

DANMARKS NATIONALBANK

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STRESS TEST

Banks face new requirements in the stress test



Systemic banks satisfy capital requirements

The stress test shows that the systemic banks satisfy both the risk-based capital requirements and the leverage ratio requirement in a severe recession scenario. However, a few systemic banks are close to breaching their buffer requirements.



Leverage ratio weakens buffers

Banks must comply with the leverage ratio requirement. For many of the systemic banks, this requirement is more binding than the existing minimum requirement. Consequently, they cannot fully utilise the capital buffers above their minimum requirements, as they breach the leverage ratio requirement sooner.



Ample capital and long maturities are important in relation to MREL

The systemic banks depend on their ability to issue MREL-eligible instruments regularly to be able to satisfy the MREL under stress. To address this risk, it is essential that they hold ample capital or MREL-eligible issuances with long maturity profiles.

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Danmarks Nationalbank conducts a semi-annual stress test of the Danish banking sector. The stress test comprises the largest Danish banks.¹ In the stress test, the banks' capital ratios are compared with the current capital requirements in three scenarios: a baseline scenario, a low growth scenario and a severe recession scenario.²

In previous stress tests, Danmarks Nationalbank focused on the banks' compliance with minimum capital and buffer requirements (risk-based capital requirements). In this stress test, we also consider the banks' ability to satisfy leverage ratio requirements and minimum requirements for own funds and eligible liabilities, MREL. The primary difference between the leverage ratio and the risk-based capital requirements is that the leverage ratio relates to the banks' ratio of capital to total assets rather than the risk exposure amount and, moreover, the requirement must be satisfied using Tier 1 capital. The MREL is considerably higher than the risk-based capital requirements, but can be satisfied using several types of liabilities such as non-preferred senior debt.

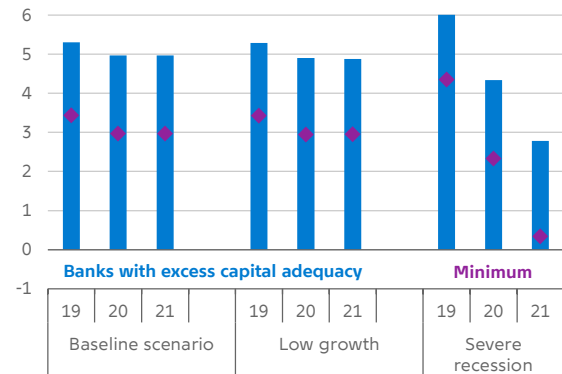
Systemic banks satisfy risk-based capital requirements

The stress test shows that the systemic banks satisfy their capital requirements in the severe recession scenario. While some of the systemic banks are very close to their buffer requirements, all banks maintain a distance to the minimum capital requirement. In the severe recession scenario, the systemic banks on average have excess capital adequacy of just under three percentage points relative to the buffer requirements, cf. Chart 1.

If a bank's capital ratio falls below the buffer requirement, a number of restrictions will be imposed, e.g. in relation to dividend payments and interest payments on hybrid capital instruments. This could weaken the banks' access to external funding in the

Some systemic banks are close to their buffer requirements

Chart 1



Note: The chart shows the systemic banks' total excess capital adequacy relative to the capital requirement including buffers. Capital is measured as a percentage of the banks' total risk exposure amount. The minimum value is the excess capital adequacy for the bank with the lowest excess capital adequacy at the end of each year (so the points do not necessarily represent observations for the same bank). The excess capital adequacy in 2019 is higher in the recession scenario than in the other scenarios because the countercyclical buffer is presumed to have been released in the recession scenario.

Source: The Danish Financial Supervisory Authority and own calculations.

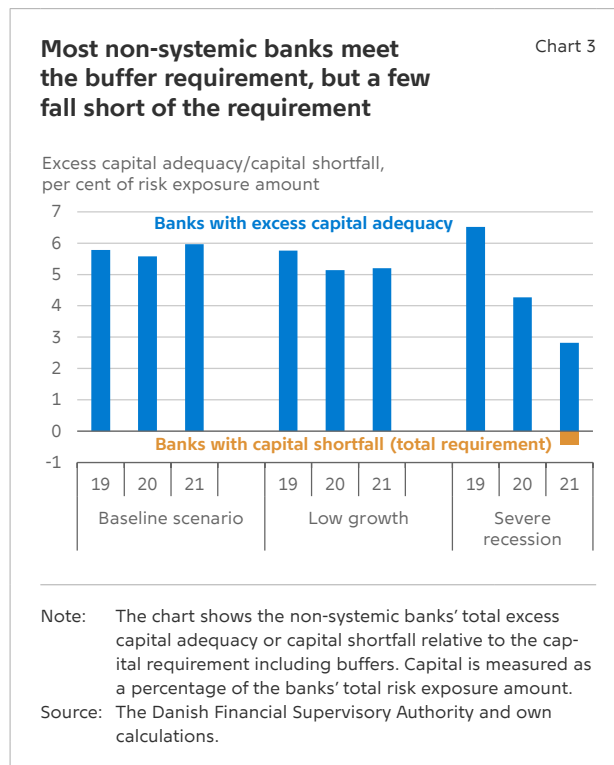
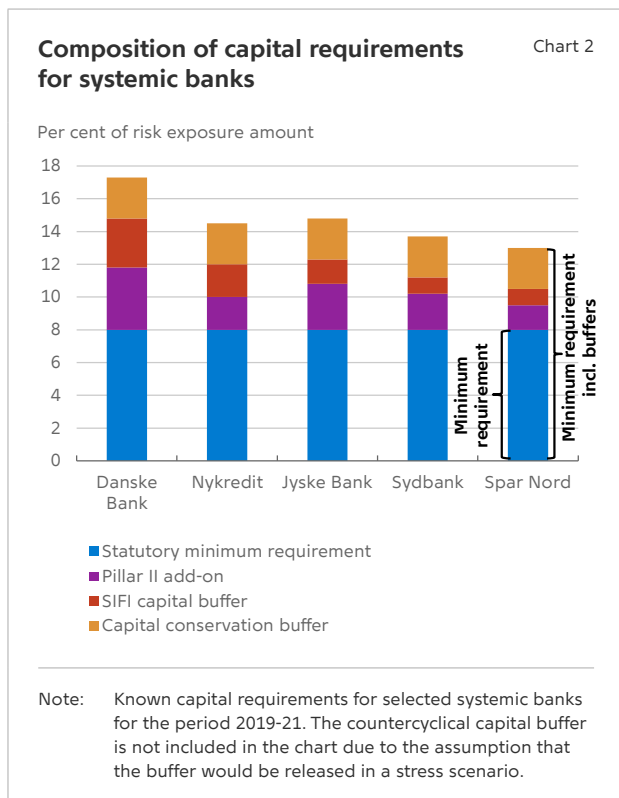
financial markets at a time when funding is already difficult to obtain.

The banks must satisfy both a minimum requirement and several buffer requirements, cf. Chart 2. From 2019, the capital conservation buffer and the SIFI capital buffer have been fully phased in. The countercyclical capital buffer has been set at 0.5 per cent from the end of the 1st quarter of 2019, rising to 1.0 per cent at the end of the 3rd quarter of 2019. The Systemic Risk Council has recommended to the Minister for Industry, Business and Financial Affairs that the buffer rate be increased to 1.5 per cent in 2020.³ In the severe recession scenario, the buffer rate is set to zero, as the buffer is presumed to be released in a severe stress scenario.

1 See Appendix 1 for an overview of the banks included in the stress test.

2 See Appendix 2 for an overview of the scenarios and the section *Stress test scenarios* on page 8 for a description of the scenarios.

3 The Systemic Risk Council has recommended a further increase to 1.5 per cent from mid-2020. By 26 June 2019, the Minister for Industry, Business and Financial Affairs must decide whether or not to implement the recommendation. In the stress test, we assume that the buffer is increased to 1.5 per cent.



Several of the small, non-systemic banks have insufficient capital to satisfy their capital buffer requirements, cf. Chart 3. In 2021, the non-systemic banks will be approximately kr. 800 million short of satisfying the buffer requirements. All banks satisfy the minimum requirements.

Breaches of the buffer requirements of this magnitude are not assessed to pose a threat to financial stability. Should the non-systemic banks fall short of the buffer requirements and come close to the minimum requirements, the authorities may intervene. If the authorities deem recovery or resolution necessary, they have the tools required to address the situation, but the owners and creditors of the banks in question may suffer losses.

Leverage ratio requirement could weaken buffers

In previous stress test analyses, Danmarks Nationalbank focused exclusively on the banks' minimum capital and buffer requirements. Over the coming years, the banks will be required to meet new capital structure requirements.

One such requirement is a minimum leverage ratio requirement, which will be introduced with the implementation of the amended Capital Requirements Regulation, CRR2. According to the requirement, banks must have Tier 1 equity exceeding 3 per cent of their total (non risk-based) exposures.

All banks have some excess capital adequacy relative to the leverage ratio requirement under stress. However, the leverage ratio is still significant, as several banks are closer to breaching the leverage ratio threshold than the risk-based minimum requirement.

The leverage ratio requirement primarily affects the systemic banks, due to their lower risk weights, e.g. as a result of substantial mortgage lending. At the time of writing, banks such as Danske Bank, Nykredit and Jyske Bank thus have less excess capital adequacy relative to the leverage ratio than relative to the risk-based minimum requirement, cf. Chart 4. Consequently, the leverage ratio requirement is the binding minimum requirement on these banks.

In a stressed scenario, the requirements that are binding could change. The banks' risk weights increase under stress. This lowers their excess capital adequacy relative to the risk-based capital requirements, without affecting the leverage ratio requirement. The

systemic banks are closer to falling short of the leverage ratio than the risk-based minimum requirements under stress, cf. Chart 5, which illustrates the distance to the leverage ratio requirement. This means that a considerable portion of the capital buffer in excess of the minimum requirement does not constitute an actual buffer. In practice, the banks will hit the leverage ratio requirement before their buffers are depleted.

For several of the small banks, the leverage ratio requirement is less significant. They will hit the buffer requirements, or the MREL, long before breaching the leverage ratio requirement.

Systemic banks depend on their ability to issue new MREL-eligible instruments to be able to satisfy requirements under stress

As of July 2019, the systemic banks are required to satisfy an MREL.⁴ For the systemic banks, the MREL has been set at twice the capital requirement including buffers.⁵ However, the MREL can be satisfied using other instruments, such as non-preferred senior debt, which is not included in own funds in the calculation of the other capital requirements.

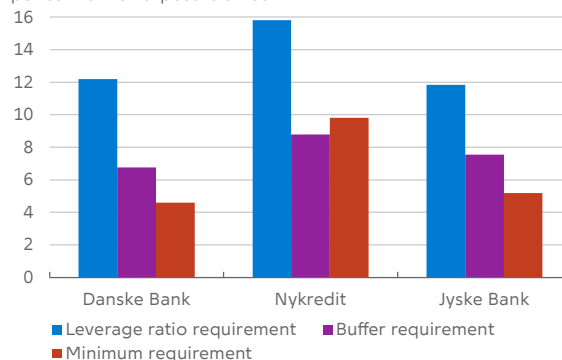
In order for the instruments to be MREL-eligible, these instruments must have a residual maturity of at least one year. As regards the debt requirement, the mortgage credit institutions are not faced with a residual maturity requirement, but with an original maturity requirement of more than two years. If banks are not able to issue new MREL-eligible instruments when the old ones cease to satisfy the requirements, they may find it difficult to satisfy the MREL.

If the systemic banks can regularly issue sufficient amounts of MREL-eligible instruments, they will be able to satisfy the requirement. But in a stress test context, the relevant question is for how long and to what extent the banks are able to satisfy the MREL if they are unable to issue MREL-eligible instruments.

The largest banks are closer to the leverage ratio than the minimum requirement prior to the stress test

Chart 4

Excess capital adequacy relative to requirements, per cent of risk exposure amount



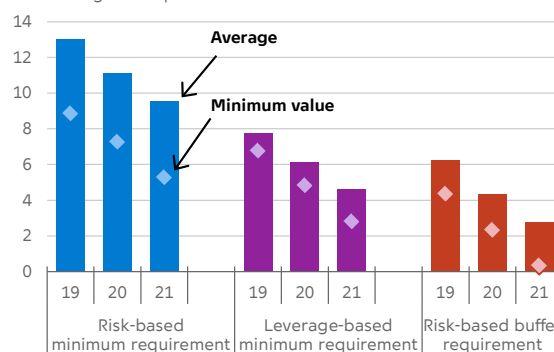
Note: The columns represent the banks' excess capital adequacy, stated as a percentage of their risk exposure amounts (REA), relative to the various requirements.

Source: Own calculations.

The effective buffers are limited as the banks hit the leverage ratio before the minimum requirement

Chart 5

Excess capital adequacy as a percentage of risk-weighted exposures



Note: At the end of each year in the stress test, it is indicated how much the systemic banks as a group must lose (i.e. the sum of the required losses for each bank), divided by the total risk exposure amount, before they fall short of the minimum capital requirement, the leverage ratio requirement and the capital buffer requirement, respectively.

Source: Own calculations.

4 Including debt buffer requirements for groups also comprising mortgage credit institutions.

5 However, the countercyclical capital buffer is included only once in the calculation of the MREL.

In the final year of the severe recession scenario, the systemic banks could have some MREL shortfall if they are unable to issue new MREL-eligible instruments, cf. Chart 6. This emphasises the importance of having either ample own funds or debt issuances with sufficient residual maturities to satisfy the requirement.

The systemic banks' shortfall relative to the MREL is due primarily to their debt instruments ceasing to be eligible for inclusion in the MREL.⁶ However, loss of own funds due to the stress is, in itself, sufficient to breach the MREL. This is illustrated by the broken line in Chart 6, which shows the shortfall if the only source of reduction in the MREL funds were loss of own funds. In the severe recession scenario, the banks would have to increase their total MREL-eligible issuances to satisfy the requirement.

Breach of the MREL is not a projection, but a worst case scenario

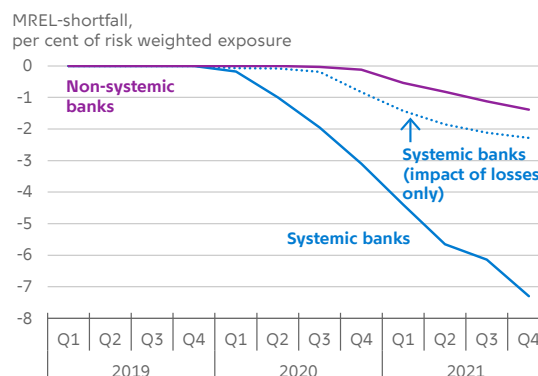
The time profile of the systemic banks' shortfall relative to the MREL (Chart 6) should not be seen as a projection of what would happen in a stressed scenario, but rather as a worst case scenario. The stress test results show that the banks generally satisfy their capital requirements, which should be seen as a positive indication of their ability to continue issuing MREL-eligible instruments. But the analysis suggests that the banks could potentially have problems if there are no buyers of their instruments for an extended period of time.

The analysis is also subject to certain reservations. Calculating whether or not the banks actually satisfy the MREL, both now and in the future, is difficult based on the available data. Therefore, we have imposed a number of simplifying assumptions in our calculations.

Several of the largest banks have published their own MREL fund overviews. In these cases, we have based our calculations on these overviews, adding relevant non-preferred senior debt issuances made after the release of the overviews.⁷ As regards the

Systemic banks suffer a larger capital shortfall vis-à-vis the MREL if they are unable to issue new MREL instruments

Chart 6



Note: The MREL shortfall is defined as the amount the banks are short of satisfying the MREL divided by the banks' total risk exposure amount (systemic and non-systemic banks, respectively). The broken line indicates the shortfall relative to the MREL, assuming that institutions maintain the same level of debt instruments that can be used to satisfy the debt requirement as at the outset. The banks' MREL funds have been estimated on the basis of their own publications as well as data on senior debt issuances from Bloomberg (in which we have included a number of filters to identify the issuances assumed in our calculations to be able to be used to satisfy MREL and debt buffer requirements, respectively). The maturity profile has also been estimated on the basis of Bloomberg bond data.

Source: Danish Financial Supervisory Authority, Bloomberg and own calculations.

remaining banks, we have included Common Equity Tier 1 capital, Additional Tier 1 capital, Tier 2 capital and selected senior debt issuances in the calculation of their MREL funds. Moreover, the systemic banks need only satisfy the MREL by 1 July 2019, i.e. after the release of this stress test analysis, and must be expected to issue additional MREL-eligible instruments in the future. Consequently, we underestimate the banks' ability to satisfy the MREL.

Most non-systemic banks breach the MREL under stress

The non-systemic banks primarily satisfy the MREL using own funds. There are few examples of non-systemic banks satisfying the requirement by issuing non-preferred senior debt. Since the MREL consists of the general capital requirement plus an add-on, the MREL will typically be the most binding requirement on the non-systemic banks.

6 If used by a bank to satisfy the MREL, debt issuances cease to be included one year prior to maturity. As regards mortgage credit institutions, these issuances can no longer be used to satisfy the debt buffer requirement when they mature.

7 Specifically, issuances recorded by Bloomberg by 25 April 2019 have been included. We have also used Bloomberg data to calculate the maturity profiles of the individual banks' MREL issuances.

In the baseline scenario, all non-systemic banks satisfy the MREL. They can satisfy their requirements through their existing excess capital adequacy or by retaining current earnings.

On the other hand, when it comes to the severe recession scenario, most of the non-systemic banks breach the MREL in the stress test. Non-systemic banks are unable to satisfy the MREL for two reasons: they have or are close to having a capital shortfall relative to the buffer requirements, and the requirement increases each year as it is being phased in towards 2023. However, the Danish Financial Supervisory Authority has made the phasing-in conditional on the assumption of normal levels of earnings and impairments during the phasing-in period. If these assumptions are not met, which will be the case in the stressed scenario, the phasing-in period may be extended.

The implications in case of breach of the MREL are described in detail in Danmarks Nationalbank Prospects of lower earnings and higher capital requirements for banks.⁸

Stress test scenarios

Danmarks Nationalbank's stress test is based on three macroeconomic scenarios: a baseline scenario, low growth scenario and severe recession scenario. See also Appendix 2. The scenarios span the period 2019-21.

The baseline scenario follows Danmarks Nationalbank's projection of the Danish economy in which the balanced upswing is assumed to continue. In the low growth scenario, the economy is hit by domestic recession, affecting consumption, investment and house prices. The severe recession scenario describes a global crisis in which export market growth

Change in key variables

Table 1

Variable	Rule	Adjustment
Increase in unemployment	6.2 percentage points	0.0
Decline in real GDP	-5.4 per cent	0.0
Decline in house prices over disposable income	-24 per cent	0.0

Note: See Danmarks Nationalbank, The largest banks satisfy capital requirements in stress test, *Danmarks Nationalbank Analysis (stress test)*, No. 21, November 2018, for a technical description of the rules used to calculate the changes in the three key variables ([link](#)).

Source: MONA statistics and own calculations.

is reduced and GDP and house prices plunge, while unemployment rises.

When preparing the scenarios, Danmarks Nationalbank emphasises developments in unemployment, real GDP and house prices. For each of these variables, a systematic approach is applied to determine their increase (unemployment) or fall (GDP growth and house prices).⁹ This approach ensures that the scenarios reflect the cycle, so that the scenarios are more severe in good times.

The approach specifically implies that we seek to hit specific targets for developments in unemployment, real GDP and house prices (deflated by disposable income), cf. Table 1. These targets are based on historical data and are thus backward-looking. Therefore, the approach includes an option to adjust the scenarios based on expert judgement to capture forward-looking risks, but this option has not been used in this stress test analysis.

⁸ Danmarks Nationalbank, Prospects of lower earnings and higher capital requirements for banks, *Danmarks Nationalbank Analysis (Financial Stability – 1st Half 2019)*, No. 11, May 2019 ([link](#)).

⁹ The scenarios are developed in cooperation with the Danish Financial Supervisory Authority. The approach used to generate the scenarios is described in detail in Danmarks Nationalbank's most recent stress test, The largest banks satisfy capital requirements in stress test, *Danmarks Nationalbank Analysis (stress test)*, No. 21, November 2018 ([link](#)).

Appendix 1. Stress test population

Systemic banks (credit institutions)

Danske Bank

Nykredit Realkredit

Jyske Bank

Nordea Kredit

Sydbank

DLR Kredit

Spar Nord

Non-systemic banks (credit institutions)

Arbejdernes Landsbank

Ringkjøbing Landbobank

Sparekassen Kronjylland

Vestjysk Bank

Lån & Spar Bank

Jutlander Bank

Sparekassen Sjælland-Fyn

Den Jyske Sparekasse

Sparekassen Vendsyssel

Alm. Brand Bank

Appendix 2. Stress test scenarios

Key variables	Table		
	Baseline scenario	Low growth	Severe recession
2019			
GDP, per cent year-on-year	1.7	1.4	1.1
Private consumption, per cent year-on-year	1.8	1.3	1.3
Export market growth, per cent year-on-year	3.2	3.2	1.8
House prices, per cent year-on-year	2.9	2.8	2.7
Gross unemployment, per cent of labour force	3.2	3.3	3.4
Bond yields	0.7	0.7	0.7
2020			
GDP, per cent year-on-year	1.7	-0.6	-5.0
Private consumption, per cent year-on-year	2.2	-1.3	-3.5
Export market growth, per cent year-on-year	3.5	3.5	-8.8
House prices, per cent year-on-year	3.6	-3.9	-15.8
Gross unemployment, per cent of labour force	3.0	4.0	5.9
Bond yields	0.9	0.9	0.9
2021			
GDP, per cent year-on-year	1.6	0.6	-1.6
Private consumption, per cent year-on-year	2.1	-0.7	-2.8
Export market growth, per cent year-on-year	3.5	3.5	-0.4
House prices, per cent year-on-year	2.9	-1.4	-8.8
Gross unemployment, per cent of labour force	2.8	4.7	9.4
Bond yields	1.1	1.1	1.1
Note: Annual averages. House prices are cash prices of single-family houses.			

ABOUT ANALYSIS



As a consequence of Danmarks Nationalbank's role in society we conduct analyses of economic and financial conditions.

Analyses are published continuously and include e.g. assessments of the current cyclical position and the financial stability.

The analysis consists of a Danish and an English version. In case of doubt regarding the correctness of the translation the Danish version is considered to be binding.

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