ANALYSIS

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Build-up of risks in credit institutions

Booming housing market gives cause for concern

Higher down payment requirement and amortisation requirement for highly indebted homeowners are among the measures that should be considered in order to limit vulnerability in connection with a subsequent drop in house prices.

Banks are ready for the ongoing economic recovery

Bank lending to hard-hit corporations is limited, and provisions have been made to handle losses. It is assessed that banks are well equipped to handle an expiry of government liquidity-supporting measures.

Banks' capital requirements should be rebuilt

Accommodative financial conditions and risk build-up mean that the banks' capital requirements should be re-established by raising the countercyclical capital buffer. Stress tests of the credit institutions show that a few institutions should consider their capitalisation.

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After a year with the covid-19 pandemic and large declines in economic activity, the global economy is entering an economic upswing with high growth rates. In Denmark, economic activity is expected to pick up sharply during the year in line with the population being vaccinated against covid-19 and the reopening of society. In Denmark and internationally, equity markets have continued the trend with increasing equity prices since April 2020.

Expectation of a higher level of inflation has resulted in higher interest rates
In early 2021, long-term government bond yields increased in the United States and the euro area. One reason for the increase was expectations of rising inflation in step with expected increased global economic growth. Even though long-term mortgage rates have also risen, they remain at a very low level.

Credit premium remains at a low level
The financial markets are still characterised by high risk appetite among investors and low credit premiums even though the long-term interest rates have increased. Many central banks have continued their extraordinary measures initiated at the beginning of the pandemic, such as the injection of liquidity into the markets and purchases of government bonds and corporate bonds.

Rising demand for green financial assets
The markets for green assets are still emerging and are currently seeing rapid development. Joint standards for what is sustainable and green strengthen investors' ability to price the assets. The EU's taxonomy in this area and the requirement for publication of the climate impact of activities are a good starting point.

CREDIT

Booming housing market during the pandemic
During the pandemic, the Danish housing market has been characterised by both high trading activity and rapidly rising prices.

The conditions for continued rising prices are currently present in the housing market. Sharp increases in housing prices increase the risk of subsequent price decreases.

Housing tax agreement may support a better balanced housing market
The design of the tax system does not help to dampen housing market fluctuations. The current housing taxation, in which the nominal property value tax is frozen, means that the effective taxation decreases when prices rise. The housing tax agreement from 2017, aimed at reestablishing the connection between the tax payment and market value of the home, is expected to enter into force in 2024. The Danish tax deduction for interest costs has not been reduced to the same extent as the effective property taxes since the freeze, and the difference in taxation of the value of owning a home and the interest deduction for debt poses a challenge to housing market stability.

Signs of increased risks in institutions' housing lending
Danish homeowners' gross debt in relation to their income is among the highest in the world, and lending to homeowners has increased moderately in recent years. There are also certain signs of increased risk-taking in the lending: In 2020, loans to highly indebted home buyers constituted a higher share of total new lending, especially in the City of Copenhagen and environs.

High refinancing activity increases housing debt
Credit growth may pick up if households choose to mortgage part of their rising home equity. In 2020, about half of homeowners who refinanced their mortgage loans chose to increase their mortgage debt. Additional borrowing in connection with mortgage refinancing has, on average, increased these homeowners' loan-to-value ratios, and they have only repaid other bank debt to a limited extent.

High loan-to-value ratios may weaken credit institutions' resilience
It is important to financial stability in Denmark that there is high credibility of the mortgages underly-

ing housing lending and thus the issued mortgage bonds. The Danish down payment requirement of 5 per cent for home purchases is low relative to the other Nordic countries. In addition, the vast majority of first-time buyers borrow right up to the threshold.

Experience with loan rules shows that they can contribute to more resilient housing lending
Over a number of years, the authorities have introduced borrower-based requirements for credit institutions' housing lending to curtail the riskiest borrowing. For example, in 2020, the thresholds were binding for many first-time buyers in the City of Copenhagen and environs as well as in Aarhus. Experience shows that lending rules can contribute to limiting the extent of risky borrowing.

There is reason to consider tightening lending rules
With rapidly rising housing prices and an existing basis for further price increases, there is reason to look at a tightening of the lending rules to limit vulnerability to a subsequent drop in housing prices. A higher down payment requirement and an amortisation requirement for highly indebted homeowners are among the measures that should be considered. At its next meeting in June, the Systemic Risk Council expects to recommend to the Danish Government that further measures be taken to limit continued risk build-up in the housing market.

So far, banks' corporate customers have weathered pandemic better than feared
The banks continue to report declining loan demand from their corporate customers. Government compensation schemes and liquidity-supporting measures help reduce the need for credit. The banks are well equipped to make loans to viable corporations when the government liquidity support for their customers ends. At the same time, the corporations currently make little use of the government relief packages, and it is assessed that the banks will be able to handle any deterioration in the creditworthiness of their customers on expiry of the relief packages.

Increased digitalisation may push down prices of some commercial properties
Increased working from home and online shopping may result in less demand for office and retail space. There is still a great deal of uncertainty as to where the development is heading, but mortgage credit institutions should take it into their considerations when assessing the risk on parts of their lending against collateral in commercial properties.

EARNINGS

Banks expect rising earnings in 2021
Except for DLR Kredit, the systemic credit institutions expect higher earnings in 2021 than in 2020. In April, several institutions raised their expectations with, among other things, reference to the high activity in the housing market.

Banks have reduced deposit rates
For several years, both household customers and corporate customers have paid less to keep their savings with the banks than what the banks can obtain by placing the deposits in the short-term money market. However, the banks may place a certain proportion of the deposits in assets with a higher rate of return by tying up some of the deposit funds for a longer term or by letting them replace other more long-term sources of financing. Hence, the return depends on multiple factors. Lately, banks have reduced deposit rates for both household customers and corporate customers. In 2020, a reduction in deposit rates has contributed to a decrease in the banks' net interest payments on deposits of approx. kr. 1.4 billion, equal to approximately 10 per cent of the systemic and non-systemic banks' profit before tax in 2020.

CAPITAL

Continued increase in excess capital adequacy
The systemic institutions' capitalisation was generally strengthened during 2020, while there is still a large difference in the level of excess capital adequacy relative to their capital adequacy requirements across the individual systemic institutions.

Seen in the light of the accommodative financial conditions and risk build-up, the requirement for the banks' capital should be re-established by raising the countercyclical capital buffer. If the projected positive economic development materialises, a rapid re-establishment of the buffer may be necessary. Even if there is a rapid re-establishment, the institutions are generally well equipped to meet the requirement. The Systemic Risk Council expects to recommend an increase in the countercyclical capital buffer later this year, with entry into force in 2022.

Dividend payments resumed to a limited extent
Since the outbreak of the pandemic, the payment of dividends by banks has been limited across Europe.

The sudden economic crisis in connection with the pandemic underlines the need for robust banks. However, the Danish banks appear to have gotten through the pandemic relatively unscathed so far, and they have paid moderate dividends to their investors in spring in accordance with the Danish Financial Supervisory Authority's guidelines.

A few systemic institutions fail to meet capital adequacy requirements in stress test
Danmarks Nationalbank's latest stress test shows that a few systemic institutions breach the requirements for their capital buffers in the most severe recession scenario. The future leverage ratio requirement is breached to a very limited extent in the most severe recession scenario. The breach of capital requirements should give rise to a few institutions considering their capitalisation.

New rules for MREL requirement have entered into force
On 28 December 2020, new rules entered into force when the revised Bank Recovery and Resolution Directive was implemented with final effect. The individual institutions should therefore remain focused on building up a sufficient buffer to their minimum requirement for own funds and eligible liabilities (MREL) to ensure flexibility and scope.

LIQUIDITY AND FUNDING

Banks' liquidity ratios have decreased
The systemic banks' liquidity reserves have decreased since the turn of the year, but remain at a high level. The banks' liquidity buffers were already relatively solid before the outbreak of the pandemic last year, but, during the pandemic, government liquidity support measures for the corporate sector have contributed to additional buffers. Danmarks Nationalbank's latest sensitivity analysis of the systemic banks' liquidity reserves shows that the banks can handle severe liquidity stress for at least four months.

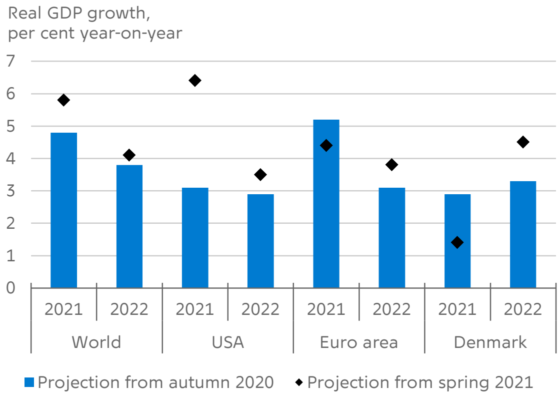
Banks' liquidity can absorb increased outflows when government liquidity support ends
The banks should be prepared for a decline in the temporarily increasing liquidity reserves as liquidity support measures are being phased out. A sensitivity calculation shows that the survival horizon of institutions decreases in cases of the deferred tax and VAT payments being repaid and corporations activating their unused credit facilities. The survival horizon still exceeds three months.

Good time to build up a more resilient excess capital adequacy relative to the banks' MREL requirement
The risk premium for non-preferred senior debt has decreased to a lower level than seen in the run-up to the pandemic. The development reflects a large risk appetite among investors in the debt issuance markets. The current market situation is a good time for the banks to build up a more resilient excess capital adequacy relative to their minimum requirement for eligible liabilities (MREL).

Financial markets are characterised by prospects of rapid recovery

Prospects of higher global economic growth
After a year with the covid-19 pandemic and large declines in economic activity, the global economy is entering an economic upswing with high growth rates. The International Monetary Fund (IMF) has revised its growth estimate further upwards in the past six months, see chart 1. The adjustments are primarily due to growth in the US economy. The economies in the euro area and Denmark have shown a weaker performance during the first part of 2021, thus lowering the outlook for the activity level in 2021. In Danmarks Nationalbank's latest projection, economic activity is expected to pick up sharply during the year as the population is being vaccinated against covid-19 and society reopens.[1]

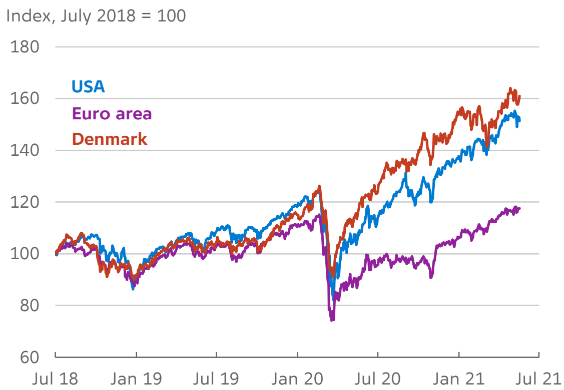
Expectations of a solid global economic upswing Chart 1



Note: IMF estimates for the world, USA and the euro area from April 2021 and October 2020, respectively. GDP growth in Denmark is based on Danmarks Nationalbank's projections from March 2021 and December 2020.
Source: IMF and Danmarks Nationalbank.

Equity prices have continued to rise
Equity markets in the United States and the euro area have continued the trend with rising equity prices since April 2020, see chart 2. The roll-out of vaccines and continued monetary and fiscal policy support programmes have contributed to better prospects of growth and higher asset prices. In autumn 2020, the second wave of the pandemic hit economic activity in many countries, but only had a brief negative effect on equity markets. Both the US S&P 500 index and the Danish C25 index have since risen to new record highs. The equity markets in the euro area have developed more moderately and have only reached the pre-pandemic level in spring 2021.

Equity markets have continued to rise Chart 2

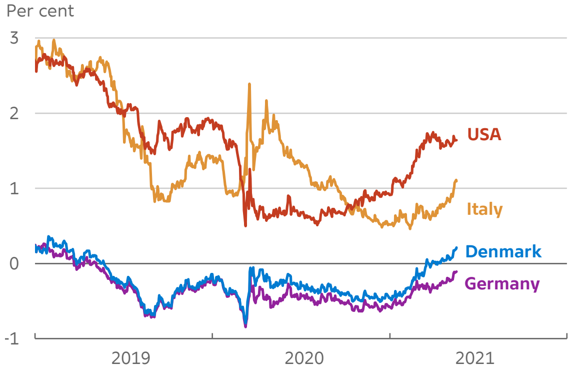


Note: The C25 index is shown for Denmark, Eurostoxx 600 for the euro area and S&P 500 for USA. The most recent update is from 18 May 2021.
Source: Refinitiv Eikon.

Expectation of higher inflation has resulted in higher interest rates
In early 2021, long-term government bond yields increased in the United States and the euro area, see chart 3. One reason for the increase was expectations of rising inflation mirroring the expected increased global economic growth. Short-term interest rates have not risen to the same extent, which has resulted in a steeper yield curve.

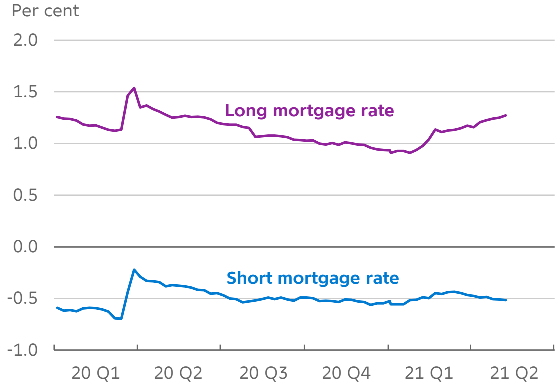
1 See Danmarks Nationalbank, Prospects of a rapid recovery once restrictions are eased, *Danmarks Nationalbank Analysis (Outlook for the Danish economy)*, No. 7, March 2021 (*link*).

Rising government bond yields Chart 3



Note: 10-year government bond yields. The most recent observations are from 18 May 2021.
Source: Refinitiv Eikon.

Moderate increase in long-term mortgage rates Chart 4



Note: Average effective bond yield for both long-term and short-term mortgage bonds. The most recent observations are from week 19 in 2021.
Source: Finance Denmark.

The first months of 2021 were characterised by rising government yields and increased volatility in several markets, for example the equity market. Risks associated with an increase in the level of interest rates are linked to a situation in which interest rates rise unexpectedly and suddenly as a consequence of a change in expectations in the market.

Continued very low mortgage bond yields

Even though long-term Danish mortgage rates have increased, they remain at a very low level, see chart 4. Danish borrowers thus still have access to home financing at very low interest costs. Short-term mortgage rates have remained largely unchanged since early 2021.

The development in the long-term mortgage rate may be due to many factors in addition to rising inflation expectations. For example, the demand for mortgage bonds may be buoyed by some investors' need to reinvest the values of the bond series that mature on an ongoing basis, for example in connection with the April 2021 pay date. Conversely, rising market interest rates may lead to a longer expected maturity of callable mortgage bonds and higher interest rate risk for investors, see box 1. An increase in interest rate risk can thus in itself reduce demand, thus triggering a market dynamic where interest rate increases may become self-reinforcing.

Credit premium is at a low level

Although the level of interest rates has increased, the financial markets are still characterised by high risk appetite among investors, pushing credit premiums downwards, see chart 5. The credit premium reflects investors' willingness to take on the risks of a given debt instrument relative to a risk-free investment.

The central banks' accommodative monetary policy can support risk appetite in the markets. Many central banks have continued their extraordinary measures initiated at the beginning of the pandemic, such as the injection of liquidity into the markets and purchases of government and corporate bonds.

Rising demand for green financial assets

In 2020, equity prices increased heavily for a number of listed corporations engaged in international green energy activities, see chart 6. Some analysts point out that increased interest in investing in green energy is due to several governments having increased focus on the green transition. At the same time, more and more asset managers have been given explicit mandates to invest in green assets. However, the prices of these equities have partly dropped back in 2021.

The markets for green assets are still emerging and are currently seeing rapid development. Well-functioning financial markets play an important role in the transition towards a green economy and enable effective financing of more climate-friendly activities. However, the development entails a risk of signifi-

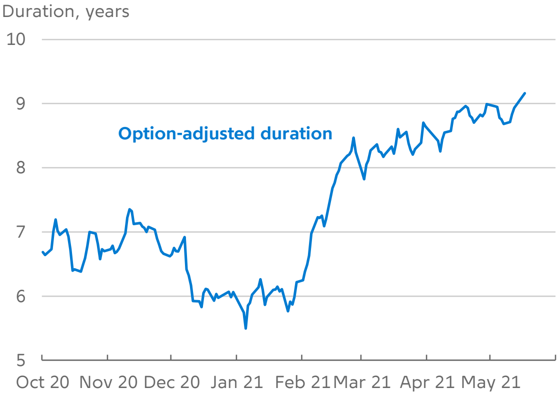
Rising interest rates and refinancing may have added effect on mortgage rates

Box 1

Investors' demand for callable mortgage bonds may be affected by, among other factors, changes in the expected maturity of the bonds, also known as the duration of the bonds. Callable bonds are characterised in that the borrower has an option to buy the bond at price 100 and thus redeem the loan. When interest rates increase, the price on these bonds will fall, making it less likely that the borrower will exercise the buyback option at some point before maturity. This means that the duration of the bond increases and consequently also the investors' interest rate risk.

Low interest rates and high loan refinancing activity in recent years have meant that many outstanding callable mortgage bonds have a coupon rate of 1 per cent.[1] Interest rate increases at the beginning of 2021 have resulted in the duration of these bonds and the investors' interest rate risk having increased, see chart below. An increase in interest rate risk may have a negative impact on bond demand, triggering a further interest rate increase. This may, for example, occur if some investors have a limited mandate to take on interest rate risk and will therefore demand fewer bonds. Other things being equal, this will boost the interest rate increase and have a self-reinforcing market dynamic. During periods with falling interest rates, the likelihood of borrowers choosing to exercise the buy-back option may, conversely, increase, and the same market dynamic may start with and amplify the fall in interest rates.

Higher duration on callable mortgage bonds

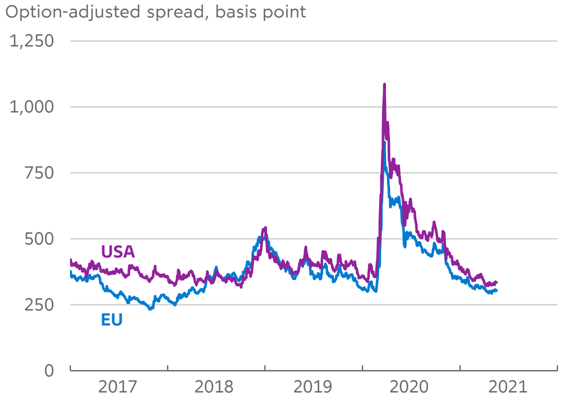


Note: Option-adjusted duration for the callable mortgage bond Nykredit 1 per cent 2053. The most recent observations are from 17 May 2021.
Source: Nykredit.

1. See, for example, Danmarks Nationalbank, Refinancing has boosted the interest rate pass-through to fixed-rate mortgages, *Danmarks Nationalbank Analysis*, No. 8, April 2021 (*link*).

Continued low credit premiums in debt markets

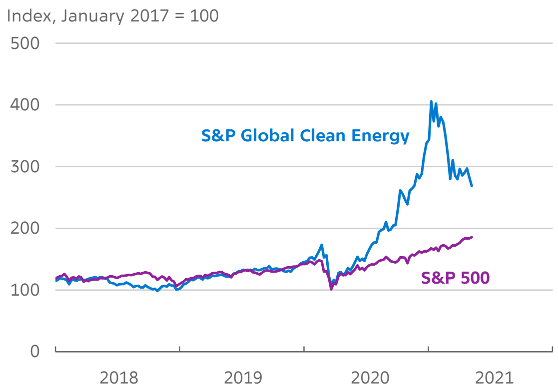
Chart 5



Note: High-yield corporate bonds. The most recent observations are from 17 May 2021.
Source: Refinitiv Eikon.

Investors showed increasing interest in investing in green energy in 2020

Chart 6



Note: S&P Global Clean Energy is an index that follows 30 listed green energy corporations, including both Ørsted and Vestas. The most recent observations are from 14 May 2021.
Source: Bloomberg.

cant volatility in asset prices and sudden changes in market expectations.

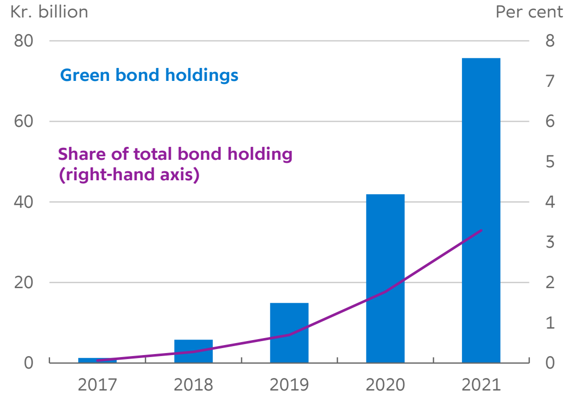
Joint standards for what is sustainable and green strengthen investors' ability to price green assets. The EU's taxonomy in this area and the requirement for publication of the climate impact of activities are a good starting point and can contribute to strengthening transparency in relation to price formation.

Danish investors have increased their share of green bonds

In Denmark, bonds that can be categorised as green are especially held by insurance and pension funds. Although investments in green bonds have increased in the past few years, they still account for a modest share of 3 per cent of the sector's total bond holdings, see chart 7. Danish investment funds have also increased their investments in green bonds. One reason for the increase in green bond investments is that the overall bond market is becoming increasingly greener in these years.

Insurance and pension funds own an increasing volume of green bonds

Chart 7



Note: Danish insurance and pension corporations' investments in green bonds. Data is calculated end-February for each year.
Source: Bloomberg and Danmarks Nationalbank.

Booming housing market during the pandemic

Housing market risks are building up

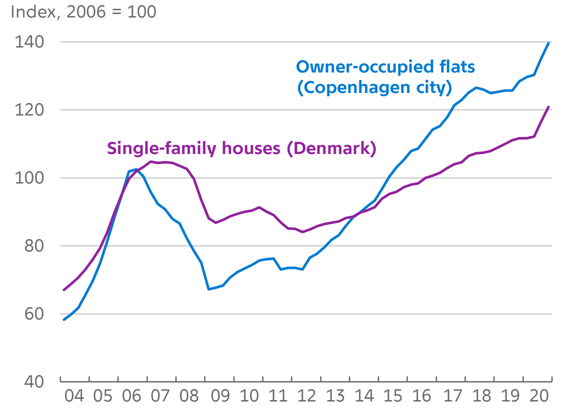
During the pandemic, the Danish housing market has been characterised by high trading activity and rapidly rising prices, see chart 8. Sharp increases in housing prices increase the risk of subsequent price decreases.

After a brief drop during the lockdown in spring 2020, housing market activity has remained at a high level. The number of transactions increased rapidly during the second half of 2020 and has reached a level above the years preceding the latest financial crisis. House prices have increased most in the City of Copenhagen and environs as well as in Aarhus.[2]

Demand is driving the development in house prices in the short term, as the overall housing stock cannot be changed at short notice, see also box 2.

House prices increased markedly in 2020

Chart 8



Note: The house prices are seasonally adjusted. The most recent observations are from end of Q4 2020.
Source: Statistics Denmark.

2 The City of Copenhagen and environs follow Statistics Denmark's definition of the provinces the City of Copenhagen and Greater Copenhagen.

Large housing price fluctuations linked to changes in housing demand

Box 2

Since the second half of 2020, housing market trading activity has increased markedly, and the supply of homes on the market has decreased, see chart A. Several fundamental factors have supported the high level of activity, for example persistently low interest rates and an economic development in which most households have managed to maintain high incomes despite the pandemic. But the pandemic and lockdowns may also have had a behavioural effect on the housing market. For example, more time spent in your own home and limited opportunities for some other types of consumption may have increased interest in certain housing aspects – for example the number of square metres, garden and natural surroundings – and thus boosted the housing demand.

The price of a home is basically determined by the willingness of home buyers to pay on the one hand and the willingness of homeowners to sell at a given price on the other. In other words, the market price is the price on which buyers and sellers can agree. Price formation in the housing market is influenced by the relatively long period involved in building new homes, which means that, in the short term, housing prices are most often driven by changes in demand. When trading activity is at a high level, housing prices have previously tended to rise as a result thereof, see chart B. In the longer term, initiated construction activity may increase the housing stock. Periods of housing price increases may thus be followed by a period of increasing housing supply.

The current activity in the housing market is higher than in the years leading up to the latest financial crisis. From the peak in house prices in 2006 to the trough in 2009, real prices of owner-occupied flats in the City of Copenhagen fell by more than 35 per cent. At the time, falling housing prices led to a significant increase in loan-to-value ratios. This may have created a need for consolidation among households, which contributed to dampening private consumption and thus aggregate demand and economic activity.

Housing market activity is high, and housing supply is low

Chart A

Increasing trading activity and decreasing number of homes for sale during pandemic

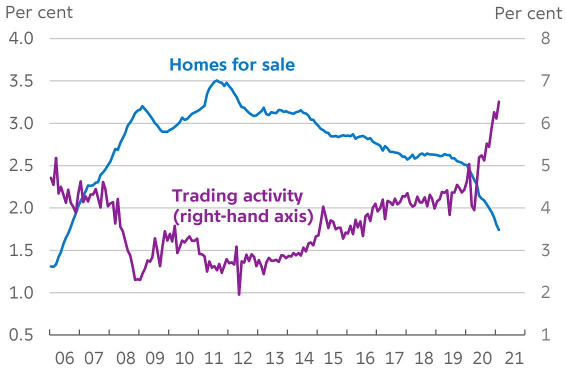
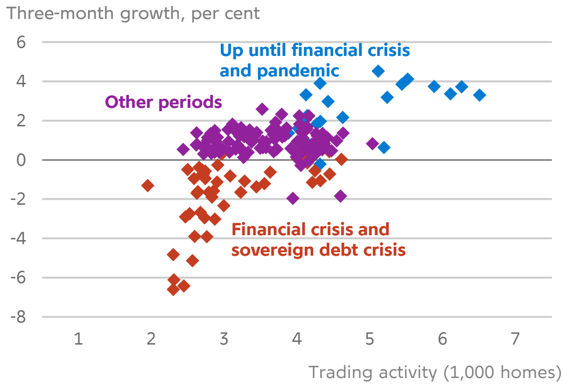


Chart B

Prices and trading activity go hand in hand in housing market



Note: Chart A: Number of single-family houses offered for sale as a percentage of the total housing stock and trading activity defined as the number of registered sales (seasonally adjusted). Chart B: Three-month growth rates in house prices (seasonally adjusted) for single-family houses and trading activity (seasonally adjusted). *Up until financial crisis and pandemic* is from the period May 2006 – April 2007 and from June 2020, *Financial crisis and sovereign debt crisis* is June 2007 – August 2009 and January 2011 – August 2012, and *Other periods* is August 2009 – December 2010 and September 2012 – April 2020. Monthly observations from June 2006 up to and including February 2021.

Source: Statistics Denmark and own calculations.

Housing taxes do not dampen housing market fluctuations

Chart 9

Chart A

Effective tax rates for single-family houses have fallen in recent years

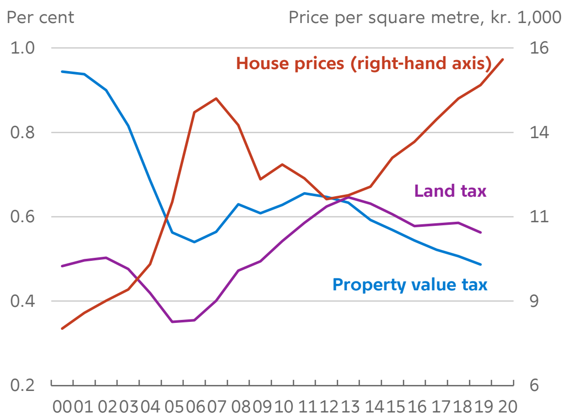
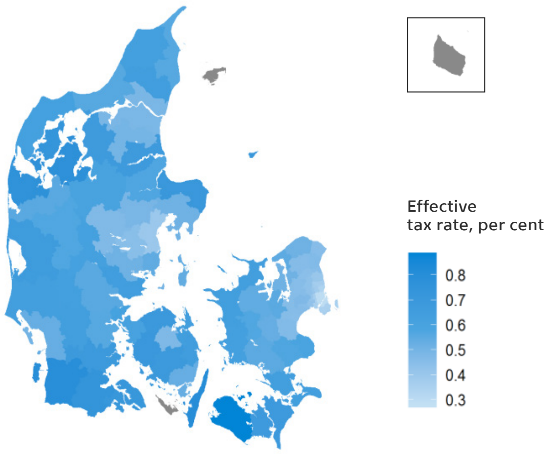


Chart B

Large regional effective tax rate differences



Note: Homeowners' property value tax and land tax as a percentage of total housing value. The tax rate for 2020 has been calculated solely on the basis of the development in house prices. Chart B: Effective tax rates for 2020 across municipalities. There is not a sufficient number of observations for the municipalities marked in grey.

Source: Own calculations based on real property register data from Statistics Denmark and Finance Denmark.

The conditions for further price increases are currently present in the housing market: Interest rates on mortgage loans are very low, and household incomes have been supported by compensation schemes.[3] At the same time, the design of the Danish tax system contributes to reinforcing housing market fluctuations, see the next section.

Housing taxation agreement may support a better balanced housing market

Housing taxes can act as an automatic housing price stabiliser if the current tax payment is proportionate to the value of the home. But the stabilising feature of housing taxes was removed with the tax freeze in 2001, when the nominal property value tax was frozen.[4] Restrictions have also been introduced on the annual rate of increase in the tax base of the land tax.

The nominal property value tax freeze means that the effective taxation decreases when prices rise, see chart 9. This has meant that the effective taxation is currently lowest in the municipalities around the large cities that have seen the highest housing price increases. The freeze has thus led to significant regional differences in taxation.

The implementation of the 2017 housing taxation agreement, the object of which is to re-establish the connection between tax payment and home value, has been postponed for a second time and is now expected to first take effect in 2024. The agreement will contribute to both smaller fluctuations in housing prices and a narrowing of regional price differences. Nonetheless, the size of these effects remains uncertain, one reason being that the new

3 See Bess and Werner, Households' disposable income is supported by compensation schemes for the corporate sector, *Danmarks Nationalbank Economic Memo*, No. 6, June 2020 (*link*).

4 The nominal property value tax freeze means that the tax base has been frozen at the real property value from 2002. However, the tax will be reduced if the real property value decreases to below the value in 2002.

public property valuation system is expected first to be issued to homeowners from the summer of 2021 and onwards.[5]

A certain symmetry is built into the Danish tax system, where homeowners are taxed based on the value of their home through housing taxes and are entitled to a deduction for their interest costs from the interest deduction. However, the interest deduction has not been reduced to the same extent as the effective property taxes since the property value tax freeze. This has affected the symmetry and challenged housing market stability.

The interest deduction in Denmark is at a higher level than in our neighbouring countries. The high level gives Danish households an incentive to build up debt. Together with an accommodative pension return tax, the Danish interest deduction encourages both increased housing debt and greater pension savings.

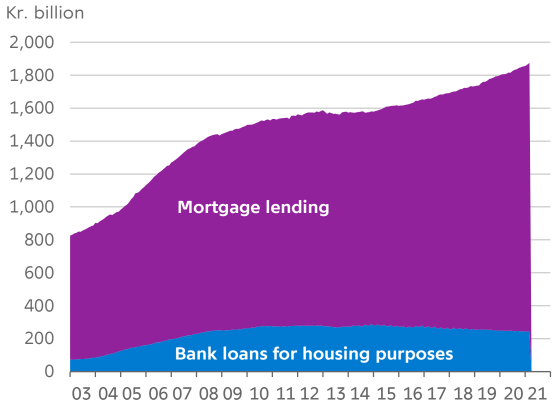
At the current low level of interest rates, a reduction in the interest deduction will have a relatively modest effect on borrowers' finances.

Signs of increased risks in institutions' housing lending

Household mortgage lending continues to rise
Danish homeowners' gross debt in relation to their income is among the highest in the world, and the mortgage credit institutions have increased their lending to homeowners by approximately 4 per cent a year in the past few years, see chart 10. The moderate increase in lending has remained roughly unchanged through the pandemic. In Danmarks Nationalbank's lending survey for the first quarter of 2021, several mortgage credit institutions and banks respond that the loan demand has increased, one

Mortgage lending increases, while banks reduce lending for housing purposes

Chart 10



Note: Mortgage loans and bank loans for housing purposes to employees, pensioners etc. The most recent observations are from March 2021.
Source: Danmarks Nationalbank and own calculations.

reason being the high activity level in the housing market.[6]

Credit growth may pick up if households increasingly choose to increase their debt by mortgaging part of their rising home equity.

High refinancing activity increases housing debt
Refinancing was at a high level in 2020, although lower than the record in 2019, see chart 11. The pronounced refinancing in 2019 was due to a number of factors, including the decreasing level of interest rates, which made it possible for many homeowners to refinance their mortgages to mortgage loans with a lower coupon rate and monthly debt service.

In 2020, about half of homeowners who refinanced their mortgage loans chose to increase their outstanding debt, see box 3. The homeowners who

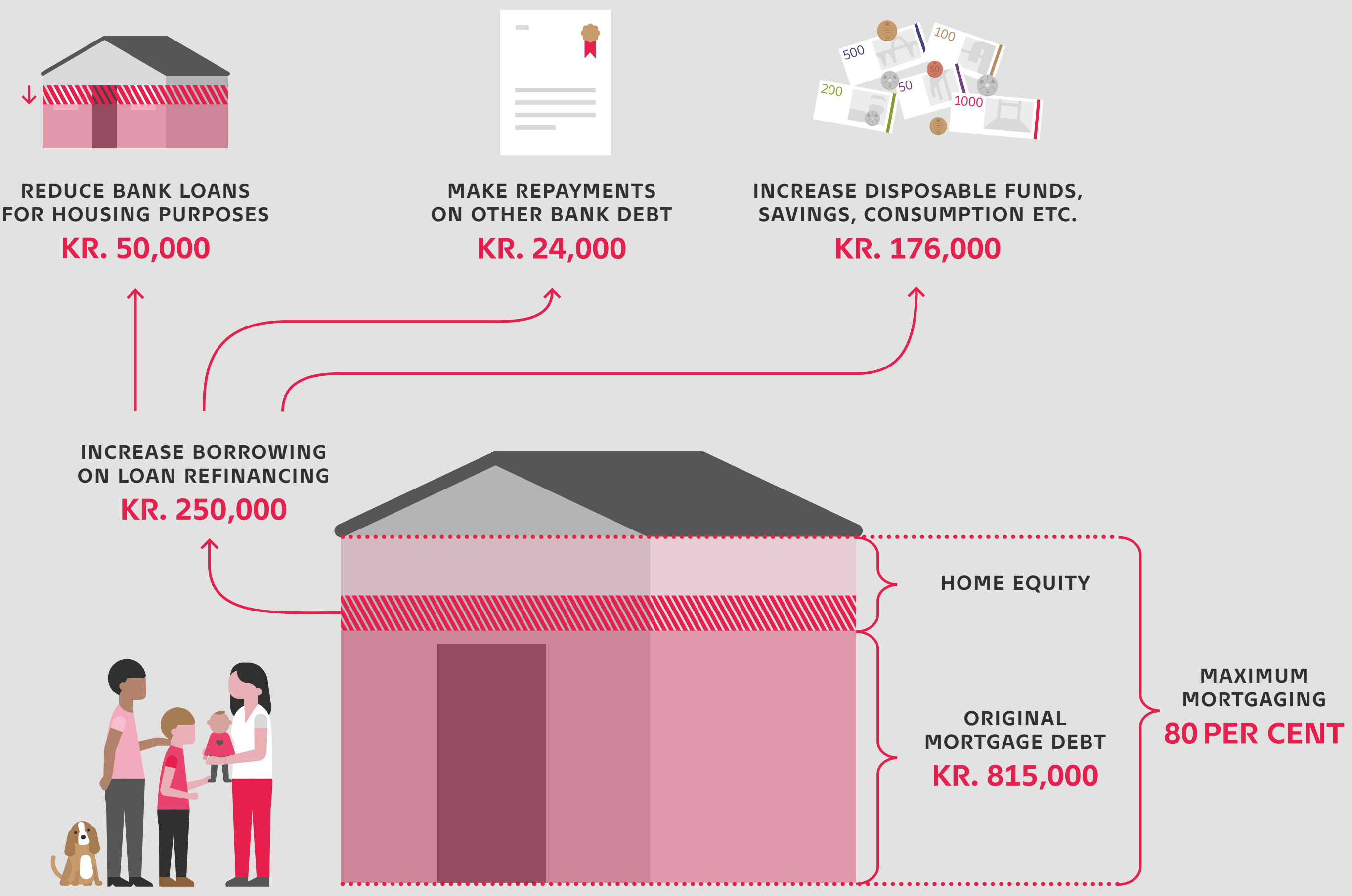
5 See Hviid and Malthe-Thagaard, The impact of the housing taxation agreement on house prices, *Danmarks Nationalbank Analysis*, No. 6, March 2019 (*link*), and Hviid and Kramp, Housing taxation agreement stabilises house prices, *Danmarks Nationalbank Analysis,* No. 14, September 2017 (*link*).

6 See Danmarks Nationalbank, Increased loan demand from private customers, *Danmarks Nationalbank Statistics*, April 2021 (*link*).

Box 3

Homeowners increase debt in connection with refinancing

For the average lender engaging in additional borrowing in connection with a refinancing operation in 2020, the original mortgage amount was kr. 815,000, and the mortgage debt was increased by kr. 250,000. The lender at the same time reduced his outstanding bank loans for housing purposes with kr. 50,000 and paid down other bank loans by kr. 24,000. After this, kr. 176,000 was left over from the increased mortgage debt to be used as additional disposable funds, savings and consumption etc.



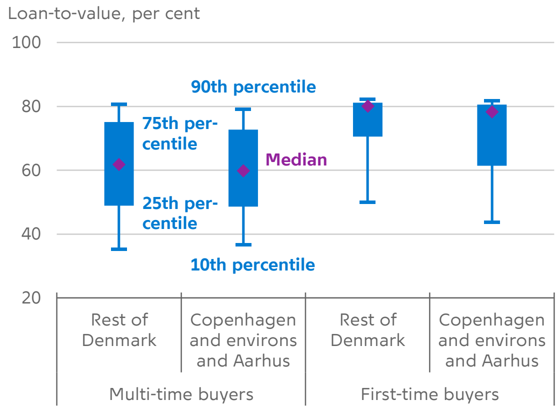
Early redemptions were at a high level in recent years

Chart 11

Note: Early redemptions of mortgage loans for owner-occupied homes and holiday homes for households. 3-month moving average. The most recent observations are from March 2021.
Source: Danmarks Nationalbank.

Many multi-time buyers have home equity, while first-time buyers use full mortgage financing

Chart 12



Note: Mortgage credit institutions' total new lending in 2020. Loan-to-value ratio up to and including the lowest ranking mortgage debt in a property. The loan-to-value ratio has been calculated as the mortgage debt secured by a mortgage on a home as a percentage of the value of the home up to the lowest ranking mortgage loan. Loan-to-value ratios above the 80 per cent requirement may occur as a result of, for example, an advance loan or time lags between loan allocation and disbursement time.
Source: Danmarks Nationalbank and own calculations.

refinanced their loans and increased their mortgage debt in 2020 have thus increased their mortgage debt by just over kr. 250,000 on average, equivalent to an increase of approximately 30 per cent. These homeowners' loan-to-value ratios consequently increased, and they have only repaid other bank debt to a limited extent. Experience from previous waves of refinancing shows that a significant part of the additional debt is used for increased consumption, including private consumption and home improvements.[7]

High loan-to-value ratios may weaken mortgage credit institutions' resilience

It is important to financial stability in Denmark that there is high credibility for the mortgages underlying housing lending and thus the issued mortgage bonds. The Danish down payment requirement of 5 per cent in connection with home purchases is low relative to the other Nordic countries. In addition, the vast majority of first-time buyers borrow right up to the threshold limits in the current lending rules, see below. The Danish down payment requirement means that homebuyers' total mortgage and bank debt secured by collateral in the home may constitute up to 95 per cent of the value of the home at the time of purchase.

The rising house prices currently mean that loan-to-value ratios are falling for those homeowners who have already bought a home. By 2020, multi-time buyers had an average loan-to-value ratio of approximately 60 per cent, see chart 12. This is shown by microdata from Danmarks Nationalbank and the Danish Financial Supervisory Authority's credit register of all loans issued by the reporting credit institutions, see box 4.

Most first-time buyers continue to borrow around as much as they can within the requirements. First-time buyers do not have home equity with them from a previous sale, and they therefore have to borrow for

7 See Danmarks Nationalbank, Mortgage refinancing supports private consumption, *Danmarks Nationalbank Analysis*, No. 17, September 2019 (*link*).

New lending and refinancing – how we proceeded

Box 4

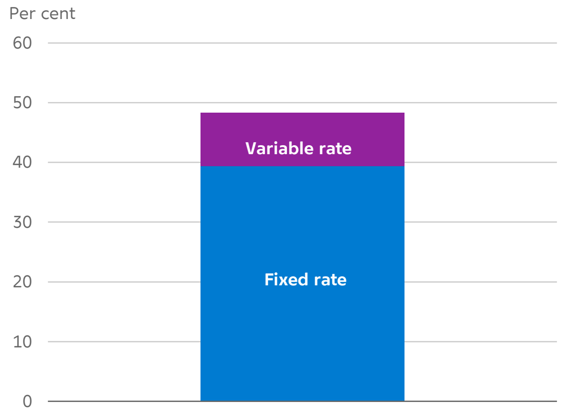
Danmarks Nationalbank and the Danish Financial Supervisory Authority collect a number of data on Danish borrowers' credit conditions from mortgage credit institutions and banks on a quarterly basis. The credit data include information about loans such as outstanding debt, interest rate, loan type, mortgage and collateral for loans, including value of mortgage, location etc.

In the analysis, we have looked into information regarding Danish private individuals' loans secured by a mortgage on real property in Denmark. Based on homeowners' mortgage and loan data and a number of assumptions we have made a new categorisation of the lending based on loan type (new lending or existing lending) and type of borrower (first-time buyer, refinancing and top-up loans as well as other home buyers).

- **New lending** is when the loan did not exist in the previous quarter and the disbursement period is within the latest period.
- **First-time buyers** are homeowners with a new mortgage loan in the current quarter who have not had either a bank loan or a mortgage loan with collateral in real properties since October 2019. The statement thus also includes buyers who have returned to the housing market since October 2019 after a break. The categorisation is subject to uncertainty, including due to the short history and time lags in mortgage ownership.
- **Refinancing and top-up loans** are when there is a change in the homeowner's lending without this involving a change in home ownership. If the homeowner increases the outstanding debt by more than 5 per cent in connection with the refinancing, this is regarded as actual additional borrowing.
- **Multi-time buyers** are all other home buyers who have either changed homes or acquired an extra home.

Just under half of new lending to highly indebted homeowners consists of loans with deferred amortisation

Chart 13



Note: Gross new lending before instalments and early redemptions with deferred amortisation. Mortgage credit institutions' total new lending to homeowners with a debt-to-income above 4 and a loan-to-value ratio above 60 per cent in 2020.
Source: Danmarks Nationalbank.

a larger share of the home purchase. Most first-time buyers entered the housing market in 2020 with a loan-to-value ratio of 80 per cent, which is the maximum allowed percentage for mortgage loans.

Credit institutions grant more home buyers deferred amortisation

After a number of years with a decline in the share of mortgage loans with deferred amortisation, the trend is again increasing at the end of 2020 and beginning of 2021. Just under half of the Danes' mortgage debt was with deferred amortisation at the end of March 2021. Part of the increase is due to 20 per cent of the homeowners who refinanced their loans in 2020 having chosen to switch to loans with deferred amortisation.

Loans with deferred amortisation are also granted to homeowners who are already highly indebted at the time of the loan disbursement. In 2020, loans with deferred amortisation constituted just under half of all new lending to highly indebted homeowners, see chart 13. The majority of these new loans are fixed-rate loans, which, among other things, reflect restrictions in the rules on mortgage loans. In 2020, new lending with deferred amortisation was most widespread in the City of Copenhagen and environs and Aarhus.

More stringent lending rules have contributed to less risky mortgage loans

Over a number of years, the authorities have introduced borrower-based requirements for the credit institutions' housing lending, and, to a certain extent, they contribute to curtailing the risk build-up in the current period with high housing market activity.

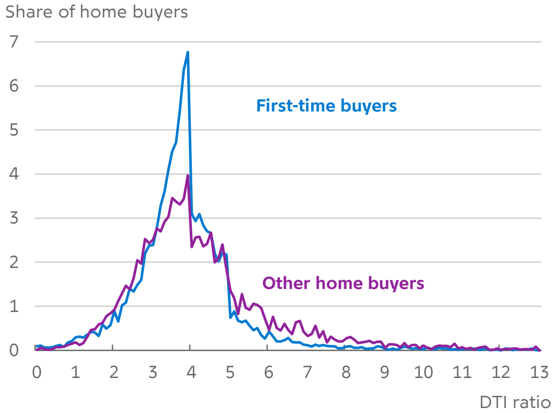
The lending rules for institutions' lending particularly affect first-time buyers, who often get more highly indebted than other home buyers. In 2020, many first-time buyers in the City of Copenhagen and environs as well as in Aarhus borrowed right up to the threshold of 4 for the so-called debt-to-income factor, which determines which types of mortgage loan the home buyers can take out, see chart 14. Only very few have taken out loans with a debt factor above 5. The debt-to-income ratio is calculated as the total debt of households relative to gross income. Experience with loan rules shows that they can contribute to more resilient housing lending. However, it cannot be ruled out that the introduction of explicit lending limits may, in some cases, mean that credit institutions grant loans right up to the thresholds to a greater extent.

The distribution of the home buyers' debt-to-income ratio reflects the threshold values in the so-called growth guidelines[8] from 2016 and the Executive Order on Good Practice for mortgage lending from 2018. For example, the growth guidelines limit access to mortgage loans with deferred amortisation and variable rates for highly indebted home buyers in the City of Copenhagen and environs as well as in Aarhus. In turn, the rules do not, for example, restrict the possibility of deferred amortisation for homeowners with a loan-to-value ratio below 90 per cent and a debt-to-income below 5.

Rising house prices provide opportunities for increased borrowing for multi-time buyers who either change homes or purchase an extra home. In 2020, around 45 per cent of multi-time buyers took on mortgage debt of more than four times the household's gross income. These customers also have a freer rein in their choice of mortgage loans. Many highly indebted homeowners can thus borrow for a home purchase with deferred amortisation even though mostly can only choose fixed-rate loans with deferred amortisation.

In the City of Copenhagen and environs as well as in Aarhus, thresholds laid down in the lending rules restrict first-time buyers' indebtedness

Chart 14



Note: The reported debt-to-income ratio is a statement of the household's total debt relative to its gross income. Total new lending in the City of Copenhagen and environs as well as in Aarhus granted in 2020.

Source: Danmarks Nationalbank and own calculations.

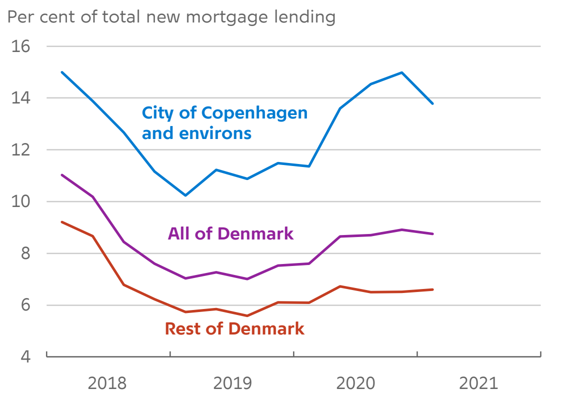
Although the loan rules have laid down some limits for how quickly risks can be built up in the credit institutions' housing lending, the risks are currently increasing. New lending to highly indebted home buyers represents an increasing share of the mortgage credit institutions' total new lending, see chart 15, and this was especially the case in the City of Copenhagen and environs.

With rapidly rising housing prices and an existing basis for further price increases, there is reason to look at a tightening of the lending rules to limit vulnerability to a subsequent drop in housing prices. Higher down payment requirement and amortisation

8 Guidelines on prudent credit assessment when granting housing loans to households with high DTI ratios and insufficient wealth in growth areas.

Higher share of new loans to highly indebted homeowners

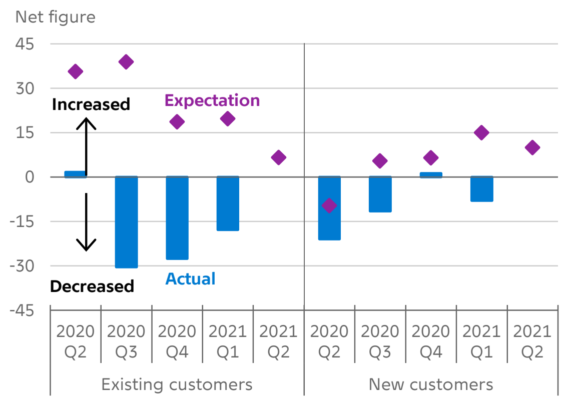
Chart 15



Note: Highly indebted homeowners are defined as homeowners with a debt-to-income ratio above 4 and a loan-to-value ratio above 60 per cent. The latest observations are from Q1 2021.
Source: The Danish Financial Supervisory Authority and own calculations.

Banks expect slightly increasing demand from corporate customers

Chart 16



Note: In Danmarks Nationalbank's lending survey, *corporate customers* cover 'Private non-financial corporations' and 'Sole proprietorships'. *Net figure* is the banks' response weighted by their respective market shares. *Expectation* is the banks' previously reported responses from the quarter before the present quarter.
Source: Danmarks Nationalbank.

requirement for highly indebted homeowners are among the measures that should be considered.

At its next meeting in June, the Systemic Risk Council expects to recommend to the Danish Government that further measures be taken to limit continued risk build-up in the housing market.

Loans with 30 years of deferred amortisation should only be offered to well-consolidated customers with high security for the value of the mortgaged property
The new mortgage loans with deferred amortisation throughout the 30-year maturity of the loan are becoming more widespread in the mortgage credit market. The loan types currently offered by institutions contain terms on, for example, a maximum loan-to-value ratio with deferred amortisation of 60 per cent of the value of the home, and there is generally no access to post-financing against another mortgage on the same property.

The new loan can be a relevant product for a limited customer group. However, as no instalments are made on the loan, it is essential that the mortgaged property maintains its value throughout the loan period. This may be a problem in areas with declining housing demand and in cases in which the building is not adequately maintained.

So far, banks' corporate customers have weathered pandemic better than feared

The government covid-19 schemes currently limit corporate customers' lending activity with the banks
The banks continue to report declining loan demand from existing and new corporate customers, see chart 16. The government compensation schemes and liquidity measures have limited corporations' need for liquidity from the banks.

However, the banks expect slightly increasing demand from both new and existing customers in the second quarter of 2021. At the same time, the banks report approximately unchanged credit standards. The low demand for bank financing is reflected in the development in bank lending to corporations, which has remained virtually unchanged at around kr. 350 billion since June 2020.

Expectations for lending growth may be raised as corporations expect a stronger economy and the pandemic recedes. Despite the second lockdown during winter 2020-21, there has not been a large increase in the share of corporations reporting some or a very high risk that they will have to liquidate their business, see chart 17.

The mortgage credit institutions have experienced increasing loan demand from their corporate customers in the past year. Their corporate lending has also continued to increase, and the annual lending growth has been around 4 per cent since the outbreak of the pandemic.

Banks have capacity to handle expiry of government liquidity schemes

The banks are well equipped to make loans to viable corporations when the deferred payment deadlines and loans fall due. At the same time, the corporations currently make little use of the government covid-19 relief packages. On this basis, it is assessed that the banks will be able to handle any deterioration in the creditworthiness of their customers on expiry of the relief packages.[9]

Deferred deadlines for payment of tax and VAT have significantly increased corporate liquidity. In 2021, the deferred payment deadlines were replaced by the option of raising interest-free tax loans equal to the due amounts of ordinary tax and VAT payments as the previously deferred payments fall due.

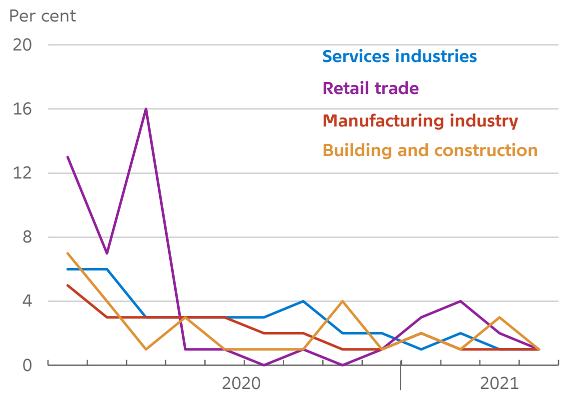
The credit institutions only have limited exposure to corporations that have raised tax loans. Two thirds of corporations that have made use of the government loan schemes have loans with credit institutions. Loans to these corporations constitute 16 per cent of the banks' corporate loans and 6 per cent of mortgage loans, see chart 18.

Increased digitalisation may push down prices of some commercial properties

The pandemic has accelerated the general development towards increased digitalisation of society. The increased digitalisation may result in less demand for office and retail space if working from home and online shopping gain further ground. There is still a great deal of uncertainty as to where the development will be heading, but mortgage credit institutions should take it into their considerations when

Corporations see limited risk of liquidation

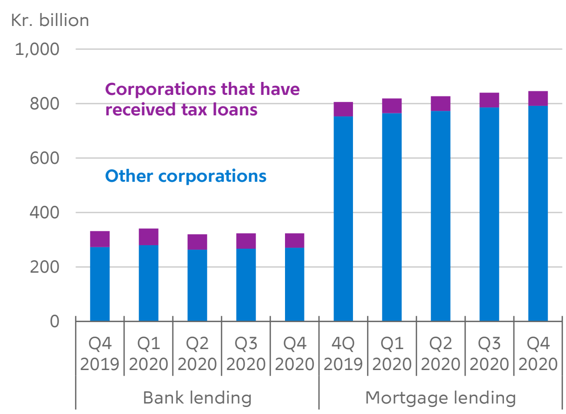
Chart 17



Note: Share of corporations reporting "some" or "very high" risk of liquidation over the next three months as a result of the coronavirus pandemic. The shares are weighted by size based on the number of employees in each corporation.
Source: Statistics Denmark.

Corporations that use government loan schemes constitute a small percentage in mortgage credit institutions' books

Chart 18



Note: Lending by large and medium-sized banks to Danish non-financial corporations. Large banks consist of the Danish Financial Supervisory Authority's group 1 and Nordea Danmark, while medium-sized banks consist of the Danish Financial Supervisory Authority's group 2 and Handelsbanken.
Source: The Danish Tax Agency, Danmarks Nationalbank and own calculations.

9 See Danmarks Nationalbank, Banks ready for expiry of government liquidity support, *Danmarks Nationalbank Analysis*, No. 10, May 2021 (*link*).

assessing the risk on parts of their lending against collateral in commercial properties.

Online shopping continues to grow and constitutes an increasing share of the total card turnover.[10] Especially online groceries shopping has increased during the pandemic.[11] At the same time, many companies have used working from home in the past year.

The share of vacant office and retail space has increased in recent years, see chart 19, and especially in the City of Copenhagen, there have been more vacant retail space. At the same time, the number of physical stores with retail trade has decreased over an extended number of years.[12] Also for office space, the share of vacant square metres has increased in most of the City of Copenhagen and especially during the pandemic.

If the increase in online shopping continues, it could lead to further declines in the number of retail stores. Moreover, increased digitalisation may result in a smaller need for office space.

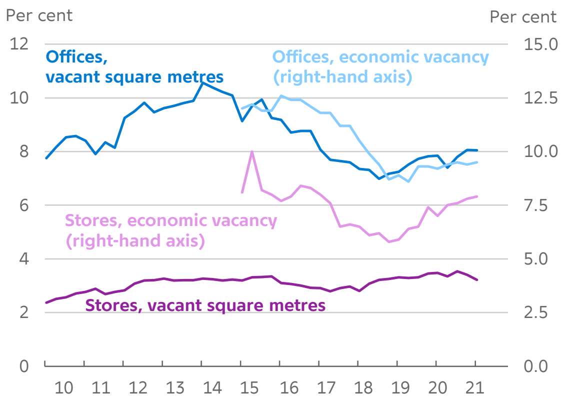
Credit institutions have limited risk in connection with falling prices of retail and office properties

The credit institutions generally have room for a fall in the prices of the retail and office properties on which they have granted loans against collateral in the property.

The majority of the mortgaged properties have loan-to-value ratios that are well below the permitted limit of 60 per cent, see chart 20. The loan-to-value limit may be increased to 70 per cent if the institution provides additional collateral for the part of the loan which exceeds 60 per cent.

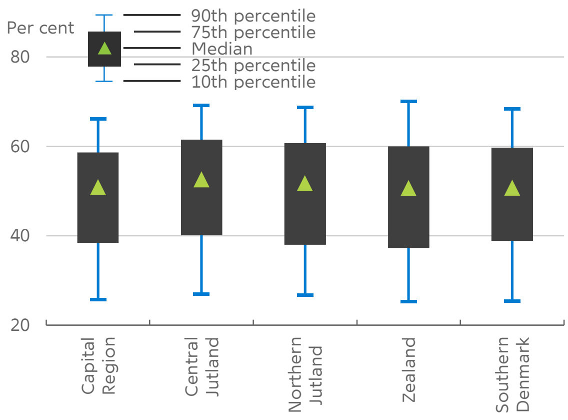
The majority of credit institutions' lending with retail and office properties as collateral are to property

More vacant stores and offices Chart 19



Note: *Vacant square metres* are stated as a percentage of estimated building stock. *Economic vacancy* is the rental value of vacant rental premises in relation to the total rental value. The most recent observations are from end of January 2021.
Source: Ejendomstorvet.dk as well as letting corporations Aberdeen Asset Management Denmark, ATP Properties and Newsec.

The vast majority of properties are mortgaged below the permitted loan limit Chart 20



Note: Debt-to-asset ratio for mortgage lending to Danish non-financial corporations secured by mortgage on office and retail properties. The debt-to-asset ratio is calculated as the outstanding debt of the loan as a percentage of the value of the property. Data calculated year-end 2020.
Source: Danmarks Nationalbank.

10 See Danmarks Nationalbank, Prospects of a rapid recovery once restrictions are eased, *Danmarks Nationalbank Analysis (Outlook for the Danish economy)*, No. 7, March 2021 (*link*).

11 See Dansk Erhverv (Danish Chamber of Commerce), *E-handelsanalysen 2020: Et usædvanligt rekordår for dansk e-handel* (E-commerce Analysis 2020: An unusual record year for Danish E-commerce), February 2021 (*link – in Danish only*).

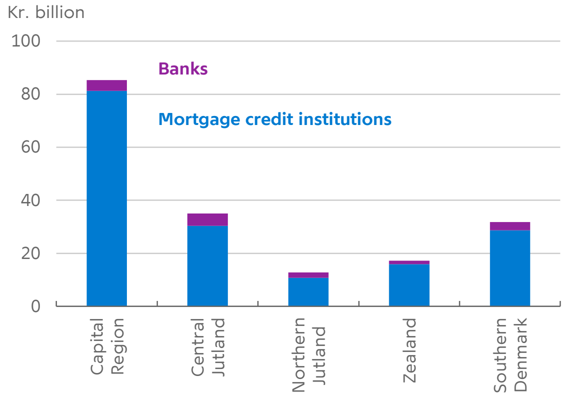
12 See Dansk Erhverv (Danish Chamber of Commerce), *Der er liv efter butiksdøden* (There is life after death of stores), June 2019 (*link – in Danish only*).

companies that let premises to stores and offices. Some of the property companies also let warehouse and production premises as well as rental homes and therefore have rental income from other property types.

The mortgaged retail and office premises used as collateral for the lending are concentrated in the Capital Region of Denmark, see chart 21, and especially around the City of Copenhagen, where the share of vacant square metres has also seen the highest increase. The lending constitutes just under 20 per cent of the mortgage credit institutions' total corporate lending.

Half of the lending to retail and office properties is in the Capital Region of Denmark

Chart 21



Note: Loans to Danish non-financial corporations secured by mortgage on office and retail properties. Data calculated year-end 2020.
Source: Danmarks Nationalbank.

Banks expect rising earnings in 2021

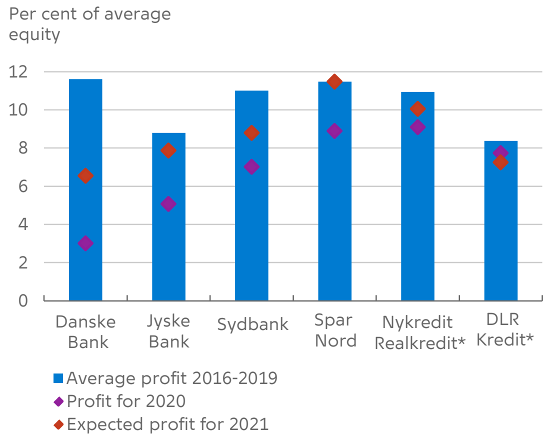
Except for DLR Kredit, the systemic credit institutions expect higher earnings in 2021 than in 2020, see chart 22. The rising expectations are due to a number of factors, including a higher activity level in the trade area and expectations of a lower level of impairment charges in 2021 than in 2020. In addition, several credit institutions have announced plans to reduce costs in 2021.

During April, several institutions raised their earnings expectations in 2021 with reference to the high activity level in the housing market.

The institutions most often announce a range-based estimate of earnings expectations. For most systemic credit institutions, a materialisation of the lower end of the profit expectations will, however, also result in higher earnings than in 2020. At the same time, there are only a few cases in which the institutions' upper profit expectations indicate a full return to the average earnings level in the years leading up to the pandemic.

Several credit institutions expect higher earnings in 2021

Chart 22



Note: The systemic credit institutions except Nordea Kredit. Profit for the year after tax and average of the latest announced expectations for the profit for 2021 as a percentage of the shareholders' average equity for 2016-19. Credit institutions marked with * are calculated before tax.
Source: Financial statements and own calculations.

Institutions' net interest income has been declining over a number of years

The systemic credit institutions' earnings have been declining since 2017, see chart 23. In step with the decline, their earnings have constituted a smaller first protection against losses.

The systemic credit institutions' earnings decreased significantly in 2020. A large part of the decline in 2020 was attributable to increased impairment charges on lending, reflecting, among other things, provisions for expected credit losses due to the pandemic. Adjusted for the increased level of impairment charges in 2020, the decrease in the systemic credit institutions' earnings has been more moderate. Also non-systemic banks' earnings decreased in 2020, one reason being higher posted impairment charges.

The development with declining earnings is partly attributable to net interest income having decreased over a number of years, see chart 24. The development must be seen in the light of lower interest margins, resulting from, among other factors, competition for customers on the lending side. See box 5 for a description of the banks' interest margins. At the same time, deposit rates have not fully mirrored the general decrease in the level of interest rates. In 2020, however, net interest income increased slightly.

Earnings from both net fees and income from administration margins on mortgage loans have remained roughly unchanged since 2017. In addition, over the same period, higher staff costs and administrative expenses have resulted in a further reduction in earnings.

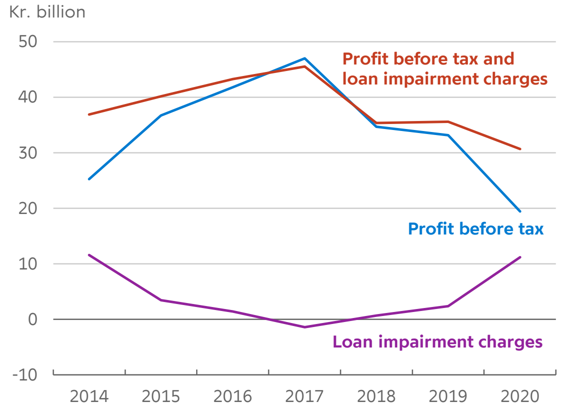
Banks have reduced deposit rates

For several years, the banks maintained their deposit rates close to zero, especially for households, while the money market interest rate was negative. The banks' adjustment towards lower deposit rates has thus been sluggish, and the banks' deposit margin became negative.

It is up to the banks themselves to set a reasonable limit for negative deposit rates. They should take into account that their customers use deposit accounts to make day-to-day payments and that this continues in the existing payment systems which are characterised by a high level of security and efficiency.

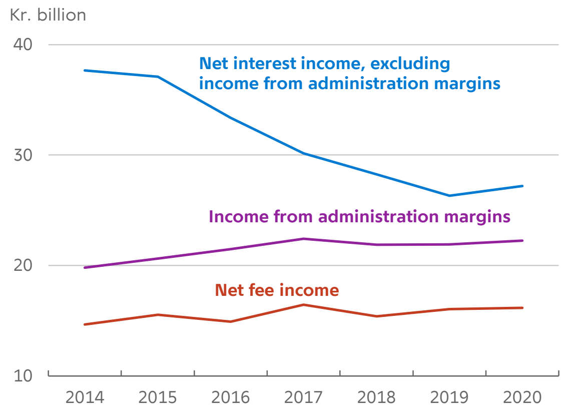
For several years, both private individuals and corporate customers have paid less to keep their savings with the banks than what the banks can obtain by placing the deposits in the short-term money market. However, the banks can place a certain proportion of the deposits in higher-yielding assets by binding some of the deposit funds for a longer term or by letting them replace other more long-term sources of financing, such as senior debt, see box 6.

Systemic credit institutions' earnings have declined since 2017 Chart 23



Note: Annual data for systemic credit institutions. The profit has been adjusted for goodwill impairment charges.
Source: The Danish Financial Supervisory Authority and own calculations.

Net interest income is still lower than earlier Chart 24



Note: Annual data for systemic credit institutions.
Source: The Danish Financial Supervisory Authority and own calculations.

Since the end of 2019, both the systemic and non-systemic banks have introduced negative interest rates on deposits from household customers above a certain threshold, and the trend towards wider use of negative deposit rates for household customers has continued into 2021, see feature page regarding negative deposit rates. In April and May, several credit institutions have announced that they

The banks' interest rates and interest margins have decreased over a number of years

Box 5

The banks' interest rates for households and corporations normally follow the development in Danmarks Nationalbank's interest rates, see charts A and B. One of the factors behind this correlation is that Danmarks Nationalbank's monetary policy instruments and the short-term money market function as a possible marginal source of both placement and financing for the individual bank.

The banks' interest margin has decreased over a number of years. However, it has increased slightly since the beginning of 2021. The interest margin represents the difference between the institutions' lending and deposit rates. The decrease in the banks' interest margin is not only affected by the development in monetary policy interest rates, but also depends on other factors such as credit risks and the competitive situation. As a natural part of their operations, banks assume credit risk when they lend money to households and corporations. The credit risk is the risk that the institution will incur a loss if the borrower defaults on the borrower's payment obligations. This risk depends on economic trends, the borrower's creditworthiness and the value of any underlying collateral, for example mortgage on property. Part of the lending margin can therefore be regarded as a payment for the credit risk that the bank undertakes in granting the loan in question.

The banks' interest margin can be divided into a lending margin and a deposit margin. The lending margin is calculated as the difference between the lending rate and the short-term money market interest rate, while the deposit margin is the difference between the short-term money market interest rate and the deposit rate. The total interest margin is the sum of the lending margin and the deposit margin.

Both the lending margin and the deposit margin have previously been positive. This reflects that the banks' customers pay an interest rate on their loans that is higher than the interest rate that the bank can obtain by placing an extra krone on the short-term money market and that interest is accrued on the customers' deposit accounts at a rate that is lower than the interest rate at which the bank can borrow funds on the money market. But the banks' adjustment of their deposit rates to Danmarks Nationalbank's certificate of deposit rate has been sluggish, and the banks' deposit margin has thus been negative over an extended period of time, see chart B. A negative deposit margin means that the banks have not been able to make a profit by attracting additional deposits and placing liquid funds from these in the money market. However, the banks' adjustment of their deposit rates in recent years has meant that the deposit margin has increased to close to zero, see chart B.

Chart A

The largest banks' lending and deposit rates have been significantly reduced

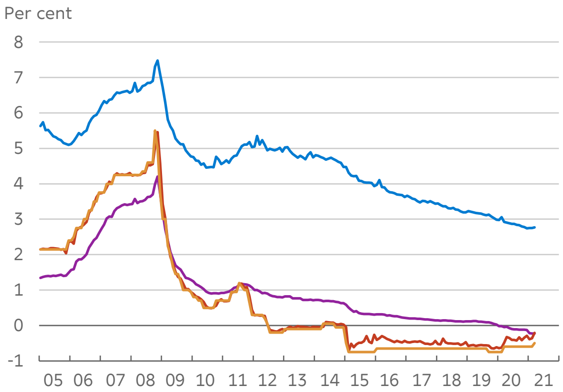
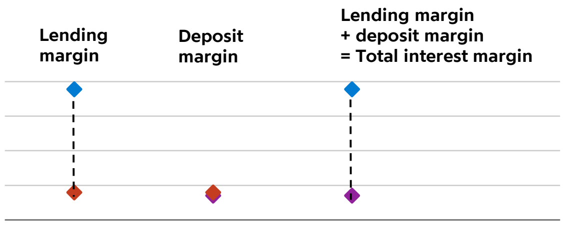


Chart B

The banks' total interest margin consists of both their lending and deposit margins



Lending rate — Deposit rate — Tomorrow-Next rate — Certificates of deposit rate

Note: Average lending and deposit rates for systemic and non-systemic banks' outstanding domestic lending and deposits for households and non-financial corporations. The most recent observations are from March 2021.
Source: Danmarks Nationalbank, Bloomberg and own calculations.

again intend to lower the deposit rate for some household customers and corporate customers.

As average deposit rates were at a significantly lower level in 2020 than in 2017-19, the banks' net interest payments on their customers' deposits decreased by just under kr. 1.4 billion during the year, see chart 25. The reduction in the banks' net interest payments on deposits in 2020 is equal to approximately 10 per cent of the systemic and non-systemic banks' pre-tax profit in 2020.

As mentioned, the average deposit rates have continued to decrease in 2021. If the level of deposits and deposit rates etc. for household customers and corporate customers remains unchanged for the rest of 2021, there will be prospects of a further decrease in the banks' net interest payments on deposits in the order of kr. 1.1 billion relative to 2020.

Banks' income from fees and charges have grown by less than assets under management

Since the recent financial crisis, the systemic banks have managed growing assets on behalf of their customers. The business area contributes revenue to the banks through asset management and administration in the underlying investment management companies that manage one or more investment funds.

The increase in managed assets can be attributed to both ongoing net injection of new funds from customers and generally rising prices of financial assets. The growing assets under management in the systemic banks are not matched by a corresponding increase in earnings from fees and charges. Decreasing earnings from fees and charges per managed krone may be due to multiple factors such as the competitive situation among investment funds and regulation.[13]

The systemic banks offer a number of investment opportunities to their customers in the form of, for example, purchases of shares in investment funds. In 2020, households made total purchases of approx.

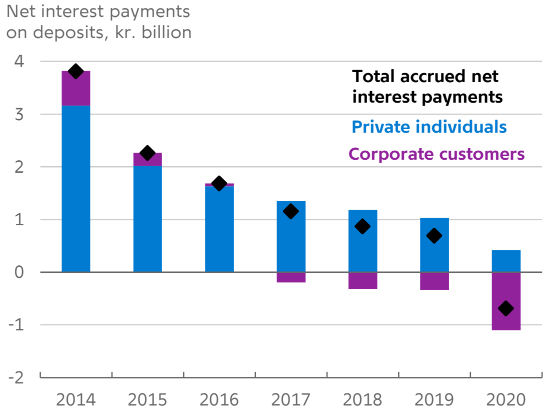
13 For example, in 2017, a partial ban on investment commissions was introduced in the Markets in Financial Instruments Directive (MiFID II), which, among other things, prohibits banks etc. from receiving and retaining commission payments from a third party (for example an investment fund) when they are authorised to make investments on the client's behalf.

Banks' return on household customer deposits depends on multiple factors Box 6

Household customers' deposits are one of the most stable sources of financing in a bank in most periods. Overall, household customers have relatively identical payment patterns over time, making future changes in deposits fairly predictable for the bank. The vast majority of customers receive the same salary, pay the same overheads and have stable consumption during the month. The predictability of the development in deposits is also reflected in government regulation and credit rating agencies' ratings, where household deposits are regarded as a stable source of financing which can partially replace long-term debt issuances.

As deposits constitute a stable source of financing, the banks can place a certain proportion of these funds in assets with a higher rate of return than that offered by short-term money market interest rates. In specific terms, the total return on deposits will reflect an average of several interest rates on the yield curve with different maturities and the bank's alternative financing costs. Hence, several factors contribute setting the deposit margin in each individual bank, see box 5.

Banks' net interest payments on deposits have fallen Chart 25

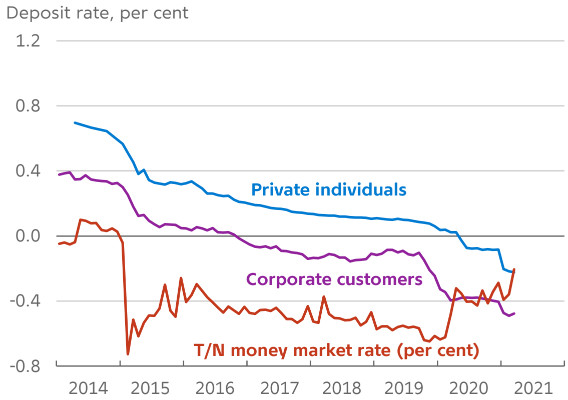


Note: Systemic and non-systemic banks' net interest payments on deposits from domestic household and corporate customers. *Private individuals* are employees, pensioners etc., and *Corporate customers* are non-financial corporations and sole proprietorships. *Net interest payments* are the amount that the banks have paid in interest and interest-like payments on deposits from private individuals and corporate customers.

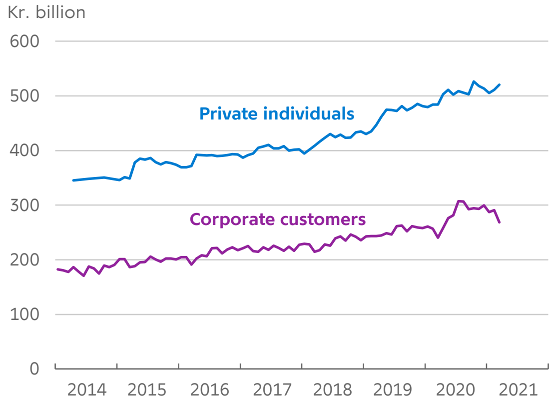
Source: Danmarks Nationalbank and own calculations.

Negative deposit rates have become more widespread in Denmark

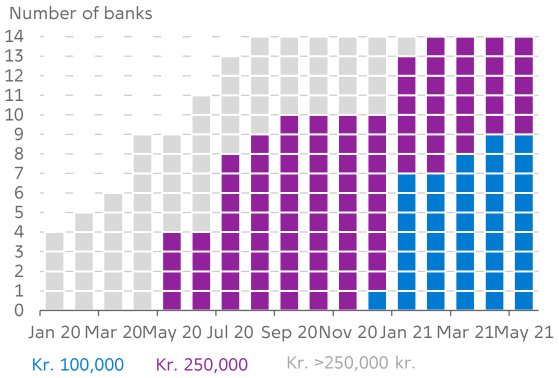
A **Banks' average deposit rates were lower in 2020 than in previous years ...**



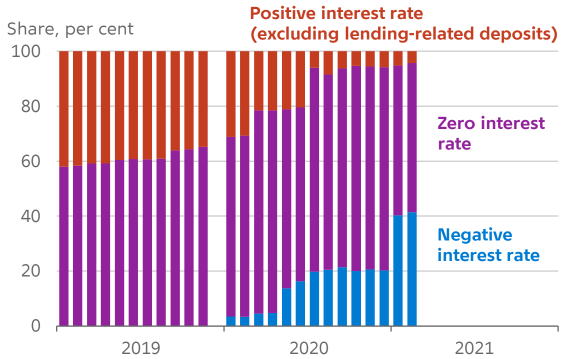
B **... but bank deposits continued to increase in 2020**



C **Many of the largest banks have reduced their thresholds for negative interest rates for household customer deposits ...**



D **... and the share of household customers' deposits that are subject to negative interest has increased significantly in the first months of 2021**

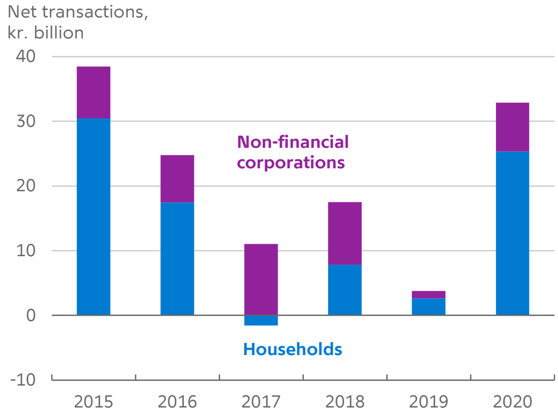


Note: A and B: Systemic and non-systemic banks' deposits and deposit rates for outstanding domestic deposits (excl. lending-related deposits and deposits in pool schemes) to *households* (employees, pensioners etc.) and *corporate customers* (non-financial corporations and sole proprietorships). C: Thresholds for negative deposit rates for household customers, beginning of month. D: The distribution of deposits on yield spread for household customers (employees, pensioners etc.) is based on a changed population of systemic and non-systemic banks over time. Observations for December 2019 are not shown due to confidentiality.

Source: Danmarks Nationalbank, public communication from the banks, Bloomberg and own calculations.

net kr. 25 billion in Danish investment funds. This amount indicates a higher investment appetite among households than in previous years, see chart 26. In recent years, there has been a trend towards investments having increased in the investment funds linked to banks that have announced negative deposit rates. There are consequently indications that some household customers have reacted to the prospects of negative deposit rates by buying investment fund shares.[14]

Net household purchases of investment fund shares were high in 2020 Chart 26



Note: Net transactions of households and non-financial corporations in Danish investment funds (UCITS).
Source: Danmarks Nationalbank and own calculations.

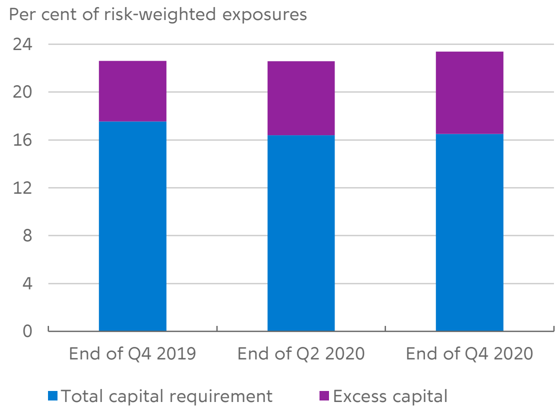
Low dividends strengthen banks' resilience

Continued increase in excess capital
The systemic institutions' capitalisation was strengthened during 2020, see chart 27. The increase in excess capital adequacy during the first half of 2020 was largely driven by eased capital requirements in response to the pandemic and its consequences.[15] In addition, the capital base was supported by the cancellation of dividends for 2019.

In the second half of 2020, the increase in excess capital adequacy was primarily driven by an increase in the capital base, including as a result of moderate dividend payments.

Across the individual systemic institutions, there is still considerable variation in the level of excess capital adequacy, see chart 28, but virtually all institutions have increased the distance to their risk-based capital requirements. The only exception is Sydbank, whose risk-weighted exposures rose after the acquisition of Alm. Brand Bank.

Increasing excess capital adequacy for systemic credit institutions Chart 27



Note: The excess capital adequacy is calculated on the basis of the total capital base. The total capital adequacy requirement consists of the solvency need (minimum capital adequacy requirement and Pillar II) and the combined buffer requirement (SIFI buffer, capital conservation buffer and countercyclical buffer).
Source: Danmarks Nationalbank and own calculations.

14 See Danmarks Nationalbank, The response of private customers to negative deposit rates, *Danmarks Nationalbank Analysis*, No. 9, April 2021 *(link)*.

15 See Danmarks Nationalbank, Banks should keep their powder dry, *Danmarks Nationalbank Analysis (Financial stability)*, No. 28, December 2020 *(link)*.

The systemic institutions have also increased their Common Equity Tier 1 (CET1) excess capital compared with the previous two years. The excess capital adequacy also increased during 2020, adjusted for the release of the countercyclical capital buffer in connection with the pandemic, see chart 29. Consequently, the release of the countercyclical buffer has not been used to pay dividends or make share buy-backs.

Seen in the light of the accommodative financial conditions and risk build-up, the capital requirement to the banks' capital should be re-established by increasing the countercyclical capital buffer. If, as expected, economic activity develops positively, a quick rebuild of the buffer may be necessary. Even if there is a rapid economic recovery, the institutions are generally well equipped to meet such a quick rebuild of the buffer.

Later in the year, the Systemic Risk Council expects to recommend an increase in the countercyclical capital buffer, with entry into force in 2022.[16]

Dividend payments have been resumed to a limited extent

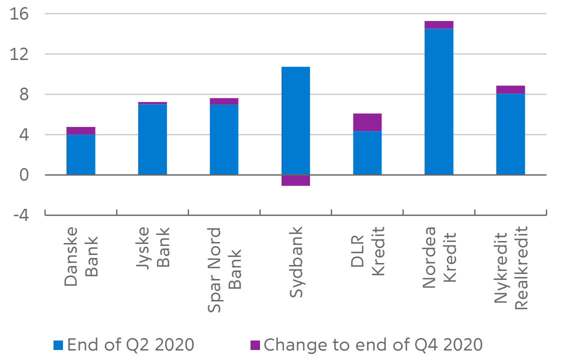
Since the outbreak of the pandemic, the European banks have limited their distribution of dividends at the recommendation of the European Systemic Risk Board (ESRB) and the national supervisory authorities. However, the credit institutions appear to have gotten through the pandemic relatively unscathed so far, and they have begun paying moderate dividends to their investors in spring. These payouts are in line with the ESRB's latest recommendation, see box 7.

The Danish Financial Supervisory Authority's guidelines are reflected in the Danish systemic institutions' distribution of dividends for 2020. Calculated as a percentage of the institutions' accumulated profits for 2019 and 2020, the Danish institutions distributed between 8 per cent and 19 per cent, see chart 30.

These levels indicate that the Danish Financial Supervisory Authority's approach has been more restrictive than that of the Swedish and Norwegian authorities, but less restrictive than the ECB. The

Continued large variations in excess capital adequacy across institutions

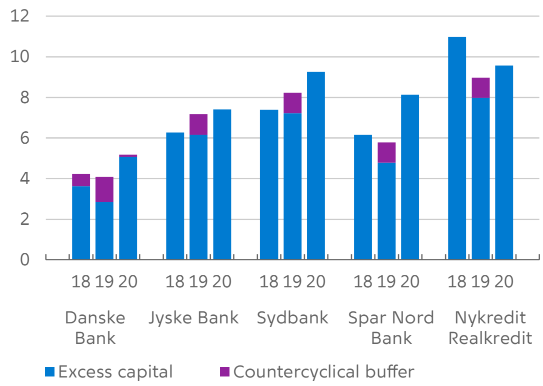
Chart 28



Note: The excess capital adequacy is calculated on the basis of the total capital base. The total capital adequacy requirement consists of the solvency need (minimum capital adequacy requirement and Pillar II) and the combined buffer requirement (SIFI buffer, capital conservation buffer and countercyclical buffer).
Source: Danmarks Nationalbank and own calculations.

Excess capital adequacy relative to Common Equity Tier 1 capital has increased since 2019

Chart 29



Note: 2018 excess capital adequacy has been adjusted to reflect fully phased-in SIFI buffer and capital conservation buffer.
Source: Danmarks Nationalbank and own calculations.

16 See press release from the 32nd meeting of the Systemic Risk Council (*link*).

Recommendations for distribution in Scandinavia and Europe

Box 7

The European Systemic Risk Board (ESRB) revised its recommendations on distribution of dividend in December 2020. The main message was still that banks and other financial institutions should refrain from or limit their distribution in the form of both dividends and share buybacks until 30 September 2021. Extreme prudence must be exercised in connection with distribution.

The revised recommendations have been implemented differently by the supervisory authorities across Scandinavia and Europe.

The Danish Financial Supervisory Authority
The overall criterion is that dividends can be paid if the institution has a sufficiently sound excess capital adequacy after any dividend payouts and under severe stress. Furthermore, the Danish Financial Supervisory Authority recommends that any distribution be made solely on the basis of the profit for 2020 and that the total distribution should be lower than in a normal year according to the institution's dividend policy.[1]

The Swedish Financial Supervisory Authority
In December 2020, the Swedish Financial Supervisory Authority recommended that the banks should distribute maximum 25 per cent of their accumulated profits for 2019 and 2020.[2]

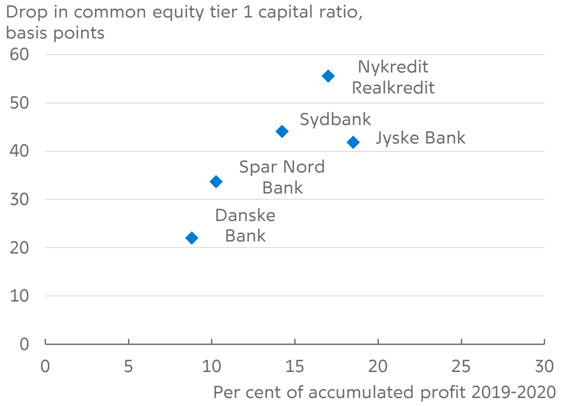
The Norwegian Ministry of Finance
In January 2021, the Norwegian Ministry of Finance called on Norwegian banks to limit their total distribution to maximum 30 per cent of their accumulated profits for 2019 and 2020.[3]

The European Central Bank (ECB)
Two requirements must be met for banks under the Single Supervisory Mechanism: The distribution must be lower than 15 per cent of the accumulated profits for 2019 and 2020 and may not result in a decrease in the institution's Common Equity Tier 1 capital ratio of more than 20 basis points.[4]

1. See the Danish Financial Supervisory Authority, *Finanstilsynet følger opdateret henstilling om kapitalbevarelse (The Danish Financial Supervisory Authority follows updated recommendation on capital preservation)*, press release, 18 December 2020 (*link – in Danish only*).
2. See the Swedish Financial Supervisory Authority, *Finansiella företag ska vara återhållsamma med utdelningar till och med september 2021 (Financial institutions must show restraint in their distributions up to and including September 2021),* press release, 18 December 2020 (*link – in Swedish only*).
3. Norwegian Ministry of Finance, *Bankerne bør være forsiktige med å dele ut utbytte fremover* (Banks should be prudent in distributing future dividends), press release, 18 December 2020 (*link – in Norwegian only*).
4. ECB, *ECB asks banks to refrain from or limit dividends until September 2021*, press release, 15 December 2020 (*link*).

Dividends constitute less than 20 per cent of accumulated profit for 2019-20

Chart 30



Note: Proposed distribution for systemic institutions as a percentage of accumulated profit for 2019-20 and risk-weighted exposures. DLR Kredit is excluded as it does not distribute dividend. Nordea Kredit has also been excluded as it is a subsidiary of Nordea Bank Abp.
Source: Danmarks Nationalbank and own calculations.

more lenient criteria in Scandinavia, including Denmark, may reflect that the banks in these countries are among the highest capitalised banks in Europe.

A few systemic institutions fail to meet capital adequacy requirements in stress test
Danmarks Nationalbank's latest stress test shows that a few systemic institutions breach the requirements for their capital buffers in the severe recession scenario, see chart 31.[17] The future leverage ratio requirement is breached to a very limited extent in the severe recession scenario. However, none of the institutions comes near to breaching their solvency need.

Cancellation of dividends for 2019 and a moderate distribution for 2020 have supported the ability of the institutions to withstand an economic downturn. However, the breach of capital requirements should give rise to a few institutions considering their capitalisation, see the section below.

17 See Danmarks Nationalbank, A few systemic banks lack capital in severe recession scenario, *Danmarks Nationalbank Analysis (Stress test)*, No. 11 May 2021 *(link)*.

The stress test results also show the need for capital build-up in a few institutions. The leverage ratio requirement is a minimum requirement, and breaches of this requirement will generally entail a transfer to Financial Stability. Capital buffer requirement breaches will result in a number of automatic restrictions, such as restrictions on dividend payments and coupon interest on hybrid capital instruments.

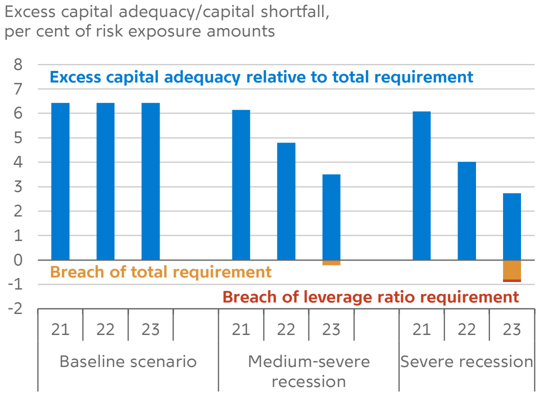
New rules for MREL requirement have entered into force

On 28 December 2020, new rules entered into force with the final implementation of the revised Bank Recovery and Resolution Directive (BRRD2).[18] The implementation introduced a number of measures, including a reduction of the so-called subordination requirement[19], and it is therefore relevant now to look at excess funds relative to both the full MREL requirement and the subordination requirement, see chart 32. At the end of 2020, all systemic institutions were able to meet their MREL requirement with subordinated funds. The individual institutions should remain focused on building up a sufficient buffer to their MREL requirement to ensure flexibility and scope.

The institutions must also be aware that a combined minimum requirement will become effective on 1 January 2022 for groups that comprise a mortgage credit institution. The requirement entails that the sum total of the group's MREL and debt buffer requirements must be minimum 8 per cent of the group's total liabilities. In technical terms, it is the debt buffer requirement for the group's mortgage credit institution that is increased to maintain the minimum requirement.

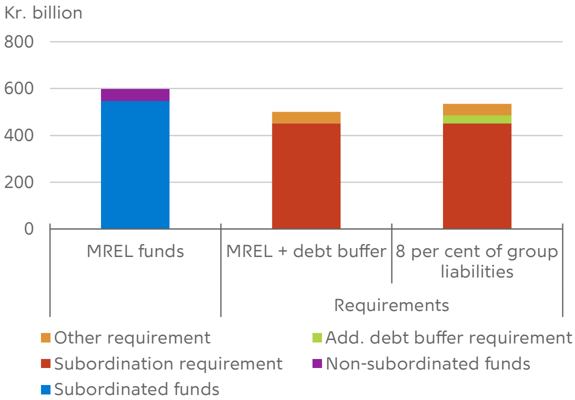
The minimum requirement of 8 per cent is expected only to result in a relatively limited increase in the institutions' total requirements. However, the stricter requirement is concentrated on a few institutions, which should already now assess their need for further issuance of MREL funds during 2021 to ensure sufficient excess funds when the requirement enters into force.

A few systemic institutions breach buffer and leverage ratio requirements Chart 31



Note: Excess capital adequacy or capital need of systemic institutions that either have excess capital adequacy or a capital need as percentages of their total risk-weighted exposures.
Source: Danmarks Nationalbank.

Overall level of MREL funds sufficient to cover future requirement for 8 per cent Chart 32



Note: *MREL funds* are calculated as the sum of funding with a remaining maturity of more than one year. *MREL + debt buffer* is the sum total of the MREL requirement and combined buffer requirement for the bank and (where relevant) total capital adequacy requirement and debt buffer requirement for the mortgage credit institution. The additional debt buffer requirement per 1 January 2022 must be fulfilled with subordinated funds.
Source: Danmarks Nationalbank and own calculations.

18 See Danmarks Nationalbank, Banks should keep their powder dry, *Danmarks Nationalbank Analysis (Financial stability)*, No. 28, December 2020 (*link*).

19 The subordination requirement must be covered by subordinated liabilities, i.e. liabilities that bear losses before unsecured creditors – for example capital instruments and non-preferred senior debt.

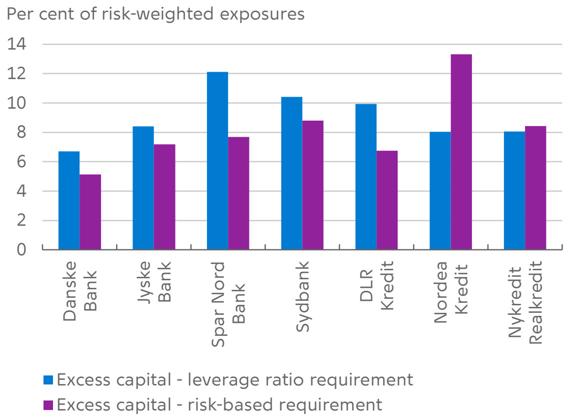
New leverage ratio requirement is generally not binding on systemic institutions
On 28 June 2021, a number of amendments to the Capital Requirements Regulation (CRR) will enter into force. Here, a leverage ratio of minimum 3 per cent is introduced as a requirement for the institutions' Tier 1 capital. The requirement is based on the institutions' non-risk-weighted exposures and is intended to limit the capital benefits of low risk weights. This is consequently a non-risk sensitive floor requirement.

Whether the leverage ratio requirement is binding on the individual institution will depend on the institution's average level of risk weights and the size of the institution-specific Pillar II requirement. For most systemic institutions, the leverage ratio requirement is not the binding capital requirement. Most of the institutions thus have a higher excess capital adequacy relative to the leverage ratio than relative to their risk-based capital requirement, see chart 33. However, the leverage ratio requirement has significant implications for Nordea Kredit, while the requirement becomes only marginally binding for Nykredit.

The leverage ratio requirement for the systemic institutions is significantly higher than the minimum requirement for Tier 1 capital. The institutions should thus be aware that the introduction of the leverage ratio requirement results in a higher minimum requirement for their Tier 1 capital.

For most systemic institutions, excess capital adequacy is higher for the gearing ratio than the capital buffer requirement

Chart 33



Note: The risk-based requirement is calculated on the basis of Tier 1 capital level and consists of the solvency requirement and the combined buffer requirement (SIFI buffer, capital conservation buffer and countercyclical buffer). The leverage ratio requirement has been calculated as 3 per cent of total non-risk-weighted exposures. Data for end-2020.
Source: Danmarks Nationalbank, own calculations and Pillar II reporting for 2020.

Liquidity reserves have been reduced since the year-end

Banks' liquidity ratios have decreased
The systemic banks' liquidity reserves have decreased since the turn of the year, but remain at a high level. The banks' liquidity buffers were already relatively solid before the outbreak of the pandemic last year, but, during the pandemic, government liquidity support measures for the corporate sector have contributed to the buffers.

Danmarks Nationalbank's latest sensitivity analysis of the systemic banks' liquidity reserves shows that the banks can handle a severe liquidity stress for at least four months, see chart 34.[20] The current survival horizon under severe stress is lower than it was during the second half of 2020, but it does not give cause for concern.

The statutory liquidity coverage ratio (LCR) also shows a decrease relative to the second half of 2020, but it still remains at a high level for both systemic and non-systemic banks, see chart 35.

20 For a method description of Danmarks Nationalbank's sensitivity analysis, see page 26 of Danmarks Nationalbank, Lower excess capital adequacy for the banks, *Danmarks Nationalbank Analysis (Financial Stability)*, No. 25, November 2019 (*link*).

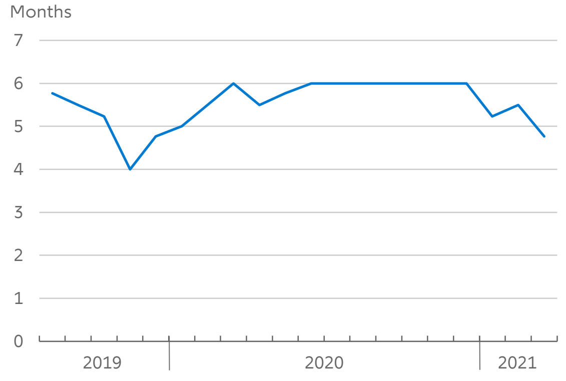
Bank deposits increased significantly as government liquidity support was introduced
Deferred deadlines for payment of tax and VAT as well as tax loans significantly increased corporate liquidity in 2020.

Liquid funds in the corporate sector and household customers' savings most often end up in the banks' balance sheets in the form of either increased deposits or decreased lending. Against this background, bank deposits increased significantly in 2020. An immediate effect of the extra deposit liquidity has been an increase in the institutions' liquidity position.

Especially corporations increased their total deposits in 2020, see chart 36, where deposits predominantly increased in the May-June period, when the payment deadlines for tax and VAT were deferred. When previously deferred payment deadlines fell due in early 2021, this may conversely have contributed to decreasing deposits from the banks' corporate customers. Households have also increased their deposits since the outbreak of the pandemic, partly due to disbursements of previously frozen holiday pay.

Some corporations secured access to liquidity through extended credit facilities with their bank during 2020. These are facilities which the banks have undertaken to be able to disburse and which therefore also contribute to the ongoing requirements for their liquidity reserves. Afterwards, corporate customers have not fully activated the facilities.

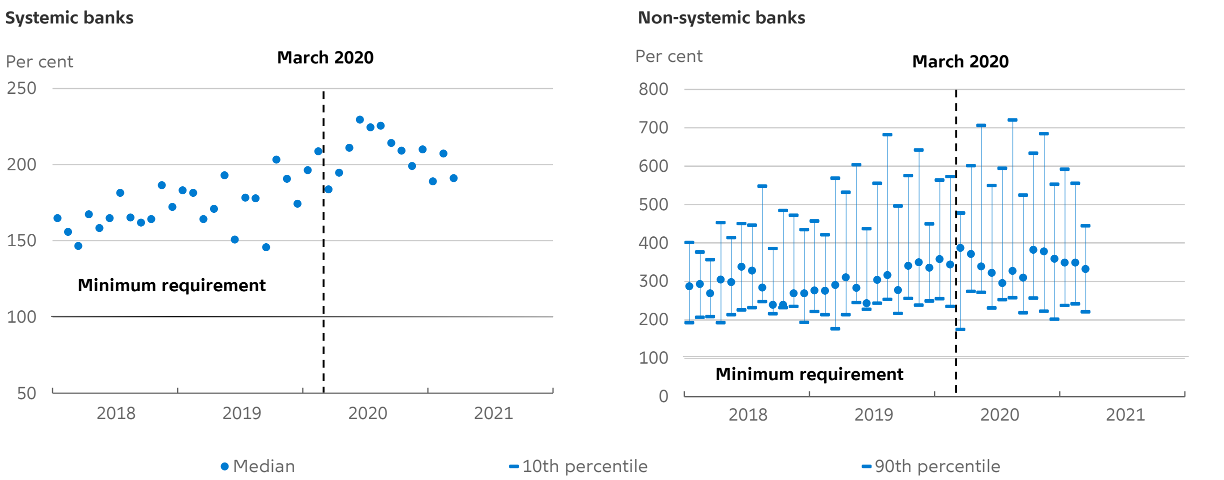
Systemic banks can survive four months of liquidity stress Chart 34



Note: Number of months systemic banks can overall withstand severe combined liquidity stress, according to Danmarks Nationalbank's sensitivity analysis. The maximum survival horizon in the sensitivity analysis is six months. The most recent observations are from end-March 2021.
Source: Danmarks Nationalbank.

Banks' liquidity can absorb increased outflows when government liquidity support is phased out
The banks should be prepared that part of the increase in deposits in the past year is temporary

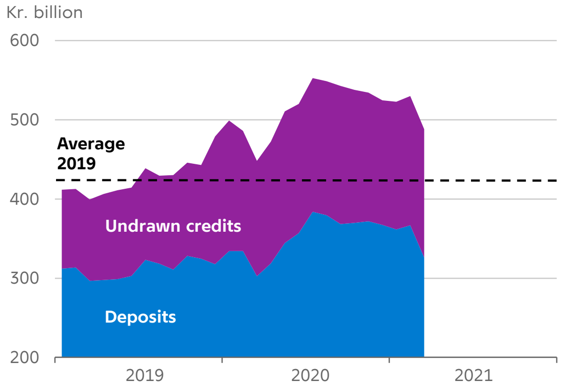
Banks observe short-term liquidity coverage ratio (LCR) with a certain margin Chart 35



Note: The LCR is calculated as the bank's liquid assets divided by outgoing net cash flows over a 30-day stress period. The most recent observations are from end-March 2021.
Source: Danmarks Nationalbank.

Corporate deposits and liquidity facilities are at a high level during pandemic

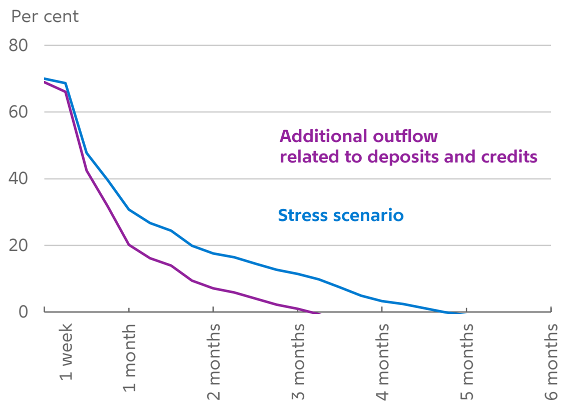
Chart 36



Note: Danish non-financial corporations' deposits and confirmed credit and liquidity facilities to non-financial corporations in Danish kroner. The most recent observations are from end-March 2021.
Source: Danmarks Nationalbank, the Danish Financial Supervisory Authority and own calculations.

Sensitivity to further deposit withdrawals and draws on credit facilities

Chart 37



Note: Number of months systemic banks can overall withstand a severe combined liquidity stress and extra draws on credit facilities and corporate deposit withdrawals, according to Danmarks Nationalbank's resilience analysis. Data calculated end-March 2021.
Source: Danmarks Nationalbank.

and will decline as liquidity support measures are being phased out.

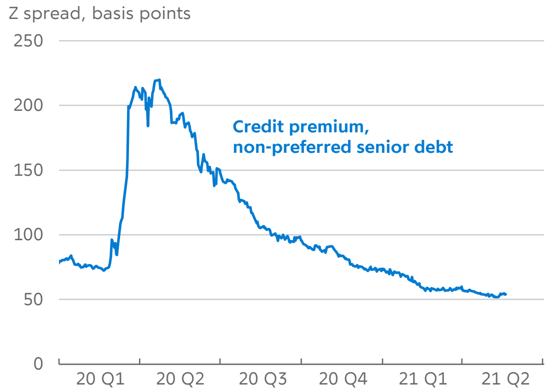
Danmarks Nationalbank has made a sensitivity calculation of the institutions' survival horizon if the deferred tax and VAT payments are repaid and corporations utilise the increase in credit facilities granted by the banks since March 2020.[21] In such case, the institutions' survival horizon will fall, but it will still exceed three months, see chart 37. While the banks' liquidity buffer has generally been lower than in the second half of 2020, the potential additional draws are also reduced in connection with the phasing out of the liquidity support measures.

Good time to build up more resilient excess capital adequacy relative to banks' MREL requirement

The risk premium for non-preferred senior debt has fallen to a lower level than in the run-up to the pandemic, see chart 38. The downward trend

Credit premium for non-preferred senior debt is back to pre-pandemic level

Chart 38



Note: Average z spread for non-preferred senior debt in euro maturing in 2024 for Danske Bank, Jyske Bank and Nykredit. The *z spread* is an expression of the additional cost of financing using a debt instrument, where the additional cost is calculated by parallel-shifting a risk-free zero coupon rate structure. The most recent observations are from 19 May 2021.
Source: Refinitiv Eikon.

21 For a further description of the resilience scenario, see box 4 in Danmarks Nationalbank, Banks should keep their powder dry, *Danmarks Nationalbank Analysis* (*Financial Stability*), No. 28, December 2020 (*link*).

reflects the large risk appetite among investors in the debt issuance markets.

For an extended period of 2020, the average risk premium for non-preferred senior debt issued by Danish banks was at an increased level. The development in the past year shows that flexibility in terms of the time of issuance may have a great impact on the cost of issuing non-preferred senior debt to meet the MREL requirement.

The current market situation is a good time for the banks to build up a more resilient excess capital adequacy relative to their MREL requirement by issuing new and more long-term non-preferred senior debt.

Appendix
Analysis data

The analysis applies the term 'credit institutions' when referring to the activities of both banks and mortgage credit institutions. The term 'bank' refers specifically to entities carrying out banking activities.

The analysis of Danish credit institutions' earnings, liquidity and own funds comprises seven systemic credit institutions selected by the Danish Financial Supervisory Authority, most recently in 2020. The analysis also includes the non-systemic banks in the Danish Financial Supervisory Authority's group 2 in 2021. The institutions are shown in Table A. Unlike in the Danish Financial Supervisory Authority's group 2, Saxo Bank has been omitted from the population due to its business model. The grouping used in the analyses applies retrospectively.

In the analysis and assessment of lending activity, focus is on the grouping of large and medium-sized banks in Danmarks Nationalbank's lending survey. Large banks consist of group 1 of the Danish Financial Supervisory Authority and Nordea Danmark, while medium-sized banks consist of group 2 of the Danish Financial Supervisory Authority, Handelsbanken and Santander Consumer Bank.

Institutions in the analysis by total assets as at 31 December 2020. Kr. million

Table A

Systemic credit institutions	Amount
Danske Bank	4,109,231
Nykredit Realkredit	1,665,767
Jyske Bank	672,648
Nordea Kredit	467,936
DLR Kredit	181,083
Sydbank	165,800
Spar Nord	102,077
Total systemic groups	7,364,542

Systemic banks	
Danske Bank	2,574,837
Jyske Bank	335,402
Nykredit Bank	197,611
Sydbank	168,823
Spar Nord	102,155
Total systemic banks	3,378,828

Non-systemic banks	
Arbejdernes Landsbank	62,704
Ringkjøbing Landbobank	54,862
Sparekassen Kronjylland	33,359
Sparekassen Sjælland-Fyn A/S	27,370
Sparekassen Vendsyssel	31,626
Lån & Spar Bank	27,426
Vestjysk Bank	39,511
Jutlander Bank	20,662
Middelfart Sparekasse	14,730
Total non-systemic banks	312,249

Mortgage credit institutions	
Nykredit Realkredit	1,554,091
Realkredit Danmark	891,194
Nordea Kredit	467,936
Jyske Realkredit	377,132
DLR Kredit	181,083
Total mortgage credit institutions	3,471,436

Note: The balance sheet total for the systemic credit institutions is stated at group level. The credit institutions have thus been stated inclusive of assets in their subsidiaries in the form of, for example, mortgage credit institutions. The balance sheet total for systemic banks, non-systemic banks and mortgage credit institutions is stated at institution level. The assets in the financial statements of the mortgage credit institution Nykredit Realkredit also reflect the Nykredit Group's funding of the subsidiary Totalkredit. The assets in the financial statements for Vestjysk Bank include the balance sheet total for Den Jyske Sparekasse, end of 2020, as Den Jyske Sparekasse merged with Vestjysk Bank in January 2021.
Source: Danmarks Nationalbank.

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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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