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Regulatory adjustments are to contribute to more effective capital buffers

Capital buffers are an essential tool for curbing losses in a crisis

The purpose of capital buffers is to ensure that banks can lend to healthy companies and households during economic turbulence. In Denmark, interaction with other requirements limits the usability of capital buffers.

Read more

Interaction between requirements must be addressed

The regulation should be adjusted so that capital used to meet the capital buffer requirements is not concurrently used to meet other requirements. This will improve buffer usability.

Read more

Banks can adjust their funding profile

Banks can meet the adjusted requirements by changing their funding profile and issuing various capital or debt instruments.

Read more

The European Commission will present a proposal for revision of the financial legislation, focusing on the framework for macroprudential policy. As part thereof, the Commission will present proposals aimed at ensuring that capital buffers are efficient and thus function as intended.

The capital buffers, including the countercyclical capital buffer, are intended to act as a cushion and mitigate the negative effects of financial crises. The capital buffers are to ensure that banks are sufficiently capitalised in order to be able to bear losses and continue to provide credit to households and corporates during a crisis.

At present, the release of the countercyclical capital buffer in Denmark will not result in a corresponding easing of the capital requirements for Danish banks, as the capital used to meet the countercyclical capital buffer requirement is also used to meet other requirements.[1] The expected positive effects in the form of increased loss and lending capacity will therefore be significantly reduced. It is consequently important to address this issue and to ensure that the macroprudential authorities have sufficient room to act.

Capital buffers are an important tool for limiting financial losses during a crisis

Experience from previous financial crises has shown that a shortage of capital in crisis periods entails major costs for both society and the individual institutions.[2] In connection with the financial crisis, the Danish State had to implement several "bank rescue packages" and state capital injections to ensure the stability of the financial system and prevent the crisis from developing into a credit crunch.

In the wake of the financial crisis, a number of new requirements were therefore introduced for both the quality and quantity of banks' capital. In addition, a number of capital buffer requirements were introduced to make banks more resilient during a crisis. The purpose of the capital buffers is to reduce the risk that banks tighten their lending to a degree that negatively impacts the real economy due to insufficient capitalisation.

The nominal size of the capital requirements is measured as a percentage of banks' risk-weighted assets. The risk-weighted assets must reflect the risk of bank lending losses. In a period with, for example, economic growth, rising property prices, high consumer confidence and low risk perception, the risk of lending losses and thus the required capital adequacy may be lower.[3] A lower estimated risk will lead to lower capital provisions, which, over time, may erode the amount of capital that could prove necessary to withstand a crisis.

An unfortunate – but not unlikely – coincidence of interest rate increases, house price falls and/or higher unemployment could result in more non-performing loans for credit institutions. Concurrently, the value of the collaterals underlying mortgage lending will decrease. Overall, this will increase the risk of losses, which will increase capital adequacy needs. This was the case during the crisis in Denmark in the 1987-1993 period, when both banks and mortgage credit institutions saw an increase in losses and impairment charges.[4]

1 The current rate of the countercyclical capital buffer is 0 per cent. Based on the Minister for Industry, Business and Financial Affairs' decision, the countercyclical capital buffer will be gradually phased in up to 2.5 per cent in Denmark from March 2023. The calculation has therefore been based on a countercyclical capital buffer rate of 2.5 per cent of the risk-weighted exposures for five credit institutions: Nykredit Realkredit, Danske Bank, Jyske Bank, Sydbank and Nordea Kredit.

2 Jesper Pedersen and Jakob Guldbæk Mikkelsen, A cost-benefit analysis of capital requirements for the Danish economy, *Danmarks Nationalbank Working paper*, no. 123, 2017 (*link*), and Abildgren et al., Real Economic Consequences of Financial Crises, *Danmarks Nationalbank Quarterly Review*, 3rd Quarter 2011 (*link*).

3 See, for example, EBA, Report on the pro-cyclicality of capital requirements under the Internal Ratings Based Approach, 2013 (*link*).

4 See Kim Abildgren, A Tale of Two Danish Banking Crises, *Danmarks Nationalbank Quarterly Review*, 1st Quarter, 2011 (*link*).

In such a situation, the bank may need to use the capital buffers to absorb losses, cover higher nominal capital requirements, as the risk of loss on existing loans increases, and maintain lending to households and companies.

Limited effect of capital buffer release

A release of the countercyclical capital buffer in Denmark will not result in a corresponding easing of the capital requirements for Danish banks at the present time.[5]

The countercyclical capital buffer for the five largest Danish credit institutions is equal to kr. 29 billion. However, a release of the buffer will only result in a capital release corresponding to kr. 17 billion. The estimated positive effects of releasing the countercyclical capital buffer will therefore be significantly reduced, see table 1.

The table shows the maximum effect if the bank exclusively uses the capital release either to cover losses, to meet higher capital requirements due to higher risk on existing customers, and thus higher risk weights, or to make loans based on unchanged risk weights.

A financial crisis is likely to result in both higher risk weights and concurrently higher unexpected impairment charges, which will dampen lending capacity in the absence of new or released capital. The effect can therefore be expected to be somewhat smaller. Current regulation has to be adjusted in order to increase the effective size of capital buffers.

Regulatory adjustments can improve capital buffer usability

Several factors affect the usability of capital buffers, in particular financial regulation, supervisory practices, market expectations and the individual bank's behaviour.

Real capital release is significantly lower than size of countercyclical capital buffer Table 1

Kr. billion	Size of countercyclical capital buffer	Effective release
Countercyclical capital buffer (2.5 per cent)	Kr. 29 billion	Kr. 17 billion
Isolated maximum effect of release for:		
Loss capacity	Kr. 29 billion	Kr. 17 billion
Increase in average risk weights	2.5 percentage points	1.4 percentage points
New loans with same risk weight (24 per cent)	Kr. 715 billion	Kr. 407 billion

Note: Data for Nykredit, Nordea Kredit, Danske Bank, Jyske Bank and Sydbank. The 24 per cent risk weight corresponds to the average risk weight of the five credit institutions. The estimates are for illustrative purposes, to display the difference between a full release of the countercyclical capital buffer compared to the effective size of the capital release.
Source: The credit institutions' financial statements for 2021 and own calculations.

The focus of the analysis is on how *financial regulation* can be adjusted in order to improve capital buffer usability. It is not necessarily needed to increase banks capitalisation, but rather the composition of instruments banks use to meet different requirements.

The analysis describes the effects of two solutions presented in the European debate: 1) to eliminate the possibility of using the same capital instruments to meet both capital buffer requirements and other requirements concurrently; 2) to introduce leverage ratio buffers.

5 The current rate of the countercyclical capital buffer is 0 per cent. The calculation is based on a countercyclical capital buffer of 2.5 per cent of the risk-weighted exposures for five credit institutions: Nykredit Realkredit, Danske Bank, Jyske Bank, Sydbank and Nordea Kredit.

Banks must meet several different requirements at the same time

Banks are today subject to a number of different requirements, e.g. for their capital adequacy as well as minimum requirements for own funds and eligible liabilities, MREL, which must be met concurrently.[6] Banks must meet a risk-weighted capital requirement consisting of a solvency need and a capital buffer requirement. In addition, there is a leverage ratio requirement, which measures a bank's capital as a ratio of its unweighted assets.

There is also a minimum requirement for the size of own funds and eligible liabilities, MREL. The MREL requirement is to ensure that a bank has sufficient funds for crisis management without compromising the national economy.

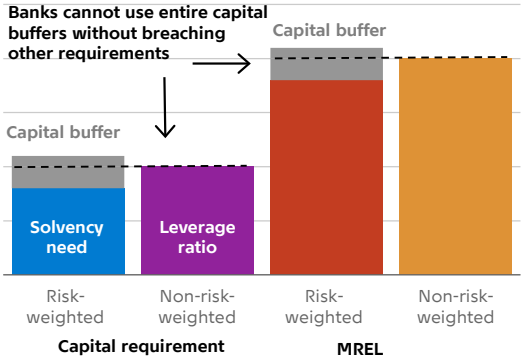
The different requirements address different risks. However, the interaction between the different requirements may reduce the effective size of the capital buffers in practice, see chart 1.[7]

If other requirements, such as the leverage ratio requirement, exceed the risk-weighted solvency need, the bank will only be able to use the buffers to a limited extent without breaching other requirements. This will limit the expected positive effects of, for example, a release of the countercyclical capital buffer, as, in effect, no or only a small amount capital is released.

The problem is especially pronounced in some European countries, including Denmark, see chart 2. Capital buffer usability is limited primarily for banks that use internal models to estimate credit risk. The reason for this is that their average risk weights are

Interaction between requirements may limit effective size of buffers Chart 1

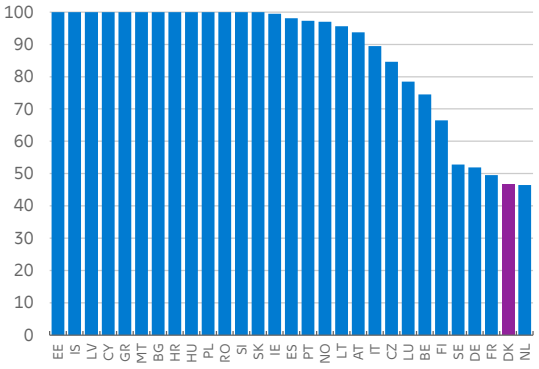
Per cent of risk weighted exposures



Note: The Chart illustrates the interaction between the different risk-weighted and non-risk-weighted requirements. It means that only the part of the buffer that is above the dotted line can actually be released and used.

Effective size of capital buffers is particularly limited in some countries Chart 2

Per cent



Note: The chart shows the effective size of capital buffers as share of the combined buffer requirement, when taking into account interaction with the leverage ratio. The data includes 163 banks. The effective size of capital buffers is the weighted sum of the bank specific buffers in each country. Data for medio 2021.
Source: ESRB, Report of the Analytical Task Force on the overlap between capital buffers and minimum requirements, 2021 (*link*).

6 The MREL is a requirement for the bank's eligible liabilities aimed at ensuring that the bank has sufficient funds to absorb losses and recapitalise the bank, if that is the resolution strategy, in a crisis situation. In the analysis, the total MREL requirement covers the bank's MREL requirement together with the mortgage credit institution's capital and debt buffer requirements. See also Danmarks Nationalbank, Banks should keep their powder dry, *Danmarks Nationalbank Analysis* (*Financial Stability*), No. 28, 2020 (*link*) for further information about MREL and capital requirements.

7 Several analyses indicate that the effective size of the capital buffers is limited due to an overlap between requirements, see, for example, ESRB, Report of the Analytical Task Force on the overlap between capital buffers and minimum requirements, 2021 (*link*).

generally lower, which means that non-risk-based requirements such as the leverage ratio requirement may exceed the risk-based requirements.

Multiple factors affect effective size of capital buffers

Especially two factors affect the effective size of the capital buffers, i.e. how large a proportion of the capital buffers that can actually be used before the bank breaches other requirements.

Firstly, financial regulation plays an important role. According to the regulation, banks must meet several parallel requirements. The capital buffers are currently only part of the risk-weighted requirements, i.e. there are no capital buffers on top of the leverage ratio requirement or the non-risk-weighted MREL requirement.

The financial regulation allows Common Equity Tier 1 capital, which is used to meet the capital buffer requirements, to also be used to meet the leverage ratio requirement or the non-risk weighted MREL requirement. If these requirements exceed the risk-based minimum requirements, it limits the usability of the capital buffers, see chart 1.

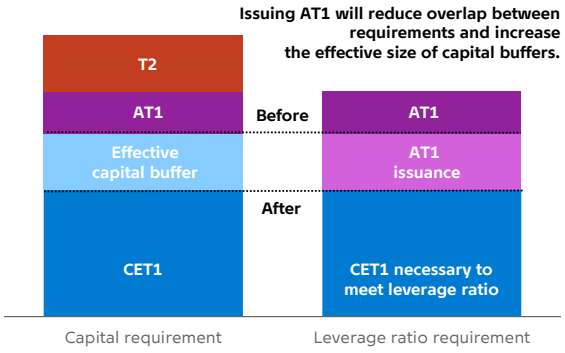
Secondly, the banks' choice of funding composition also plays a role. The banks may choose to meet the MREL and leverage ratio requirements with instruments other than Common Equity Tier 1, CET1. The more Additional Tier 1 capital, AT1, a bank has, the less CET1 it needs to meet the leverage ratio requirement, see chart 3.

If the bank issues more AT1 (the bright purple area in the chart), it will reduce the need for CET1 to meet the leverage ratio requirement. This will reduce the overlap between the two requirements, which will increase the effective size of the capital buffers (the light blue area in the chart). The same applies to the non-risk weighted MREL requirement. If the bank issues more non-preferred senior debt, it will reduce the need for Common Equity Tier 1 capital to meet the MREL requirement.

It should also be noted that the banks can act in different ways during a crisis and be more or less willing to use their capital buffers, see also box 1.

CET1 capital can be used to meet multiple requirements concurrently

Chart 3



Note: CET1 = Common Equity Tier 1 Capital, AT1 = Additional Tier 1 capital and T2 = supplementary capital. Regulatory requirements determine the proportion of the capital requirement that can be met using the various capital instruments. The capital buffer requirements can only be met with CET1. There are no requirements for the proportion of the leverage ratio requirement that is to be met with CET1.

How do banks react in a crisis?

Box 1

The purpose of the capital buffers is to ensure that the banks are sufficiently capitalised, so that they do not tighten credit conditions and reduce the supply of credit to creditworthy households and companies in a new financial crisis. A financial crisis can be expected to lead to large impairment charges and losses due to more non-performing loans, which will increase the banks' capital adequacy needs. The banks may choose to adjust both their assets and liabilities, for example by reducing new lending or issuing more capital instruments or debt instruments to maintain their excess capital adequacy relative to the regulatory requirements. The banks may react in different ways and be more or less willing to use their capital buffers, depending on the situation.

A number of factors can play a role in determining whether the banks are willing to use their capital buffers. These factors include, for example, demands from investors, market expectations, fear of stigma effects, supervisory practices or the expectation that the buffers must be rebuilt quickly again.

It is difficult to predict how banks will react in a crisis and whether they are willing to use their capital buffers. This is due, among other things, to the major changes that have been made to the capital requirements after the financial crisis combined with the fact that no episodes of *systemic* stress have yet materialised to seriously test the current framework.

A few studies have looked at the response of the banks to the pandemic and their willingness to use their capital buffers to maintain their lending to the economy. The studies should be seen in the light of the authorities' easing of various macroprudential requirements at the beginning of the pandemic. Both the Single Supervisory Mechanism (SSM) and the US Federal Reserve announced that banks in the euro area and the United States were allowed to breach the combined capital buffer requirement.[1]

An ECB[2] study has examined the behaviour of just under 90 banks in the euro area which account for 80 per cent of total lending. The study looks at how banks with low excess capital adequacy (less than 3 per cent) relative to their capital buffer requirements reacted during the pandemic. The study suggests that these banks were less willing to make loans to companies to maintain their capitalisation.

The study does not find clear conclusions as to possible explanations for the banks' lending reluctance. Several possible causes are identified:

- Firstly, it may be due to market expectations of a certain degree of capitalisation. For example, Jørgensen and Nelson[3] find that banks will adjust their own capitalisation based on other banks' choice of capitalisation.
- Secondly, the reason may be that the banks want to avoid being subjected to stricter supervision.
- Thirdly, the reason may be that the banks come close to breaching other regulatory requirements, such as the leverage ratio requirement, and are therefore not able to use the capital buffers.

The study also pointed out that comprehensive fiscal policy packages were used to support the economy in general during the pandemic. It is therefore difficult to assess whether the experiences from the pandemic can be used to draw conclusions on how the banks will react in a systemic financial crisis.

Other studies based on data from the United States also indicate that the banks reduce their lending when they come close to breaching regulatory requirements. Based on experiences from the beginning of the pandemic, BCBS[4] finds that banks react by reducing their lending to corporates. Berrospide, Gupta and Seay[5] find that US banks that are close to breaching their capital buffer requirements curb their lending to SMEs.

Norges Bank[6] points out that the banks' risk weights may increase in connection with a crisis. This will increase the capital needed to comply with the regulatory minimum requirements. This may further limit the effective size of the capital buffers. Conversely, Brei and Gambarcorta[7] find that the leverage ratio requirement becomes less binding during crises.

1. Federal Reserve Board, Federal Reserve Actions to Support the Flow of Credit to Households and Businesses, 2020 (*link*).
2. ECB, Annex 2: Enhancing macroprudential space in the banking union, 2022 (*link*).
3. Mia Jørgensen and Genevieve Nelson, Do strategic interaction effects drive excessive capital financing of banks?, *Danmarks Nationalbank Economic Memo*, no. 9, December, 2021 (*link*).
4. BCBS, Early lessons from the Covid-19 pandemic on the Basel reforms, *BCBS Implementation Reports*, 2021 (*link*).
5. Jose M. Berrospide, Arun Gupta and Matthew P. Seay, The Usability of Bank Capital Buffers and Credit Supply Shocks at SMEs during the Pandemic, March 2022 (*link*).
6. Andersen et al., How do different bank capital requirements function in bad times?, *Norges Bank Staff Memo*, no. 8, 2021 (*link*).
7. Michael Brei and Leonardo Gambacorta, Are bank capital ratios pro-cyclical? New evidence and perspective?, 2016 (*link*).

The largest Danish credit institutions have limited effective capital buffers

In Denmark, especially the five largest credit institutions have limited effective capital buffers. This reflects the fact that they have a high proportion of mortgage lending with very low average risk weights. The five largest credit institutions in Denmark account for just around 80 per cent of total lending to households and companies.

Interaction with leverage ratio requirement limits effective size of capital buffers

The interaction between the risk-weighted capital requirements and the leverage ratio requirement limits the effective size of the capital buffers for five of the largest Danish banks, see chart 4.

For example, Nordea Kredit's combined capital buffer requirement is 6.5 per cent of its risk-weighted exposures, equal to just under kr. 5.4 billion.[8] However, the same Common Equity Tier 1 capital is used to meet the leverage ratio requirement. This means that Nordea Kredit has no effective capital buffers.

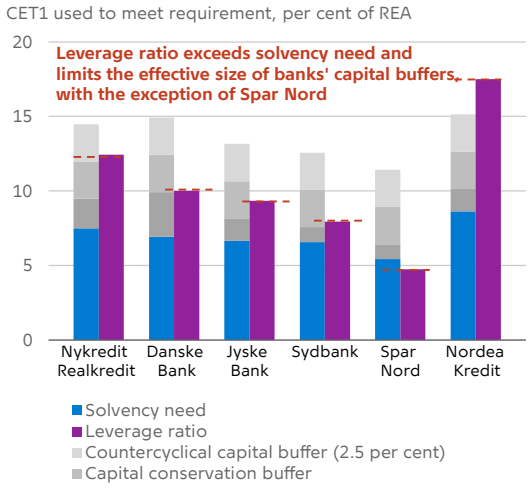
The chart is based on the banks' current balance sheet composition and shows the need for CET1 to meet the requirements at the end of 2021. The chart therefore shows how much capital could actually be released at the time.

The leverage ratio requirement can also be met with AT1. If an institution chooses to issue AT1, this will reduce the need for CET1 to meet the leverage ratio requirement. This will reduce the overlap between the requirements and improve the effective size of the buffers. However, the funding composition has remained relatively constant over time.

Interaction with MREL requirement may also limit effective size of capital buffers

Concurrently with the capital requirements, the institutions must also meet various requirements for the size of their own funds and eligible liabilities, MREL. In Denmark, systemic banks must comply with a risk-based MREL requirement, while mortgage credit institutions must comply with a debt buffer requirement.[9] Systemic groups that comprise a mortgage credit institution are also subject to a minimum requirement for their own funds and eligible liabilities, the so-called 8-per cent requirement. This requirement means that the group's own funds and eligible liabilities must constitute at least 8 per cent of its balance sheet total. For groups that comprise

Leverage ratio requirement limits effective size of capital buffers Chart 4



Note: The chart is based on the following requirements: Solvency need = the group's risk-based solvency requirement and the leverage ratio requirement = the group's leverage ratio requirement converted into a percentage of the risk-weighted exposures. To be able to compare the size of the requirements, the chart shows the part of the requirement that is met with CET1 when the group's AT1 capital and supplementary capital are taken into account. Data for end-2021.
Source: The institutions' risk reports and investor presentations.

8 Here, the combined buffer requirement is a capital conservation buffer of 2.5 per cent, a SIFI buffer of 1.5 per cent and a countercyclical capital buffer of 2.5 per cent.

9 The risk-based MREL requirement for banks corresponds to twice the institution's solvency need and once the combined capital buffer requirement. The debt buffer requirement for mortgage credit institutions is 2 per cent of the mortgage credit institution's unweighted lending. If the total own funds and eligible liabilities for mortgage credit institutions is below 8 per cent, the debt buffer should be revised upwards.

a mortgage credit institution with relatively low risk weights, the 8-per cent requirement may therefore become the binding requirement and limit the effective size of the buffers. This is, for example, the case for Jyske Bank, see chart 5. Jyske Bank's combined capital buffer requirement is 6 per cent. At the end of 2021, Jyske Bank's capital buffers were 1.7 per cent due to the interaction with the 8-per cent requirement and Jyske Bank's composition of capital instruments and debt instruments to meet this requirement.

The institutions can meet the 8-per cent requirement with both capital and certain debt issuances, for example non-preferred senior debt. If the institution chooses to issue more debt, this will reduce the need for CET1 to meet the 8-per cent requirement. This will reduce the overlap between the requirements and thus increase the effective size of the capital buffers.

Output floor requirement will reduce, but not solve, problem

The interaction between the requirements is connected with the risk weights of the institutions' exposures. The lower an institution's risk weights, the more binding the non-risk weighted requirements, for example the leverage ratio requirement, will be.

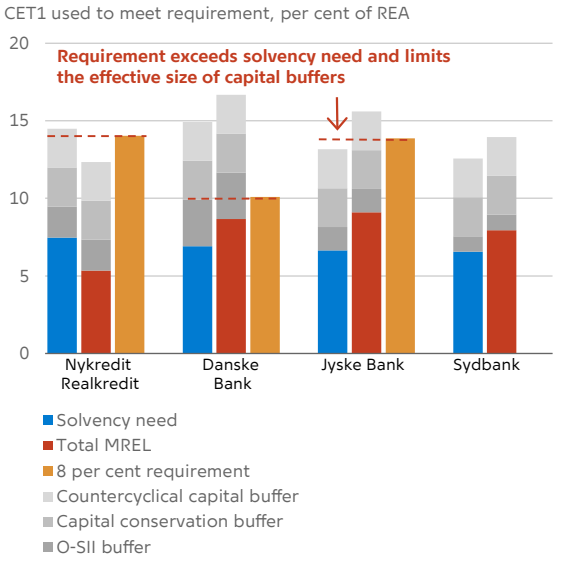
An increase in risk-weighted exposures could therefore also increase the actual usability of the capital buffers. The Basel Committee's output floor requirement will work in this direction. The output floor requirement limits how low the risk weights can be in the banks' risk assessment of exposures when using internal models. According to the Commission's proposal, the output floor requirement will be implemented gradually in the EU from 2023 to 2028.

Preliminary analyses of the effects of the output floor requirement indicate that it will reduce, but not solve, the problem, see ESRB, 2021.

The EU implementation encourages more accommodative risk weighting of housing loans as well as of loans to non-rated corporate customers if a number of conditions have been met.[10] The more accommodative risk weighting is a temporary scheme that will be phased out gradually in the 2029-2032 period, but with the possibility of an extension.

Risk-weighted exposures for the largest Danish banks may increase by between kr. 160 and 330 billion when the total capital requirements package has been fully phased in, depending on whether the transitional schemes expire or are continued.

Interaction with MREL requirement limits effective size of capital buffers Chart 5



Note: The chart shows how much of the requirement the group meets with CET1 when taking into account the group's other instruments, for example Additional Tier 1 capital and non-preferred senior debt. As shown in the chart, the size of the requirements does therefore not necessarily correspond to the regulatory requirements that appear from the institutions' quarterly reports. Solvency need = the group's solvency need, 'MREL' = the group's combined MREL and debt buffer requirements, including the mortgage credit institution's capital requirements; 8-per cent requirement = requirement that eligible liabilities must constitute at least 8 per cent of the liabilities of groups that comprise a mortgage credit institution. All requirements have been converted into a percentage of the risk-weighted exposures. Spar Nord has not been included in the chart as the bank's MREL requirement is currently being phased in. Data for end-2021. Data for Jyske Bank for Q1 2022.

Source: The institutions' risk reports and investor presentations.

10 Danmarks Nationalbank, Rising interest rates and prices can challenge banks' customers, press release, June 2022 (*link*).

The importance of the output floor requirement to the effective size of the capital buffers is therefore linked to the precise implementation of the capital requirements package.

Adjustment of funding composition will improve capital buffer usability

The question of the effective size of the capital buffers forms part of a more comprehensive debate on how to ensure the macroprudential space. In connection with the Commission's revision, proposals have been tabled that aim to address, among other matters, several of the factors affecting the usability of the capital buffers.

In relation to the regulatory framework, especially two possible solutions for increasing the effective size of the capital buffers have been discussed internationally:

1. Remove the multiple use of capital, i.e. capital instruments which are used to meet the capital buffer requirements must not concurrently be used to meet other requirements;
2. Introduce leverage ratio buffers.

The first solution will increase the usability of capital buffers without necessarily leading to an increase in the Common Equity Tier 1 capital requirement, as banks can issue Additional Tier 1 capital or debt to meet an adjustment of the requirements.

The following sections elaborate on the two possible solutions and their implications. An illustrative bank is used to describe the expected effects of the two different solutions.

Removing multiple use of capital (solution 1) will create an incentive to adjust funding composition

The first solution involves adjusting legislation to ensure that capital instruments used to meet the capital buffer requirements cannot be used also to meet other requirements.

This model is already known from the risk-based MREL requirement. The solution will thus entail extending this model to the leverage ratio requirement and the non-risk-based MREL requirement.

In practice, this will mean that the capital buffers can be put on top of the leverage ratio requirement and the non-risk-based MREL requirement, see chart 6, left.

The chart illustrates how much the effective size of the capital buffers will increase if the bank chooses to use Common Equity Tier 1 capital to meet the adjustment of the requirements, see chart 6, left.

The solution does not necessarily entail higher CET1 requirements, as the bank can comply with the adjustment of the requirements by adjusting its funding composition, for example by issuing other capital instruments or debt. The solution will thus reduce the overlap between the requirements.

Norges Bank points out, that e.g. issuing more senior non-preferred debt to meet the MREL requirement actually improves banks' credit ratings, and thus also funding costs.

Introduction of leverage ratio buffers (solution 2) results in unnecessarily large increase in requirements

The other solution involves introducing leverage ratio buffers on top of the leverage ratio requirement. There is already a leverage ratio buffer for global systemically important banks, the so-called G-SIB leverage ratio buffer.[11] The proposal entails extending the model to comprise all institutions as well as all risk-based capital buffers.[12]

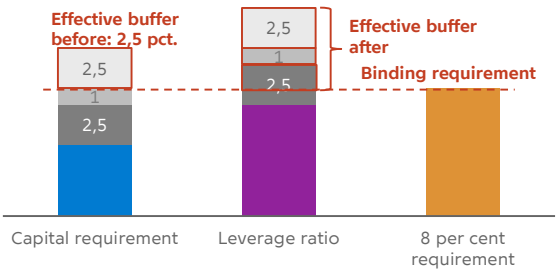
11 G-SIBs stands for Global Systemically Important Banks. Under the Capital Requirements Regulation, CRRII, the leverage ratio buffer for G-SIBs was to apply from 1 January 2022. However, this has been postponed until 1 January 2023 to enable the institutions to respond immediately and effectively to the consequences of covid-19.

12 In accordance with the Capital Requirements Regulation, the Commission must consider whether to introduce a leverage ratio buffer that mirrors the SIFI buffer from the risk-based framework (a SIFI leverage ratio buffer). The proposal entails that only the SIFI buffer will be introduced in the leverage ratio framework, in accordance with the same model as for G-SIBs. This issue has been discussed separately from the discussion on how to increase the effective size of the capital buffers.

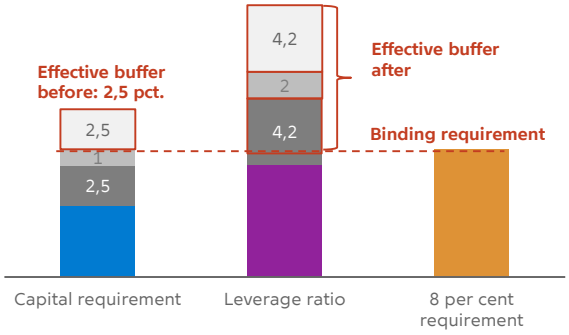
Removing multiple use of capital (solution 1) will increase the effective size of capital buffers without leading to unnecessary increase in overall requirements

Chart 6

Solution 1
Eliminate double use of capital



Solution 2
Introduce leverage ratio buffers



Note: The chart shows an illustrative example of the effects of the two solutions.

The size of the G-SIB leverage ratio buffer is calculated mechanically based on a conversion factor of 50 per cent, which is of great importance to how much the requirement will increase, see also box 2. A conversion factor of 50 per cent corresponds to the ratio between the risk-based requirement for Tier 1 capital and the leverage ratio requirement.

For banks with average risk weights below 50 per cent, the nominal size of the leverage ratio buffer will exceed the nominal size of the risk-based capital buffers. The binding requirement will thus be the leverage ratio requirement, including the leverage ratio buffers, and not the risk-based capital requirement. The lower the average risk weights of a bank, the more the leverage ratio buffer will therefore exceed the nominal size of the risk-based capital buffer requirements. Solution 2 will improve the effective size of the capital buffers, but it could lead to an unnecessarily large increase in the overall leverage ratio requirement, see chart 6, right.

One solution may be for the authorities to choose a conversion factor of less than 50 per cent to calculate the leverage ratio buffers. However, this will add further complexity to an already complex framework. Alternatively, the conversion factor can be calibrated so that the leverage ratio buffers correspond to the risk-based buffers when measured in Danish kroner.

Conversion factor determines size of leverage ratio buffers

Box 2

In the calculation of the G-SIB leverage ratio buffer, the conversion factor is set at 50 per cent of the size of the corresponding risk-based buffer. A conversion factor of 50 per cent corresponds to the ratio between the risk-based requirement for Tier 1 capital and the leverage ratio requirement (6 per cent and 3 per cent, respectively).

If, for example, a risk-based G-SIB buffer of 2 per cent is used as a basis, the G-SIB leverage ratio buffer, which is non-risk weighted, will be calculated as:
G-SIB gearing buffer = 50 per cent + 2 per cent = 1 per cent

$$G-SIB_{gearingsbuffer} = 50\ pct. * 2\ pct. = 1\ pct.$$

This requirement is added to the leverage ratio requirement of 3 per cent. The total leverage ratio requirement including leverage ratio buffer will thus be 4 per cent of the non-risk weighted exposures.

The choice of conversion factor is of great importance to how much the requirement will increase. If the institution's average risk weight is 50 per cent, there will be no difference between the nominal size (in Danish kroner) of the risk-based capital buffer and the leverage ratio buffer. However, if the institution's average risk weights are below 50 per cent, this will mean that the nominal size of the leverage ratio buffer will exceed the risk-based capital buffer.

This would correspond to solution 1 if a concurrent requirement is made that the buffers must be met with Common Equity Tier 1 capital.

The authorities can also choose to set lower risk-based capital buffers to prevent the pass-through to the leverage ratio buffers from becoming so high. This will mean that the capital buffer requirements in the risk-based framework will be set based on different principles to the risk-based capital requirements in general. In addition, it may become more difficult to compare requirements across countries if the models for setting capital buffer requirements differ.
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The introduction of leverage ratio buffers following the same model as for G-SIBs will result in a significantly higher increase in the overall requirement relative to solution 1, see table 2. The introduction of leverage ratio buffers may lead to higher requirements, even for banks that do not experience a limited effective size of the buffers.

Effects of the two solutions Tabel 2

	Increase in requirements and effective buffers (percentage point of RWEs)	
	Eliminate double use of capital	Introduce leverage ratio buffers
Nykredit	4.9	13.5
Danske Bank	1.3	9.8
Jyske Bank	0.2	5.7
Sydbank	1.4	7.4

Note: The Chartes indicate the increase in the overall requirement and size of the effective buffers.
Source: Own calculations.

Banks have multiple options for adapting to adjusted requirements

The above regulatory changes do not entail a more stringent Common Equity Tier 1 capital, CET1, requirement. An explicit minimum requirement for the bank's CET1 is thus still laid down in the risk-based capital requirements.

As the various requirements can be met using several different capital or debt instruments, the banks have multiple options for adapting to a regulatory adjustment. Whether this will entail a greater need for Common Equity Tier 1 capital depends on the banks' choice of how to adapt to the change in the requirement.

To illustrate the effects, an example is used based on an illustrative bank that has no effective capital buffers due to the interaction between the requirements and the funding composition, see chart 7, left.

The illustrative example is based on solution 1, where the regulation is adjusted so that the bank is not allowed to use capital used to meet the capital buffers to meet the leverage ratio requirement.

In principle, the bank has three different options for adapting to the adjustment:
1. meeting requirements with CET1
2. issuing more AT1
3. replacing debt with AT1

However, if the bank chooses to replace debt with Additional Tier 1 capital, AT1, this will not reduce the problem of buffer usability.

The first option corresponds to the effects described in the previous section and illustrated in chart 6 – the bank chooses to meet the requirement with more CET1. This means that the bank must issue equity or retain earnings to adapt to the adjustment. This will reduce the overlap between the requirements and increase the effective size of the capital buffers, see chart 7, right.

As the leverage ratio requirement can also be met with Additional Tier 1 capital, AT1, the bank can choose to issue instruments of this type, see chart 8. Using AT1 to meet a larger share of both the leverage ratio requirement and the 8-per cent requirement reduces the overlap between the requirements. This will increase the effective size of the capital buffers.

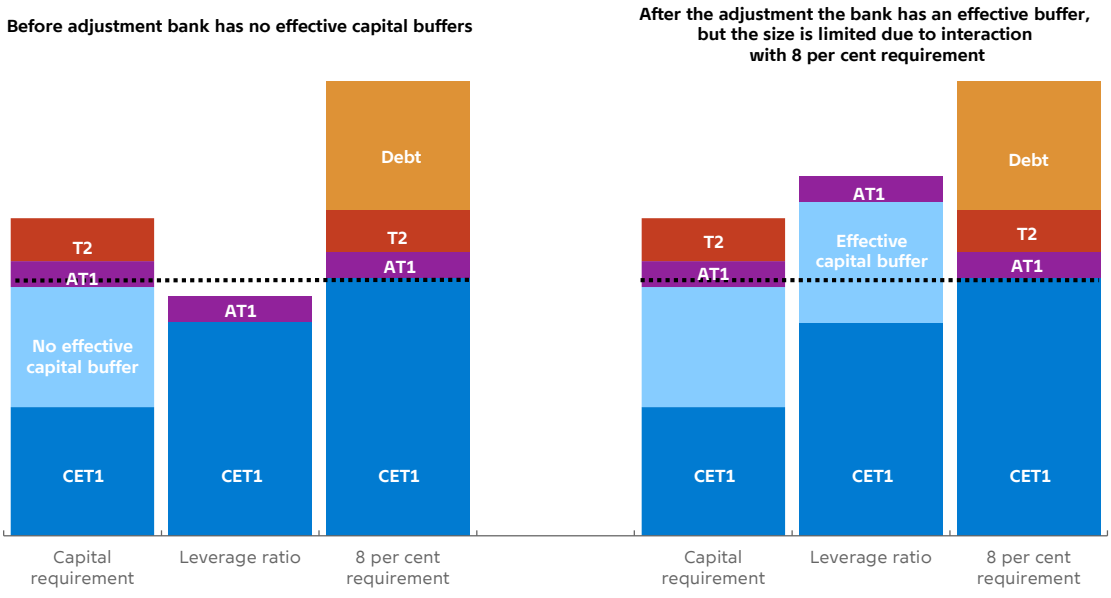
The bank may also choose to replace debt that expires with issuances of Additional Tier 1 capital, AT1, see chart 9.

Opting for this adjustment will reduce the bank's need for CET1 to meet the leverage ratio requirement and thus also the overlap between the leverage ratio requirement and the capital requirement. However, in the example illustrated in chart 9, this will not reduce the interaction with the 8-per cent requirement. The effective size of the capital buffers will therefore not be improved.

For the solution to have the expected effect, it is important that it covers all the regulatory requirements, including the 8-per cent requirement. In principle, the bank can always choose to issue more debt to reduce the overlap between the requirements. However, a regulatory adjustment will provide a greater incentive to do so. The considerations are the same as for the other requirements described above.

Scenario 1
The bank uses CET1 to meet adjusted requirement

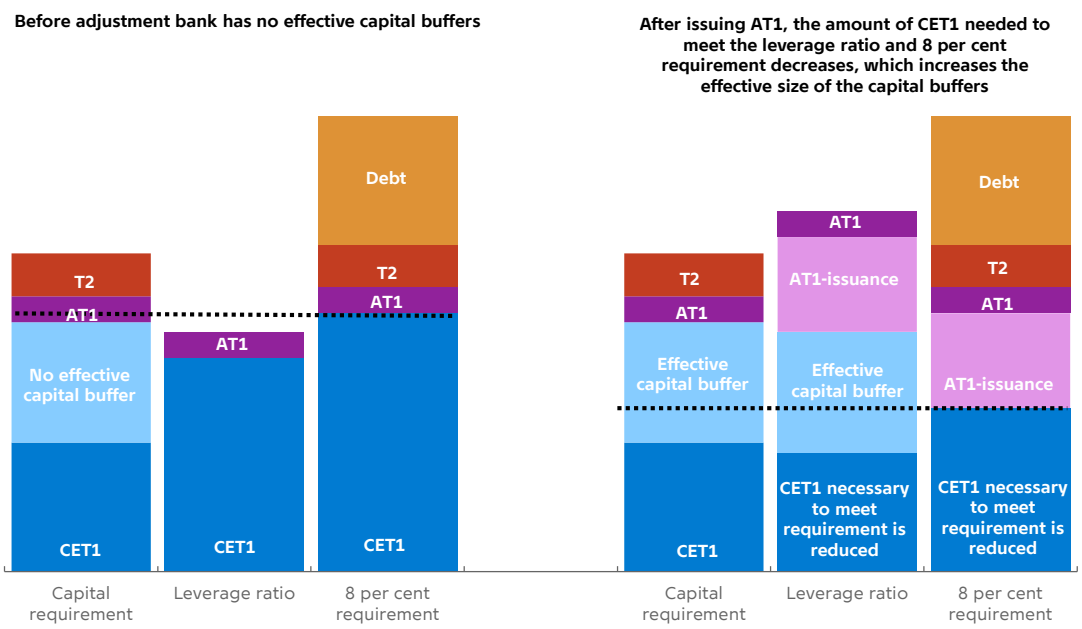
Chart 7



Note: The bank meets the adjusted requirements with more CET1. This means reducing the overlap between the requirements and increasing the effective size of the capital buffers. As solution 1 does not include the 8-per cent requirement, the effective size of the capital buffers remains limited.

Scenario 2
Bank issues Additional Tier 1 capital (AT1)

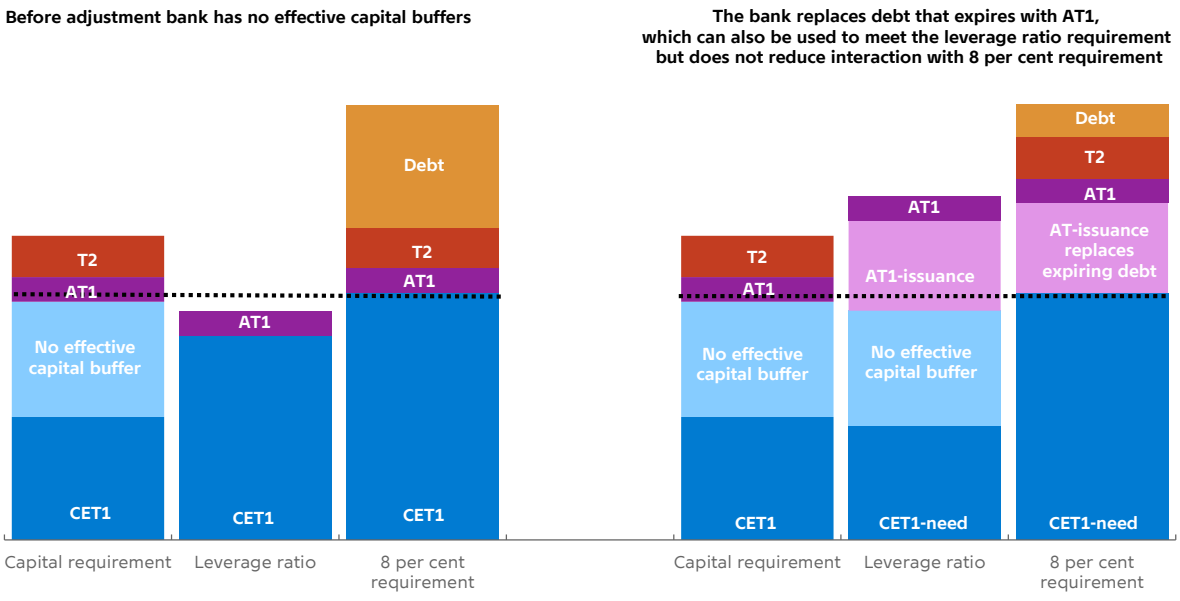
Chart 8



Note: The bank meets the adjusted requirements by issuing Additional Tier 1 capital, AT1. If the bank issues more AT1, this can, in principle, also be used instead of supplementary capital, T2, to meet the capital requirement. As solution 1 does not include the 8-per cent requirement, the effective size of the capital buffers remains limited.

Scenario 3
The bank replaces debt with Additional Tier 1 capital (AT1)

Chart 9



Note: The bank meets the adjusted requirements by replacing debt that matures with Additional Tier 1 capital, AT1. In principle, the Additional Tier 1 capital can also be used instead of supplementary capital, T2, to meet the capital requirement. As solution 1 does not include the 8-per cent requirement, there is no effect on the effective size of the capital buffers in this example.

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