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FINANCIAL STABILITY – 1ST HALF 2020

Credit institutions are facing hard times

- The coronavirus outbreak has influenced banks' results in the 1st quarter of 2020 reflected in the largest impairment charges for the largest banks since the 2008-09 financial crisis. How severely the economy and banks will be affected remains highly uncertain.
- Credit institutions today are both better capitalised and have higher excess liquidity than in the run-up to previous downturns. But it is important for institutions to increase the proportion of eligible liabilities in order to ensure sufficient distance to the requirements.
- It is important to stick to the regulatory framework that has ensured a good starting point for the credit sector. Banks can only ensure continued lending to creditworthy customers as long as their own soundness cannot be called into question.

Countercyclical buffer released

on 12 March with immediate effect

Read more

The liquidity premium rose

in the mortgage market for a short period

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Corporate customers affected

severely by lockdown

Read more

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Summary and assessment

Sharp economic slowdown across the world
Economic activity around the world has slowed down sharply and very suddenly. The International Monetary Fund, IMF, expects a strong fall in global GDP in 2020, and the impact on the euro area is expected to be even more severe. Six months ago, the outlook for 2020 was for moderately positive growth rates. The dramatic slowdown in March followed the global outbreak of coronavirus (COVID-19) and the government measures to contain the risk of infection by means of lockdown of large segments of society.

Prices in financial markets can change both very quickly and dramatically
The outbreak of coronavirus has once again shown that prices in the financial markets can change both very quickly and dramatically. Financial market volatility rose to levels last seen during the 2008-09 financial crisis.

In April and May, market volatility has fallen and equity prices in particular have recovered. The increases have coincided with announcements of large fiscal relief packages and very accommodative monetary policy.

Stick to the requirements that have ensured banks a good starting point in this crisis
Banks contribute best to the economy by being well capitalised and having robust liquidity buffers. This is reinforced by suspending dividends and share buybacks.

Now is the time to stick to the regulatory framework that has made the banks well prepared for the current crisis. The regulatory framework builds on the experience of the 2008-09 financial crisis and includes new requirements for banks' capital and liquidity, as well as a new recovery and resolution regime.

Should some banks' business models become unsustainable, the first step is still to seek a market-based solution. The next step is resolution and in some cases restructuring.

The liquidity position is still robust in the largest banks
Throughout the period, Danish banks have maintained a good distance to the short-term liquidity requirement. Systemic banks can withstand significant liquidity outflows according to Danmarks Nationalbank's sensitivity analysis of their liquidity buffers. Since the financial crisis, the sector has turned a customer funding deficit into a customer funding surplus.

The scope for new issuances was limited for some time
During the financial stress peak in March, activity in the markets for new issuances of capital and debt instruments to meet the requirements for eligible liabilities was briefly suspended. Activity returned slowly in early April and has since stabilised at slightly higher interest rate levels. The strong and sudden drop in market activity demonstrates the importance of a diversified maturity profile.

Mortgage market liquidity was briefly challenged
Mortgage bond yields increased sharply for a short period before Easter, with significant expansions of interest rate spreads on both short-term and long-term securities. Despite the market stress, mortgage credit institutions were able to continue issuing without interruption throughout the period, contrary to the situation in many other debt markets. Pricing in well-functioning markets naturally entails notably higher interest rates during a period of investor restraint. Shortly after interest rates had risen quickly, investors returned and relatively large issues were sold in connection with the end of the quarter.

The lockdown may affect many firms with bank credit
Loans to firms in affected industries account for a substantial proportion of bank lending. There is a significant risk that firms in other industries will also be affected by the consequences at a later stage. Many firms do not have adequate liquid funds to cover short-term liabilities. Consequently, many firms will depend on access to additional credit from their banks. Firms with a poor starting point or poor prospects will find it difficult to secure adequate liquidity, possibly resulting in default.

Relief packages can support the quality of institutions' lending
Banks are facing a period of lower credit quality in their lending. In Danmarks Nationalbank's latest lending survey the institutions pointed to

expectations of stronger customer risk assessment in the 2nd quarter. However, a large number of wide-ranging government support schemes and other government measures can temporarily buoy up customers' finances and creditworthiness.

Credit institutions should maintain their credit standards for new exposures.

Corporate customers of medium-sized banks are generally less resilient
Overall, Danish corporate customers have become more resilient in recent years, but the credit quality of medium-sized banks' corporate customers is considerably lower than that of large banks. Thus, more than one in three corporate customers have both low solvency and low liquidity in 4 out of 11 medium-sized banks.

Rising unemployment could eventually increase losses on loans to households
If unemployment growth sticks at a high level for a prolonged period, the risk of losses on loans to households may increase. However, credit institutions' lending to employees and others in the industries where unemployment has increased the most so far, accounts for a small proportion of employees' total borrowing.

Bank earnings fell sharply in the 1st quarter
The coronavirus outbreak has influenced banks' results in the 1st quarter of 2020 reflected in the largest impairment charges for the largest banks since the financial crisis in 2008-09. The drop in earnings should be seen in the light of a significant increase in institutions' loan impairment charges and negative value adjustments.

Larger impairment charges at the prospect of crisis are a key part of recently introduced accounting rules
A significant proportion of impairment charges reflect a downward adjustment of the macroeconomic outlook used to calculate expected credit losses under the recently introduced accounting standard, IFRS 9. The new standard is important in ensuring confidence in banks' financial statements. At the same time, based on management judgement, several institutions have recognised additional impairment charges reflecting the uncertainties associated with the current valuations.

Release of the countercyclical capital buffer provides extra scope to get through the crisis
Danish banks are significantly better capitalised than before the financial crisis in 2008-09. On 12 March 2020, the Minister for Industry, Business and Financial Affairs decided to release the countercyclical capital buffer with immediate effect. This gives banks and mortgage credit institutions extra scope in relation to capital requirements.

Danske Bank, Nykredit, Jyske Bank, Sydbank and Spar Nord have all chosen to cancel dividend payments as well as planned and existing share buyback programmes. Danmarks Nationalbank sees the cancellation of dividend payments and share buybacks as a sign that banks are appropriately prudent in the current situation.

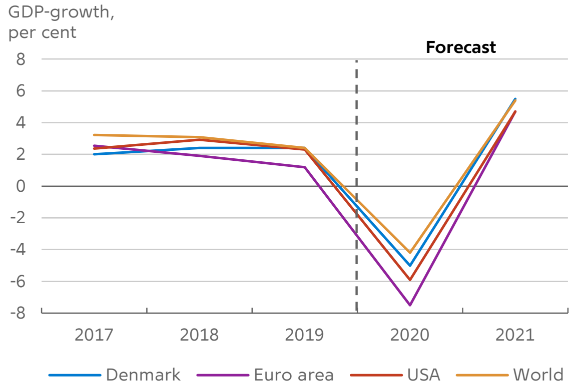
Institutions should ensure sufficient distance to the MREL requirement by issuing eligible debt instruments
In the coming years, several systemic institutions will have to issue new, MREL-eligible debt instruments to continue to meet their minimum requirements for own funds and eligible liabilities, MREL. During periods of financial market turmoil, issuance can be difficult and expensive, as most recently seen in March this year. It is important that institutions have sufficient distance to the MREL requirement to avoid having to limit their activities in order to ensure compliance. Institutions should thus issue MREL-eligible debt instruments in good time to provide a robust distance in relation to the MREL requirement.

Sharp economic slowdown hit financial markets

Economic activity around the world has slowed down sharply and very suddenly. The International Monetary Fund, IMF, expects global economic growth of -4.2 per cent in 2020, see Chart 1. In the euro area, growth of -7.5 per cent is expected in 2020. Six months ago, the IMF's outlook for 2020 was for moderately positive growth rates. The outlook for GDP growth in 2020 is considerably lower than in any year during the 2008-09 financial crisis.

The dramatic economic slowdown followed the global outbreak of coronavirus (COVID-19). Following the outbreak, authorities around the world have taken measures to contain the risk of infection by closing down large segments of society.

Prospect of sharp decline in economic activity Chart 1



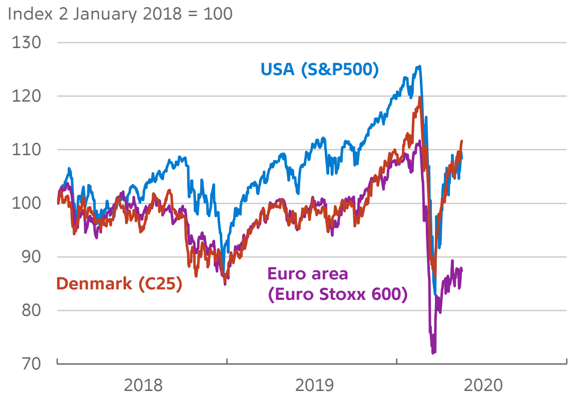
Note: IMF's main scenario for world GDP growth is based on market exchange rates and IMF projections for USA and Euro area. GDP growth in Denmark is Danmarks Nationalbank's central scenario from April 2020.
Source: IMF and Danmarks Nationalbank.

The coronavirus outbreak and lockdown affected equity markets

The leading stock indices plummeted in March, but have since recovered some of the losses, see Chart 2. The coronavirus outbreak has triggered extraordinarily high uncertainty about the economic outlook. That led to a sharp fall across most equity markets. On a few days, the leading stock indices fell by more than 10 per cent.

Equity markets have subsequently recovered in April and May. The increases have coincided with announcements of large fiscal relief packages and very accommodative monetary policy. However, the increases have not been broad-based. In the travel and leisure sectors, as well as for banks, equity prices remain about 40 per cent lower than in mid-February, see Chart 3. This also applies to the equity prices for Danish systemic banks, which have fallen almost 35 per cent in the same period. Conversely, equity prices for firms in the health sector have almost returned to the mid-February level.

Large and sudden declines in equity markets followed by increases Chart 2

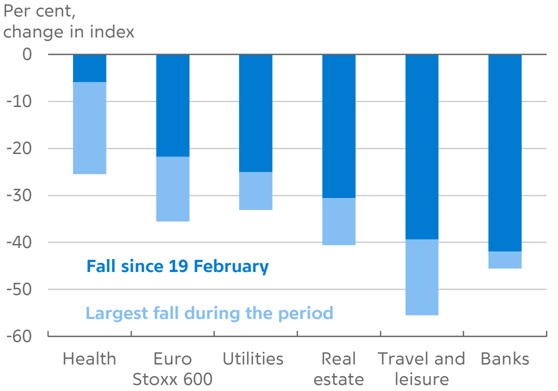


Note: The most recent observations are from 19 May 2020.
Source: Refinitiv Eikon.

Diving prices of oil and other commodities

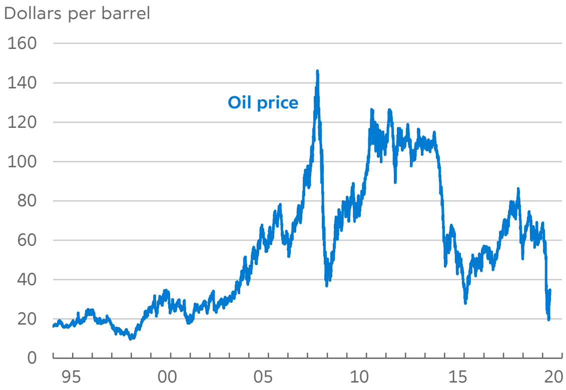
The lockdown in many countries, first China, then Europe and the USA, among others, has resulted in plummeting demand and prices for a number of commodities. On 9 March, oil prices dropped by almost 25 per cent after Russia and the Organization of the Petroleum Exporting Countries, OPEC, failed to agree on limiting the oil supply, see Chart 4. Since then, the market price has remained at a lower level, but with large fluctuations. The coronavirus outbreak

Equity prices in the banking, travel and leisure, real estate and utilities sectors are still severely affected Chart 3



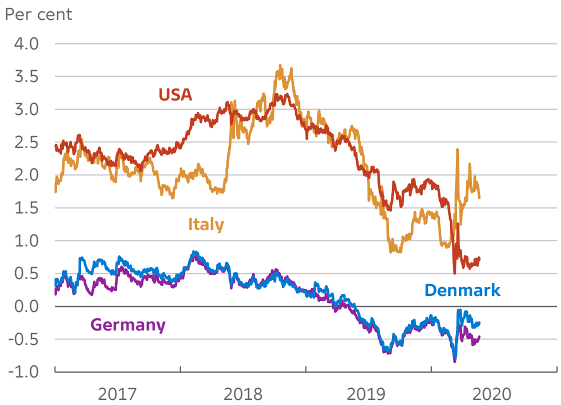
Note: Change in per cent for the selected stock index in the euro area, Euro Stoxx 600 index, since 19 February 2020, the peak of the Euro Stoxx 600 index. The most recent observations are from 19 May 2020.
Source: Refinitiv Eikon.

Oil prices plunged in April to lowest level since 2001 Chart 4



Note: Price of a barrel of brent crude oil. The most recent observation is from 19 May 2020.
Source: Refinitiv Eikon.

Government bond yields have fallen in the USA since February, but have increased in, inter alia, Italy Chart 5



Note: 10-year government bond yields. The most recent observations are from 19 May 2020.
Source: Refinitiv Datastream.

has also caused the prices of other commodities, such as metals, to fall.

Many countries are facing high government yield volatility and prospects of a higher debt burden
The negative economic developments also impacted the sovereign debt markets, where government bond yields have fluctuated strongly, see Chart 5. In the USA, government yields have fallen significantly. Conversely, government yields rose in Europe in March and have since stabilised at a slightly higher level than before the virus outbreak. Italian government yields have fluctuated strongly and have increased considerably since mid-February.

Danish government bond yields have also risen slightly relative to German government yields, but are still below zero.

Many countries are facing a period of substantial demand for new government issuances to finance the economic relief packages implemented in recent months. Large new issuances could prove challenging for countries that already have high debt.

The Danish State is well equipped to finance the extraordinary corona-related expenses, given the low government debt, sound public finances and the very high credit rating. As one of few in the world, the Danish State has retained the highest achievable rating from the largest credit rating agencies.

Strong price fluctuations for equities and bonds

The outbreak of coronavirus has once again shown that prices in the financial markets can change both very quickly and dramatically. This is the highest volatility level since 2008-09 during the financial crisis for both equities, see Chart 6, and bonds.

For a few days in March, equity prices dropped, while bond yields rose, see Chart 7. Both bond yields and equity prices have readjusted since then. Price falls for equities and bonds at the same time have occurred previously during periods of high financial market stress.

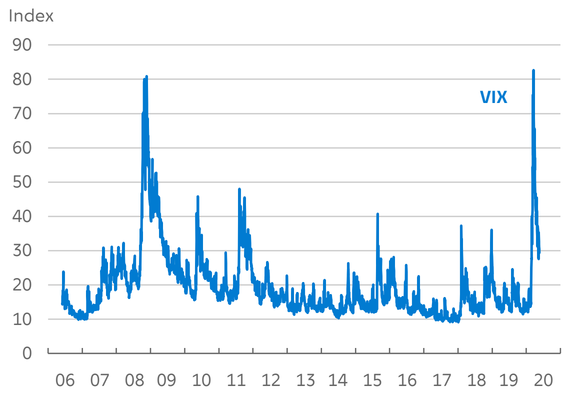
The insurance and pension sector suffered heavy losses in March

The pension sector holds a large part of private-sector savings in Denmark. Consequently, it was particularly severely affected by the market turmoil in March, see Chart 8. The value of the sector's asset portfolio fell by around kr. 300 billion over one month. But this loss is unrealised and if the financial markets recover from the losses, pension wealth will also return to pre-virus levels. In addition, some companies sold assets during this period, suffering realised losses.

Following the increase in interest rates in mid-March, some insurance and pension companies were met with variation margin calls to cover fluctuations in the value of derivatives portfolios. For some derivative contracts, the variation margin must be in the form of cash deposits.[1] To the extent that companies have experienced high cash variation margin calls or have been nervous about potential calls, this may have limited their performance in the financial markets in mid-March.

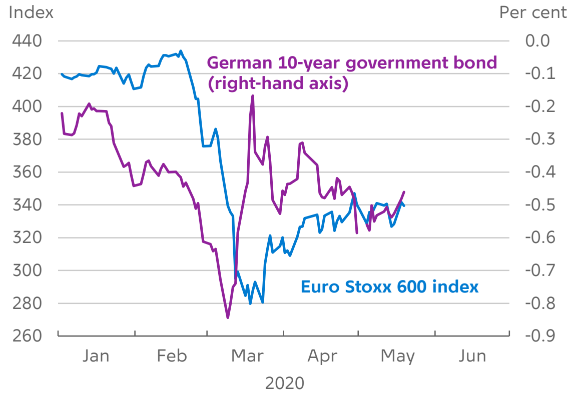
The market turmoil in March underlines the importance of sound liquidity reserves in the companies for compliance with variation margin calls. Thus, the companies must have connection with both Danish and international banks with a view to repo transactions. If reasonable access to liquidity is not possible, it may be necessary to reduce the use of derivatives.

Historically high equity market volatility Chart 6



Note: The most recent observation is from 19 May 2020.
Source: Refinitiv Eikon.

Period with both falling stock prices and rising interest rates Chart 7



Note: Euro Stoxx 600 index and German 10-year government bond yield. The most recent observations are from 19 May 2020.
Source: Refinitiv Eikon.

1 See Danmarks Nationalbank, Pension companies will have large liquidity needs if interest rates rise, *Danmarks Nationalbank Analysis*, No. 23, November 2019 (*link*).

Massive easing and support from central banks
Several central banks have introduced extraordinary measures to support banks' access to liquidity. Over a few days, both the European Central Bank, ECB, and the Federal Reserve, Fed, decided to inject liquidity into the market and initiate significantly larger asset purchases.

The ECB launched a number of initiatives in March in the light of the coronavirus outbreak. On 12 March, the ECB maintained its key interest rate at -0.5 per cent but at the same time announced that it would increase its asset purchases. On 18 March, a new purchase programme amounting to 750 billion euro in total was launched, as a minimum in force until end-2020, comprising corporate debt such as commercial paper.

The ECB has also expanded its facilities to include long-term loans to banks, i.e. Longer-Term Refinancing Operations, LTRO, and launched Pandemic Emergency Longer-Term Refinancing Operations, PELTRO. Both measures give euro area banks access to loans at favourable interest rates. In addition, the ECB has temporarily eased a number of collateral requirements, e.g. lower haircuts on some assets eligible as collateral for central bank loans.

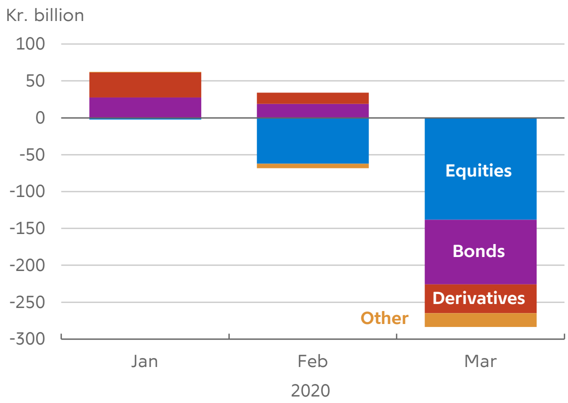
The Fed also launched initiatives in March. On 3 March, the Fed decided to lower its key interest rate to 1-1.25 per cent. On 15 March, this interest rate was lowered again to 0-0.25 per cent and an asset purchase programme was launched. On 17 March, this was extended to include commercial paper. On 23 March, the Fed announced that it would purchase government bonds and covered bonds to the extent necessary, which the market interpreted as an unlimited purchase programme. In addition, the Fed launched targeted purchase programmes to support well-functioning markets and credit.

Danmarks Nationalbank's lending facility and swap agreements have improved banks' access to liquidity
Like other central banks, Danmarks Nationalbank established extraordinary lending facilities for its monetary policy counterparties in March 2020. The new facilities should collectively ensure the banking sector's access to liquidity and longer-term financing in various currencies on favourable terms and support a well-functioning bond market.

From 20 March, the monetary policy counterparties have been able to take out the new one-week loans against collateral, and on 27 March, they also gained access to 3-month loans against collateral. The interest rate on the extraordinary loans is set at -0.35 per cent. The interest rate on the 3-month facility is variable, following the interest rate on extraordinary loans.

Substantial losses in the insurance and pension sector

Chart 8



Note: Value adjustments incl. exchange rate adjustments. Reporting to Danmarks Nationalbank's statistics of securities and investment associations concerning insurance and pension companies.
Source: Danmarks Nationalbank.

On 19 and 20 March, Danmarks Nationalbank announced that it had established a swap agreement with the Fed and reactivated a swap line with the European Central Bank. The agreements guarantee Danish financial institutions access to liquidity in dollars and euro. The swap line with the Fed amounts to 30 billion dollars and runs for at least six months. With the reactivation of the swap line with the European Central Bank, the maximum loan amount was increased from 12 billion euro to 24 billion euro.

The financial sector's core tasks continued to operate smoothly

Since the outbreak of coronavirus, financial institutions in Denmark have focused on being able to continue to operate and to service customers – even in the event of a worsening of the crisis or other incidents.

Some of the functions of the sector are critical. For example, clearing and settlement of payments in Danish kroner is important in order to keep society going, see Box 1. On each banking day, payments averaging kr. 618 billion, or just over one fourth of annual Danish GDP, are processed via the Danish payments infrastructure. The critical functions of the sector have so far operated smoothly.

Financial institutions have taken a number of actions to ensure staffing of key critical functions and to reduce employee contagion. A case in point is implementation of split teams, i.e. employees with critical functions are divided into teams to reduce the spread of infection. Meetings have been digital and as many people as possible have worked from home.

Payments constitute a critical function

Box 1

The Danish payments infrastructure consists of settlement systems and actors, together ensuring the smooth settlement of the many daily time-critical transactions, see the chart.

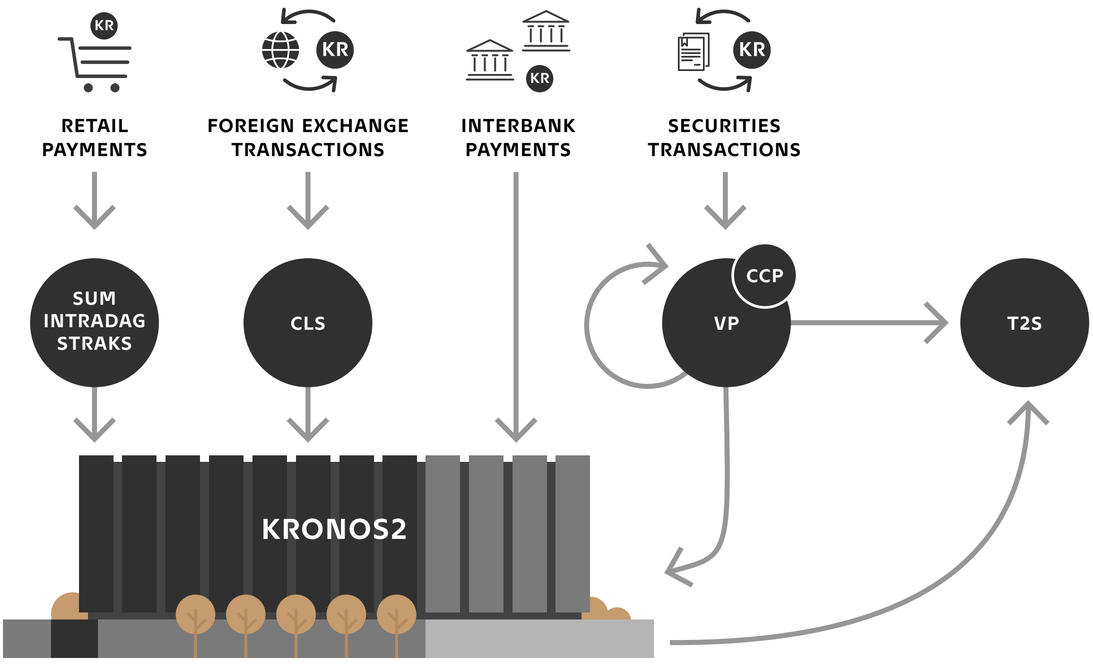
Danmarks Nationalbank's payment system, Kronos2, plays a central role in this infrastructure, both in relation to settlement of large, time-critical payments between banks (interbank payments) and by virtue of Danmarks Nationalbank's role as settlement bank for other payment and settlement systems.

Retail payments are payments between consumers, firms and public authorities, e.g. by Dankort or as credit transfers. Depending on their type, retail payments are cleared and settled through the Sumclearing, the Intradagclearing or the Straksclearing (retail payment systems).

Foreign exchange transactions are settled in CLS, an international system for settlement of foreign exchange transactions. It includes, inter alia, FX spot and FX swap transactions. An FX spot consists of two opposing payments. For example, a transaction in Danish kroner against euro entails a payment in Danish kroner from one party to the other party and a reverse payment in euro. An FX swap is an agreement between two parties to exchange payments in one currency for payments in another currency over a specified period.

Securities transactions in VP comprise transactions in bonds, equities and investment fund shares. Securities settlement predominantly takes place on the pan-European platform Target2-Securities (T2S). The rest is settled on VP's own platform. Some securities transactions, such as equity transactions, are cleared via a central counterparty, CCP.

The Danish payments infrastructure



Source: Danmarks Nationalbank, Oversight of the financial infrastructure, *Danmarks Nationalbank Report*, No. 3, May 2020 (*link*).

Before the partial lockdown, a number of financial institutions were already focusing on changing the infrastructure to minimise physical presence.

In the event of a critical incident, the FSOR emergency response will coordinate
The financial institutions themselves are responsible for ensuring stable operation and operational resilience. In the event of an operational incident that could threaten financial stability, the sector also has a common crisis response. It is organised under the Financial Sector Forum for Operational Resilience, FSOR, which is a forum involving the key financial institutions, interest groups and authorities.[2] Danmarks Nationalbank is chairman and secretariat of the FSOR. The FSOR's crisis response has not been activated in the current situation, but it has coordinated internally within the financial sector and with the national emergency response, NOST.

The crisis response is activated in the event of operational incidents that could potentially threaten financial stability. These can be breakdowns caused by severed cables, significant internal IT problems or cyberattacks. In particular, the risk of cyberattacks has been a focus area in recent years, see Box 2.

Cyberattacks constitute a systemic risk to financial stability

Box 2

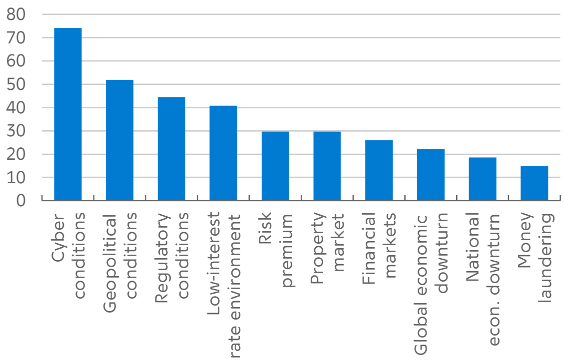
The threat from a cyberattack against the financial sector is very high[1], and among Danish financial enterprises, cyberattacks were the systemic source of risk cited by most as the main source of concern in February 2020, see Chart A, left. At the same time, it is the type of risk that the institutions consider to be the most challenging, see Chart A, right. IT dependencies both within organisations and across the sector are high, and IT criminals are highly skilled, using sophisticated methods. Moreover, the threat is dynamic and new threat variants are constantly evolving.

Across the financial sector, the focus is on strengthening resilience to cyberattacks, and a substantial part of this work is done within the FSOR, Financial Sector Forum for Operational Resilience, whose members are the financial sector's key actors. Many of the major actors in the financial sector also participate in the TIBER-DK cyber tests, where a hacker team by appointment tries to access pre-specified functions and data that are critical both for the actor being tested and for society.

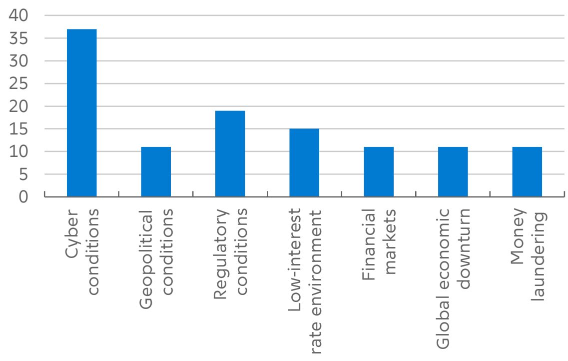
The cyber risk is substantial and difficult to manage

Chart A

Major sources of risk



Most challenging sources of risk



Note: Survey conducted among 27 risk managers in Danish financial enterprises. Left-hand chart: Proportion of respondents listing the individual risk categories in the question: "In your opinion, which risks are likely to have the greatest impact on financial stability in Denmark over the next three years?" Respondents could indicate up to five risks. Right-hand chart: Proportion of respondents listing the individual risk categories in the question: "In your opinion, which risks are likely to be most challenging to address for a firm?". Respondents could indicate up to two risks.
Source: See Danish Financial Supervisory Authority, Systemic Risk – Survey (in Danish only), March 2020 (*link*).

1. See Centre for Cyber Security, The Cyber Threat Against Denmark During the COVID-19 Pandemic, April 2020 (*link*).

Continues

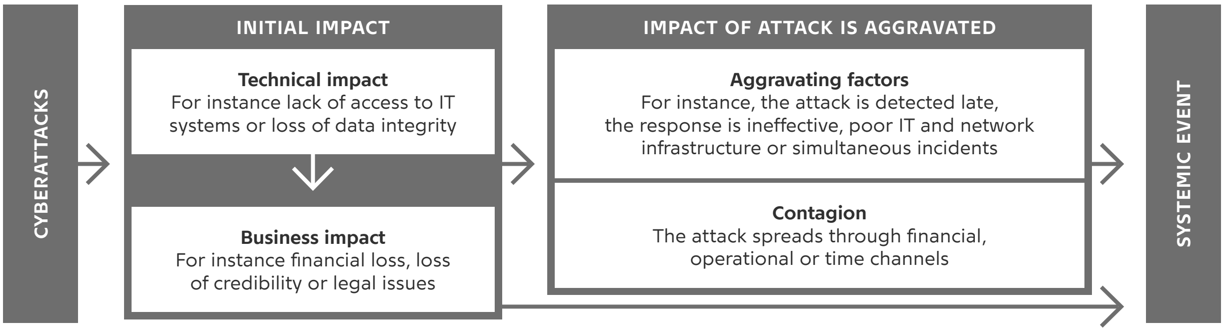
2 Read more about the FSOR here (*link*) and more generally about the financial infrastructure here (*link*).

Cyberattacks constitute a systemic risk to financial stability Box 2
continued

Cyberattacks can hit individual banks, but can also become systemic and generate instability throughout the sector. An attack becomes systemic when it escalates from having a limited technical and business impact to an impact on the sector as a whole, as well as on financial stability and the real economy, see Chart B. This can happen, for example, by an attack impacting critical functions of society, affecting confidence in the financial sector, or the economic losses from an attack reaching an order of magnitude where the financial system is unable to absorb them.

An example of a systemic cyberattack from abroad is the NotPetya attack, which started in Ukraine in June 2017. NotPetya encrypted data and cut off information and communication equipment. The attack did great damage in Ukraine, but also had an impact on some international organisations, including Maersk. NotPetya is estimated to have cost Maersk almost 300 million dollars[2]. The total cost of NotPetya is estimated at between 2 and 10 billion dollars.[3]

From cyberattack to systemic event Chart B



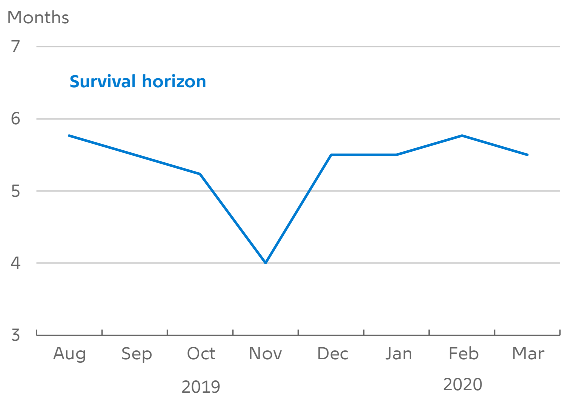
Source: See European Systemic Risk Board, *Systemic cyber risk,* February 2020 (*link*).

2. See A.P. Moeller – Maersk, *2017 Annual Report* (*link*).
3. See L. Kaffenberger and E. Kopp, Cyber Risk Scenarios, the Financial System, and Systemic Risk Assessment, *Cyber Policy Initiative Working Paper Series*, Carnegie Endowment for International Peace, no. 4, September 2019 (*link*).

The liquidity position of the largest banks remains robust

Systemic banks continue to hold solid liquidity reserves. According to Danmarks Nationalbank's sensitivity analysis, banks' liquidity stocks can, overall, cover their liquidity needs in a severe liquidity stress scenario for more than five months, see Chart 9.[3] Danmarks Nationalbank's sensitivity analysis and its scenarios are described in Box 3, which also provides a robustness analysis of the importance of deposits and credit for the liquidity situation of institutions.

Systemic banks can survive five months of liquidity stress Chart 9



Note: Number of months before systemic banks' net liquidity is run down in combined scenario based on reportings end of period each month. The latest observation is from March 2020.
Source: Danmarks Nationalbank.

3 Danmarks Nationalbank's sensitivity analysis looks at the factors that affect the liquidity position of banks and how quickly a bank may encounter liquidity difficulties, thus complementing regulatory liquidity requirements.

Danmarks Nationalbank's sensitivity analysis of banks' liquidity position

Box 3

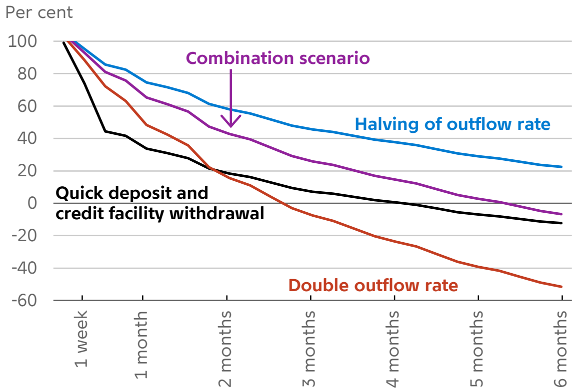
The projection of the liquidity position in Danmarks Nationalbank's sensitivity analysis is based on calculations of banks' excess liquidity under various assumptions of outflow rates regarding both contractual flows and demand deposits as well as the realisation value of the various assets in the liquidity stock.

Scenarios in the sensitivity analysis
The scenarios have been constructed under the assumption that the liquidity stock is to be sold in the market. This gives an indication of how long the bank is able to manage its own liquidity situation without resorting to Danmarks Nationalbank's facilities.[1]

The *market-specific scenario* simulates general stress in the banking sector with funding markets closing, but with no strong effect on daily customer transactions, e.g. household customers are not withdrawing demand deposits. The *institution-specific scenario* at individual bank level, e.g. due to rumours of difficulties. The *combination scenario* includes for the bank both deposit withdrawals and expanded loans and credits as stress in the financial markets. This scenario thus addresses a number of the issues that may impact banks' liquidity situation in the current situation after the coronavirus outbreak.

Performance robustness under alternative assumption of outflow of deposits and credit expansion
The virus outbreak and the subsequent partial lockdown of Denmark have led to an extraordinary need for temporary liquidity in the affected firms. This could mean increased credit facilities and outflow of bank deposits. The results of the sensitivity analysis are generally influenced by the applied assumptions about the outflow of bank deposits and credit expansions. As a robustness test, it is therefore considered for how long banks remain liquid if the combination scenario assumes a change in the outflow of deposits and credit facilities. In a scenario with a further outflow of deposits for a short period and simultaneously a marked increase in drawings on credit facilities, e.g. due to a severe liquidity crisis for household and corporate customers, the average survival horizon decreases to approximately four months, see the chart. Specifically, the combination scenario has been recalculated here with three times larger deposit withdrawals and expansion of credit facilities for the first 14 days. The pace then drops to half of the combination scenario.

Sensitivity to deposit and credit withdrawal



Note: Systemic banks' net liquidity over time in various outflow scenarios. Net liquidity is defined as the liquidity stock adjusted for net outflow over time. Data from end-March 2020.
Source: Danmarks Nationalbank.

1. For a more detailed description of methodology and scenarios, see Box 3 in Danmarks Nationalbank, Lower excess capital adequacy for the banks, *Danmarks Nationalbank Analysis (Financial Stability), No. 25*, November 2019 (*link*).

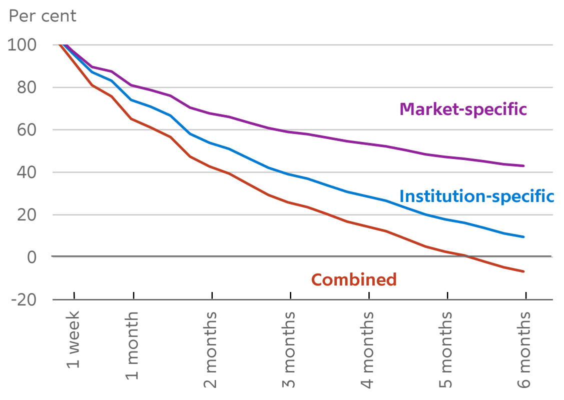
After a limited decline in the survival horizon in November 2019, banks have subsequently built up their reserves. At the end of March, according to the analysis, banks' survival horizon was still at the same level as earlier this year. Thus, overall, their liquidity situation has not been affected by the coronavirus outbreak in mid-March. But this is no guarantee of liquidity problems not arising anyway. According to the sensitivity analysis, at the end of March the systemic banks were able to withstand liquidity stress for more than five months in the combined scenario and more than six months in both the institution-specific and market-specific scenarios, see Chart 10.

In addition, both systemic and non-systemic banks have maintained a good distance to the short-term liquidity requirement, LCR, see Chart 11. Thus, the LCR was still stable at the end of April for both systemic and non-systemic banks. This reflects that the sector as a whole has had a significant customer funding surplus over a number of years, meaning that banks' deposit financing exceeds their lending.

Extraordinary lending facilities to support the money market

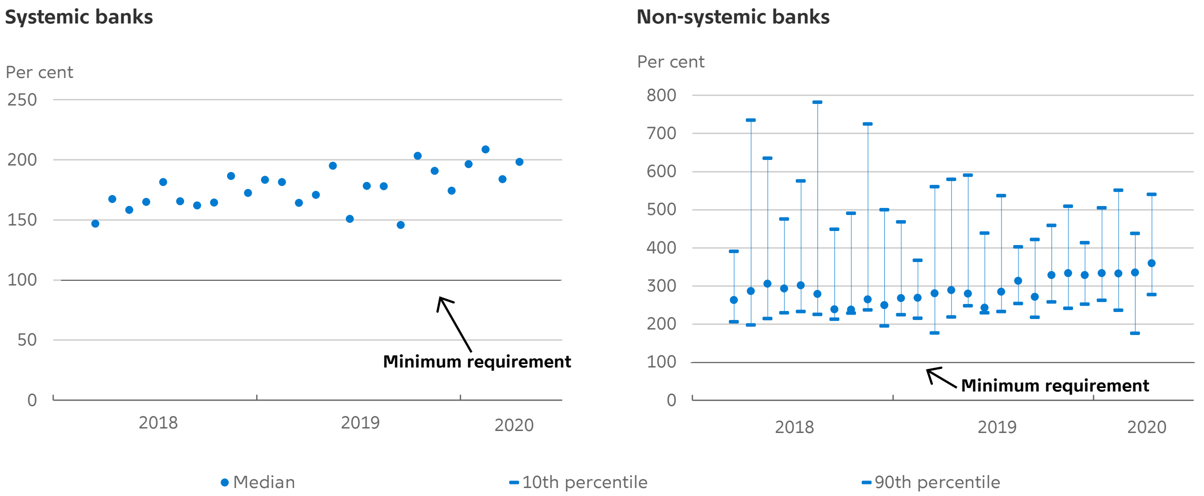
Danmarks Nationalbank has established extraordinary lending facilities following the outbreak of coronavirus. On 27 March, in order to increase banks' access to longer-term financing in the cur-

Banks can withstand severe liquidity stress Chart 10



Note: Systemic banks' net liquidity over time in various outflow scenarios. Net liquidity is defined as the liquidity stock adjusted for net outflow over time. Data from end-March 2020.
Source: Danmarks Nationalbank.

Banks observe the short-term Liquidity Coverage Ratio with a certain margin Chart 11

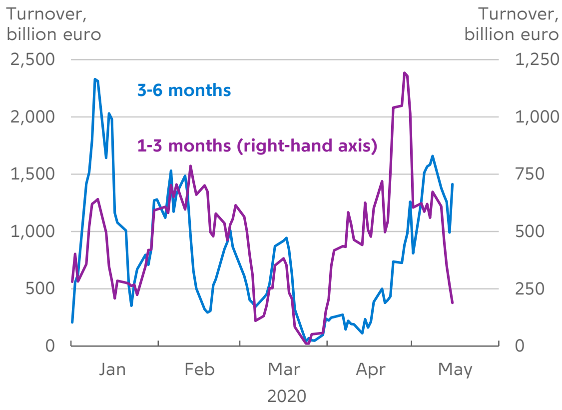


Note: The LCR, which must be higher than 100 per cent, is calculated as the bank's liquid assets divided by outgoing net cash flows over a 30-day stress period. The most recent observations are from end-April 2020.
Source: Danmarks Nationalbank.

rent situation, Danmarks Nationalbank expanded credit access to include 3-month loans. The new longer-term financing facility was also to support a well-functioning bond market. Danmarks Nationalbank has also announced the possibility for Danish institutions to borrow US dollars and euro for three months through Danmarks Nationalbank.

In March, the European money market was characterised by decreasing turnover in money market loans with longer maturities, see Chart 12. The Danish money market also experienced fluctuations, but with increasing turnover in short-term secured loans.

Decline in turnover of money market loans with longer maturities Chart 12



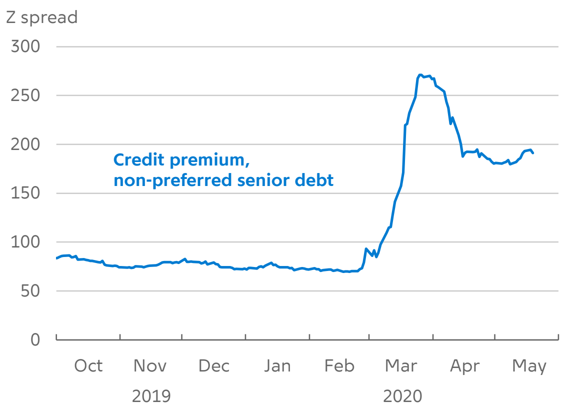
Note: 5-day rolling average of turnover in Euro area money market. Reported to Short-Term European Paper. Latest observations are from 18 May 2020.
Source: ECB, Short Term European Paper.

Period with limited scope for new issuance

In March, activity in the markets for new issuances of senior debt and capital instruments was briefly suspended. Activity returned slowly around Easter, when a few large international banks conducted issuances in the senior debt market. Several Nordic banks have also issued senior debt since then.

The price of MREL-eligible liabilities rose sharply during March. In the market for debt for MREL compliance, prices briefly rose by around 200 basis points, but have since fallen back somewhat, see Chart 13.

Periodically high price of non-preferred senior debt Chart 13



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 the debt instrument in question, where the additional cost is calculated by paralleling a risk-free zero coupon rate structure, so that back discounting using this gives the price of the debt instrument. The most recent observations are from 19 May 2020.
Source: Refinitiv Eikon.

Financial stress period underlines the need for maturity diversification

Once again, the period after the outbreak of coronavirus has shown why maturity diversification is important. A sufficiently diversified maturity profile may help an institution to avoid breaching the MREL even in the event of a prolonged period of limited market access. Danmarks Nationalbank's stress test shows that banks may find it difficult to comply with their MREL requirements under stress.[4] Furthermore, insufficient flexibility concerning date of issue may affect banks' financing costs if they are forced to issue in an unfavourable situation with greatly widened credit spreads.

4 See Danmarks Nationalbank, A prolonged recession could squeeze banks, *Danmarks Nationalbank Analysis (Stress test)*, No. 7, May 2020 (*link*).

The MREL can be met using debt instruments with remaining maturities of over one year. Danish banks' issuance of MREL debt has relatively short remaining maturities compared with other European banks, see Chart 14. Danish banks have usually issued MREL debt with maturities of 3-5 years.

Liquidity in the mortgage bond market weakened briefly

Mortgage bond yields rose sharply for a short period from mid-March, see Chart 15. Thus, the option-adjusted yield spread (OAS) increased significantly for both short-term and long-term bonds.

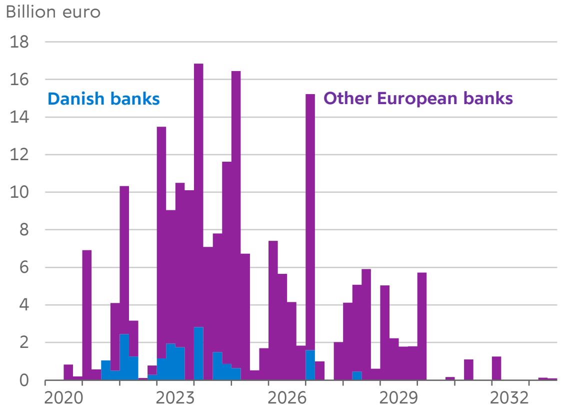
In recent years, foreign investors have acquired a larger share of issued Danish mortgage bonds and have retained their ownership since the coronavirus outbreak.

Mortgage credit institutions have been able to sell bonds without interruption
Unlike a number of other debt markets, in the mortgage bond market mortgage credit institutions were able to sell bonds as they found necessary without interruption. Up to the end of a quarter, mortgage credit institutions often have a relatively substantial need for issuance. Transaction reports for individual transactions[5] during the period show that institutions were able to sell the desired bonds towards the end of March, despite the sharply rising market interest rates in the same period.

The tendency for interest rates to rise amid investor restraint is a natural consequence of the structure of the Danish mortgage bond market. In practice, the issuance risk on disbursement of loans and refinancing rests with the individual homeowners, because the price of their loans is determined only when the bonds are issued. This can lead to sharp yield fluctuations, but ensures transparent price

MREL debt of Danish banks is relatively shorter than that of other European banks

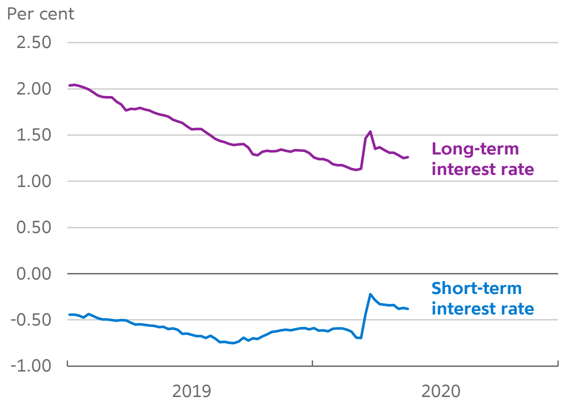
Chart 14



Note: Maturity profile of MREL debt issued by European banks.
Source: Bloomberg.

Fluctuations in Danish mortgage bond yields

Chart 15



Note: Average short-term and long-term mortgage bond yields in Danish kroner. Latest observations are from week 20.
Source: Finance Denmark.

5 Read more about transaction reports, data filtering and calculation of liquidity measures in Danmarks Nationalbank, *Financial stability, 2nd Half 2015*, December 2015 (*link*). The reports are a prudential reporting requirement under the MiFIR Regulation, Directive 2014/65/EU of the European Parliament and of the Council of 15 June 2004 on markets in financial instruments and amending Directive 2002/EC and Directive 2011/61/EU.

formation and rapid adjustment towards a new equilibrium.

Increase in the liquidity premium in the mortgage market
The transaction reports show that, on some days in the latter part of March, the liquidity premium on mortgage bonds was significantly higher than normal, see Chart 16. The liquidity premium on mortgage bonds is measured here in relation to how much the price changes in a single transaction. Larger price changes in either direction indicate a higher liquidity premium.

Liquidity premiums subsequently decreased, inter alia as authorities around the world announced a series of extraordinary measures. As an example of such measures, on 27 March Danmarks Nationalbank opened a facility giving monetary policy counterparties access to variable-rate 3-month lending against collateral. However, premiums remain at a high level.

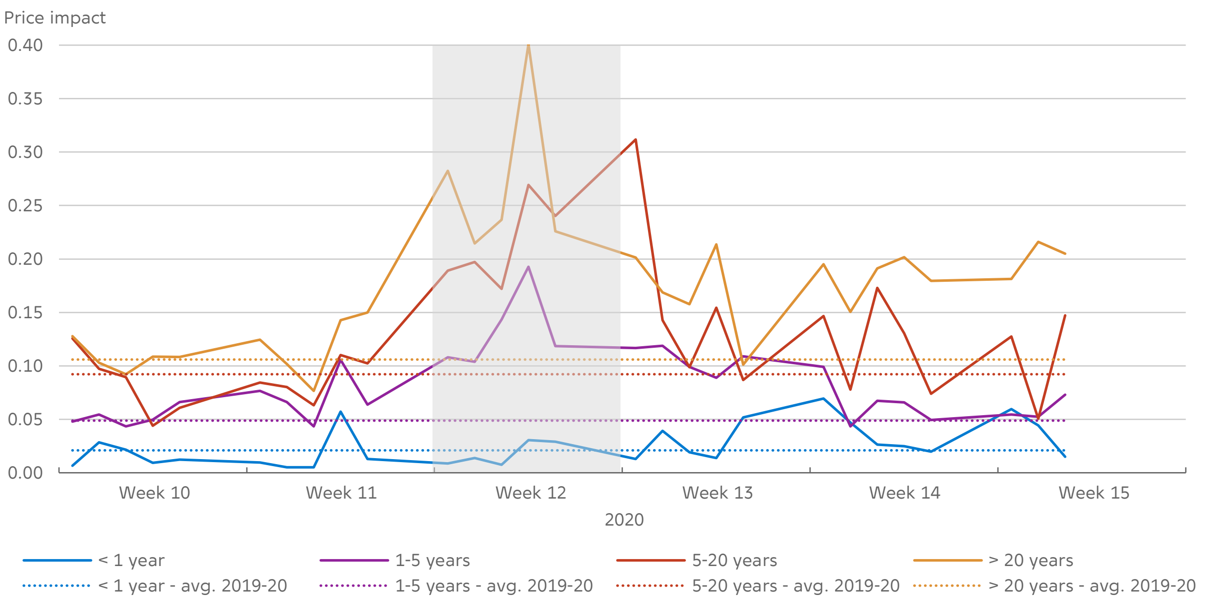
Banks expect weakened credit quality

The Danish economy and thus the customers of the institutions have entered the coronacrisis from a good starting point. However, larger loan losses should be expected in step with a more sustained economic downturn.

Banks expect increasing credit risks over the coming period. In Danmarks Nationalbank's latest lending survey, the institutions' credit managers pointed to expectations of stronger customer risk assessment in the 2nd quarter of 2020, see Chart 17. The survey was carried out after the government implemented a series of temporary measures in mid-March to reduce the spread of coronavirus infection.

Subdued lending growth in March and April
In mid-May, the consequences of the outbreak of coronavirus have not materialised in the available statistics on the sector's lending.

Liquidity premiums rose sharply in mid-March and remain high Chart 16



Note: Daily median of price impact on transactions for each remaining maturity segment. The average for 2019-20 has been calculated for the period from 1 January 2019 until and including 8 March 2020 (end of week 9). For more information about transaction reports, filtering of data and calculation of liquidity measures, see the analysis in Danmarks Nationalbank, *Financial Stability, 2nd half 2015* (*link*). The most recent observations are from 9 April 2020.
Source: Danmarks Nationalbank, MiFIDII transaction reports and own calculations.

According to Danmarks Nationalbank's latest data, lending growth was generally subdued in March and April following the outbreak of coronavirus, see Chart 18. This period is the season for many firms' dividend and tax payments. This year, however, with a temporary Act, the Folketing (Danish Parliament) has made it possible to defer payment of tax. In the first instance, this reduces the seasonal demand from firms for drawing on credit facilities in 2020.

Banks' corporate customers may well have been granted expansion of credit lines, or undrawn credit lines and credit commitments may have been created without being reflected in the statistics.

Creditworthy customers may obtain additional liquidity facilities

Several credit institutions have offered temporary measures to customers to get through the lockdown period that has severely affected the revenue of many firms. For example, some corporate customers have been offered new credits or an increase in existing lines, moratorium or extended loan maturities. In addition, several mortgage credit institutions have offered temporary interest-only periods to household customers.

Credit managers at institutions expect to see rising demand for credit from the corporate sector in the 2nd quarter. Several credit managers point out that the reason is an increased need for liquidity during the lockdown.

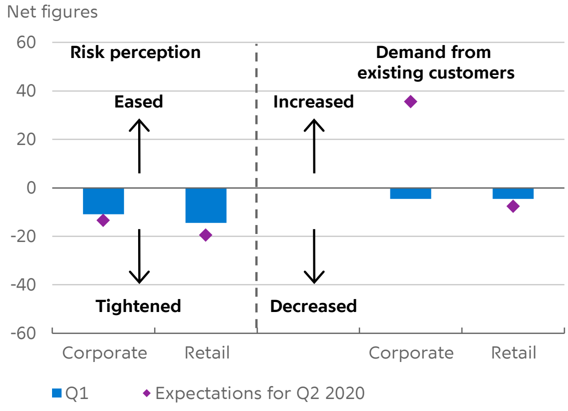
In assessing new exposures and extensions of existing exposures, credit institutions should maintain their credit standards.

Lockdown could affect a large proportion of corporate lending

Business activity is being hit hard by the large-scale lockdown and the resulting sharp and sudden slowdown in the Danish and international economy.[6]

Banks expect higher risks and increased demand from corporate customers

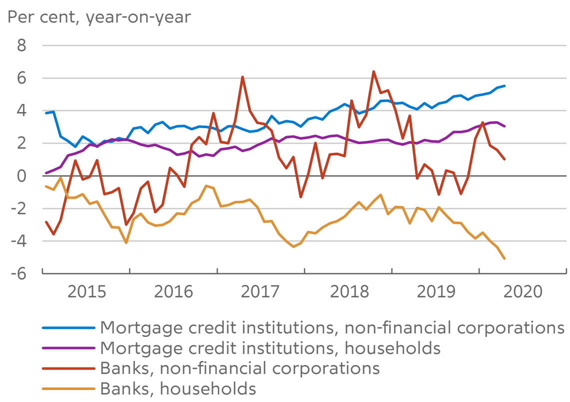
Chart 17



Note: The term "Retail" includes employees, pensioners, etc., while "Corporate" (total firms) includes private non-financial corporations and sole proprietorships and unincorporated partnerships. Only reports from banks.
Source: Danmarks Nationalbank.

Moderate lending growth in latest months

Chart 18



Note: Lending by banks and mortgage credit institutions to Danish households and non-financial corporations. The most recent observations are from end-April 2020.
Source: Danmarks Nationalbank.

6 See Danmarks Nationalbank, Danish and international economy affected by pandemic, *Danmarks Nationalbank Analysis*, No. 4, April 2020 (*link*).

An assessment of the outlook for institutions' credit quality is currently subject to considerable uncertainty. Much will depend on how hard and for how long the lockdown and other government measures affect economies around the world.

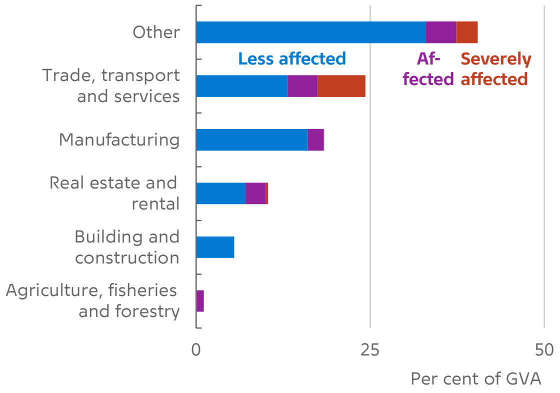
A number of industries are or have been severely affected by the government measures to contain the spread of infection, see Chart 19. The firms most severely affected have been completely or almost completely unable to sustain their activity. This applies, for example, to hotels, restaurants, culture, leisure, travel and passenger transport, parts of the retail sector and the professions. The methodology used to assess the expected impact of the lockdown on bank lending is described in Box 4.

At the same time, many other industries can be significantly affected through other channels. These are industries serving as closely linked subcontractors of goods and services to the most severely affected industries. And the crisis may also hit export-oriented industries, which are negatively affected by similar actions in other countries.

The rest of the economy has been less affected by the lockdown. This applies, for example, to parts of the wholesale and retail sectors, as well as e-commerce, public and private firms that are critical to

Large segments of the Danish corporate sector expected to be affected by the coronavirus outbreak

Chart 19



Note: The distribution of total gross value added, GVA, among main groups and whether industries have been and/ or continue to be "severely affected", "affected" or "less affected" by full lockdown and derived effects, see calculations in Danmarks Nationalbank, Danish and international economy hit by pandemic, *Danmarks Nationalbank Analysis*, No. 4, April 2020 (*link*). Industry GVA is from 2016.

Source: Statistics Denmark, Danmarks Nationalbank and own calculations.

Consequences of the lockdown – this is what we did

Box 4

No accurate data is available yet about the economic consequences of the lockdown. That is why an assessment of the consequences for institutions' credit quality is currently subject to considerable uncertainty.

In this analysis, the breakdown of bank lending to vulnerable industries is calculated on the basis of Danmarks Nationalbank's assessment of the initial shock of a full lockdown, see Danmarks Nationalbank, Danish and international economy affected by pandemic, *Danmarks Nationalbank Analysis*, No. 4, April 2020 (*link*).

In the early April assessment, activity under a full lockdown is estimated to fall by almost 80 per cent in a number of exposed service sectors, 45 per cent in the retail sector and 5 per cent in other private sectors, while exports are estimated to be reduced by almost 25 per cent. Input-output calculations enable inclusion of indirect effects on activity in other industries of a shock to output or demand. Recent developments in a number of real-time indicators, such as payment card transactions, indicate that the lockdown for some industries has affected activity to a different degree than expected in early April. A case in point is the retail sector, where the fall in activity should now be assessed as more limited than previously assumed.

In this analysis, industries are described as "severely affected" during full lockdown if the aggregate fall in activity is more than 50 per cent. Industries with an expected aggregate fall of 30-50 per cent are described as "affected". Other industries are grouped in the category "other".

The analysis is based on microdata in the new Danish credit register. The register encompasses bank lending and unused credit facilities to individual firms in the affected industries. This gives an inventory of the proportions of lending that can potentially be hit by the direct and indirect effects of the lockdown. At the same time, the new credit register allows us to assess the robustness of firms in the affected industries, based on their most recent financial statements.

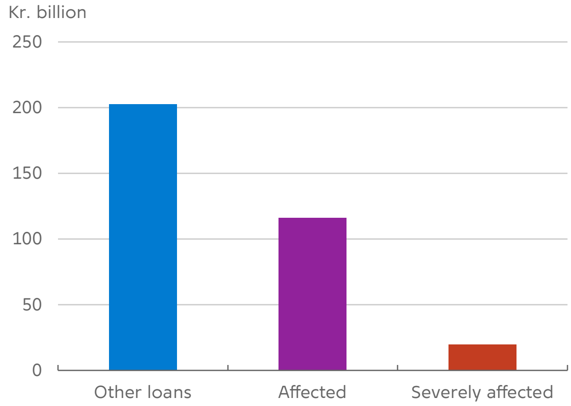
society, parts of manufacturing, construction and subcontractors to these.

Looking forward, the increase in credit risk for Danish banks is subject to considerable uncertainty. There is a risk that the economy in general will be affected by a downturn in the wake of the lockdown, which could put the exposures of credit institutions under pressure, see Danmarks Nationalbank's most recent stress test.[7]

Loans to severely affected industries account for a substantial portion of bank lending
Some firms will be affected by the lockdown and a subsequent economic downturn to such a degree that they will no longer be able to service their debt and default. This will weaken the credit quality of bank and mortgage lending and cause losses.

Bank lending is more exposed than mortgage lending. Mortgage credit institutions provide credit only against the first part of the collateral in firms' properties. So if a customer defaults, they can take over the properties and recover all or some of their receivables by selling the properties. As regards banks, a smaller part of bank lending is collateralised against firms' assets.

The lockdown is expected to have affected firms accounting for a large share of banks' lending to corporate customers Chart 20



Note: Industries that are expected to be hit by an aggregate drop in activity of more than 50 per cent during the full lockdown are described as "severely affected", while industries that are expected to be affected by an aggregate decline in activity of 30-50 per cent are described as "affected" in the analysis. See Box 4 for more information. The most recent observations are from end-2019.
Source: Bisnode, Statistics Denmark, Danmarks Nationalbank and own calculations.

Bank lending to firms in industries that are or have been most severely affected by the lockdown accounts for 6 per cent of total corporate lending, see Chart 20. Loans to firms in parts of the trade, transport and services sectors account for most of this, at kr. 17 billion, while loans to severely affected firms in other industries account for kr. 2 billion of total lending.

The largest fall in output is seen in industries directly affected by government measures to contain the infection. But the proportion of lending to these industries is smaller than the proportion of lending that is indirectly affected, and which may be impacted by a combination of lower exports and derived effects for other industries of the economy.

Firms in industries that are expected to suffer a decline in activity of between 30 and 50 per cent at full lockdown account for approximately 30 per cent of banks' corporate lending.

Crisis measures support firms and their creditors

Soon after the lockdown began, the authorities launched a series of temporary government support schemes to reduce the negative impacts on affected firms.

These schemes include both liquidity-enhancing and cost-covering measures, see Chart 21. Corporate liquidity is improved by deferring VAT and tax payments and through bank loans partly guaranteed by the government, see below. The cost-covering meas-

7 See Danmarks Nationalbank, A prolonged recession could squeeze banks, *Danmarks Nationalbank Analysis (Stress test)*, No. 7, May 2020 (*link*).

ures comprise a number of compensation schemes to cover, for instance, some corporate payroll and fixed costs.

Banks may extraordinarily provide corona-related loans collateralised by government guarantees
In March, the Folketing (Danish Parliament) adopted a series of government guarantee schemes to facilitate corporate access to credit.

In mid-May, these schemes had been used for lending totalling about kr. 5 billion, see Chart 22. Within the allocated limits, loans totalling approximately kr. 70 billion may be granted.

The schemes have a number of objective requirements regarding the financial position of firms, and the schemes can be used only by firms that have suffered or expect to suffer a revenue loss of at least 30 per cent due to the coronavirus outbreak. However, the credit assessment is to be performed by the individual bank. In this context, it should be noted that banks bear part of the risk of loss when the schemes are applied and must cover 20-30 per cent of any loss.

Lending to already financially weak firms could result in losses
Firms that were already financially weak before the virus outbreak are more exposed in the current situation. Healthy key ratios in the most recent financial statements before the virus outbreak will thus contribute to determining the risk that the firm will default on its liabilities in the wake of the lockdown.

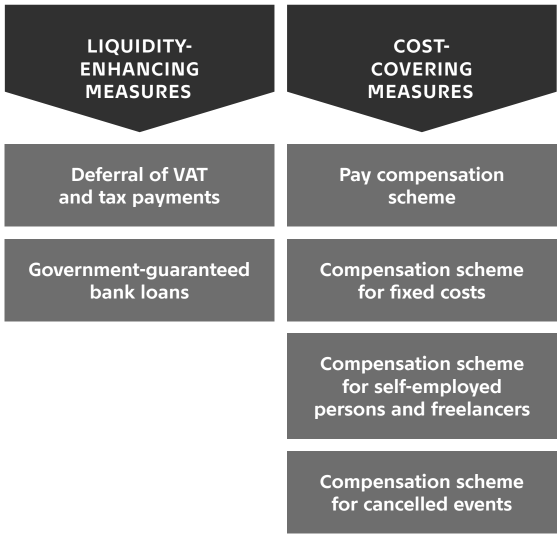
Lending to the firms most severely affected by the lockdown, which have low solvency and low liquidity, accounts for 20 per cent, see Chart 23. For other industries affected, the proportion of firms with low solvency and low liquidity is somewhat lower.

In the short term, the lockdown has especially challenged the liquidity position of firms. A firm's liquidity risk can be calculated as its short-term-assets-to-short-term-debt ratio. In the most recent financial statements available, many firms do not have sufficient liquid assets to cover short-term liabilities, see Box 5.

Creditworthy firms generally have high solvency ratios. Firms with a high equity-to-total-assets ratio are better equipped to absorb business losses. About 75 per cent of bank lending to the industries most

Several large, temporary government compensation schemes for severely affected firms

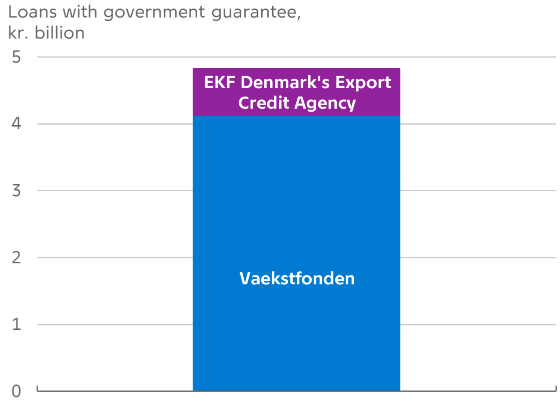
Chart 21



Source: Ministry of Industry, Business and Financial Affairs (in Danish only) (*link*).

Loans are collateralised by new and temporary government guarantee schemes

Chart 22



Note: Total active guarantees provided by the Danish state's investment fund, Vaekstfonden and EKF Denmark's Export Credit Agency. Observations are from 19 May 2020.
Source: EKF Denmark's Export Credit Agency, Vaekstfonden.

Many firms do not have adequate funds to pay short-term liabilities

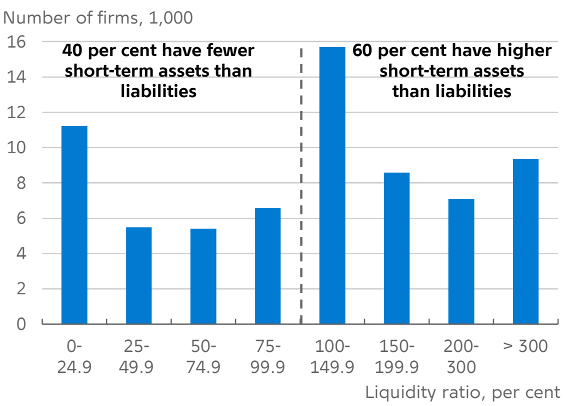
Box 5

Many firms have a business model with a limited amount of directly available liquidity, so they will quickly need access to credit from their banks. Firms with more short-term assets than short-term liabilities, i.e. with a liquidity ratio of more than 100, will be better able to pay their bills and service their debt. Just under half of the firms with debt in Danish banks are unable to cover their short-term liabilities with short-term assets if their regular earnings stop, see Chart A.

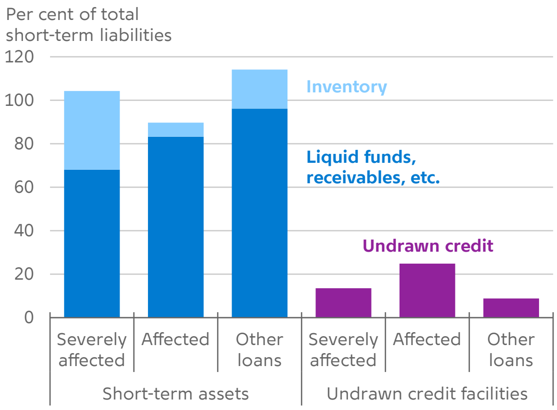
In the current situation, all short-term assets are not necessarily liquid. Short-term assets consist of inventories, liquid funds and receivables, etc. The value of inventories, in particular, depends on the marketability of goods. In the most severely affected industries, inventories account for a substantial portion of short-term assets, see Chart B. If the value of inventories is excluded, the average liquidity ratios of these firms fall below 70 per cent.

If firms do not have sufficient liquid assets available, they need to draw on overdrafts and other facilities through their banks. However, at end-2019, firms that have later been severely affected by the lockdown did have a limited amount of already granted, but undrawn credit facilities with their banks. Overall, the firms affected have a lower liquidity ratio, but are less dependent on the marketability of inventories and have larger undrawn credit facilities with their banks.

A. A large proportion of firms could face difficulties meeting short-term liabilities



B. Inventories constitute a large proportion of the available liquidity of the most severely affected firms



Note: The liquidity ratio is calculated as the short-term-assets-to-short-term debt ratio. Financial information is available for 70,000 large firms with loans in Danish banks. See Box 4 for more information. The most recent financial statements available have been used, while loans are from end-2019.
Source: Bisnode, Danmarks Nationalbank and own calculations.

severely affected by the lockdown has been provided to firms with high solvency ratios in their most recent financial statements available.

Corporate customers of medium-sized banks are generally less resilient

Overall, Danish corporate customers have become more resilient in recent years, but the credit quality of medium-sized banks' corporate customers is considerably lower than that of large banks.

Overall, the proportion of corporate lending to the most financially vulnerable customers accounts for close to 25 per cent in medium-sized banks compared with about 10 per cent in large banks, see Chart 24 (left). Moreover, there are substantial variations between individual medium-sized banks' proportion of corporate customers with low solvency and low liquidity. Thus, more than one in three corporate customers have both low solvency and low liquidity in 4 out of 11 medium-sized banks.

The distribution of vulnerable customers in large and medium-sized banks, respectively, is also reflected in the Danish Financial Supervisory Authority's calculation of bank lending quality. At end-2019, the proportion of corporate lending of normal credit quality was 56 per cent for medium-sized banks – and thus considerably lower than for large banks in which this proportion was 84 per cent.

Higher unemployment could lead to higher losses in the longer term

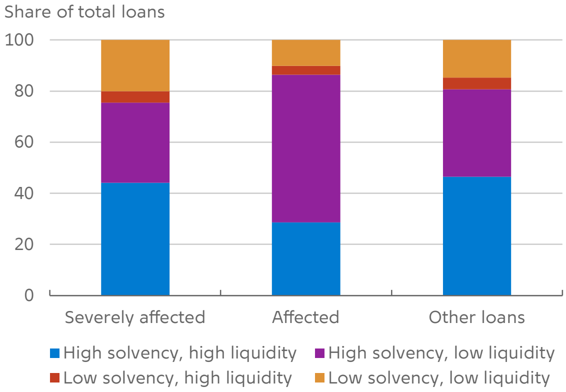
Over a short period of time, unemployment has surged due to the effects of the coronavirus outbreak and the measures implemented to contain the infection, see Chart 25.

If unemployment sticks, this could lead to credit institution losses on lending to households in the longer term. However, most households are resilient to short spells of unemployment, both because of unemployment insurance and accumulation of liquid funds in individual households.

Since 11 March, when the government announced a series of measures to contain the infection, the number of unemployment registrations has increased by approximately 48,000. The increase in per cent of employment is most prominent in industries directly affected by imposed temporary shutdown or travel restrictions, such as the hotel and restaurant industry, transport and travel agencies, etc.

Many corporate customers have limited disposable liquidity in their latest financial statements

Chart 23

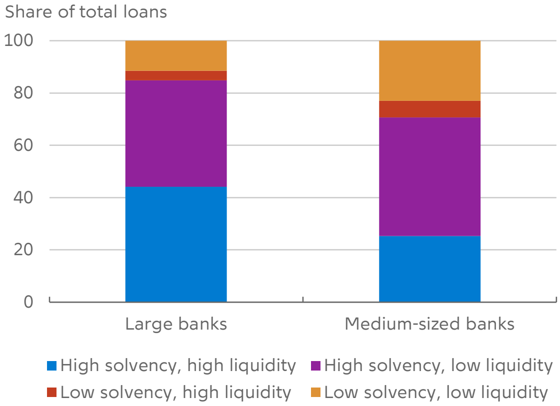


Note: "High solvency" is defined as an equity-to-total-assets ratio of at least 15 per cent. "High liquidity" is defined as a short-term-assets-to-short-term-debt ratio of at least 100 per cent. Financial information is available for 70,000 large firms with loans in Danish banks. See Box 4 for more information. The most recent financial statements available have been used, while loans are from end-2019.
Source: Bisnode, Danmarks Nationalbank and own calculations.

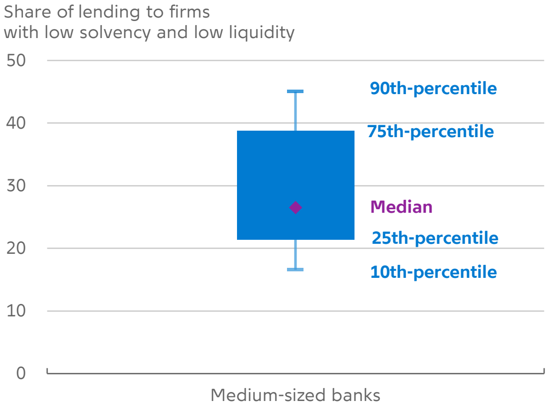
Many vulnerable corporate customers in some medium-sized banks

Chart 24

Larger share of vulnerable corporate customers in medium-sized banks over all



Large dispersion in share of corporate customers with low solvency and low liquidity among medium-sized banks



Note: "Low solvency" is defined as an equity-to-total-assets ratio of less than 15 per cent. "Low liquidity" is defined as a short-term-assets-to-short-term-debt ratio of less than 100 per cent. Financial information is available for 70,000 large firms with loans in Danish banks. See Box 4 for more information. The most recent financial statements available have been used, while loans are from end-2019.
Source: Bisnode, Danmarks Nationalbank and own calculations.

Limited proportion of loans to employees in industries severely affected by unemployment
Credit institution lending to employees in the industries with the highest increase in unemployment accounts for a small proportion of total credit institution lending to employees, see Chart 26.

Among the self-employed, the large majority of loans to sole proprietorships are in agriculture. Bank lending to self-employed borrowers could generally be subject to higher risk than lending to ordinary employees. Agriculture has been less affected by shutdowns and restrictions than other industries.

Highly indebted households are hit hardest in case of unemployment
The risk of losses on lending to the household customers currently affected by unemployment depends on the level of indebtedness of the household, among other factors. The higher the indebtedness, the higher the income required to ensure sufficient disposable income after servicing of debt. So households with a high debt-to-income (DTI) ratio are less resilient to negative shocks to their personal finances.

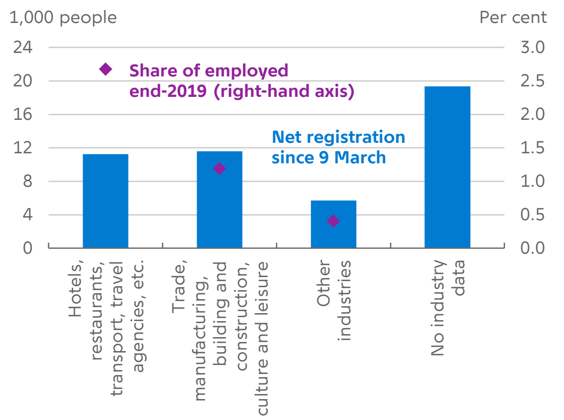
Households with a shorter education as highest completed education on average have a lower debt-to-income ratio than groups with higher education, see Chart 27. Since early March, new unemployment registrations are primarily people with short education, see Chart 28. This also applied to new unemployment registrations over the same period in 2015-19.[8]

Households in which the longest completed education is primary and secondary school or upper secondary school have a substantially lower debt-to-income ratio than households with longer education.

The second major group of new unemployment registrations are people with vocational training. The average household with vocational training as the longest completed education also has a lower debt-to-income ratio than households with longer education. However, the 10 per cent most indebted households do have a debt-to-income ratio in line with households with longer education.

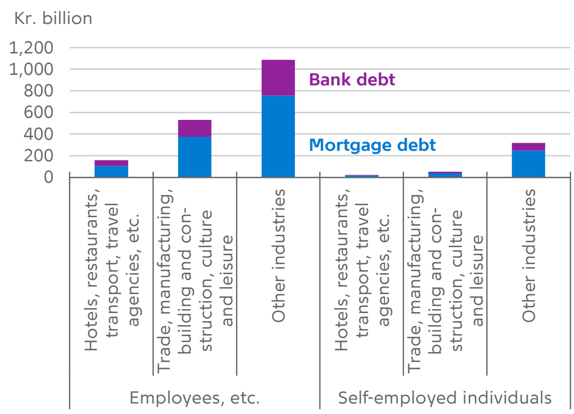
8 The Danish Agency for Labour Market and Recruitment, *Regional overvågning af situationen på arbejdsmarkedet fordelt på forskellige karakteristika* (in Danish only).

Sharpest increase in unemployment in directly affected industries Chart 25



Note: Net registrations from 9 March to 19 May 2020 are calculated as the number of people, not the number of full-time equivalents. Per cent of employment is calculated as the number of net registrations as a percentage of wage-earner employment in number of people in the 4th quarter of 2019. The industry affiliation of new registrations since 9 March is calculated based on the month with the most recent employment data in 2020. New registrations with no employment data in 2020 are indicated as no industry data.
Source: Danish Agency for Labour Market and Recruitment, Statistics Denmark and own calculations.

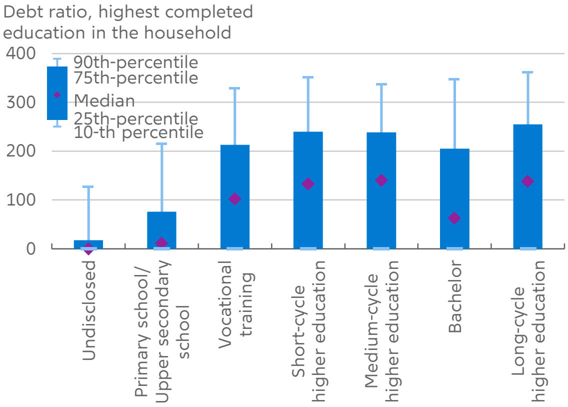
Limited proportion of loans to employees in industries severely affected by unemployment Chart 26



Note: Debt of private individuals at end-2018 broken down by main occupation at end-2017. "Employees, etc." also include unemployed persons and students etc. "Self-employed individuals" include assisting spouses. Old-age pensioners and disability pensioners as well as recipients of voluntary early retirement benefits are not included.
Source: Statistics Denmark and own calculations.

Households with short educations have a lower debt-to-income ratio

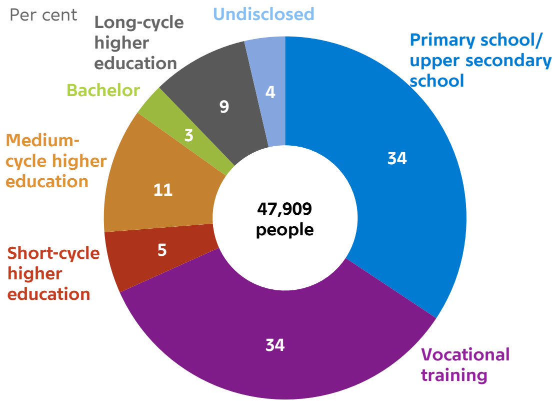
Chart 27



Note: The debt ratio is calculated as the total ratio of debt to income before tax for households classified according to the highest completed education in the household. Households with one or more old-age pensioners or recipients of voluntary early retirement benefits are not included. Data is for end-2018.
Source: Statistics Denmark and own calculations.

New unemployment registrations since the outbreak of corona are mainly people with short education

Chart 28



Note: For net unemployment registrations from 9 March to 19 May 2020 education has been stated as highest completed education as at 1 October 2018. Educations completed after this date are not included in the calculation.
Source: Danish Agency for Labour Market and Recruitment and own calculations.

Period of reduced housing market activity
The lockdown and increased uncertainty have led to reduced housing market activity. Just after the lockdown was imposed in March, the number of houses and owner-occupied flats sold plunged. Since then, sales of houses and owner-occupied flats have returned to the average level of the same period in 2015-19. But the total supply of single-family houses, terraced houses and owner-occupied flats on the market is somewhat lower than last year.

So far, the housing market uncertainty has not been reflected in major price falls. Prices are still higher than last year's level. Most household debt is mortgage debt collateralised by the home of the household, and consequently house prices are significant.

Before the coronacrisis, homeowners had generally been consolidating their debt over a number of years, opting for safer loan types. At the same time, the average mortgage payment has been declining in recent years, reflecting lower market rates and household refinancing of fixed-rate loans at lower interest rates.

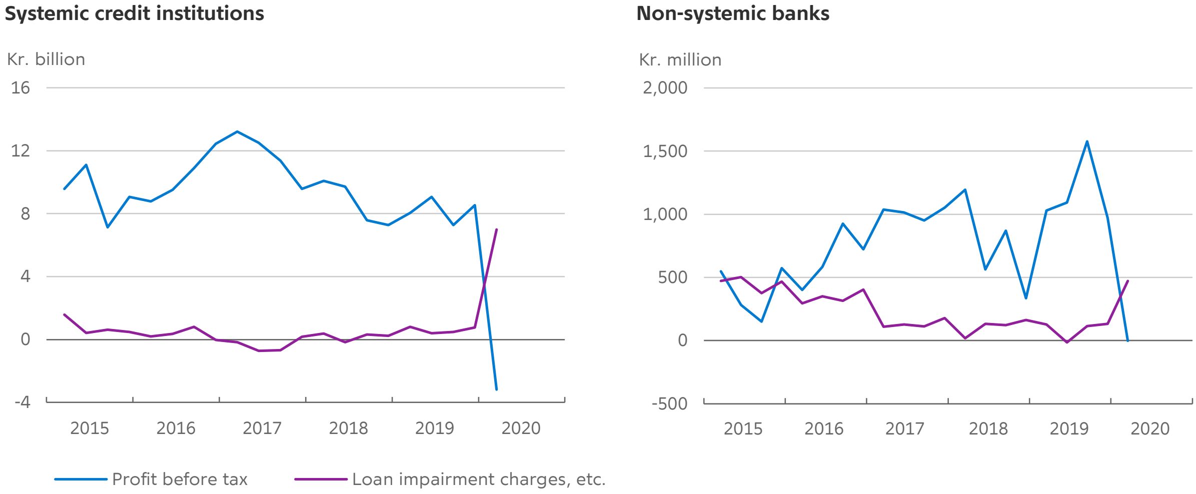
Sharp drop in bank earnings

The outbreak of coronavirus has affected bank results in the 1st quarter of 2020, and the systemic credit institutions' earnings are the lowest since the 4th quarter of 2008 during the financial crisis. The drop in earnings should be seen in the light of a significant increase in loan impairment charges, see Chart 29. At the same time, earnings from underlying operations have been decreasing in recent years, also in the 1st quarter of 2020.

A significant proportion of the loan impairment charges reflect a downward adjustment of the macroeconomic outlook used to calculate expected credit losses under the recently introduced accounting standard IFRS 9. At the same time, several institutions have recognised impairment charges, based on management judgement, reflecting the uncertainties associated with the current assessments of the impact of the coronapandemic for the institutions' customers.

In addition to loan impairment charges, the drop in earnings in systemic credit institutions can primarily be attributed to negative value adjustments follow-

Institutions' results for the 1st quarter of 2020 are affected by high impairment charges Chart 29



Note: Quarterly profit before tax and impairment charges on loans and receivables, etc. for systemic credit institutions and non-systemic banks. For systemic credit institutions, profit before tax has been adjusted for goodwill impairment charges. The most recent observations are from the 1st quarter of 2020.
Source: Danmarks Nationalbank, financial statements and own calculations.

ing a period of price falls and increased volatility in the financial markets, see Chart 30. Value adjustments are negative after several years of positive value adjustments that helped to boost the earnings of the systemic credit institutions.

The level of impairment charges is to reflect the institution's expectations regarding future loan losses
During the 2008-09 financial crisis, financial reporting standards were criticised for resulting in "too little, too late" as far as impairment charges were concerned.

Under IFRS 9, impairment must be recognised for both incurred and expected credit losses as opposed to previously when impairment was not to be recognised in the income statement until there was objective evidence of impairment, OEI. In times of crisis, it is essential that institutions' financial statements can be trusted and that they are still based on all available relevant information. Impairment charges must reflect not just credit losses resulting from events that have already occurred, but also expected future credit losses.

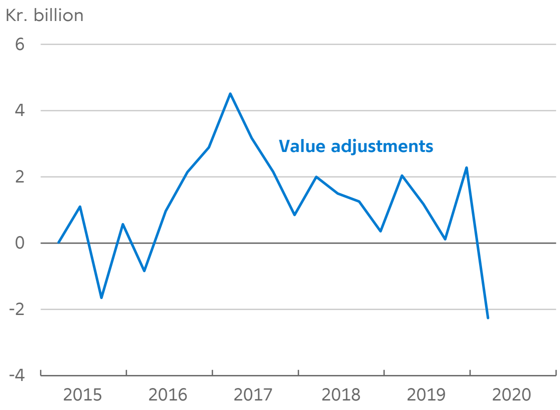
In Danmarks Nationalbank's lending survey for the 1st quarter of 2020[9], banks reported that they expected higher impairment charges and losses on corporate lending in the 2nd quarter, see Chart 31. For household customers, most of the banks also expect higher impairment charges and losses in the 2nd quarter. Credit managers' expectations as regards higher impairment charges and losses may reflect that individual impairment charges and losses are expected to increase in the 2nd quarter, while impairment charges in the 1st quarter primarily reflect general non-attributable impairment charges.

The coronacrisis may lead to further consolidation in the banking sector
Widespread uncertainty about future economic developments means that the impact on the financial sector is still uncertain.

9 See Danmarks Nationalbank, Expect increased losses and demand from NFC, *Danmarks Nationalbank Statistics (Lending Survey)* April 2020 (*link*).

Value adjustments have declined in the 1st quarter of 2020

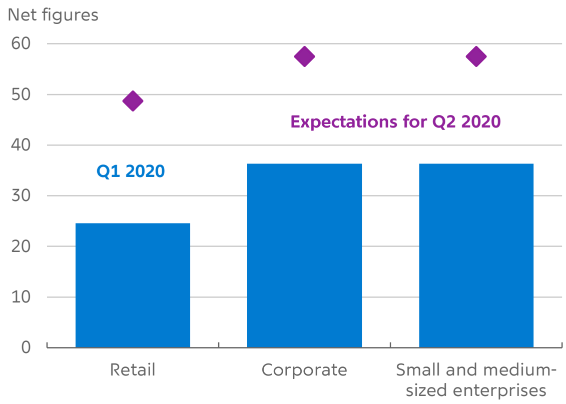
Chart 30



Note: Quarterly value adjustments for systemic credit institutions. The most recent observation is from the 1st quarter of 2020.
Source: Danmarks Nationalbank and financial statements.

Banks expect higher impairment charges and losses

Chart 31



Note: "Retail" includes employees, pensioners, etc., while "Corporate" (total firms) and small and medium-sized enterprises includes private non-financial corporations and sole proprietorships and unincorporated partnerships.
Source: Danmarks Nationalbank.

In their financial statements for the 1st quarter of 2020, systemic credit institutions have provided updated guidance for earnings for the year. The updated guidance primarily reflects substantial downward adjustments from the guidance at the beginning of 2020.

Depending on the size and duration of the downturn, the business models of some banks will potentially come under pressure. An institution with an unsustainable business model should explore the possibilities of a market-based solution, for instance in the form of a merger or acquisition.

Lower earnings reduce the first line of defence against losses

Systemic credit institutions recorded a decline in earnings in the years leading up to the coronavirus outbreak, albeit from a high level, see Chart 32.

Moreover, in 2019, results of the largest banks were buoyed up by extensive mortgage refinancing. But fee earnings from the waves of refinancing were temporary and cannot be expected to recur to the same extent in 2020.

Since 2017, the cost level of systemic credit institutions has been rising due to higher staff costs and administrative expenses, among other factors, see Chart 33. Part of the increase is attributable to general price and wage adjustments.

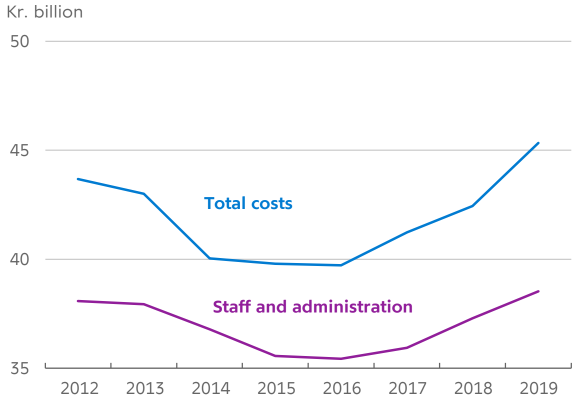
Decline in systemic credit institutions' earnings

Chart 32

Note: Annual profit before tax for systemic credit institutions. Profit before tax has been adjusted for goodwill impairment charges and earlier mergers and acquisitions. The most recent observation is from 2019.
Source: Danmarks Nationalbank and own calculations.

Rising staff costs and administrative expenses have increased overall costs since 2017

Chart 33

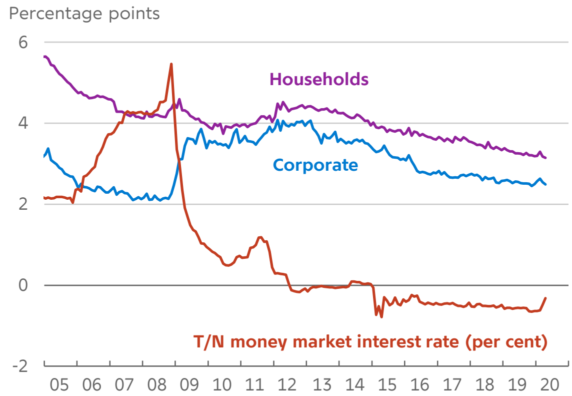


Note: Annual data for systemic credit institutions in nominal prices. Total costs have been adjusted for goodwill impairment charges, while both total costs and staff costs and administrative expenses are adjusted for earlier mergers and acquisitions. Costs are defined as the sum of staff costs and administrative expenses, depreciation and amortisation of tangible and intangible assets and other operating costs. The most recent observations are from 2019.

Source: Danmarks Nationalbank and own calculations.

Systemic banks' interest margins are low

Chart 34



Note: Interest margin of systemic banks' outstanding domestic transactions in Danish kroner. Corporate covers non-financial corporations. Weighted monthly average for the T/N money market interest rate. The most recent observations are from April 2020.

Source: Danmarks Nationalbank, Bloomberg and own calculations.

Despite the focus on cost efficiency, no substantial cost savings have been realised so far, which should be seen, for instance, in the context of higher costs related to regulation and compliance measures and IT investments. Against that backdrop, cost savings in the coming years are doubtful. Investment can only be expected to contribute to efficiency gains in the longer term.

Higher interest margins are a sensible measure when customer finances deteriorate

For several years, interest margins have been squeezed by the low interest rate environment and intensive competition for creditworthy customers, see Chart 34.

An interest margin is the average bank lending rate less the average deposit rate and it constitutes an important part of banks' earnings base. Currently interest margins are low seen over an extended period of time, which is often the case after a boom period.

A bank's lending price is based on an assessment of its risk of loss from lending activities. When the economy is in a weak cyclical phase, banks are exposed to a higher risk that their customers will be unable to repay their loans. If banks fail to take the necessary steps to ensure that their business models remain sustainable, they cannot generate sufficient earnings to continue lending to creditworthy customers.

Negative deposit rates are still prevalent

The downward trend in banks' interest margins reversed in the latter part of 2019, particularly for medium-sized banks, driven primarily by a decline in average corporate deposit rates.

While corporate deposit rates have already been negative for a number of years, banks have been reluctant to introduce negative deposit rates for households. But since the 2nd half of 2019, all systemic banks have announced or introduced negative interest rates on some household deposits.

In February, 3.5 per cent of household deposits paid negative interest rates, equivalent to deposits totalling some kr. 34 billion. This is shown by a survey conducted by Danmarks Nationalbank, covering medium-sized and large Danish banks.[10]

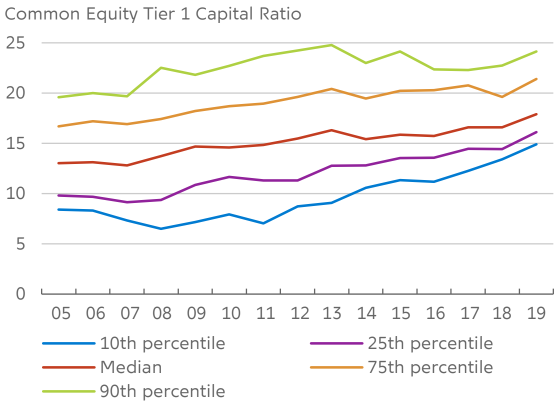
Banks are better capitalised than before the financial crisis

Danish banks are generally better capitalised than before the financial crisis in 2008-09, see Chart 35. This especially applies to the weakest capitalised banks. During the financial crisis, a number of the weakest capitalised banks had to close down. Today, the tenth of banks with the lowest Common Equity Tier 1 ratios are about twice as capitalised as the tenth of banks with the lowest Common Equity Tier 1 ratios in 2007.

Because of lower capitalisation before the financial crisis, a risk materialised during the crisis that banks would not be able to perform their core task of intermediating credit. A credit crunch loomed in which even healthy and creditworthy customers would not be able to raise loans. As private investors were reluctant to provide capital, a scheme was introduced as part of Bank Rescue Package 2, enabling solvent institutions to apply for injections of government Additional Tier 1 capital.

In the current situation, institutions are better capitalised, and the countercyclical capital buffer has been released, see below.[11] And although the capital markets have seen considerable volatility in recent months, there are no current indications that private investors are reluctant to provide capital. However, some small and medium-sized institutions could fail or be likely to fail in the coming period. Should that situation occur, the resolution authorities have the tools necessary to ensure an orderly resolution, see below.[12]

Higher capitalisation, particularly among the weakest capitalised banks Chart 35



Note: Banks in the Danish Financial Supervisory Authority's groups 1-3. For banks that are parent companies of groups, the Common Equity Tier 1 ratio is stated at consolidated level.
Source: The Danish Financial Supervisory Authority and own calculations.

Downward risks for the institutions' capitalisation
The coronavirus outbreak and the temporary lockdown of parts of society pose a number of risks to institutions' capital positions. Loan impairment charges and losses on portfolios of securities and derivatives could reduce institutions' own funds, while higher financial market volatility and decreasing credit quality may increase the risk weights used in the calculation of capital requirements. On the other hand, government relief packages to firms may mitigate developments in both impairment charges and risk weights.[13]

Financial statements for the 1st quarter of 2020 show that, so far, there are only minor changes in the level

10 See Danmarks Nationalbank, Private deposits for kr. 34 billion at a negative rate, *Danmarks Nationalbank Statistics (banking and mortgage lending, interests)*, April 2020 (*link*).

11 Under Bank Rescue Package 2, a total of 43 institutions raised government Additional Tier 1 capital totalling about kr. 46 billion. The release of the countercyclical capital buffer means that the capital requirements on Danish institutions are reduced by approximately kr. 17 billion here and now. Given that already adopted increases of the buffer rate are also cancelled, the aggregate reduction in capital requirements until end-2020 totals about kr. 34 billion.

12 See Danmarks Nationalbank, A prolonged recession could squeeze banks, *Danmarks Nationalbank Analysis (Stress test)*, No. 7, May 2020 (*link*).

13 In April 2020, the European Commission proposed an amendment to the current IFRS 9 transitional arrangements. If adopted, this proposal will enable institutions to recognise a temporary Common Equity Tier 1 add-on during the period 2020-2024, based on the size (increase) of loan impairment charges at stages 1 and 2 since 1 January 2020. Loan impairment charges at stage 3 are not included in the proposal.

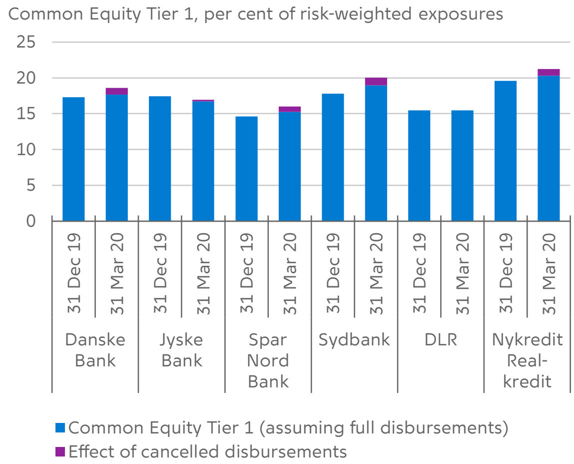
of Common Equity Tier 1 in systemic credit institutions, see Chart 36.

The relatively modest changes should be seen in the context of several factors. Despite a generally higher level of impairment charges and negative value adjustments of securities portfolios, only three of the six institutions reported a loss for the 1st quarter. At the same time, there were generally only minor changes in risk-weighted exposures.

Danske Bank, Nykredit, Jyske Bank, Sydbank and Spar Nord have all decided to cancel the dividend payments recommended at their annual general meetings in 2020 and to cancel planned and existing share buyback programmes, see Chart 36. These cancellations have helped to increase institutions' capital ratios. Danmarks Nationalbank sees the cancellation of dividend payments and share buybacks as a sign that banks are appropriately prudent in the current situation.

The uncertainty surrounding the macroeconomic outlook will continue to have a spillover effect on bank capital ratios in the coming periods. Several institutions have announced that they expect impairment charges to remain elevated throughout the remainder 2020. At the same time, an increase in risk-weighted exposures is to be expected as several loans either move to lower levels of credit quality in institutions' IRB models or are included in the regulatory definition of "default"[14].

Small changes in the level of Common Equity Tier 1 in the 1st quarter of 2020 Chart 36



Note: The sum of the blue and purple bars as at 31 March are equivalent to the actual levels of Common Equity Tier 1 as at 31 March. Cancelled disbursements include both dividends and share buybacks not completed according to plan. Nordea Kredit does not publish quarterly financial statements and has been omitted in the chart.
Source: Annual and quarterly financial statements.

Release of the countercyclical capital buffer provides additional headroom

On 12 March 2020, the Minister for Industry, Business and Financial Affairs decided to release the countercyclical capital buffer with immediate effect in response to the coronavirus outbreak. This gives banks and mortgage credit institutions additional headroom in relation to capital requirements. This means they will have more headroom to handle impairment charges and higher risk weights on existing loans and still be able to lend to creditworthy customers.

In recent years, the Systemic Risk Council has focused on increasing the resilience of credit institutions through a gradual increase of the countercyclical capital buffer. The aim has been to build a buffer of a size that could make a difference when it became necessary to release it. Hence, it was in line with the Systemic Risk Council's buffer approach that it was released in response to the uncertainty following the coronavirus outbreak.

The efforts to increase the buffer requirement during a period of moderate credit growth should be seen as due care. Due to a relatively long implementation period, the current buffer requirement immediately before the release of the buffer was only 1 per cent. However, further increases of the buffer requirement were underway.[15]

14 Under the Capital Requirements Regulation, an obligor is considered to be in default if the institution considers that the borrower is unlikely to pay its credit obligations without realising security, or if the obligor is more than 90 days past due.

15 In October 2019, the Minister for Industry, Business and Financial Affairs decided to increase the buffer requirement to 2 per cent, effective from end-2020. In December 2019, the Systemic Risk Council announced that it expected to recommend a further increase of the buffer rate from 2.0 to 2.5 per cent in the 1st quarter of 2020.

The Systemic Risk Council's regular recommendations of continuing the build-up of the buffer rate was motivated by continued risk build-up in institutions' lending. Despite moderate credit growth, the Council was concerned that the low interest rate environment provided a basis for build-up of financial vulnerabilities through intensified search for yield.

Still considerable variation in excess capital adequacy

The release of the countercyclical capital buffer does not give institutions more capital, but it increases the distance between actual capital and capital requirements, i.e. excess capital adequacy. Generally, excess capital adequacy has increased over the past six months – also more than can be attributed to the release of the countercyclical capital buffer, see Chart 37.

There is still considerable variation in excess capital adequacy among systemic institutions, reflecting substantial differences in their loss absorbing capacity.

Danmarks Nationalbank has previously recommended that some of the systemic credit institutions should reconsider their capital targets.[16] This recommendation still applies.

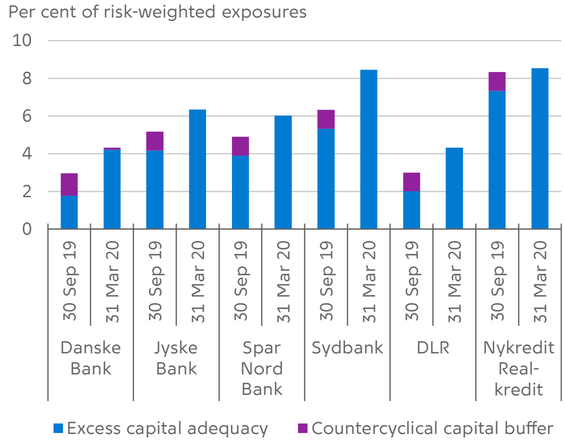
A few non-systemic banks are at risk of failing

Danmarks Nationalbank performs a semi-annual stress test of the Danish banking sector. In the most recent stress test, institutions' capital ratios are compared with the current capital requirements in three scenarios: a prolonged recession, a deep 'V' scenario and a combination scenario. Both the prolonged recession scenario and the combination scenario are considerably more severe than the financial crisis.[17]

The stress test shows that institutions are able to withstand a prolonged recession and also a very severe, but temporary, economic downturn, without falling significantly short of the buffer requirements.

Release of the countercyclical capital buffer has contributed to higher excess capital adequacy

Chart 37



Note: Excess capital adequacy indicates how much of its Common Equity Tier 1 capital (percentage points) the institution can afford to lose without breaching the combined capital buffer requirement (including fully phased-in SIFI buffer requirement for Spar Nord Bank). Nordea Kredit does not publish quarterly financial statements and has been omitted in the chart.

Source: Danish Financial Supervisory Authority and quarterly financial statements.

But a combination of these scenarios could cause problems, and in this scenario more systemic credit institutions may fall short of the capital buffer requirements.

Several non-systemic banks could face difficulties in case of a prolonged downturn. For instance, more than half of the non-systemic banks will fall short of the buffer requirements in the prolonged recession scenario, and overall they will be around kr. 3 billion short of satisfying the buffer requirements. Breaches of the buffer requirements of this magnitude are not assessed to pose a threat to financial stability. However, a few non-systemic banks are at risk of failing.

16 See Danmarks Nationalbank, Lower excess capital adequacy for the banks, *Danmarks Nationalbank Analysis (Financial stability)*, No. 25, November 2019 (*link*).

17 See Danmarks Nationalbank, A prolonged recession could squeeze banks, *Danmarks Nationalbank Analysis (Stress test)*, No. 7, May 2020 (*link*).

Institutions should ensure sufficient distance to the MREL requirement by issuing eligible debt instruments

Before falling short of their buffer requirements, the institutions in the stress test could fall short of the minimum requirement for own funds and eligible liabilities, MREL. Over the coming years, several systemic credit institutions will need to issue new MREL-eligible debt instruments to continue to meet the requirements. During periods of financial market turmoil, issuance can be difficult and expensive, as most recently seen in March this year, see the section "Period with limited scope for new issuance" above. It is important that institutions have sufficient distance to the MREL requirement to avoid having to limit their activities in order to ensure compliance. Institutions should thus issue eligible debt instruments in good time to provide robust distance to the requirement.

MREL specifies the minimum requirement for own funds and eligible liabilities. It is to ensure that the institution's activities are funded to enable recovery and resolution of the institution, irrespective of its size.

MREL is a key element in credible recovery and resolution

Over a number of years, Denmark has established a credible framework for recovery and resolution of banks. This framework is to enable recovery and resolution of banks without causing a significant adverse effect on financial stability and without use of government funds.

The framework for recovery and resolution complies with the rules established by the EU Bank Recovery and Resolution Directive, BRRD, implemented in 2014.[18] These rules were introduced after the financial crisis when several countries had been forced to use government funds to bail out institutions in crisis.

If the Danish Financial Supervisory Authority assesses that an institution is failing or likely to fail, control of the institution is transferred to the Financial Stability Company, Finansiel Stabilitet.

Finansiel Stabilitet manages failing institutions in accordance with the regulatory resolution objectives, including ensuring the continuation of critical functions and avoiding significant adverse effects on financial stability.

A number of tools and powers have been assigned to Finansiel Stabilitet to enable it to manage failing institutions. The key tool is "bail-in". Applying the bail-in tool, Finansiel Stabilitet can write down debt and capital in order to absorb losses in an institution. If the resolution strategy is to continue the institution, the bail-in tool can also be used to recapitalise the institution. Thus, institutions' MREL constitute a key element in the possible resolution plans and subsequent recapitalisation. Application of the bail-in tool ensures that investors and creditors rather than taxpayers bear the costs of recovery and resolution of a failing institution. Finansiel Stabilitet also has the power to replace the management of the institution.

Finansiel Stabilitet is prepared to manage failing institutions. Each year, resolution plans are prepared for institutions in which a number of key issues have been considered in advance. The only thing missing in the Danish implementation of the BRRD is to ensure that mortgage credit institutions can be subject to recovery and resolution in the same manner as banks.

18 The framework for recovery and resolution complies with the EU rules set out in the BRRD, Directive 2014/59/EU of the European Parliament and of the Council of 15 May 2014 establishing a framework for the recovery and resolution of credit institutions etc. The BRRD has been transposed into Danish law, in part by Act on Restructuring and Resolution of Certain Financial Enterprises (*lov om afvikling og restrukturering af visse finansielle virksomheder, RAL*) and in part by an amendment to the Financial Enterprises Act *(lov om finansielle virksomheder, FIL)*.

Appendix: Data for the analysis

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 designated by the Danish Financial Supervisory Authority, most recently in 2019. The analysis also includes the non-systemic banks in the Danish Financial Supervisory Authority's group 2 in 2020. These institutions are listed in Table 1. 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 also applies backward in time.

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 are the Danish Financial Supervisory Authority's group 1 plus the branch Nordea Danmark, while medium-sized banks are the Danish Financial Supervisory Authority's group 2 plus the branches Handelsbanken and Santander Consumer Bank.

Institutions in the analysis by total assets as at 31 December 2019. Table 1

Systemic credit institutions	Kr. million
Danske Bank	3,761,050
Nykredit Realkredit (including Nykredit Bank)	1,610,336
Jyske Bank (including Jyske Realkredit)	649,738
Nordea Kredit	473,277
DLR Kredit	173,444
Sydbank	147,738
Spar Nord	93,113

Systemic banks	
Danske Bank	2,281,873
Jyske Bank	304,100
Nykredit Bank	225,886
Sydbank	149,953
Spar Nord	93,246

Non-systemic banks	
Arbejdernes Landsbank	58,846
Ringkjøbing Landbobank	52,941
Sparekassen Kronjylland	29,868
Sparekassen Sjælland-Fyn A/S	25,435
Sparekassen Vendsyssel	25,399
Lån & Spar Bank	24,686
Vestjysk Bank	22,192
Jutlander Bank	19,564
Den Jyske Sparekasse	15,956
Middelfart Sparekasse	13,494
Alm. Brand Bank	13,386

Mortgage credit institutions	
Nykredit Realkredit	1,524,337
Realkredit Danmark	912,440
Totalkredit	887,315
Nordea Kredit	473,277
Jyske Realkredit	384,899
DLR Kredit	173,444
LR Realkredit	27,510

Note: The balance sheet totals of systemic credit institutions are stated at group level, while the balance sheet totals of systemic banks, non-systemic banks and mortgage credit institutions are stated at institution level.
Source: Danmarks Nationalbank and annual financial statements.

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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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