DANMARKS NATIONALBANK

2 DECEMBER 2021 — NO. 29

STRESS TEST – 2ND HALF 2021

# A few of the largest banks are close to buffer requirements under stress

**A severe recession can challenge a few of the systemic banks**

The stress test shows that the banks have sufficient capital to withstand a severe recession scenario, but a few of the systemic banks are close to their buffer requirements. The non-systemic banks keep a good distance from the buffer requirements.

**Several systemic banks should consider whether their capital target is sufficient**

The systemic banks would fall approx. kr. 13 billion short of meeting the buffer requirement in the most severe stress test scenario if their capital was on a par with their capital target on commencement of the stress test.

**Banks remain challenged by MREL**

The stress test shows that, in a severe recession scenario, the banks will have a significant issuance need if they are to continue to meet the minimum requirement for their eligible liabilities, the MREL. Therefore, they must ensure robust surplus relative to the MREL and long remaining maturity on their MREL-eligible issuances also in the future.

CONTENTS

Every six months, Danmarks Nationalbank conducts a stress test of the largest Danish banking groups aimed at assessing the resilience of the financial system as a whole.[1] In the stress test, we examine whether the banks keep a sufficient distance from the capital requirements in three macroeconomic scenarios. The three stress test scenarios consist of a baseline scenario that follows Danmarks Nationalbank's latest projection as well as two scenarios in which the Danish economy experiences a downturn from the 2nd half of 2022: a moderate downturn and a severe recession.[2]

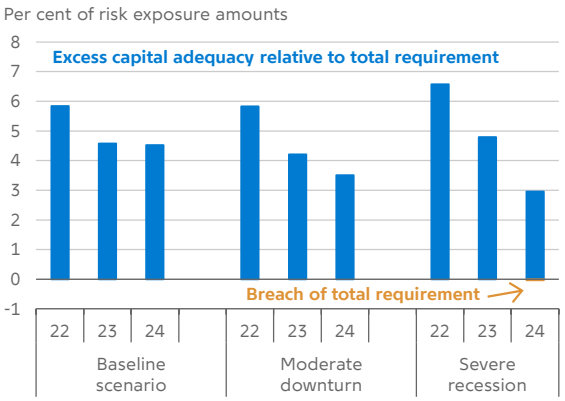
The banks have generally increased their capitalisation under covid-19 and are basically better capitalised than in the past. The stress test shows that the majority of the banks comply with all requirements for their capital in a severe recession scenario.

However, the situation would be different for several of the systemic banks if their capital was initially on a par with their capital target.[3] The banks' capital target is the capital level they regard as adequate to withstand an economic downturn. In this case, several systemic banks would experience significant breaches of the capital buffer requirements, and they would overall fall approx. kr. 13 billion short in 2024. It is important that banks have adequate capital, and some systemic banks should therefore be careful about reducing their capital to a level that corresponds to their capital target. Instead, they should consider whether their capital target is sufficient to withstand stress.

## A few systemic banks are close to buffer requirements under stress

The banks generally perform better in this stress test than in the stress test conducted in the spring.

**A few systemic banks get close to buffer requirements in a severe recession** Chart 1




Note: The chart shows the excess capital adequacy or capital shortfall of systemic banks that either have excess capital adequacy or a capital shortfall as percentages of their total risk exposure amounts. The reduction of the banks' excess capital adequacy in the baseline scenario and in the scenario with a moderate downturn is due to a number of factors, including that the stress test takes into account expectations for the build-up of the countercyclical capital buffer.
Source: The Danish Financial Supervisory Authority and own calculations.

The primary reason for this is that the outlook for the Danish economy, and thus the starting point for the stress test, has improved since spring. However, a severe recession may still result in a few systemic banks getting close to their buffer requirements, see chart 1.

If an institution fails to meet its buffer requirements, a number of restrictions will be imposed, for example in relation to dividend payments and payment of coupon rates on hybrid capital instruments.[4] The institution must also submit a capital conservation plan to the Danish Financial Supervisory Authority and take capital buffer restoration measures. This

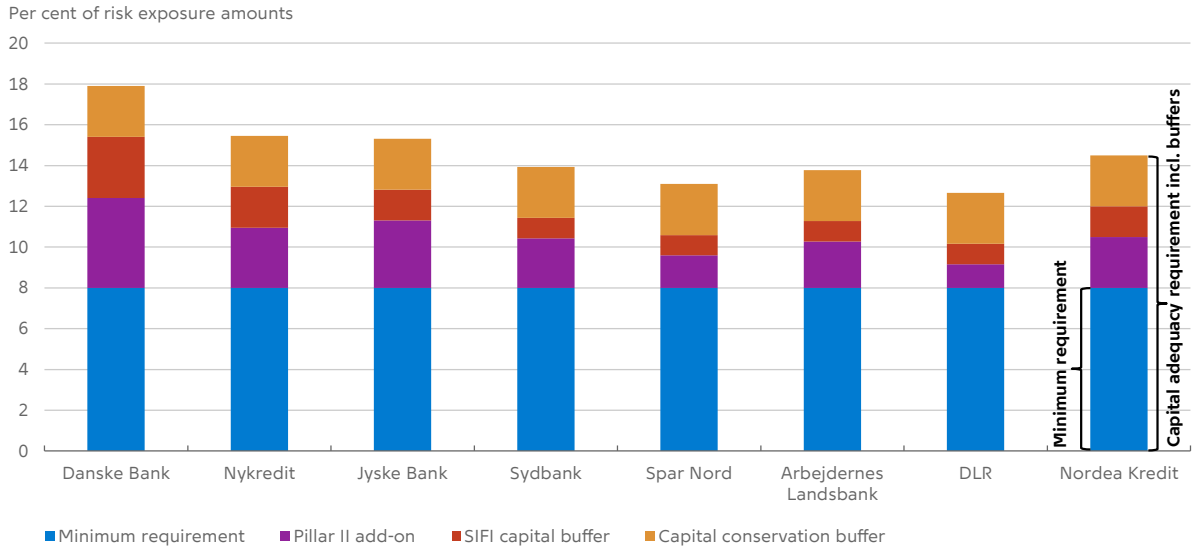
1 See Appendix 1 for an overview of the institutions that constitute the stress test population.

2 Read more about the stress test scenarios on page 7 and see appendix 2 for an overview of the key variables for the scenarios.

3 We have not tested the resilience of non-systemic banks' capital target.

4 Hybrid capital instruments are money that the bank has borrowed from other investors on special terms. For example, the loan does not have an expiry date, and the owners of the capital (the investors) may risk losing the investment in full or in part if the bank is in a situation in which it does not meet the capital requirements.

**Composition of capital requirements for systemic banks** Chart 2




Note: Risk-based capital requirements as at mid-2021. For Arbejdernes Landsbank, the expected fully implemented SIFI buffer is shown.
Source: The Danish Financial Supervisory Authority and own calculations.

could make it difficult for the banks to access external financing in the financial markets at a time when funding is already difficult to obtain.

In the stress test, we assess the capitalisation of the banks in relation to the applicable capital requirements and, to some extent, also in relation to capital requirements that will be implemented up to 2024.[5] In addition, a number of new regulatory measures are likely to be introduced in the coming years. These measures do not form part of the stress test, but they are expected to reduce the current excess capital adequacy and thus further reduce the banks' distance from the buffer requirements under stress.[6]

Chart 2 illustrates the different minimum and buffer requirements with which the systemic banks must comply. The requirements shown are risk-based, i.e. the amount of capital is assessed in relation to the risk exposure amounts.[7] In the stress test, all systemic banks keep a distance from their risk-based minimum requirements in all the scenarios. In addition, the banks must comply with the leverage ratio requirement, which ensures that their core capital constitutes minimum 3 per cent of their total exposures. The stress test does not show any breach of the leverage ratio requirement.

The non-systemic banks can cope with both a moderate downturn and a severe recession with a good

5 This concerns the 8 per cent requirement described in further detail in note 14, reactivation of the countercyclical capital buffer as well as phasing-in of the MREL and the SIFI capital buffer.

6 See Danmarks Nationalbank, Increased risks in credit institutions' housing lending, *Danmarks Nationalbank Analysis (Financial Stability)*, no. 28, December 2021, p. 27, for a discussion of the coming regulation.

7 Read more about the banks' capital requirements and risk exposure amounts in Danmarks Nationalbank, Knowledge about – Capital requirements for banks (only in Danish) (*link*).

distance from the capital buffer requirements, see chart 3. In addition, all non-systemic banks meet both the risk-based minimum requirement and the 3 per cent leverage ratio requirement in the recession scenario.

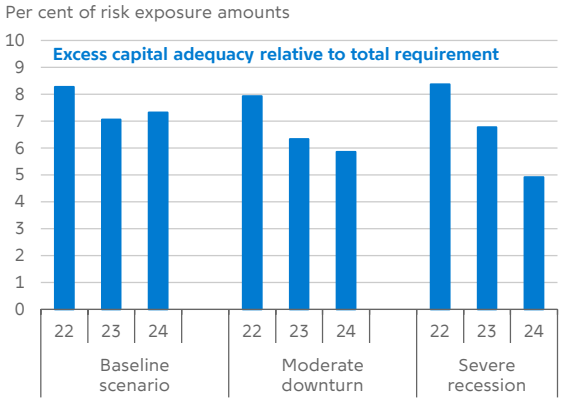
**Covid-19 measures have increased the banks' excess capital adequacy**

The capitalisation of both systemic and non-systemic institutions is today higher than in 2019. This is partly due to limited impairment charges despite covid-19 and the authorities' recommendation to stop share buy-backs and withhold dividend payments from the banks' profits for 2019 and 2020. However, the recommendation no longer applies, as the authorities have assessed that the banks no longer need additional capital to absorb covid-19-related losses.

The release of the countercyclical capital buffer in 2020 also contributes to the banks' excess capital adequacy being higher today than before the outbreak of covid-19. However, the Minister for Industry, Business and Financial Affairs has reactivated the countercyclical capital buffer at a rate of 1 per cent with effect from 30 September 2022, and it is expected to increase further to 2 per cent at the end of 2022. This will reduce the banks' excess capital adequacy in both the baseline scenario and the moderate downturn scenario. However, this is of no importance to the banks' capitalisation in the severe recession scenario, as Danmarks Nationalbank presupposes that the buffer is released under stress.

Conversely, it has a negative impact in the stress test that the banks are in a slightly weaker profit position today than they were a few years ago. The main reason for this is that the banks' costs have increased. In addition, falling net interest income has long eroded the banks' earnings. But with the banks having introduced negative deposit rates, including for households, this decrease has stopped, and there has been a concurrent increase in the banks' net income from fees. However, their overall income has not increased. All in all, this means that net earnings are today lower than a few years ago.

**Non-systemic banks keep a good distance from capital buffer requirements under stress** Chart 3




Note: The chart shows the excess capital adequacy or capital shortfall of non-systemic banks that either have excess capital adequacy or a capital shortfall as percentages of their total risk exposure amounts. The reduction of the banks' excess capital adequacy in the baseline scenario and in the scenario with a moderate downturn is due to a number of factors, including that the stress test takes into account expectations for the build-up of the countercyclical capital buffer.
Source: The Danish Financial Supervisory Authority and own calculations.

## The capital targets of several systemic banks are too low to cope with a severe recession

In this part of the stress test, we examine whether systemic banks would be sufficiently capitalised under stress if their capitalisation was on a par with their capital target on commencement of the stress test.

Systemic banks publish their capital target as part of their capital planning aimed at ensuring that the banks meet the applicable capital requirements at any given time. In practice, this also means that the banks' capital plans must take into account future capital regulation of both known and uncertain scope.[8] It also means that the banks must set their capital target based on their ability to cope with

8 Some institutions state that they add a specific supplement to their capital target reserved for future capital regulation. We disregard this supplement in our analysis.

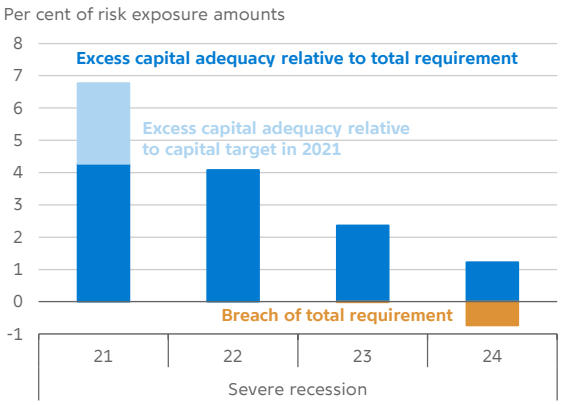
both institution-specific stress and macroeconomic stress.[9] In this part of the stress test, we examine whether the latter is the case.

Specifically, we conduct the stress test under the most severe stress test scenario, where the only change we make is to the banks' excess capital adequacy on commencement of the stress test. This means that if, for example, a bank has published a capital target of 16 per cent, we set this bank's capital ratio[10] at 16 per cent on commencement of the stress test.[11] All other inputs are the same as in the ordinary stress test, and the stress test model is then executed as normal.[12]

The analysis shows that several systemic banks would not be sufficiently capitalised to withstand a severe recession if their initial capital ratio was on a par with their capital target, see chart 4. In this case, they would overall be kr. 13.2 billion short of satisfying the buffer requirements in 2024.

On commencement of the stress test, all systemic banks have an excess capital adequacy relative to their capital target between 1.5 and 4.1 percentage points. However, the stress test shows that several banks should show restraint in reducing their capitalisation simply because it is above their current target. Instead, they should consider adjusting their capital target upwards.

**Several systemic banks would breach the buffer requirements if they went into the stress test with capital corresponding to their capital target** Chart 4




Anm.: The chart shows the excess capital adequacy or capital shortfall of the systemic banks that either have excess capital adequacy or a capital shortfall as percentages of the total risk exposure amounts of the systemic banks.
Kilde: The Danish Financial Supervisory Authority and own calculations.

9 For a more exhaustive discussion of capital targets, see the memo from the Danish Financial Supervisory Authority, The Danish Financial Supervisory Authority's Expectations for capital plans and targets, 8 November 2018.

10 Capital ratio is the bank's capital in relation to risk exposure amounts.

11 For systemic institutions that state a range for their capital target, we use the midpoint of the range, while, for institutions that set a minimum, we use this minimum. For Nordea Kredit, we assume that its capital target is equal to its observed capital ratio at the end of the 2nd quarter of 2021.

12 This means that we implicitly assume that the size of the balance sheet remains unchanged, but that the composition of the liabilities has changed. To isolate the effect of changed capital ratios, we assume that the reduced equity is matched by a corresponding increase in another liability. We do not let this change in financing affect the bank's expenses.

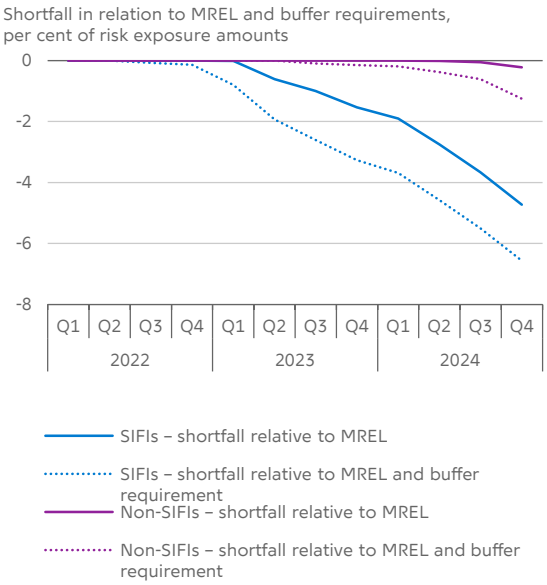
# Banks are challenged by the MREL and buffer requirements under stress

The banks may comply with the MREL and buffer requirements by means of the capital they use to meet the capital requirements and using additional eligible liabilities.[13] The results that we have presented above are based on an assumption that the banks can continuously issue eligible debt instruments to a sufficient extent to meet the MREL. In a stress test context, it is also interesting to examine for how long and to what extent the banks can meet the MREL and buffer requirements if they are unable to issue the necessary eligible liabilities.[14]

In the severe recession scenario, especially systemic banks will have a substantial need to issue new eligible liabilities, see chart 5. The chart shows two time profiles for the estimated shortfall of MREL funds that the systemic institutions will have in relation to the MREL (fully drawn blue line) and the sum of the MREL and buffer requirements (dotted blue line) if they do not make new issuances of eligible liabilities in the last two and a half years of the stress test. It is important for banks to ensure during good times that they have robust surplus relative to the MREL, a sufficiently diversified maturity profile of their MREL issuances and that the issuances have a long maturity.

Unlike the systemic institutions, which typically meet their MREL by issuing eligible liabilities, the non-systemic banks primarily meet the MREL with own funds. Chart 5 shows that several of the non-systemic banks have difficulty meeting the MREL and buffer requirements in the most severe stress test scenario. The difference between the two time profiles (fully

**The MREL challenges banks in severe recession scenario** Chart 5




Note: The shortfall in relation to the MREL and buffer requirements is defined as the amount by which the banks (systemic and non-systemic, respectively) fall short of meeting the MREL and the sum total of the MREL and buffer requirements, respectively, divided by their total risk exposure amounts. The shortfall reflects both the maturity of existing issuances and capital loss due to stress. The dotted lines show the banks' shortfall in relation to the sum total of the MREL and capital buffer requirements. The banks' MREL funds and their maturity profile have been estimated on the basis of data provided by the Danish Financial Supervisory Authority. The chart does not include Nordea Kredit.
Source: The Danish Financial Supervisory Authority and own calculations.

13 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.

14 In addition to MREL and buffer requirements, systemic institutions that are or comprise a mortgage credit institution are also subject to a minimum requirement for their eligible liabilities, the 8 per cent requirement. This requirement entails that the financial institution's MREL and buffer requirements, together with the mortgage credit institution's capital and debt buffer requirements, must constitute minimum 8 per cent of the group's total liabilities. For systemic institutions with low risk weights, the 8 per cent requirement may therefore become the binding requirement.

drawn purple line and dotted purple line) for the non-systemic banks' estimated shortfall illustrates that a significant share of their issuance need is due to a failure to meet the buffer requirement and not the MREL.

One reason that the non-systemic banks are unable to meet the MREL and buffer requirements under stress is that the MREL for these banks increases year on year in line with it being phased in towards 2023. The banks should continuously assess whether the gradual phasing-in of the MREL will entail a need for additional capital to ensure sufficient excess capital adequacy.

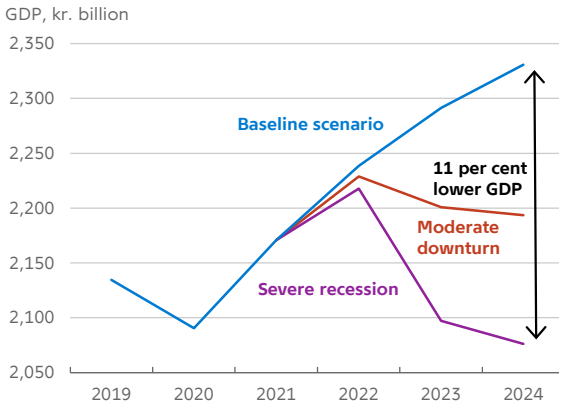
## Stress test scenarios

The stress test is based on three different scenarios for the macroeconomic development in Denmark over the period 2022-24. The three scenarios consist of a baseline scenario that follows Danmarks Nationalbank's latest projection as well as two scenarios in which a downturn of varying intensity hits the Danish economy in the 3rd quarter of 2022: a moderate downturn and a severe recession.

In both scenarios, the downturn in the Danish economy is a result of a decline in Danish export market growth, which reduces GDP and increases unemployment. The downturn also entails a slump in house prices. The global downturn is strongest in the recession scenario, with GDP falling by 4.3 per cent, and with GDP being 11 per cent lower than in the baseline scenario in 2024, see chart 6. Concurrently, unemployment increases by 6.3 percentage points over a three-year period, and, in the severe recession scenario, house prices plummet to the level seen at the end of 2015.

Danmarks Nationalbank's method for preparing the stress test scenarios is based on the prior macroeconomic development, so that, for example, more

**The three stress test scenarios** Chart 6




Note: The baseline scenario follows Danmarks Nationalbank's projection from September 2021. In 2024, the baseline scenario is a technical projection of the development in GDP.
Source: Own calculations.

severe stress is applied after a period of marked economic growth. In our scenarios, we focus especially on the development in GDP, unemployment and house prices. For each of these variables, we apply a systematic approach to determine their rate of increase (unemployment) or decrease (GDP growth and house prices) over the three-year period covered by the scenarios based on the current economic situation.[15] How much the individual variables are to increase or decrease is known as benchmarks in the stress test.

In the benchmarks, we take into account experience from previous recessions in relation to determining a range for the given benchmark. For example, the benchmark for the fall in real GDP may be between 3 and 7 per cent. If GDP growth has been strong in the years leading up to the stress test, the benchmark for the fall will be higher and thus closer to 7 per cent. Conversely, the benchmark will not be quite as high if the development in GDP has been less favourable. This means, for example, that the bench-

15 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, The largest banks satisfy capital requirements in stress test, *Danmarks Nationalbank Analysis (Stress Test)*, No. 21, November 2018.

mark for the decrease in GDP is slightly higher in this stress test than in the stress test conducted in the spring, as the starting point for the Danish economy is significantly better as a result of the reopening of society.

The benchmarks for the three variables are calculated independently of each other, and we therefore ensure consistency in the development of the variables by using Danmarks Nationalbank's economic model MONA to determine the scenarios. This means that the actual development may deviate slightly from the benchmarks, as the development in the different variables depends on their interrelation in MONA. Based on the previous economic development, we have also chosen in the most severe stress test scenario that the fall in GDP is 0.3 percentage points greater than indicated by the GDP benchmark. This has been done to take into account the high growth in Danmarks Nationalbank's projection in the first year of the scenario before the occurrence of stress. Therefore, unemployment also increases by 0.7 percentage points more than the benchmark indicates.

As there have been heavy increases in house prices in 2020 and the first half of 2021, the severe recession must include a significant drop in house prices according to our benchmark. Despite low interest rates and increasing incomes generally supporting rising house prices, we have increased the drop in house prices relative to the benchmark to reflect the significant housing market uncertainty in the stress test scenarios. Therefore, house prices in relation to disposable income fall by 27.8 per cent in the severe recession scenario, while the benchmark indicates a decrease of 26.3 per cent.

# Appendix 1: Institutions in the stress test

| **Systemic banks (credit institutions)** |
|---|
| Danske Bank |
| Nykredit Realkredit |
| Jyske Bank |
| Nordea Kredit |
| Sydbank |
| DLR Kredit |
| Spar Nord |
| Arbejdernes Landsbank |

| **Non-systemic banks (credit institutions)** |
|---|
| Ringkjøbing Landbobank |
| Sparekassen Kronjylland |
| Lån & Spar Bank |
| Jutlander Bank |
| Sparekassen Sjælland-Fyn |
| Sparekassen Vendsyssel |

# Appendix 2
# Stress test scenarios

**Key variables**

| | Baseline scenario | Moderate downturn | Severe recession |
|---|---|---|---|
| **2022** | | | |
| GDP, per cent year-on-year | 3.1 | 2.7 | 2.2 |
| Private consumption, per cent year-on-year | 6.1 | 6.0 | 4.9 |
| Export market growth, per cent year-on-year | 6.0 | 4.5 | 4.1 |
| House prices, per cent year-on-year | 4.6 | 1.7 | -0.2 |
| Gross unemployment, per cent of labour force | 2.8 | 2.9 | 3.0 |
| Bond yields | 0.5 | 0.5 | 0.5 |
| **2023** | | | |
| GDP, per cent year-on-year | 2.4 | -1.3 | -5.4 |
| Private consumption, per cent year-on-year | 2.1 | -1.2 | -8.9 |
| Export market growth, per cent year-on-year | 3.7 | -5.9 | -9.9 |
| House prices, per cent year-on-year | 1.2 | -11.8 | -20.7 |
| Gross unemployment, per cent of labour force | 2.7 | 4.3 | 6.0 |
| Bond yields | 0.6 | 0.6 | 0.6 |
| **2024** | | | |
| GDP, per cent year-on-year | 1.7 | -0.3 | -1.0 |
| Private consumption, per cent year-on-year | 1.8 | -1.1 | -3.3 |
| Export market growth, per cent year-on-year | 2.9 | -2.2 | -4.6 |
| House prices, per cent year-on-year | 1.5 | -1.1 | -5.6 |
| Gross unemployment, per cent of labour force | 2.7 | 6.4 | 9.3 |
| Bond yields | 0.8 | 0.8 | 0.8 |

Note: Annual averages. House prices are cash prices of single-family houses. The baseline scenario follows Danmarks Nationalbank's projection up to 2023, while the development in 2024 is a technical projection.

## PUBLICATIONS

### NEWS

News offers quick and accessible insight into an Analysis, an Economic Memo, a Working Paper or a Report from Danmarks Nationalbank. News is published continuously.

### ANALYSIS

Analyses from Danmarks Nationalbank focus on economic and financial matters. Some Analyses are published at regular intervals, e.g. *Outlook for the Danish economy* and *Financial stability*. Other Analyses are published continuously.

### REPORT

Reports comprise recurring reports and reviews of the functioning of Danmarks Nationalbank and include, for instance, the *Annual report* and the annual publication *Danish government borrowing and debt.*

### ECONOMIC MEMO

An Economic Memo is a cross between an Analysis and a Working Paper and often shows the ongoing study of the authors. The publication series is primarily aimed at professionals. Economic Memos are published continuously.

### WORKING PAPER

Working Papers present research projects by economists in Danmarks Nationalbank and their associates. The series is primarily targeted at professionals and people with an interest in academia. Working Papers are published continuously.

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.

DANMARKS NATIONALBANK
LANGELINIE ALLÉ 47
DK-2100 COPENHAGEN Ø
WWW.NATIONALBANKEN.DK

This edition closed for contributions on 1 December 2021

DANMARKS NATIONALBANK

**Olivia Helmersen**
Stress Test Expert
*otgh@nationalbanken.dk*

**Mia Jørgensen**
Quantitative Risk Analyst
*mrhj@nationalbanken.dk*

FINANCIAL STABILITY

## CONTACT

**Teis Hald Jensen**
Communications
and Press Officer

*tehj@nationalbanken.dk*
*+45 3363 6066*

SECRETARIAT
AND COMMUNICATIONS