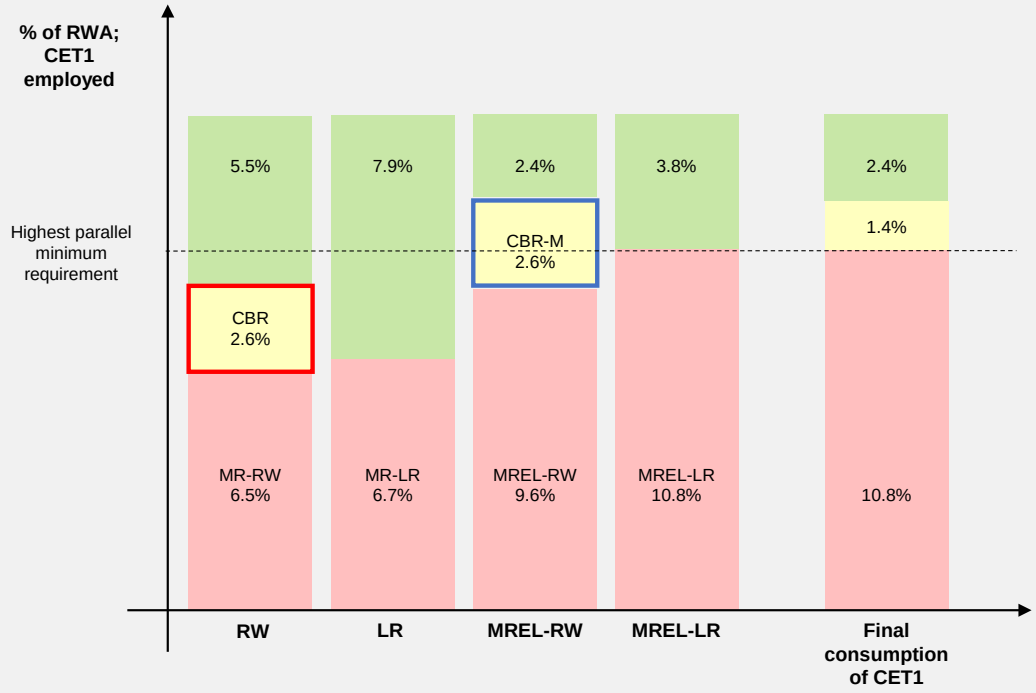
Complementary views: usability of buffers in the risk-weighted capital and MREL stack

Risk-weighted capital requirements, which include Pillar 1, Pillar 2 and CBR, are currently the common reference point for microprudential and macroprudential policy. Therefore, this report focuses on how CBR in the risk-weighted capital stack are usable for loss absorption. This view is a suitable starting point to demonstrate the challenges to macroprudential policy posed by parallel requirements. In addition, it is acknowledged that CBR stacks not only on top of risk-based minimum capital requirements, but also on top of risk-based MREL (CBR-M). This means that CBR in the risk-based stack and CBR-M may be usable to differing degrees. "CBR usability" could, therefore, also be defined as maximum usable CBR in the risk-based or MREL stacks, whichever is higher.

While this complementary interpretation supports the notion that impediments to buffer usability exist, it may have an impact on its magnitude, which for some banking sectors could be material. By construction, the complementary interpretation leads to equal or higher buffer usability indications than the interpretation used in this report. Figure A shows a stylised example where the complementary view leads to significantly higher buffer usability indications.[45]

Figure A

Complementary interpretations of buffer usability



Notes: The relative sizes of the elements are for illustrative purposes. In the interpretation of buffer usability used throughout this report, the reference CBR is depicted by the red-lined box. As the entire CBR lies below the highest parallel minimum requirement, CBR usability is 0%. The complementary interpretation would, in this case, look at the CBR-M depicted by the blue-lined box which is only partially constrained by the highest parallel minimum requirement. Under the complementary interpretation, CBR usability would be 54% (1.4%/2.6%).

While under this complementary approach it can be argued that macroprudential buffers may be less constrained for certain banks, and on average compared with the approach pursued in this report, this depends on the size of the MREL-RW requirement and the amount of eligible liabilities in a bank's balance sheet at a given point in time. Most banks in the banking system are currently not earmarked for resolution, and thus the two approaches will coincide for those smaller banks. In addition, the capital that is free to absorb losses above the highest minimum requirement remains the same.

It should also be noted that breaches of CBR-M may have different consequences compared with breaches of the CBR (see Box 1) and are addressed by different authorities. Therefore, while CBR

[45] In Figure A the MREL-LR is binding, which creates a difference between the usability of CBR (reported in this report) and the usability of CBR-M (complementary approach). However, a difference between the CBR and CBR-M usability across requirements could also arise when (i) the MREL-RW requirement is binding (as long as MR-LR or MREL-LR are higher than MR-RW) or (ii) when the MR-LR requirement is binding (as long as the MREL-RW requirement is higher than the MR-RW requirement).

and CBR-M are the same size, they can be regarded as conceptually, and possibly in practice, somewhat different, justifying the complementarity of the approaches described in this box. Consequently, macroprudential authorities need to be aware of the increasing role of the resolution framework and strictly coordinate with resolution authorities (also for the purpose of effective information exchange).

The observation that – once MREL is implemented – buffer usability can be different in the capital stack and in the MREL stack further highlights the complexity of the framework. Shift of focus to MREL can be additionally complicated as data on MREL might not be available to macroprudential authorities in all jurisdictions and in a timely manner.

Box 3

Buffer usability simulation tool

To analyse the interaction between capital buffers and all minimum requirements simultaneously, in a way that is contingent on bank specifics and the regulatory setting, the task force developed an interactive Buffer Usability Simulation Tool. Its environment is based on the free statistical software R. Currently, the tool allows authorities to analyse the usability of buffers (or excess capital) for a single bank. The user provides the key parameters for the interaction of capital buffers with minimum requirements in an interactive and user-friendly way. The tool then runs all the calculations automatically and presents the results for one (or more) banks in a visual and comprehensible way.

The tool may serve as a convenient policy exploration tool. Authorities can vary the parameters to see how usability reacts to policy experiments, for example changing risk weights or buffer levels.

An updated final version of the tool is available as an R package featuring help functions, documentation, a user manual and the ability to receive regular software updates. The goal of the Task Force was to make the tool a transparent, convenient and accessible instrument that is ready to use for interested authorities.

3 Materiality of the overlap between minimum requirements and capital buffers

The materiality of limited buffer usability was analysed based on bank-level data provided by the European Banking Authority (EBA). The full sample covered 163 banks from 29 European countries. The sample size reduced to 95 banks (21 countries) when we ran analyses on a balanced sample for which data are available to calculate both LR and MREL interactions. We combined data from supervisory and resolution reporting with data collected by the EBA for the Quantitative Impact Study (QIS) on the implementation of the final Basel III reforms. For most banks, proxies were computed for MREL resources and requirements, while for a few banks these were added from public or national sources. The most recent data from the EBA is for quarter 4 2019. For risk weights, we obtained quarterly data from quarter 2 2014 to quarter4 2019, which made it possible to perform certain sensitivity analyses of buffer usability contingent on risk-weighted densities over time. If not stated otherwise, we report results based on the data consolidated at banking group level, except for MREL eligible liabilities that are set at the individual level in accordance with external MREL rules.

In calculating buffer usability, only CET1 components of parallel requirements were considered. The CBR is a CET1 requirement, therefore an overlap with parallel minimum requirements can only occur with the CET1 component of those parallel requirements. The CET1 component of a requirement is given by subtracting from this requirement a bank's eligible resources that are not CET1 (see Section 2.2). For example, the leverage ratio is a Tier 1 requirement. Thus, the CET1 component of the leverage ratio requirement is the nominal Tier 1 requirement minus a bank's stock of AT1. Similarly, the CET1 component of subordinated MREL results from deducting available AT1, T2 and subordinated eligible liabilities from this MREL requirement.

In analysing the forthcoming requirements, it was generally assumed, when estimating any overlap under a steady-state perspective, that banks would close their shortfalls and maintain a management buffer above each regulatory requirement. This applies to banks with shortfalls at quarter 4 2019 compared with the final 2024 MREL target and with the output floor (where considered in the analyses). These adjustments ensured that usability was not limited simply because banks do not yet fulfil future requirements. In particular, the empirical investigations of buffer usability were in line with the dates on which the different regulations would come into force. Table 5 provides an overview of the applicable regulations and scenarios examined. Based on banks' end-2019 resources, first the effect of the leverage ratio (mid-2021) is analysed. Then the effect of the leverage ratio and final MREL targets from 2024 and the effect of the leverage ratio, final MREL targets and output floor from 2028 were examined, in both cases assuming that any applicable shortfalls would be closed and a minimum management buffer equal to 1% of RWAs above each applicable minimum requirement would be maintained. The 2024 scenario will serve as the baseline and reference scenario for all subsequent investigations of buffer usability by bank type or when analysing the effect of potential mitigating options.

Table 5

Overview of regulations and scenario assumptions

	Leverage ratio	Leverage ratio MREL final (Baseline scenario)	Leverage ratio MREL final Output floor
Year of application	Mid-2021	**2024**	2028
Chart/ table	Chart 2	**Table 6**	Chart 3
Scenario assumptions	Constant balance sheet (end-2019)	**Closed shortfalls** **Minimum management buffer of 1% RWAs** **Funding needs closed with cheapest available funding source**	Closed shortfalls Minimum management buffer of 1% RWAs Funding needs closed with cheapest available funding source
Notes	163 banks	**95 banks** **Baseline scenario for subsequent calculations (Tables 7-11, Chart 4)**	71 banks

When interpreting the results, assumptions on how shortfalls are closed, the use of proxies (MREL) and banks' self-assessed impact of the output floor need to be considered.[46] In the 2024 and 2028 scenarios we assumed that any funding needs were closed using the cheapest available eligible funding source. A funding source was assumed to be "available" if it was already part of the funding mix at end-2019. Both the assumed management buffer and the choice of funding sources used to close any funding gaps affect the estimated buffer usability, but this relates mainly to excess capital and only to a minor extent to regulatory buffers.[47] Importantly, this analysis assumed a balance-sheet-neutral and average-risk-weight-neutral rebalancing of resources to meet requirements and resources, thereby possibly underestimating the overlap as requirements remain unaffected. Regarding the interaction of buffers with MREL, proxies for MREL requirements had to be used for most banks in the sample. Requirements were based on bank-type-specific default MREL formulas provided by rules under the new banking package, which, for some banks, may overestimate or underestimate actual future requirements set by resolution authorities. The MREL-TLOF subordination requirement was assumed to be 8% TLOF for G-SIIs, top-tier and fished banks.[48] In addition, MREL resources were estimated based on detailed resolution reporting but may differ from figures approved by resolution authorities.[49] Similarly, the leverage ratio exposure measure (LR-EM) as reported in quarter 4 2019 was not yet based on new banking package definitions. We therefore cross-checked our results with total assets as a possible lower bound estimate for the LR-EM as defined under CRR2.

46 See Annex A2 for technical details.

47 Estimates of the usability of regulatory buffers do not change by more than 3 percentage points in either direction when the assumption on the funding composition or on the minimum management buffer is altered in the baseline scenario.

48 Resolution authorities have the discretion to deviate upwards or downwards from this calibration under certain conditions. Assumption of a different calibration equal to the maximum of MREL-LR and MREL-RW + CBR, if lower than 8% TLOF, leads to very similar buffer usability estimates.

49 For end-2019 data reported to and obtained from the EBA, MREL figures approved by resolution authorities were not available. Approved figures have only been reported to the EBA for recent data that were not yet available at the time of the analysis.

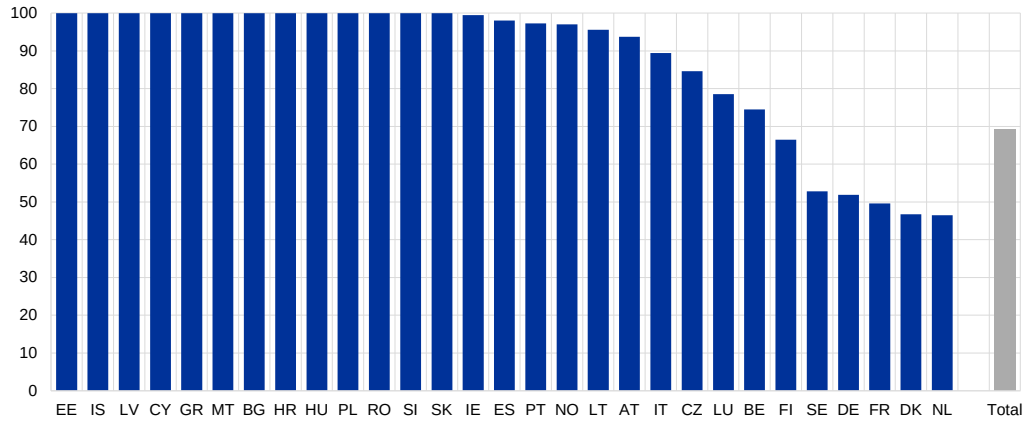
3.1 Buffer usability across countries and bank types

In several countries, aggregate buffer usability is already limited when considering the leverage ratio, which becomes binding in mid-2021. Chart 2 provides an overview of the extent to which the leverage ratio limits buffer usability given balance sheets and CBR levels as of end-2019. Taking 163 large European banks into account (see black bar on the right-hand side), on aggregate 69% of the total amount of the CBR is usable. Across countries CBR usability varies considerably (see blue bars). CBR usability is below 60% in DK, DE, FR, NL and SE and below 80% in BE, LU and FI. Note that limited CBR usability does not necessarily constrain the effective releasability of the CCyB. As buffers that are released can be considered as being in the upper part of the CBR in the stacking order of capital[50], it may be the case that the CCyB is fully or largely releasable but the lower part of the CBR may not be usable at all.[51] The usability of excess capital (not shown here) is hardly constrained by the leverage ratio. On aggregate 98% of the excess capital in the risk-weighted capital stack is not blocked by the leverage ratio.

Chart 2

Mid-2021: Leverage ratio interaction: CBR usability by country

(percentages)



Notes: Sample includes 163 banks. Aggregate buffer usability per country is calculated based on the sum of the weighted bank-specific buffer usability in each country. The bank-specific weightings are given by the ratio of a bank's nominal CBR to the total amount of CBR in each country. The leverage ratio interaction is based on banks' CET1 component of the leverage ratio requirement, which is defined as the nominal Tier 1 leverage ratio requirement minus the stock of available AT1.

Using total assets as a lower bound estimate for the leverage ratio exposure measure under CRR2 yields qualitatively similar results. The calculation shown in Chart 2 is based on the definition of the leverage ratio exposure measure (LR-EM) in CRR 1. In CRR 2, the revised LR framework excludes more exposures from the leverage ratio calculation and treats off-balance-sheet items in a more lenient way. To analyse how the CRR 2 definition might affect the overlap, we also used total assets as a proxy for the LR-EM under CRR 2 as a robustness check. Total

[50] With the release, regulatory buffer capital is transformed into a voluntary management buffer in the same capital stack.

[51] For instance, on aggregate 97% of the CCyBs available in 2019 were usable assuming that the leverage ratio was already binding at the time.

assets may be lower than LR-EM under CRR 2 as it largely excludes off-balance-sheet items. Using this lower bound for the LR-EM improves CBR usability on aggregate from 69% to 74%.

In exceptional circumstances, banks could be allowed to exempt central bank exposures from the LR exposure measure to facilitate the implementation of monetary policies. In this case, to maintain both the level of resilience provided by the leverage ratio and its important function as a backstop to the risk-based framework, the leverage ratio requirement would have to be recalibrated upwards to ensure that banks were granted leeway only with respect to central bank exposures assumed after the exceptional circumstances had begun.[52] Therefore, buffer usability would be unaffected at the beginning but might improve afterwards, depending on the increase in central bank exposures during the duration of the exemption. In a counterfactual analysis, this effect is estimated for Single Supervisory Mechanism (SSM) banks, for which we had more recent data, comparing buffer usability based on quarter 4 2020 data and assuming such an exemption with recalibration to buffer usability under a no-exemption scenario. For the recalibration, the minimum leverage ratio was adjusted in a bank-specific manner based on central bank exposures in quarter 4 2019. On aggregate, CBR usability would increase from 56% to 59% when such an exemption and an adjusted leverage ratio are assumed.[53]

The regulatory approach to calculating risk weights seems to be a particularly important determinant of buffer usability in terms of leverage ratio interaction. The lower a bank's average risk weight density, the more likely it is that buffer usability would be constrained by the leverage ratio. Banks using internal models (IRBA) to calculate risk weights tend to have a lower risk weight density than banks where risk weights are calculated based on the SA. While the average risk weight density of IRBA banks is 36%, it is 49% for SA banks. This difference in the risk weight density is an important driver of aggregate buffer usability. When banks' buffer usability is weighted based on their nominal CBR, the buffer usability of IRBA banks in the sample was 66%, as compared with 92% for SA banks.

Based on end-2019 balance sheets and dynamic balance-sheet assumptions, buffer usability would on average further decline once MREL requirements become binding. While an overlap between capital buffers and MREL will already emerge in 2022 when intermediate MREL targets become binding, the analysis focuses on the final MREL targets. Table 6 shows both the overall effect of all parallel minimum requirements combined ("Total" column) and the individual effects of the leverage ratio (LR) and the different final MREL requirements (MREL-RW, MREL-LR, MREL-TLOF), applicable from 1 January 2024, on the usability of buffers (CBR) and EC.[54] As MREL information is only available for a subsample of 95 parent banks and the number of banks is very small in some Member States, we do no show results on a country level

[52] Article 500b of Regulation (EU) No 575/2013 as amended by Regulation (EU) 2019/876 and Regulation (EU) 2020/873 (without offsetting mechanism) and Article 429a (5) of Regulation (EU) No 575/2013 as amended by Regulation (EU) 2019/876 and Regulation (EU) 2020/873. At the time of writing, the ECB had declared such exceptional circumstances, allowing SSM banks to opt for the exemption until 27 June 2021 when reporting and disclosing leverage requirements. However, as the leverage ratio becomes binding beyond June 2021, this has no effect on actual buffer usability. In the event of exemption after 27 June 2021, the leverage ratio would have to be recalibrated upwards. It might then become less binding if central bank exposures continued to grow after an initial offsetting given that the offset is not adjusted continuously.

[53] To analyse how buffer usability evolved over 2020, we used more recent SSM data covering 104 banks that were also part of the EBA sample. In the absence of the most recent resolution reporting data for SSM banks, we could only compute buffer usability with respect to the leverage ratio interaction and not for MREL as well.

[54] For G-SIIs, interim MREL statutory minimum requirements have applied since mid-2019 and final statutory minimum requirements will apply for G-SIIs, top-tier banks and fished banks from 1 January 2022 (see Table 3).

but use a regional perspective. Note, however, that even the regional subsamples only include a limited number of jurisdictions and banks, especially in the case of central and eastern Europe (CEE). The LR column in the first row reveals a weighted average CBR usability of 65% in the full sample when only considering the interaction with LR. This is comparable to the 69% in the unrestricted sample with 163 banks. The usability is weighted by banks' nominal amount of the CBR and the results remain largely unchanged when weighting with total assets. The weighted average usability when considering in addition the final MREL targets drops to 29%. While at bank level the total usability coincides with the lowest level of usability across requirements, this is not the case after aggregation and calculating averages as in Table 6. As different banks can have buffer usability limited by different requirements, the total level of usability is, in some instances, much lower than the lowest levels of usability for the individual requirements. Each column to the right of total usability displays the average effect when only considering one specific minimum requirement. The decomposition is aimed at revealing the driving factors behind total buffer usability. The results are mainly driven by non-risk-weighted requirements. As shortfalls have been closed in this scenario, MREL in risk-weighted terms only affects the usability of excess capital, as CBR-M is fully usable. It should be noted that the sample mainly comprises large European banks for which MREL requirements exceed minimum own funds requirements. As many small banks will have MREL requirements equal to their own funds requirements, the results may not be representative for the whole EU banking system.[55]

[55] The 95 banks represented around 65% of total banking system assets in this sample of countries.

Table 6

2024: Usability of CBR and excess capital in the EU (closed shortfall + management buffer)

Region	Obs	Usability of…	Total	LR	MREL (a) LR	MREL (b) TLOF	MREL (c) RWA
Full sample	95	CBR	**29**	65	69	44	100
		Excess capital	**45**	97	94	63	62
Northern Europe	13	CBR	**18**	53	77	34	100
		Excess capital	**52**	95	97	57	100
Western Europe	44	CBR	**19**	53	55	38	100
		Excess capital	**44**	96	90	56	61
Southern Europe	33	CBR	**54**	95	95	58	100
		Excess capital	**46**	100	100	77	52
CEE	5	CBR	**88**	100	100	88	100
		Excess capital	**41**	100	100	100	41
∑	95						

Notes: "Obs" means observations. Each cell shows the buffer usability in percentage terms taking into account all applicable requirements (total) and for specific requirements individually. The usability is weighted by banks' nominal size of the CBR. The total usability is equal to the lowest usability across individual requirements at bank level, but this does not hold true for the aggregated figures shown in the table. Column MREL-TLOF assumes that the subordination requirement expressed in terms of TLOF is allowed to determine the overall MREL-LR requirement. Northern E.: DK, NO, FI, SE; Western E.: BE, DE, FR, LU, NL, AT; Southern E.: GR, ES, IT, CY, MT, PT; CEE: BG, HU, RO, SI. All requirements reflect the CET1 component only, i.e. the stock of other eligible resources such as AT1 is subtracted from the respective requirement.

Allowing banks to close shortfalls with the types of resources available for any particular bank increases the relevance of the baseline scenario. To account for possible adjustments in banks' funding structures, Table 6 shows the results for a scenario in which it is assumed that all banks have closed any of their shortfalls and, in addition, maintain a minimum management buffer above each applicable requirement equal to 1% of bank-specific RWAs. Each bank is assumed to fund any applicable shortfall in requirements and the assumed minimum management buffer with the cheapest funding source eligible and already available on the bank's balance sheet at end-2019 (see Annex A2). We used this scenario as the baseline in all subsequent calculations. In the case of a constant balance-sheet scenario, not assuming any response from the bank to replenish shortfalls and build up minimum management buffers, estimated buffer usability would have been significantly lower, not just for the final 2024 MREL targets but also for the intermediate MREL targets that come into force at the beginning of 2022.[56]

The results for CBR usability applying alternative scenario assumptions are robust. For instance, changing the assumption on the funding composition such that banks close any funding needs with the cheapest eligible funding source irrespective of its availability yields a CBR usability of 27% on aggregate. Instead, retaining the assumption that banks use the cheapest available funding while assuming bank-specific management buffers at end-2019 above each requirement as a minimum (median: 3.24% of RWAs) yields a CBR usability of 32%. Assuming a bank-specific management buffer and funding gaps closed with resources based on the bank's funding mix at

[56] See Annex A2 for the computation for MREL intermediate targets.

end-2019 leads to an aggregate CBR usability of 31%. However, as to the usability of excess capital, results are more sensitive to a change in the scenario assumption. For the scenarios described in this paragraph the usability of excess capital is between 30% and 86%.

Taking the baseline scenario with closed shortfalls and a management buffer (Table 6), the output floor would – depending on its implementation – improve CBR usability but hardly change the usability of excess capital on aggregate. The output floor sets a floor on risk-weighted assets calculated under internal models at 72.5% of those required under the SA. Thus, risk-weighted assets of IRBA banks with exceptionally low risk weights might increase. The effect on IRBA risk weights crucially depends on how the output floor is implemented in European legislation and on the development of SA risk weights.[57] In the scenario we use, it is assumed that, in keeping with the Basel framework, all risk-weighted capital requirements are included in the calculation of the output floor. For SA banks and those IRBA banks that report an estimate of the output floor effect (71 banks), CBR usability would increase from 37% to 45%, mainly due to a decline in the overlap of the CBR with leverage-based minimum requirements (see Chart 3).[58] The usability of excess capital would remain relatively stable (49% as compared with 51% with the output floor), as the positive effects of non-risk-weighted requirements would almost be outweighed by the impact of increased MREL-RW due to the output floor. It should be noted, however, that this is an upper bound estimate of the output floor effect, as even the most conservative European implementation would give rise to some offsetting effects, for instance in the calculation of the P2R. Less stringent implementation options would limit the positive impact on buffer usability compared with the status quo and in some instances might even inhibit buffer usability.[59] For SSM banks, the effects of the targeted review of internal models (TRIM) exercise were already included in the quarter 4 2019 data for banks that received TRIM letters by this date. The TRIM may only affect certain portfolio risk weights, and the effect will be lower than that stemming from the output floor that will, in all likelihood, supersede any TRIM impact for most banks in the sample.

[57] For instance, while a flat risk weight of 100% is assigned to unrated corporate exposures under the SA, the risk weight for exposures with an external rating of between AAA and AA- is only 20%. If the output floor triggers a demand for external ratings, SA risk weights will tend to decline, attenuating the effect of the output floor.

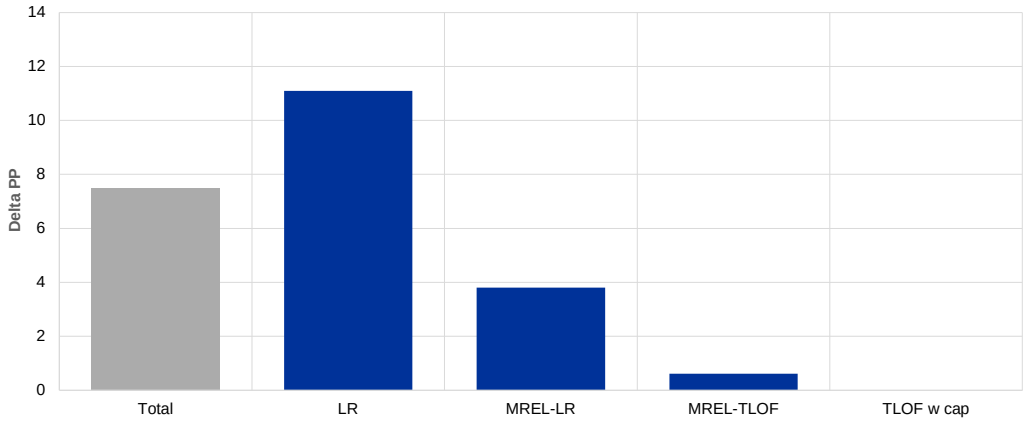
[58] For the 37 IRBA banks in the sample reporting output floor effects, CBR usability would increase from 33% to 42%.

[59] For example, the so-called parallel stacks approach to output floor implementation under the risk-based framework might, in some banks, render SyRB ineffective and reduce CBR usability in its entirety. Parallel stacks suggest that the higher of two requirements applies: (i) the unfloored requirement comprising Pillar 1, Pillar 2 and the CBR and (ii) the floored requirement comprising Pillar 1 and the CBR without the SyRB. Usability is limited when the SyRB is an important element of the CBR and the impact of the floor on RWAs is large, so that the floored requirement applies.

Chart 3

2028: Usability of the CBR and EC in European regions – effect of the output floor

CBR usability (71 obs)	
Baseline	post OF
37.2	44.7



Delta PP: Change in percentage points
Obs: Observations
OF: Output floor
Notes: Bars show the percentage point increase in CBR usability due to the output floor effect. The sample includes 71 banks. All requirements reflect the CET1 component only, i.e. the stock of other eligible resources such as AT1 is subtracted from the respective requirement.

On average, buffer usability differs depending on banks' regulatory approach for the calculation of risk weights, but also correlates with banks' systemic importance. Table 7 shows buffer usability by bank type based on the scenario used in Table 6 (2024 requirements, closed funding gaps and minimum management buffer). IRBA banks turn out to have markedly lower CBR usability compared with SA banks (27% as compared with 67%), while excess capital is similarly restricted (46% as compared with 37%). As expected, SA banks are more affected by MREL-RWA, while IRBA banks by non-risk-weighted requirements due to their lower risk weight density. Furthermore, compared with other banks SIIs have a lower usability level both of the CBR (26% as compared with 73%) and of excess capital (43% as compared with. 60%), implying that current buffers may not ensure SIIs' loss absorption capacity to the extent intended. Regarding banks' business models, universal banks have similar CBR usability (30%) to retail and commercial banks (28%) and specialised and other banks (28%). There is a wide dispersion of CBR usability across banks in the sample, often being either 100% or 0%, with the majority of IRBA banks and SIIs (G-SIIs and O-SIIs) showing low usability (see Chart 4).

Table 7

Usability of the CBR and EC with respect to bank types

(a) Risk approach

Region	Obs	Usability of…	Total	LR	MREL (a) LR	MREL (b) TLOF	MREL (c) RWA
IRBA	61	CBR	**27**	64	67	42	100
		Excess capital	**46**	99	94	60	62
SA	34	CBR	**67**	85	97	69	100
		Excess capital	**37**	84	94	80	58
∑	95						

(b) SIIs compared with other banks

Region	Obs	Usability of…	Total	LR	MREL (a) LR	MREL (b) TLOF	MREL (c) RWA
SIIs	58	CBR	**26**	63	67	41	100
		Excess capital	**43**	99	93	58	60
OTHER	37	CBR	**73**	88	98	84	100
		Excess capital	**60**	85	96	95	75
∑	95						

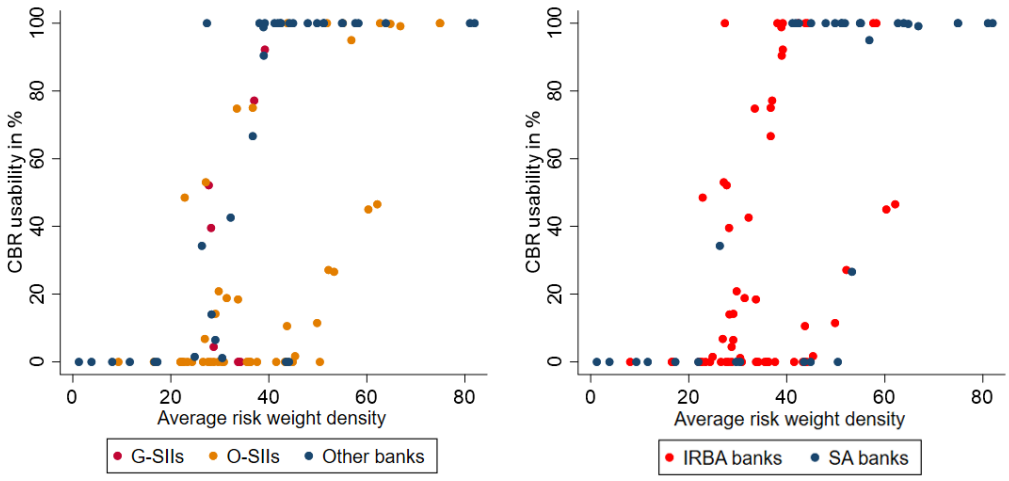
(c) Business model

Region	Obs	Usability of…	Total	LR	MREL (a) LR	MREL (b) TLOF	MREL (c) RWA
Universal banking	54	CBR	**30**	63	66	45	100
		Excess capital	**48**	100	93	61	62
Retail and commercial	30	CBR	**28**	63	66	29	100
		Excess capital	**30**	99	98	65	48
Specialised and other	11	CBR	**28**	63	66	87	100
		Excess capital	**44**	48	89	82	100
∑	95						

Notes: Each cell shows the buffer usability in percentage terms taking into account all applicable requirements (total) and for specific requirements individually. The usability is weighted by banks' nominal size of the CBR. The total usability is equal to the lowest usability across individual requirements at bank level, but this does not hold true for the aggregated figures shown in the table. Column MREL-TLOF assumes that the subordination requirement expressed in terms of TLOF is allowed to determine the overall MREL-LR requirement. All requirements reflect the CET1 component only, i.e. the stock of other eligible resources. such as AT1, is subtracted from the respective requirement.

Chart 4

Dispersion of CBR usability across bank types



Notes: Each dot represents a bank in the sample positioned at the intersection of its CBR usability (y-axis) and average risk weight density (x-axis). All requirements reflect the CET1 component only, i.e. the stock of other eligible resources such as AT1 is subtracted from the respective requirement.

Finally, we find that the forthcoming leverage ratio buffer only partially improves the ability of G-SIIs to use their buffers. From 2023 onwards, G-SIIs need to meet a leverage ratio buffer in Tier 1 capital equal to 50% of their respective risk-weighted G-SII buffer. This buffer can be (partially) met with AT1 instruments, which would reduce its buffer role as AT1 instruments do not bear losses sufficiently early. Only if the CET1 component of the leverage ratio buffer towers above the CBR in the risk-weighted capital stack would the usability of total buffers[60] be increased. Even in this case, though, the contribution of the leverage ratio buffer to the usability of total buffers would be limited if there is an overlap with MREL requirements. Based on the same scenario underlying Table 6, the leverage ratio buffer only slightly improves G-SIIs' usability of total buffers, from 34% to 38% on aggregate. The G-SII leverage buffer will, however, likely become more important once the leverage ratio P2R (LR-P2R) requirements introduced by the recent banking package start to be set. Currently, the implementation and calibration of LR-P2R are still at the development stage. To assess the possible impact of the forthcoming LR-P2R, it is assumed to have been set at 1% for purely illustrative purposes and without prejudice to forthcoming supervisory decisions. Under this scenario, the CBR usability of G-SIIs would decrease to 5%, but at the same time their total buffer usability would increase to 42%.[61] Leverage ratio buffers would therefore have a positive overall effect on buffer usability, while without them CBR usability would decrease once LR-P2R becomes applicable (on aggregate for all banks declining from 29% in the baseline scenario to 10% assuming a uniform LR-P2R of 1%).

[60] In this analysis, usability of total buffers is the sum of the nominal usable part of the CBR plus the nominal usable part of the portion of the CET1 component of the G-SII LR buffer over and above the nominal CBR. If the leverage ratio buffer sits below the CBR in the CET1 capital stack, it is disregarded.

[61] For comparison, assuming a LR-P2R of 0.2% the numbers would be 28% and 36%, respectively.

3.2 Buffer usability under different scenarios

Buffer usability may change if the banks' risk weight density increases or decreases, as might be the case over the economic cycle. As the data do not cover a full economic cycle and cross-country heterogeneity is limited in the sample period, econometric analysis of the impact of financial cycle variables on buffer usability is not feasible. Buffer usability is therefore assessed assuming changes in portfolio risk weights, which are likely to be sensitive to upturns and downturns in the economy. For banks using point-in-time probability of default models, in a downturn risk weights will tend to increase with probability of default, while in an upturn credit risks, and therefore portfolio risk weights, tend to decline. At the same time, however, the portfolio asset composition may change. Banks in the upturn might increase their credit exposure to the non-financial private sector, but lower their zero or low risk-weighted claims on the government. While in an upturn it is not obvious how average risk-weighted densities of assets change, we interpret the scenario of decreasing risk-weighted densities as an upturn based on country-specific historical distributions.[62] At the same time, all other balance-sheet characteristics, such as balance-sheet size and the portfolio asset composition, are kept as at quarter 4 2019. A second scenario then simulates a downturn by increasing the risk weight density. In a third scenario, we keep balance sheets and risk-weighted densities as at end-2019 but vary the level of the CCyB to 2.5% to simulate a uniform policy response in a boom and to investigate effective releasability.[63] Abstracting from a preceding boom, this last scenario can also be used to illustrate two policy ideas currently under discussion. The first is to assume more active use[64] of the CCyB and the second is to allow a partial or full release of the CCoB in exceptional circumstances, requiring a legal change. For the purpose of this analysis, more active use of the CCyB is represented by a CCyB of 2.5% for all banks,[65] while the emergency full release of 2.5% CCoB is assumed to occur as a second step after the CCyB has been released (i.e. from a situation with 0% CCyB).

In an economic upturn scenario with declining risk weights, buffer usability tends to decline while excess capital usability remains largely unchanged on average. Table 8 compares the usability of the CBR and excess capital in the baseline scenario (upper panel) depicted in Table 6 with an upturn scenario (middle panel) and a downturn scenario (lower panel). Compared with the baseline scenario, CBR usability declines from 29% to 11% in an upturn, which is linked to more constraining leverage-based minimum requirements, while excess capital usability reduces only slightly (45% as compared with 40%), which might be driven by the assumption of a constant minimum management buffer under each scenario. In the downturn scenario, usability of the CBR (56%) and of excess capital (61%) is higher. Estimates of CBR usability are robust for the various assumptions relating to the management buffer and closure of any funding gap. The results for excess capital usability are more sensitive to the underlying assumptions.

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62 See the background to the empirical analyses in Annex A2 for details of the computation.

63 It should be noted that the analysis of pre-COVID CCyB usability is reasonable only in Member States that applied non-zero CCyB rates. To keep the EU-wide perspective, a hypothetical 2.5% example is used.

64 This may also encompass the setting of a target reference rate when risks are neither elevated nor subdued (see, for example the discussion of "neutral rate" in, "**Special feature B: Use of the countercyclical capital buffer – a cross-country comparative analysis**", *A Review of Macroprudential Policy in the EU in 2017*, ESRB, Frankfurt am Main, 25 April 2018.

65 Due to the lack of granular data, the CCyB level of 2.5% is assumed to translate into a bank-specific CCyB of equal magnitude. Given cross-country reciprocity, this a fair approximation – at least for banks with a low share of third-country exposures.

Table 8

Sensitivity of buffer usability to a change in risk weights

(a) Baseline (2024 scenario with closed shortfalls and management buffers)

Region	Obs	Usability of…	Total	LR	MREL (a) LR	MREL (b) TLOF	MREL (c) RWA
Full sample	95	CBR	**29**	65	69	44	100
		Excess capital	**45**	97	94	63	62

(b) Upturn (RWA decline)

Region	Obs	Usability of…	Total	LR	MREL (a) LR	MREL (b) TLOF	MREL (c) RWA
Full sample	95	CBR	**11**	44	50	36	100
		Excess capital	**40**	96	91	59	69

(c) Downturn (RWA increase)

Region	Obs	Usability of…	Total	LR	MREL (a) LR	MREL (b) TLOF	MREL (c) RWA
Full sample	95	CBR	**56**	89	88	62	100
		Excess capital	**61**	97	99	82	69

Notes: Each cell shows the buffer usability in percentage terms taking into account all applicable requirements (total) and for specific requirements individually. The usability is weighted by banks' nominal size of the CBR; a different weighting with total assets leads to qualitatively similar results. The total usability is equal to the lowest usability across individual requirements at the bank level, but this does not hold true for aggregated figures shown in the table. Column MREL-TLOF assumes that the subordination requirement expressed in terms of TLOF is allowed to determine the overall MREL-LR requirement. All requirements reflect the CET1 component only, i.e. the stock of other eligible resources, such as AT1, is subtracted from the respective requirement. See also Annex A2 for technical details of the scenarios.

A higher CCyB would increase effective releasable buffer space. Using the baseline scenario, Table 9 shows the usability of a CCyB of 2.5% and of a 2.5% CCoB, assuming the CCoB would be fully released after any CCyB is first decreased to zero. It is assumed that banks still meet their CBR when the respective buffer is released, meaning that no breach occurs and the respective buffer is the first within the CBR to be used. A positive neutral CCyB, or any other policy that increases the CCyB in the upward phase of the cycle, would mean a release from a higher level, which limits the likelihood and magnitude of potential impediments from parallel minimum requirements. Simulating the effects shows that, on average, 65% of a higher CCyB would be usable, although the usability is lower for SIIs than for other banks. The higher CCyB also increases the usability of the entire CBR (from 29% in the baseline shown in Table 6 to 45%), thus increasing macroprudential space.

A potential releasable CCoB would increase the size of releasable buffers. However, the amount of the buffers not tied into parallel requirements does not change if the CCoB is made

releasable given that it only transforms existing structural buffers into releasable ones.[66] It is important to note that for the purpose of this analysis any available CCyB is assumed to be released first, followed by the CCoB. Therefore, the usability of the CCyB or the transformed CCoB will be higher than the usability of the remaining part of the CBR.[67] As the releasable CCoB does not increase the CBR and is assumed to be released only after any CCyB, its usability is naturally lower in comparison with the higher CCyB.

Table 9

Effective releasability of a 2.5% CCyB and of a hypothetically releasable CCoB

					MREL		
Region	Obs	Usability of…	Total	LR	(a) LR	(b) TLOF	(c) RWA
Full sample	95	CBR	45	77	81	56	100
		of which CCyB	65	99	92	66	100
		CBR	28	63	67	42	100
		of which CCyB	37	81	75	47	100

Notes: "Obs" means observations. Each cell shows the buffer usability taking into account all applicable requirements (total) and for specific requirements individually. The usability is weighted by banks' nominal size of the respective buffer. The total usability is equal to the lowest usability across individual requirements at bank level, but this does not hold true for aggregated figures shown in the table. In this analysis, the CCyB and the CCoB are assumed to be the first layer of the CBR to be used, in that order. Column MREL-TLOF assumes that the subordination requirement expressed in terms of TLOF is allowed to determine the overall MREL-LR requirement. All requirements reflect the CET1 component only, i.e. the stock of other eligible resources, such as AT1, is subtracted from the respective requirement.

Summary of empirical findings

The empirical analyses show that, on aggregate, buffer usability might already be limited once the leverage ratio becomes binding in mid-2021 and that usability may further decline once MREL requirements are phased in from 2022 to 2024. The output floor will tend to reduce the overlap for IRBA banks, but the effect seems to be limited and could be superseded by the forthcoming LR-P2R, which tends to increase the overlap with the CBR. However, it would increase the usability of total buffers for banks with leverage ratio buffers. Higher buffers, e.g. in the form of a positive neutral CCyB, would improve buffer usability as they would limit the likelihood of constraints from a parallel minimum requirement. Reshuffling current CBR levels towards a higher share of releasable buffers would have no impact on the size of the buffer not tied into parallel requirements and therefore would be effective only to the extent to which buffers do not overlap with parallel requirements. It is likely that limited buffer usability would not be a transitional phenomenon given that the overlap stems from the multiple use of capital for buffers and minimum

[66] A release of buffers does not lead to the MDA restrictions that would apply if a bank were to dip into regulatory buffers. This might have implications if banks were more willing to use released buffers to avoid deleveraging than dip into buffers that were not released, but the empirical evidence on this is currently not clear. The issue of banks' willingness to use buffers and its policy implications for releasable versus structural buffers are not discussed in this report.

[67] For instance, for a bank with 38% of usable CCoB, only 0.95% of RWAs would be effectively releasable. Any other applicable macroprudential buffers (G-SII, O-SII, SyRB) would not be usable at all. The bank would be able to use 0.95% of RWAs in the current set-up, too, where the CCoB is not releasable, albeit this would entail MDA restrictions. As a hypothetically releasable CCoB would reduce the structural CBR component, all else being equal, as opposed to a more active use of the CCyB, a CCoB release might diminish the usability of this structural CBR component more than a CCyB release.

requirements that is allowed. Therefore, closing any current shortfalls and keeping management buffers might mitigate the overlap to a certain degree but would not eliminate it.

Box 4
Literature and analytical work on usability of macroprudential buffers

The literature review suggests that macroprudential capital buffers, the leverage ratio and the MREL are mostly examined separately and there is not much research on the interaction between them. Nevertheless, some publications are available, prepared mainly by central banks and macroprudential authorities. These publications acknowledge that the leverage ratio has an overall positive effect on financial stability by strengthening the resilience of the banking sector. However, they also point to two areas where a binding leverage ratio requirement might adversely affect the conduct of macroprudential policy.

First, research indicates that increasing capital buffer rates might not add to the resilience of banks if these institutions are constrained by the leverage ratio. When risk-weighted capital requirements are lower than the leverage ratio requirements even after the buffer rates are increased, these policies would not add further resilience to the system nor would they help to moderate the credit cycle. To counteract this undesirable feature, introducing leverage ratio buffers into the leverage framework might be desirable (European Systemic Risk Board (2015)[68] or Pfeifer et al. (2016)[69]). Other policy measures could also be activated for this purpose, including a risk-weighting add-on for certain exposures (e.g. real estate).

Second, leverage ratios might impair the ability of banks to draw on the risk-weighted buffers in times of crisis. For example, Finansinspektionen (2016)[70] shows that the leverage ratio for four major Swedish banks exceeded in aggregate the Pillar 1 and Pillar 2 minimum requirements for Tier 1. As a consequence, banks could not draw on their buffers in full. Similar results for Danish O-SIIs were presented by Danmarks Nationalbank (2018)[71]. Four out of seven Danish O-SIIs would have a leverage ratio requirement exceeding Pillar 1 and Pillar 2 requirements, inhibiting the usability of buffers. In aggregate, only one-third of accumulated buffers is rendered usable. For two Danish O-SIIs, the leverage ratio requirement exceeds the total capital requirement and buffers are not usable at all. Danmarks Nationalbank expects that the introduction of the output floor would improve the buffer usability of its O-SIIs. According to Pfeifer et al. (2016), one Czech bank would be non-compliant with a microprudential leverage ratio of 3%; for two institutions and another two building societies the leverage ratio would be constraining given that their average risk weight density is below 35%. Limited usability was also confirmed by Pfeifer (2020)[72] using mid-2020 data for Czech banks.

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68 "**The ESRB Handbook on Operationalising Macroprudential Policy in the Banking Sector, Addendum: Macroprudential Leverage Ratios**", ESRB, Frankfurt am Main, June 2015.

69 Pfeifer, L., Holub, L. Pikhart, Z. and Hodula, M., "**The role of the leverage ratio in capital regulation of the banking sector**", *CNB Financial Stability Report 2015/2016*, Czech National Bank, Prague, 2016, pages 137-148.

70 "**Leverage ratio as a minimum requirement reduces banks' buffers**", FI Analysis No. 7, Finansinspektionen, Stockholm, 2016.

71 "**Minimum leverage ratio requirement may overrule buffer requirements**", Analysis, Financial stability, 2nd half 2018, Danmarks Nationalbank, Copenhagen, 2018.

72 Pfeifer, L., "**Usability of capital buffers under a binding leverage ratio requirement**", *Thematic article on financial stability 6/2020*, Czech National Bank, Prague, 2016.

Regarding the implications of the MREL for buffer usability, an analysis by the Danish authority, Danmarks Nationalbank (2020),[73] found that for most Danish O-SIIs the MREL currently limited buffer usability. For four out of five groups, the MREL constrained buffer usability more than the leverage ratio did.

These analyses have usually focused on a limited number of banks from one jurisdiction and employed simplifying assumptions about the framework.[74] A multi-country study, taking into account the full regulatory landscape and a wider range of banks with different business models, has not yet been conducted. In addition, there is still limited research on the interaction between the MREL and macroprudential capital buffers.

However, in parallel with this work by the European Systemic Risk Board (ESRB), other authorities have highlighted the issue of the overlap between buffers and parallel minimum requirements.[75]

[73] "**Can capital buffers actually help banks in the time of crisis?**", *Analysis*, No 25, Danmarks Nationalbank, Copenhagen, 25 November 2020.

[74] "**The EBA 2019 Basel III monitoring exercise report**", has a regular section on the interactions between risk-based and leverage ratio capital requirements. However, it only shows that the leverage ratio can be binding at least for some banks in the sample. A greater level of detail or possible macroprudential considerations are not provided.

[75] See for instance, the special issue of the "**Financial Stability Report, June 2020**" of the Banco de Portugal and the Financial Times lead article by the Governor of Danmarks Nationalbank "Capital buffers aren't working" (9 December 2020).

4 Options for improving the usability of banks' buffers

4.1 High-level principles

Based on the conceptual considerations and empirical findings, this section sets out options for improving banks' ability to use the macroprudential buffers and highlights their implications. Reflecting its analytical mandate, the ATF does not take a stance on these options. By focusing on the ability to use buffers, rather than on banks' willingness to use them, the options below complement the work of (a) the Financial Stability Committee group on monitoring banks' response to the Covid-19 pandemic, and (b) the ESRB Drafting Team on removing disincentives for the use of capital buffers. Previous ESRB positions have also been taken into account.[76]

The full phase-in of the regulatory changes announced may reduce overlaps, but not significantly, according to the empirical results. These regulatory changes include (a) the implementation of the output floor under Basel III finalisation, and (b) stricter standards for banks' IRB models, for example under the TRIM exercise for SSM banks. These developments may influence the extent to which compensating policy measures are needed.

The empirical findings show that limited ability to use buffers does not affect all Member States in the same way. At aggregate level, the usability of banks' CBR in some Member States is restricted more by the leverage ratio and/or non-risk-weighted MREL requirements. In other Member States, risk-weighted MREL requirements may be an important factor affecting the usability of excess capital (buffers are usable provided there is no MREL shortfall). This heterogeneity relates to differences in banks' risk weight density and the composition of the liability side and can also be prevalent across banks within a country.

This heterogeneity needs to be kept in mind in assessing mitigating options, which differ in their effectiveness under different circumstances. Certain options would be able to ensure buffer usability by design (e.g. mirroring risk-weighted buffers with leverage buffers or a general prohibition on buffers being countable towards minimum requirements) and may call for a uniform solution. Others are more targeted to specific banks and requirements. These might need to take national specificities into consideration and allow increased flexibility to improve the ability to use buffers, depending on the country-specific root cause of limitations. It may also be useful to combine different options. While respecting the level playing field in the European Union, different reactions to heterogeneous buffer usability limitations are possible within the legal framework to address resulting vulnerabilities.

The following high-level principles were applied to select a range of mitigation options. These principles served as the conceptual framework for assessing the options:

1. **Preserving the objectives of the parallel frameworks:** Buffer usability needs to be improved where necessary. At the same time, it is necessary to preserve the regulatory objectives of the

[76] See Footnote 57 of "**The ESRB Handbook on Operationalising Macroprudential Policy in the Banking Sector, Addendum: Macroprudential Leverage Ratios**", ESRB, Frankfurt am Main, June 2015.

three parallel frameworks: (i) the risk-weighted capital framework, (ii) the non-risk-weighted capital framework, and (iii) the MREL framework. In addition, any mitigating options need to comply with Basel Committee on Banking Supervision (BCBS) minimum standards and preserve the resilience of the financial system. In this regard, full and timely Basel III implementation is supported given that it would ensure a level playing field and improve banks' ability to use buffers.

2. **Enhancing the consistency of the regulatory framework:** Options to increase the ability to use buffers aimed at ensuring that buffers are treated consistently across frameworks.[77] Any review of regulation would benefit from a holistic view, as excessively frequent changes of regulation need to be avoided. A stable framework improves predictability and credibility.

3. **Reducing the complexity of the regulatory framework:** An important finding of the conceptual analysis is that the interaction between parts of the regulatory framework is already complex. Ideally, any options should reduce the complexity, or, at the very least, not increase it further.

In general, there are three ways to enhance regulatory buffer usability that adhere to the high-level principles. First, by increasing the size of usable buffers by enlarging either the buffer size or the minimum requirement on which they stack.[78] Second, by increasing that part of the parallel minimum requirement that can be met with own funds (or eligible instruments) other than the capital permissible for meeting buffers (CET1) and not, in effect, require banks to use CET1 to fulfil them. This increase should not, however, jeopardise the requirement's objectives. Third, by amending the way in which various stacks interact, either by amending the stacking order or limiting the multiple use of capital. These options could also be combined. All these options are summarised in Table 12 at the end of Section 4.

The report does not take a stance on the options, nor does it advocate, at this stage, higher overall capital requirements and buffers over and above what is envisaged by Basel III. The options in this report are a starting point for future thinking about the issue. Should regulators conclude that a reduction in overlaps is necessary, the report offers mitigating options for consideration. Some of the options are readily available and also allow authorities to address limited buffer usability at national level, while respecting the Single Market. Others would require legal changes. A holistic assessment of the pros and cons would help authorities to select the most appropriate measure for their respective jurisdictions. As the report does not take a stance on the options and does not assess their overall merits, shortcomings and feasibility from a political perspective, the implication for overall capital requirements is not applied as a high-level principle.

If regulators wish to effectively expand macroprudential space, this requires ensuring the ability to use buffers. Increasing releasable buffers, as discussed for instance in the October 2020 European Central Bank (ECB) Macroprudential Bulletin[79], can only be effective if no overlap

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77 For instance, only the G-SII risk-weighted buffer is mirrored in the leverage framework and the legal provisions may be interpreted differently as to whether it sits on top of MREL-LR. Also, the permission to double count capital for both buffer and minimum requirements could be seen as an inconsistency given that different goals are then conflicting.

78 For example, the usability of the CBR can be improved by increasing the minimum requirement under the risk-based framework. By contrast, the usability of the leverage ratio buffer can be improved by increasing the minimum leverage requirement.

79 "**Macroprudential capital buffers – objectives and usability**", Macroprudential Bulletin Article No. 11, ECB, Frankfurt am Main, 19 October 2020.

hinders the use of a released buffer. For example, a hypothetical release of CCoB might not be fully effective if the released capital remains (partially) tied into a parallel minimum requirement.

Transparency, information sharing and monitoring are crucial for assessing overlaps. All authorities involved need to have access to information on all relevant bank-specific requirements and resources available to meet them. This is crucial for assessing buffer usability, the distance from breaches and interaction with different regulatory objectives. Moreover, it is worth considering whether increasing market participants' awareness of the usability of buffers and distance from breaches would simplify informed decision-making on their part.[80] In the same vein, regular assessments of buffer usability by EU and national authorities might help in understanding how the materiality of the regulatory impediments to buffer usability evolves when banks adjust their balance sheets amidst the phase-in of various requirements.

We estimate below the impact of some of the mitigation policy options on both CBR usability and the additional resources required to comply with the option concerned. The calculations are based on the balanced sample of 95 banks and are compared with the baseline scenario described in Section 3.1 (Table 6). The scenario assumes that banks have closed any shortfall and hold a management buffer of at least 1% of RWAs above any of the requirements. We have assumed that banks will use the cheapest available capital components and eligible liabilities to fund the resources needed to comply with the requirements. While the impact of the policy options on CBR usability in the alternative scenario settings is robust, the estimated additional resources required to comply with the policy option concerned are sensitive to the scenario assumptions. The figures should therefore be interpreted with caution.

In general, improving buffer usability without softening parallel requirements might, in some cases, result in an increase in capital requirements or an amended funding structure. In these cases, the potential costs of adjustment to higher requirements or a shift towards higher-quality capital or towards eligible liabilities should be weighed against greater buffer usability, more forceful macroprudential policy and a higher level of resilience in the system. The magnitude of these potential adjustment costs and their distribution among banks would differ between options. It should be stressed that some options may also increase capital requirements for banks that already have their buffers fully usable. This side effect could be reduced to some extent in three ways: first, where appropriate, using options that are primarily aimed at other microprudential or macroprudential objectives and have the beneficial side effect of affording buffer usability;[81] second, using options ensuring the most favourable balance between benefits for buffer usability and the potential cost to banks that already have their buffers usable; third, granting banks appropriate phase-in periods to adjust to increasing requirements.

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80 MREL public disclosure will apply from 1 January 2024 at the earliest, while TLAC will already need to be disclosed on entry into force of the EBA ITS. Regulatory reporting of the MREL to the EBA will start from the reference date of 30 June 2021 both for the MREL and TLAC. See "**EBA publishes final draft technical standards on disclosure and reporting on MREL and TLAC**", Press release, EBA, 3 August 2020.

81 For example, full implementation of the Basel floor or activating a sectoral SyRB to cover risks relating to residential real estate have specific objectives but would also improve buffer usability as a consequence.

4.2 Options within the current framework

Enhancing transparency and information sharing between authorities is an important prerequisite for assessing buffer overlaps. An intensified exchange of information on all relevant bank-specific requirements and resources available to meet them would allow policymakers to take all interactions into account when setting a requirement. In this regard, macroprudential authorities or designated authorities, especially if they are not also competent authorities, might not have access to all the supervisory, MREL and resources data that is necessary. Where appropriate, memoranda of understanding between authorities could help to close these data gaps. It could ensure, for example, that buffers are set at a level at which they remain usable.

Authorities might consider increasing the CBR. This option would not, per se, solve the issue of interaction between capital buffers and parallel minimum requirements. Rather, it would increase the likelihood that sufficient effectively usable buffer capital is available. Under this option, total capital requirements and resilience would increase. It is important to note that which buffer type is increased might make a difference. The CCyB and, with introduction of CRD V, the SyRB too, if used to address specific cyclical risks that also have cyclical properties, are intended to create releasable buffers in line with movements of the financial cycle. The CCyB has the additional advantage that it does not affect the default calculation for the market confidence charge as part of MREL-RW, unlike other buffers. A more active use of the CCyB would also help to reduce overlaps (see Section 3), thereby increasing macroprudential space. The disadvantage of the CCyB in comparison with other buffers is, however, that it cannot be tailored to bank-specific impediments to buffer usability given that it applies to exposures and therefore affects both banks with limited buffer usability and those whose buffers are already fully usable. Based on our scenario calculations, an increase of the CCyB to 2.5% from quarter 4 2019 levels for all banks would increase aggregate CBR usability from 29% to 45%. To build up the CCyB would require additional capital and eligible liabilities of 1.27% of RWAs relative to the baseline scenario (see Table 10).

Table 10
Increase in CBR usability relative to baseline scenario

	Obs	Buffer usability (%CBR)	Δ Resources (%RWA)	
Baseline	95	29	-	Assumptions as in table 5
Higher CBR	95	45	1.27	Increase of CCyB to 2.5% from Q4-2019 levels
Higher risk weights	95	49	1.13	Increase of IRBA-risk weights in order of magnitude of output floor*

*Notes: Delta resources relative to baseline (fully phased-in requirements, no output floor, all shortfalls closed plus management buffer of at least 1%) assumed replenishment with the cheapest available funding source. * For those IRBA banks with missing information from EBA QIS, we assumed that the risk weight densities of corporates and retail IRB portfolios increased to 72.5% of the average risk weight density of the respective SA portfolios. Obs means observations.*

If the overlap stems from low risk weight density, a higher risk weight density might increase buffer usability.[82] Higher risk weights can be achieved either through (i) macroprudential measures, (ii) microprudential measures, or (iii) general regulatory requirements (e.g. through

[82] If, on the other hand, off-balance-sheet items that are part of the leverage ratio exposure measure contribute chiefly to the overlap, measures amending risk weights would not be effective.

Basel III implementation). As regards macroprudential measures, authorities may impose floors on risk weights under Article 458 CRR or increase risk weights or LGD floors under Article 124/164 CRR. Microprudential measures include, inter alia, increased scrutiny of IRB models and the application of the more stringent EBA standards ("IRB roadmap") that will be mandatory from 2022 onwards. These measures may already lead to higher risk weight densities for at least certain IRBA banks in the coming years. This also applies to the targeted review of internal models (TRIM) exercise in the SSM. Although measures at the level of certain portfolios might not suffice to ensure full usability of macroprudential buffers, they may help to alleviate the magnitude of the problem for some banks – but not at the system level, as shown in the empirical analysis. Finally, as regards general regulatory requirements, implementation of the Basel III output floor in the EU in a manner consistent with the Basel text, i.e. where the output floor applies to all buffers, will also increase the average risk weight density of banks using internal models (IRBA). Based on the estimated output floor effect given in Section 3, CBR usability would improve from 37% to 45% on average (from 33% to 42% for IRBA banks only). For the scenario in Table 10, we have assumed an increase in risk weights of a magnitude proportionate to the output floor effect. Because we lack information for some IRBA banks on the effect of the output floor, we have assumed an increase in IRBA portfolio risk weights to 72.5% of the risk weight density for the SA portfolios of those banks. Based on these assumptions, higher risk weights would improve buffer usability from 29% to 49%. This would require an increase in resources of 1.13% of RWAs (see Table 10) as compared with the baseline scenario.

In a similar vein, macroprudential authorities could communicate their expectation that banks should maintain a certain level of buffer usability. This would give banks the discretion to decide how this level was achieved. A bank constrained by the MREL, for example, would be free to either issue eligible liabilities to improve buffer usability or adjust RWAs, LR-EM or TLOF or issue CET1, thereby increasing EC to compensate for reduced buffer usability. Another option would be a higher risk weight density for banks with constrained buffer usability. While a sufficient level of buffer usability would be maintained, banks could choose the remedy that suited them best. This option, however, would not resolve the reasons for the overlaps in the framework.

4.3 Options requiring statutory changes

Legislators and standard setters could consider changing legal provisions to ensure the usability of regulatory buffers. First, the options identified in Section 4.2 could be more forcefully implemented through legal amendments. Second, a more direct approach to usability concerns might be to introduce targeted changes to the capital stack and permissible capital quality through legal amendments.

Information exchange and disclosure requirement

The introduction of a legal mandate for information exchange between authorities would strengthen the exchange of information. While EU law does not currently preclude information exchange between authorities, certain provisions could be amended to explicitly mandate such exchanges. For example, given that information on MREL targets may not be available to macroprudential authorities, Article 90 BRRD and Article 30 SRMR might be amended to cover

information exchange for macroprudential purposes. Information exchange also needs to be incorporated into national law and covered by interinstitutional memoranda.

In addition, adjusting bank public disclosure templates to enable a holistic analysis of how the requirements could be considered. This could facilitate the use of the disclosure data by market participants. Currently, requirements and available resources are disclosed for individual requirements in various templates, but this information is not necessarily presented in a holistic fashion. Bank-level public disclosure in a single template of the distance from a breach of the individual requirements and of the available usable buffer and excess capital could increase market transparency and awareness of the importance of overlaps in practice, and thus avoid information asymmetry and unpredictability.

Increasing leverage ratio buffers and changes in stacking order

One approach to increasing buffer usability would be to mirror all risk-weighted buffers with parallel LR buffers. This is currently the case for the G-SII buffer and more generally under the UK framework. A similar rule that would transpose all other buffers constituting the CBR into an LR buffer equivalent would ensure that any non-usable part of the CBR resulting from an overlap with the minimum leverage ratio is compensated by a usable LR buffer in the non-risk-weighted capital stack. A release of the CCyB would be associated with an equivalent release of the CCyB component in the LR buffer.[83] Mirroring all risk-weighted buffers with their respective LR buffer would help increase buffer usability and strengthen the role of the leverage ratio as a supplementary measure. For the banks in our sample, the total usable buffer relative to the size of the CBR would increase from 29% to 77% on aggregate if leverage buffer rates corresponded to 50%[84] of their CBR counterparts. This would require additional resources equal to 0.82% of RWAs relative to the baseline scenario (see Table 11). A mechanical link via a conversion factor would not increase the complexity of the buffer framework, while rendering it predictable and consistent. The effectiveness of LR buffers could be further improved if they were also stacked on top of MREL on a non-risk-weighted basis (MREL-LR and MREL-TLOF) or on top of each minimum requirement (see below).

[83] In this way, the Bank of England has implemented a countercyclical leverage ratio buffer. See also the **Addendum to the ESRB Handbook suggesting macroprudential leverage buffers**. Finally, at the next CRR/CRD review the Commission will assess whether there is merit in introducing leverage ratio buffers for O-SIIs as well, even though this might be motivated by the need to improve resilience rather than enhance buffer usability.

[84] This can be deduced from the introduction of the G-SII leverage buffer and its calculation, as the 50% conversion factor derives from the ratio between minimum leverage-based and minimum risk-weighted Tier 1 requirements (3%/6% = 50%).

Table 11

Total buffer usability vis-à-vis the baseline scenario

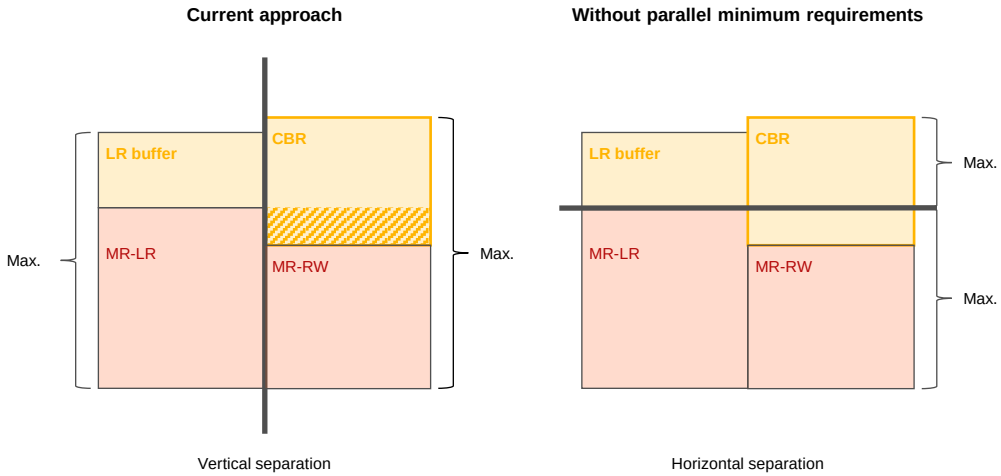
	Obs	Buffer usability (%CBR)	Δ Resources (%RWA)	
Baseline	95	29	-	Assumptions as in table 5
LR buffer	95	77	0.82	Assumed conversion factor 50%
No multiple use of CBR capital	95	100	1.38	No double counting of capital for CBR and minimum requirements
MREL: min 33% liabilities	95	42	1.08	Minimum liabilities component for G-SIIs, top-tier and fished banks
AT1 phase out	95	32	0	AT1 phased out from all capital stacks
AT1 & T2 phase out	95	54	0	AT1 and T2 phased out from all capital stacks

Notes: All shortfalls are closed, and banks hold a management buffer of at least 1% of RWAs with funding sources based on the funding structure in 2019. Δ Resources is the sum of the resources that would need to be raised to cover shortfalls and maintain the management buffer. Buffer usability is shown as a weighted average across banks, except for the non-multiple use of CBR capital where usability is 100% for all banks by design. The LR buffer scenario does not assume that the buffer stacks above MREL. Obs denotes the number of banks used to derive results obtained in the table.

Likewise, a restriction of the multiple use of capital for buffers and minimum requirements could be extended to the parallel frameworks. This would mean that capital used to meet the CBR could not be used to meet any minimum requirement: (i) risk-weighted requirements, (ii) the minimum leverage ratio requirement, or (iii) MREL requirements. The same would apply to the leverage ratio buffer. This change can be visualised as stacking buffers on top of minimum requirements (Figure 5). This option would lead to a clear separation of minimum requirements and buffer requirements. A bank's overall requirement would then be the maximum of the risk-weighted and leverage-based minimum requirements plus the maximum of the RWA-based and LR-based buffer requirements. A clear separation between minimum and buffer requirements would ensure that all buffers would always be fully usable and that the overall buffer size was apparent to banks and authorities. On aggregate, it would require additional resources of 1.38% of RWAs relative to the baseline (see Table 11). Unlike all the other options in this report, this is the only mitigating option that would ensure full buffer usability by design.

Figure 5

Buffer capital with and without parallel minimum requirements



Notes: The situation shown in this figure refers to a bank with low average risk weight density which has its CBR partially constrained by the leverage ratio under the current framework. The figure abstracts from the MREL framework for ease of reference.

Restriction of the multiple use of capital for buffers and parallel minimum requirements and mirroring of risk-weighted buffers with leverage buffers could also be combined. As a result, the supplementary and backstop function of the leverage-based framework would work effectively for both minimum and buffer requirements without constraining buffer usability.[85] In either variant, the total capital requirement would tend to be higher for banks with low risk weight densities.

With respect to MREL, the usability of LR buffers would improve if they were to sit on top of non-risk-based MREL. This would be akin to the current requirement that the CBR be on top of MREL-RW and would ensure usability with respect to all MREL. However, unless leverage ratio buffers mirror CBR and/or buffers in general are required to sit on top of the highest minimum requirement, there could still be an overlap between buffers and the MREL-LR. In this case, buffers (including the CBR) could sit on top of each of the MREL requirements. Note that putting buffers on top of each MREL requirement without further changes would only address the overlap of buffers with MREL but not with prudential minimum capital requirements.

Banks, or certain categories of banks, could also be required to use more eligible liabilities to mitigate the buffer overlap with MREL. If banks largely comply with MREL from eligible liabilities rather than CET1, the overlap between the CBR and non-risk-based MREL declines (as does the overlap between EC and risk-weighted MREL, albeit this overlap is conceptually of lesser concern). A minimum share of eligible liabilities also has support in the Financial Stability Board (FSB) TLAC standard for G-SIBs, which (i) affirms that regulatory buffers must be usable without entry into resolution and that TLAC must not interfere with that, and (ii) sets an expectation that at least 33% of the TLAC minimum requirement be met with regulatory capital instruments in the form

[85] It may be argued that after buffers are stacked on the highest minimum requirement, leverage ratio buffers are no longer needed to safeguard buffer usability and can be abolished to simplify the framework. However, leverage ratio buffers are meaningful for banks with low risk weight densities to (i) strengthen their resilience, and (ii) increase their usable buffers.

of debt liabilities or other eligible instruments that are not regulatory capital.[86] Requiring G-SIIs, top-tier banks and fished banks to meet at least 33% of their MREL requirement with eligible liabilities[87] would increase aggregate CBR usability in the banking system from 29% in the baseline scenario to 42% (see Table 11), and for affected banks from 26% to 39%. The current shortfall of eligible liabilities amounts to 1.08% of aggregate RWAs in the system. Alternatively, requiring the full recapitalisation amount to be met with eligible liabilities would increase usability further (to 53% for CBR and 79% for EC) but would also increase the shortfall of current resources on aggregate. The current EU resolution framework does not set a binding debt component for MREL.[88] However, the availability of eligible liabilities in the event of a resolution could be encompassed by the resolvability assessment for banks, and a debt component based on this.[89] Its general application to all EU banks has not been foreseen given that this option might have side effects. In particular, challenges for accessing debt markets in some jurisdictions and for some banks might make issuing the requisite amount of eligible liabilities difficult or costly from a bank's perspective. This might be especially the case for banks that have not yet issued unsecured debt.[90]

Changes to capital quality for meeting requirements

The G-SII leverage buffer, and potentially other leverage buffers, could be met with CET1 only instead of Tier 1 capital. This would make it consistent with the risk-based framework, where only CET1 capital can be used to meet buffer requirements. The ground for this is that AT1 instruments tend to bear losses only after CET1, which is inconsistent with the role of buffer capital.[91] Limitations to leverage buffer usability are of modest materiality at the given juncture with

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86 "Regulatory capital buffers must be usable without entry into resolution. Firms must be allowed to utilise Basel III buffers without entering resolution. The setting of Minimum TLAC requirements should not interfere with that." (Principle IX); "In addition, to help ensure that a failed G-SIB has sufficient outstanding long-term debt for absorbing losses and/or effecting a recapitalisation in resolution, there is an expectation that the sum of a G-SIB's resolution entity or entities (i) tier 1 and tier 2 regulatory capital instruments in the form of debt liabilities plus (ii) other TLAC-eligible instruments that are not also eligible as regulatory capital, is equal to or greater than 33% of their Minimum TLAC requirements." (Term Sheet 6). "Principles on Loss-absorbing and Recapitalisation Capacity of G-SIBs in Resolution – Total Loss-absorbing Capacity (TLAC) Term Sheet", Financial Stability Board, Basel, 9 November 2015. This expectation of a minimum amount of eligible liabilities aims to ensure that the resources necessary for resolution are still available when a bank is failing given that equity will be largely eroded.

87 This example excludes AT1 and T2 instruments, which increases both buffer usability and funding needs by more than if they are included in a long-term debt requirement.

88 Where applicable and conducive, authorities may also set binding minimum funding requirements that could indirectly mitigate the overlap problem. See, for example, the Belgian macroprudential instrument offering the possibility of imposing compliance with a minimum funding requirement (Article 36/34(1)(10) of the Law of 22 February 1998 establishing the organic statute of the National Bank of Belgium).

89 See, for example, the liabilities proportion principle currently applied by the Swedish National Debt Office (NRA), under which banks earmarked for resolution should have MREL liabilities that are at least equivalent to the recapitalisation amount. If the bank or institution does not comply with these principles, the Debt Office will initiate a review to determine whether there are material impediments to applying resolution. It is stated that the usability of buffers will improve as a consequence. The principle will be abolished once BRRD II is implemented, although BRRD II does not forbid it. See the **Decision memorandum application of the minimum requirement for own funds and eligible liabilities**, Riksgälden 2017.

90 The option of requiring a higher share of eligible liabilities could remain at the discretion of the national authority rather than be an obligation stemming from the legal text. This would allow national authorities to take into account national specificities, in particular the access of domestic banks to a deep market for eligible debt instruments. This option, however, entails governance complications, as resolution authorities are not mandated to consider buffer usability in their MREL policies.

91 First, banks seem to be reluctant to cancel AT1 coupon payments, which reduces the instruments' ability to absorb losses in a going concern. For example, during the COVID-19 crisis, AT1 coupons continued to be paid, while dividends were largely halted. Second, AT1 can be converted or written down to absorb losses only when banks' capitalisation falls below certain thresholds that are currently set at levels that would imply a previous breach in minimum requirements. Therefore, AT1 capital cannot serve a buffer role.

leverage buffers being rather small and relating solely to G-SIIs; however, the benefit from ensuring their usability would become pronounced if the leverage ratio buffers were to increase in future.

Buffer usability could also be improved by requiring higher capital quality for minimum requirements than that currently foreseen in the CRR/CRD. As shown in the conceptual and empirical analyses, the higher the CET1 component of minimum capital requirements in the risk-based framework, the lower the overlap with non-risk-based minimum requirements. For instance, a higher share of CET1 in risk-weighted Pillar 1 or Pillar 2 requirements would reduce the overlap of the CBR with the minimum LR. Similarly, the usability of leverage buffers, if they are to be met with CET1, can be improved by ensuring that the minimum leverage ratio is also (at least partially) met with CET1.[92] If AT1 is excluded from both the risk-weighted requirements and the leverage ratio, CBR usability in our sample would increase from 29% to 32%. If both AT1 and T2 are phased out, CBR usability would further improve to 54%. The phasing-out of AT1 would not require a build-up of additional resources under the baseline scenario but a slight increase in CET1 to replace AT1. Thus, it might induce some banks to issue additional CET1, with a view also to maintaining management buffers unchanged. If, in addition, T2 is phased out, banks would need additional resources equating to 0.3% of RWAs plus an extra 1% CET1, that would largely be compensated for by a reduction in the other funding sources used in the simulation (see Table 11). Phasing-out AT1 and T2 would simplify the framework given that only the best loss-absorbing capital class (CET1) would be eligible to meet going-concern requirements, while a wider class of MREL eligible resources would be used to meet gone-concern requirements. However, this option would not be sufficient to ensure full buffer usability as a stand-alone measure and could be combined with other options listed above. Importantly, ensuring effective leverage buffers means meeting them with CET1 but requiring banks to change the composition of their own funds (CET1, AT1, T2) would also has implications for banks whose buffer usability is not constrained.

[92] The CET1 overlap would be between minimum requirements under the risk-based framework and the leverage ratio, and less so between the leverage ratio buffer and risk-based minimum requirements. Increasing the capital quality only for the leverage ratio stack may, all else being equal, reduce CBR usability, but could still increase the usability of the bank's total buffer. Likewise, increasing only the capital quality of the risk-weighted capital stack may render the role of the leverage ratio as a supplementary measure less effective.

Table 12

Summary of mitigating options

	Option	Need for legal change?	Improving usability of CBR	Improving usability of LR buffer	Improving usability of excess capital with respect to MREL-RWA
1	Intensified information exchange between authorities on requirements and resources	No/Yes (depending on the existing arrangements)	Indirectly	Indirectly	Indirectly
2	Enhanced bank disclosure on buffer usability and distance from breach	Yes	Indirectly	Indirectly	Indirectly
3	Higher CBR	No[93]	Yes	No	No
4	Increase risk weights through: (a) macroprudential measures; (b) microprudential measures; (c) general regulatory requirements (such as the Basel floor)	No/Yes (depending on the measure used)	Yes	No	No
5	Communicate expectation of banks keeping usable buffer	No	Yes (if compliant)	Yes (if compliant)	Yes (if compliant)
6	Legal requirement for minimum EL	Yes	Yes	Yes	Yes
7	Mirroring CBR with LR buffers	Yes	Yes	Yes	No
8	Prohibiting the multiple use of capital for buffers and minimum requirements	Yes	Yes	Yes	No
9	LR buffer stacked on top of MREL-LR	Yes	No	Yes	No
10	Meeting LR buffers with CET1 only	Yes	No	Yes	No
11	Higher capital quality of risk-based minimum requirements	Yes	Yes	No	No
12	Higher capital quality of leverage-based minimum requirements	Yes	No	Yes (if combined with (10))	No

[93] It assumes the size of the increase, the motivation and the rationale behind the increase in the respective parts of CBR requirements are consistent with current legislation. Impediments to buffer usability could be regarded as a source of systemic risk in the sense that the buffers cannot be fully used to address systemic risk as intended. Legal changes facilitating such “direct” targeting of the buffer-to-buffer usability impediments would increase the efficiency of this mitigating option.

5 Conclusion

Capital buffers are central to macroprudential policy, but they can only absorb losses if their use does not lead to the breach of other regulatory requirements. This report has investigated, from an analytical perspective, the interaction between capital buffers and the minimum requirements under all three frameworks, namely (1) the risk-weighted framework aimed at increasing the resilience of banks, (2) the leverage ratio requirement constraining the build-up of leverage, mitigating the risk of destabilising deleveraging processes, and safeguarding against model risk and measurement error, and (3) the resolution framework facilitating the resolution of failed banks without putting public funds at risk. It has explored constraints that may prevent banks from using their buffers and that may also render authorities' decisions to release capital buffers ineffective. It has explored the interactions and resulting constraints, first from a conceptual perspective and then by performing empirical analyses of the scope and magnitude of overlaps. Finally, it has laid out options for mitigating the overlap issue and indicated their implications.

The regulatory framework is, by construction, a multi-restrictive framework designed to achieve a sufficiently resilient banking system. Without such multi-restrictiveness, each individual requirement would have had to be set at a higher level to achieve the same level of resilience. With minimum restrictions in many dimensions and rules that allow the multiple use of capital for buffers and minimum requirements across frameworks, a consequence is that buffers above the minimum requirements may not always be fully usable for all banks, thereby reducing the effectiveness of macroprudential policy. By respecting the objectives of the frameworks, the policy options discussed in this report would increase the usability of buffers and preserve the balance between the existing minimum requirements in achieving the desired overall resilience in the banking system.

The conceptual findings show how banks' ability to use their buffers could be limited and furthermore corroborate the complexity of the current regulatory framework. Limited ability to use buffers stems from the multiple use of the same capital units for both minimum and buffer requirements. This limits the effectiveness of the buffer framework and renders a holistic view of the regulatory interactions complex.

The conceptual analysis also revealed that consistency with respect to the relationship between the G-SII LR buffer and MREL-LR could be enhanced. Currently, capital used to meet risk-weighted buffers may also be used to meet non-risk-weighted minimum requirements. The same applies to the G-SII LR buffer that can be counted towards risk-weighted minimum requirements. However, while multiple use for buffers and minimum requirements is not permitted within the risk-weighted framework, this may not be the case for the G-SII LR buffer with respect to MREL-LR and MREL-TLOF according to the European Commission's interpretation.[94] This would constitute an inconsistency in the current framework, rendering the G-SII LR buffer less effective and adding to the already high level of complexity of the framework.

Furthermore, the usability of leverage ratio buffers may be hampered by allowing them to be met with AT1, which is usable only after some CET1 has been consumed. Since CET1 covers

[94] Commission Notice relating to the interpretation of certain legal provisions of the revised bank resolution framework in reply to questions raised by Member States' authorities 2020/C 321/01 (OJ C 321, 29.9.2020, p. 1-35).

losses first, it stacks above AT1 in the leverage ratio capital stack and, consequently, CET1 might cover the entire LR buffer, while AT1 covers part of the minimum requirement. Based on quarter 4 2019 data, G-SIIs are able to meet the G-SII LR buffer with CET1. However, potential limitations to going-concern loss absorbency could become material if all risk-weighted buffers were to be mirrored with LR buffers and AT1 remains eligible for use by banks to close any shortfall in leverage buffer.

Given the existence of regulatory interactions, information sharing is key to assessing limited buffer usability. Bank-specific information on all applicable requirements and eligible resources should be available to microprudential and macroprudential authorities alike, as well as to resolution authorities. The empirical analysis used proxies for MREL, given that reporting of MREL to the EBA will only start from the initial reference date of 30 June 2021. Furthermore, dynamic balance-sheet assumptions were used to assess the overlap that will occur when final MREL requirements become effective in 2024. Nevertheless, the analysis offers robust estimates of buffer usability and key insights into the effectiveness of mitigating options.

The results of the empirical analyses show that, on aggregate, buffer usability will already be limited once the leverage ratio becomes binding in mid-2021, and that usability may further decline once MREL requirements apply in 2022 and 2024. The ability to use buffers will already be considerably limited by mid-2021 in several jurisdictions and might be further constrained for a material number of banks in several jurisdictions when the upcoming requirements take effect. This result holds true under various dynamic balance-sheet assumptions, including cost-efficient compliance with all requirements, given that the overlap stems from the permissible multiple use of capital for buffers and minimum requirements. Banks might to some extent mitigate the effect of the new overlapping requirements if they themselves aim to ensure buffer usability beyond what is required by law. However, limited buffer usability will not be a transitional phenomenon.

The analyses also found a large degree of heterogeneity across regions, across countries and in particular across banks. IRBA banks are relatively more affected than SA banks, as average risk weight density is a key determinant of buffer usability and IRBA banks usually have lower risk weight densities. The same holds true for systemically important banks that often use the IRBA. There is a wide dispersion of CBR usability across banks in the sample, often being either 100% or 0%.

Fully Basel-compliant implementation of the output floor might help to increase buffer usability, although it is unlikely to eliminate all overlaps entirely. Full implementation of Basel III, including the output floor, is an important milestone for a more resilient banking system and currently a top priority. The output floor – if implemented as agreed by the BCBS – will most likely increase the risk weight densities of banks using internal models that are most affected. As banks that are especially limited in their buffer usage typically have particularly low risk weight densities, this would tend to improve buffer usability. The output floor, however, will not have any impact on banks not using internal models but which may also have limited buffer usability. The empirical results show that while the output floor improves buffer usability, it cannot fully resolve the overlap on its own. On the other hand, the output floor tends to increase MREL-RW requirements for IRBA banks, for some possibly limiting the usability of their excess capital in the risk-weighted capital stack and leading to an earlier breach of CBR-M. Furthermore, if supervisors were to use the forthcoming LR-P2R, it would tend to increase the overlap with the CBR for banks with low risk

weight density but would increase the usability of the total buffer for banks with leverage ratio buffers; this would only be applicable to G-SIIs from 1 January 2023. Limited buffer usability would not be a transitional phenomenon given that the overlap stems from permissible multiple use of capital for buffers and minimum requirements.

Given the ongoing adjustments to balance sheets amidst the phasing-in of regulatory requirements, EU and national authorities might need to periodically reassess regulatory impediments to buffer usability. The leverage ratio will become binding from mid-2021, the G-SII leverage buffer will apply from 2023, MREL will be fully phased in in 2024 and the Basel III output floor will start to be implemented in 2023 with full implementation in 2028. Banks' dynamic balance-sheet adjustments might affect their ability to use buffers, for better or worse. Different adjustments have already been simulated in this analysis, including that which would be the most cost-efficient from a bank's perspective, and these show that the overlap will likely remain material. As the ability to use buffers is a key macroprudential policy tool, it will be important for European and national authorities to analyse the issues raised in this report, including options to strengthen the overall resilience of the sector by mitigating the impediments created by the multi-restrictive framework.

The options suggested might either fully resolve or mitigate the overlap, while respecting the objectives of the parallel framework in line with its key principles. The report outlines in a neutral way possible options for mitigating buffer overlaps. Some of the options are applicable within the current or forthcoming statutory framework, while others would necessitate statutory change. The options also differ in the degree to which they reduce the overlap, with one option ensuring full buffer usability under all circumstances (removing the multiple use of capital), while others mitigate the impediments only partially based on specific set-ups. Moreover, some options (e.g. higher CBR or higher risk-weighting measures) might also affect banks that do not show an overlap (buffers fully usable); other options (removing the multiple use of capital for buffers and parallel minimum requirements or mirroring risk-weighted buffers with leverage buffers) would have an impact only on banks with limited buffer usability. As only those mitigating options that do not adversely affect the objectives of the respective frameworks were selected for this report, the options typically lead to higher capitalisation or adjustment of liability structures, which might entail costs for banks. The benefits of higher buffer usability need to be balanced against the costs of the options concerned, but, at the same time, against the costs of inaction, that is in terms of limited buffer usability and hence resilience.

Of the options that could be applied within the current legal framework, a higher CBR would tend to increase buffer usability. As shown empirically, however, a considerable part could still remain blocked by parallel minimum requirements, on aggregate, unless the CBR were calibrated specifically to increase buffer usability. While the actual effect would depend on the size of the CBR increase, such an increase would also help to facilitate the use of releasable buffers. It should be borne in mind, however, that only that part of the CBR that is not tied into a parallel requirement could be freed up by the macroprudential authority on buffer release.

Legal changes could ensure full or significantly improved buffer usability. Removing the multiple use of capital for buffers and minimum requirements would ensure full usability by design. Mirroring all risk-weighted buffers with leverage buffers would also significantly improve overall buffer usability, according to empirical results based on the simulation. Both options would require additional resources from banks, estimated at 0.82% and 1.38% of RWAs respectively. Moreover, increasing the quality of capital requirements would lead to a significant improvement in buffer

usability, without increasing total capital requirements. Introducing a long-term debt requirement for larger and systemically important banks would also mitigate the overlap with MREL requirements for those banks, while leading to estimated funding needs of 1.08% of RWAs. Different options could also be combined. In general, higher absolute CET1 requirements and more MREL eligible liabilities would mitigate many of the overlaps.

The macroprudential review undertaken by the European Commission in 2022[95] and the ongoing review of the crisis management and deposit insurance (CMDI) framework[96] offer a window of opportunity for legal changes. Provisions that allow multiple use of capital are currently part of the BRRD and the Single Resolution Mechanism Regulation (SRM-R)97. Therefore, the macroprudential and CMDI reviews should take a comprehensive look at the regulations that lead to consistent outcomes, while also making sure that efforts to address buffer usability would not give rise to excessive regulatory fragmentation in the Single Market. This report does not take a stance on any increase in the capital requirements over and above what is envisaged by Basel III, and any implementation of policy options should be based on a cost-benefit analysis. This report may serve as important input into discussions in this area.

95 CRR, Art. 513.

96 **European Commission Review of the Bank Crisis Management & Deposit Insurance Framework**.

97 Regulation (EU) No 806/2014 of the European Parliament and of the Council of 15 July 2014 establishing uniform rules and a uniform procedure for the resolution of credit institutions and certain investment firms in the framework of a Single Resolution Mechanism and a Single Resolution Fund and amending Regulation (EU) No 1093/2010 (OJ L 225, 30.7.2014, p. 1).

Annex A1: Overview of regulatory requirements

Table A1

List of minimum requirements for risk-weighted and leverage ratio frameworks

Framework	Pillar	Requirement	To be met with	Legal basis
Risk-weighted	Pillar 1	4.5% of RWAs	CET1	CRR II, Art. 92(1)(a)
Risk-weighted	Pillar 1	6% of RWAs	Tier 1 (CET1 or AT1)	CRR II, Art. 92(1)(b)
Risk-weighted	Pillar 1	8% of RWAs	Own funds (CET1, AT1 or T2)	CRR II, Art. 92(1)(c)
Risk-weighted	Pillar 2	Bank specific	CET1 at least 9/16 of the requirement, T1 at least 75% of the requirement (Supervisor can prescribe higher capital quality)	CRD V, Art. 104a
Leverage ratio	Pillar 1	3% of LR-EM	Tier 1	CRR II, Art. 92(1)(d)
Leverage ratio	Pillar 2	Bank specific	Tier 1	CRD V, Art. 104a

Sources: ATF on Overlaps, based on CRR and CRD.
Note: The classification of legal requirements into minimum requirements, capital buffers and excess capital follows assumptions adopted by the ATF.

Table A2

List of minimum requirements for the MREL framework

Type	Applies to	Amount (fully phased in)		Subordination requirement (fully phased in)		Constraints (also subject to the interpretation of the 8% TLOF requirement) (Section 2.1)	Can be met with CBR capital?	Legal basis
		Pillar 1	Pillar 2	Pillar 1	Pillar 2			
Risk-based	G-SIIs	18% of RWAs	Max (0, risk-based MREL std formula - MREL Pillar 1 requirement)	Full	Full subordination could be required*	≥8% of TLOF** ≤Max (8% of TLOF, baseline formula***)	No	CRR II, Art.92a(1)(a) – P1 req BRRD II, Art.45d(1) – P2 req BRRD II, Art.45b(4, 7) – Subordination
Non-risk-based		6.75% of LR-EM	Max(0, non-risk-based MREL std formula - MREL Pillar 1 requirement)				Yes	
Risk-based	Top-tier banks	13.5% of RWAs	As above for G-SIIs	Full	Full subordination could be required*	≥8% of TLOF** ≤27% of RWA* ≤Max (8% of TLOF, baseline formula***)	No	BRRD II, Art.45c(5) – P1 req BRRD II, Art.45c(2) & (3) – P2 req BRRD II, Art.45b(4) & (7) – Subordination
Non-risk-based		5% of LR-EM					Yes	
Risk-based	Fished banks	13.5% of RWAs	As above for G-SIIs	Full	Full subordination could be required*	≥8% of TLOF** ≤Max (8% of TLOF, baseline formula***)	No	BRRD II, Art.45c(6) – P1 req BRRD II, Art.45c(2) & (3) – P2 req BRRD II, Art.45b(4) & (7) – Subordination
Non-risk-based		5% of LR-EM					Yes	
Risk-based	Other banks subject to resolution	-	MREL std formula	-	Decision by regulatory authorities (RA)	≤Max (8% of TLOF, baseline formula***)	No	BRRD II, Art.45c(2) & (3) – P2 req BRRD II, Art.45b(5) – Subordination
Non-risk-based							Yes	
Risk-based	Other banks subject to insolvency	-	LAA	-	Decision by RA	≤Max (8% of TLOF, baseline formula***)	No	BRRD II, Art.45c(2) & (3) - P2 req BRRD II, Art.45b(5) – Subordination
Non-risk-based							Yes	

Risk-based MREL standard (std) formula = LAA + RCA + MCC, with:
- LAA = risk-based P1 + P2R = 8% of RWAs + P2R
- RCA = risk-based P1 + P2R (post resolution) = 8% of post-resolution RWAs + P2R post resolution
- MCC = CBR – CCyB
Non-risk-based MREL std formula = LAA + RCA + MCC, with
- LAA = P1 = 3% of LR-EM
- RCA = P1 (post resolution) = 3% of post-resolution LR-EM
** Under certain conditions.*
*** Exemptions and derogations may be applicable.*
**** Baseline formula = 2A + 2B + C, where A = Pillar 1 requirement for the total capital ratio (CRR II, Art.92(1)); B = Pillar 2 requirement (CRD V, Art.104a); C = CBR.*
Source: ATF on Overlaps.
Notes: The classification of legal requirements into minimum requirements, capital buffers and excess capital follows assumptions adopted by the ATF. Amounts are based on fully phased-in rules.

Table A3

List of capital buffers

Framework	Buffer	Releasable by authorities?	Size	To be met with	Legal basis
Risk-weighted	Capital conservation buffer (CCoB)	No	2.5% of RWAs	CET1	CRD V, Art. 129
Risk-weighted	Countercyclical capital buffer (CCyB)	Yes	2.5% of RWAs, subject to mandatory reciprocity (can go above)	CET1	CRD V, Art. 136
Risk-weighted	Systemic risk buffer (SyRB)	No (but can be recalibrated)	3% of RWAs, at the discretion of the national authority	CET1	CRD V, Art. 133
Risk-weighted	Buffers for systemically important institutions (G-SII and O-SII buffers)	No (but can be recalibrated)	3% of RWAs (Higher of G-SII and O-SII buffers), at the discretion of the national authority	CET1	CRD V, Art. 131
Leverage ratio	Buffer for G-SIIs	No (but can be recalibrated)	50% of the risk-weighted G-SII buffer rate applied to LR-EM	T1	CRR II, Art. 92 1a

Source: ATF on Overlaps, based on CRR and CRD.

Annex A2: Background information on the empirical analyses

Data from the EBA made it possible for banks' resources, requirements and the resulting overlap (if any) to be calculated. The data were based on the figures from the common reporting (Corep), financial reporting (Finrep), EBA Quantitative Impact Study (QIS) and Implementing Technical Standards (ITS) resolution reporting at end-2019. As some regulatory requirements were not yet reflected in the data, these were calculated based on the current statutory provisions.

The P2R reform were taken into account by calculating the CET1, T1 and T2 components of P2R, so that the overlap was consistently based on CET1 figures. Overall, P2R figures were quality-checked and a few implausible values were adjusted. For SSM banks, P2R figures were updated with 2020/2021 requirements, as published on the ECB's website.

For MREL requirements under new the BRRD/SRMR provisions, reporting was not yet available when this report was finalised, and proxies were used. EBA data at end-2019 reflected legal provisions before entry into force of the recent banking package, meaning they could not be used to calculate buffer usability under the new rules. External MREL requirements were thus proxied using default formulas under new BRRD/SRMR rules.[98] To this end, we classified each bank as a G-SII, top-tier bank, fished bank, other resolution or other liquidation bank, and assigned the respective MREL statutory minimum requirements as applicable. Fished banks were assumed to be O-SIIs that were neither G-SIIs nor top-tier banks. Other resolution banks were those not pertaining to the above classifications, but which had an MREL requirement under BRRD I rules at end-2019 or where the relevant information was obtained from national sources. Finally, other liquidation banks were the remaining banks, for which no MREL requirement under BRRD I rules was reported. These were assumed to be earmarked for liquidation, setting the MREL to the LAA. For each bank earmarked for resolution, overall MREL-RW and MREL-LR requirements were calculated based on the formula LAA + RCA, to which MCC (= CBR – CCyB) was added in the case of MREL-RW. LAA and RCA each amounted to P1R + P2R. G-SIIs, top-tier banks and fished banks were further assigned MREL-TLOF requirements, which were calculated in two variants: one amounted to 8% of TLOF, while the other was computed as a robustness check (not shown in the report) and was equal to the maximum of MREL-LR and risk-weighted LAA + CBR if lower than 8% TLOF. Both variants led to very similar buffer usability estimates on aggregate.

These MREL requirements were proxies for final 2024 binding targets. The baseline MREL scenario assumed no adjustments or allowances that were at the discretion of the resolution authority as these can either increase or reduce a bank's requirement. The only exceptions were the senior allowances granted to some G-SIIs in the case of TLAC (see the FSB 2020 Resolution Report[99]), which we also assumed would apply to their MREL-TLOF requirements. As a robustness exercise, which was not shown in the main text, we analysed buffer usability under an alternative scenario that led to lower MREL requirements. In particular, we assumed a balance-sheet depletion factor amounting to a minimum of 10% of total assets and risk-weighted LAA+CBR was subtracted

[98] For Danish banks, the national MREL exemption for mortgage credit institutions and the alternative debt buffer were not considered. This means that MREL requirements for banking groups that include mortgage credit institutions were proxied using the groups' consolidated balance sheets.

[99] "2020 Resolution Report – Be prepared", Financial Stability Board, Basel, 18 November 2020.

from the RCA of MREL-RW and MREL-LR. In addition, MREL-TLOF was capped at 27% of RWAs for top-tier banks. The aggregate results were qualitatively similar and therefore not reported for reasons of space. We also analysed the buffer usability of MREL 2022 intermediate targets based on end-2019 balance-sheet data. The latter comprised the statutory minimum requirements, while the overall MREL-RW was reduced by 50% of a bank's applicable MREL shortfall in MREL-RW to allow for a linear phasing-in period over 2020 to 2024 (the same applies to overall MREL-LR and MREL-TLOF requirements). In this scenario, overall buffer usability would drop to 17%.

External MREL requirements were calculated for parent undertakings. Due to the lack of information, all banking groups are assumed to follow a single-point-of-entry approach. MREL requirements were therefore calculated at the consolidated level of the parent undertaking of a banking group, while MREL resources comprised consolidated own funds and eligible liabilities at individual level. Currently, available MREL resources are not yet reported by resolution authorities to the EBA, which necessitated the calculation of proxies based on the detailed liability breakdown under ITS resolution reporting. For the purpose of this analysis, subordinated eligible liabilities comprised senior non-preferred and subordinated liabilities with residual maturity of over one year. Total eligible liabilities included in addition senior unsecured liabilities with the same minimum residual maturity. Other bail-inable liabilities, such as structured notes or deposits not covered, were not assumed to be MREL eligible due the difficulty and risks potentially associated with bail-in, including the violation of the "no creditor worse off" principle. For some banks with missing resolution reporting, eligible liabilities were retrieved from public or national supervisory sources, and for German banks the statutory subordination of certain outstanding debt was taken into account.

To account for possible balance-sheet evolution, scenarios with 2024 and 2028 requirements assumed that banks would have closed any shortfall and kept a minimum management buffer. For the 2024 and 2028 scenarios we employed dynamic balance-sheet assumptions. For this, shortfalls between quarter 4 2019 balance-sheet figures and expected requirements were closed, and banks were assumed to keep a management buffer equivalent to at least 1% of RWAs above each requirement. As a robustness check for those scenarios, we assumed, as an alternative, a bank-specific management buffer equal to a bank's capital above the maximum of risk-weighted capital requirements (incl. P2G) and the leverage ratio in 2019 (not shown in the main text). This amount was then expressed as a percentage of RWAs and winsorised at the 95th and 5th percentile of the distribution in the sample. The nominal equivalent of this ratio was then added as a management buffer on top of each requirement if this management buffer was not already met. For instance, if a bank did not meet MREL, the shortfall was closed, and a management buffer, calculated as above, was added. The alternative calculations hardly affected CBR usability, but did affect, to some extent, the usability of excess capital.

We assumed that every bank showing a shortfall under 2024 and 2028 requirements and/or the assumed minimum management buffer closed the gap using its available funding sources. Three alternative algorithms were used as robustness exercises (not shown in the main text): shortfalls were closed based on (i) the cheapest available funding source (shown in the report), (ii) the cheapest funding source, and (iii) the bank's actual funding mix at end-2019. Approach (i) assumed that a bank met any shortfall in CET1, AT1, T2, subordinated or overall eligible liabilities with the cheapest available funding source. For instance, any remaining shortfall in

eligible liabilities after possible other shortfalls in CET1, AT1, T2 were closed would be closed with eligible liabilities if this liability type was already part of a bank's current funding mix. Otherwise, instruments that were more subordinated and already part of the bank's funding would be increased (e.g. T2). Approach (ii) assumed that banks used the cheapest funding source, as inferred from the creditor hierarchy, even if that was not yet part of the bank's funding mix. Alternatively, approach (iii) based on the current funding mix implied a gap of a certain amount in, for instance, MREL was filled with eligible resources based on the share of each available resource type (eligible liabilities, T2, AT1, CET1) in the sum of those eligible resources. For instance, a bank with a shortfall of ten units and funding shares of 30% CET1, 5% AT1, 5% T2 and 60% eligible liabilities would close the shortfall with three units of CET1, 0.5 of AT1, 0.5 of T2 and six of eligible liabilities. In both approaches, the resources added were then subtracted from liabilities that were not eligible to meet any requirement, to keep the overall balance-sheet size unchanged. Any shortfall was therefore closed by reshuffling the funding in a balance-sheet-neutral way. This tended to overestimate the positive impact on buffer usability given that balance-sheet neutrality leaves requirements unchanged. Closing any shortfalls based on the 2019 funding mix further implied that CET1 was built up by more than was needed to meet the requirements and management buffers. The assumptions on the funding composition did not significantly affect the results for CBR usability but, to some extent, did affect the results for excess capital usability.

Buffer usability in an economic upturn and downturn was simulated by assuming changes in portfolio risk weights. These changes were calculated based on the following approach.[100] First, for each portfolio, and separately by regulatory approach (IRBA and SA), risk weights were aggregated at country level for each quarter in the sample period from 2014 to 2019. Then, for each of these portfolio and regulatory approach-specific time series, the standard deviation was computed by country. Certainly, six years was too short to reflect a full economic cycle and in some countries this period might be characterised by neither an upturn nor a downturn. Therefore, for each portfolio and regulatory approach we looked at the distribution of the standard deviations across countries and used the standard deviation at the 90th percentile to shock the risk weight density of the portfolio for each bank. In the upturn scenario, we assumed that portfolio risk weight densities increased by the standard deviation, computed as described above, while in the downturn scenario we assumed an equal decline.[101]

[100] We calculated average risk weights at exposure level by dividing the risk-weighted exposure amounts and the corresponding original exposures by sector. The sectors covered were corporates, retail, government and institutions.

[101] The computed standard deviations are winsorised at the 5% and 95% percentile and floored at 0% in the boom scenario.

Imprint

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For specific terminology please refer to the **ESRB glossary** (available in English only).

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