SVERIGES RIKSBANK

Financial Stability Report

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The Riksbank's Financial Stability Report

The Riksbank's Financial Stability Report is published twice a year. In the report, the Riksbank gives an overall assessment of the risks and threats to the financial system and evaluates the system's resilience to them. The work on the stability analysis is therefore directly linked to the Riksbank's task of promoting a safe and efficient payment system. By publishing the results of its analysis, the Riksbank wishes to draw attention to, and warn of, risks and events that might pose a threat to the financial system.

The Executive Board of the Riksbank has discussed the report on two occasions – on 12 May and 24 May 2021. The report is available on www.riksbank.se. The Report takes into account developments up to and including 19 May 2021.

The Riksbank and financial stability

- The Riksbank has a mandate from the Riksdag (the Swedish parliament) to promote a safe and efficient payment system. Achieving this requires a stable financial system so that payments and the supply of capital function well. In practice, this task means that the Riksbank is responsible for promoting financial stability. The Riksbank defines financial stability as the financial system being able to maintain its three basic functions – the mediation of payments, risk management and the conversion of savings into funding – and also being resilient to shocks that threaten these functions.
- The Riksbank can provide liquidity support to financial institutions if problems arise that threaten financial stability. To be able to do this in the best possible way, the Riksbank needs to be well prepared for crises by having an efficient crisis organisation with good information channels and tools for analysis, as well as well-developed cooperation with other authorities.
- The Riksbank does not have the sole responsibility for promoting financial stability. It shares this responsibility with the Ministry of Finance, Finansinspektionen (FI, the Swedish financial supervisory authority), and the Swedish National Debt Office. The Ministry of Finance is responsible for the regulation of financial companies, FI for supervision and the Swedish National Debt Office for the government's management of banks in crisis. The interaction between the authorities is important both in the preventive work and in the event of a crisis materialising. Good cooperation with other countries is also important, as financial companies operate to a large extent across national borders.
- The financial system plays an important role in the economy. It is necessary to have a stable and smoothly running financial system for the economy to function and grow. A serious crisis in the financial system risks leading to considerable economic and social costs.
- The financial system is sensitive. This is due to the vulnerability of central parts of the system, such as banks and markets. Banks are vulnerable mainly because they fund their operations at short maturities but lend at longer maturities. This imbalance makes them dependent on public and market confidence. If market participants lose confidence in their counterparties or in the financial instruments traded on the market, serious problems may rapidly arise. The various parts of the financial system are also closely interconnected as, for example, financial institutions often borrow from and trade with one another. This means that problems arising in one institution or market can rapidly spread throughout the system. Contagion effects may also arise if there is a general fall in confidence in similar activities.

- The combination of the sensitivity of the financial system and the large potential costs of a financial crisis means that the state has a particular interest in preventing threats to financial stability. This is because banks and other market participants do not have an incentive themselves to give full consideration to the risks to financial stability they may cause. This is due to some of the costs of a financial crisis falling to other agents both within and outside the financial system. If a crisis occurs, the state therefore needs to intervene, but this should of course be done at the lowest possible cost.
- The Riksbank regularly analyses the stability of the financial system so that changes and vulnerabilities that could lead to a deterioration in the functioning of the financial system can be detected at an early stage. The focus of the analysis is on the five major banks in Sweden (Danske Bank, Handelsbanken, Nordea, SEB and Swedbank) and on the markets and infrastructure that are important for their funding and risk management.
- In some cases, the Riksbank recommends specific measures to counteract risks. These recommendations may be based on current economic developments. But they may also refer to more structural circumstances relating to how a market functions and stem from current regulatory issues. The recommendations can be aimed at banks and other market participants, as well as at legislators and other authorities.

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IN BRIEF – The Riksbank's stability assessment

With the help of **extensive support measures**, the **Swedish financial system** has coped relatively well with the coronavirus pandemic and **a financial crisis has been avoided**. **Credit supply has been maintained** and important **funding markets** are now **functioning satisfactorily**.

However, the risks to financial stability are still elevated. The **continued course and effects of the pandemic are uncertain**. **Bankruptcies** and **loan losses** may increase, at the same time as the support measures are increasing vulnerabilities in the longer run, for example through **rising asset prices** and **increased indebtedness**.

Economic policy needs to continue to **support the economic recovery**, while at the same time taking **longer-term vulnerabilities** into account. The Riksbank supports FI's decision not to extend the **exemption from amortisation requirements**. If the economy develops as expected, it is also desirable that FI should announce that the value of the **countercyclical capital buffer will be increased**.

As the economic situation improves, the **temporary relaxation of banks' regulatory frameworks needs to be withdrawn**. Globally agreed standards such as **Basel III need to be implemented in full**, in time and in a consistent manner, without being watered down.

High household indebtedness makes it necessary to take measures within **housing and tax policy**. Otherwise, new macroprudential policy measures may need to be introduced, or the measures already implemented may need to be tightened going forward.

Investment funds with holdings of corporate bonds need to **improve their liquidity preparedness**. **Regulatory frameworks and business conditions also need to be revised** to ensure that funds investing in less liquid assets, such as corporate bonds, **cannot offer daily redemptions**. Measures also need to be taken to improve the **functioning of the corporate bond market**.

It is important that market participants begin to **use the Swedish transaction-based reference rate SWESTR**, partly because bid-based reference rates are insufficiently reliable.

To enable better management of **cyber risks** and strengthen the resilience of the financial system to these risks, the **allocation of responsibility between authorities needs to be clarified and developed**. **Cooperation** between authorities and private agents also needs to be strengthened.

Climate-related risks require more and better **reporting**, and a global standard for sustainability reporting is now taking shape under the auspices of the IFRS Foundation. To be in line with this work, companies now need to start reporting in line with the **recommendations from the TCFD**.

1 Summary of the stability assessment

With the help of extensive support measures, the Swedish financial system has coped relatively well during the coronavirus pandemic and a financial crisis has been avoided. Credit supply to households and companies has been maintained and important funding markets are now functioning satisfactorily. In addition, the financial infrastructure has worked well.

However, the risks to financial stability are still elevated. After the dramatic falls in output during the first phase of the pandemic, the global economy has shown itself to be more resilient recently and is well on the way to recovery. Despite the pace of vaccinations having picked up, however, there is uncertainty over the continued course and effects of the pandemic. Bankruptcies risk increasing in the period ahead, both in Sweden and abroad, particularly if the support measures are phased out at a rapid pace. In turn, this entails an elevated risk for loan losses by banks.

Sharply rising asset prices in several countries during the pandemic, together with increasing indebtedness, are also part of the risk outlook. In addition, there are vulnerabilities in the financial system that were already there prior to the pandemic. In the euro area, these are mainly a matter of weak banks and public finances, while in Sweden they mainly concern high household indebtedness and high levels of exposure among the major banks to housing and commercial properties. A crisis in the property market can threaten the stability of the Swedish financial system.

Economic policy needs to continue to support the economic recovery going forward, while, at the same time, taking longer-term vulnerabilities into account. In light of the risks posed by the high level of household indebtedness, the Riksbank supports FI's decision not to extend the temporary exemption from the amortisation requirements. In order to increase resilience in the financial system, it is also desirable that FI, if the economic recovery continues, announces that the value of the countercyclical capital buffer will be increased, not least as increases are implemented with a time-lag of twelve months.

Extensive support measures have prevented a financial crisis

Over a year has passed since the coronavirus pandemic hit with full force around the world. Parts of the corporate sector have been particularly severely affected and many people have been made unemployed. After significant falls in output during the first phase of the pandemic, the global economy has shown itself to be more resilient recently. The effects on the economy have been less severe than many initially feared and the worst risk scenarios have not materialised. The situation was prevented from deteriorating largely due to the historically extensive support measures taken by governments, central banks and other authorities around the world. The support measures have mitigated the effects of the pandemic on the real economy, alleviated the turmoil on financial markets and prevented a financial crisis.

Over the winter and spring, further major fiscal policy stimulation packages have been launched, primarily in the United States, and central banks have continued with large-scale asset purchases and comprehensive lending programmes. At the same time, vaccinations are under way and future prospects are brighter than when the Riksbank's previous Financial Stability Report was published in November 2020.[1] On financial markets, longer-term bond yields have risen, but the financial conditions remain expansionary.

The pandemic has impacted companies and households with varying severity

Compared with the initial phase of the pandemic, when the restrictions and changed behaviour among households and companies led to a broad downturn in the Swedish economy, the negative effects have with time become clearly concentrated to parts of the service sector.

Property companies, which are often highly leveraged, have been affected with varying severity by the pandemic. Those focused on sectors affected by the crisis, such as hotels and retail trade properties, have been impacted more severely than companies focused on logistics and housing. However, it is uncertain what consequences the pandemic may have for the property sector in the longer term. For example, the pandemic may have accelerated a transition from brick-and-mortar retail to e-Commerce. If so, this would mean that the problems for retail trade properties are not just temporary. The number of office vacancies has also increased and it is uncertain how much office space tenants will need after the pandemic.

The effects of the pandemic on the Swedish household sector have also been divergent. The crisis has had a particularly severe impact on fixed-term employees, young people and those born abroad. People with permanent positions, on the other hand, have not been impacted as badly. Resilience in the household sector has generally been good during the pandemic. Support measures from the authorities have been

[1] See *Financial Stability Report*, November 2020, Sveriges Riksbank.

important. For example, the short-time work support scheme has led to fewer people losing their job. In addition, the wealth of people with financial and real assets has been strengthened during the pandemic at the same rate as equity and housing prices have risen.

Banks can continue to mediate credit to households and companies at low interest rates

The major banks in Sweden have good access to funding at low costs. They also have a margin down to the capital requirements. This is partly due to FI having lowered the countercyclical capital buffer and recommended that banks limit their dividend payments to shareholders. The banks also continue to be profitable and their loan losses have so far been small. Overall, this means that the pandemic has not caused a credit crunch in the economy – instead, the banks still have good capacity to provide credit to households and companies at low interest rates.

Lending to households has increased at a slightly faster rate during the pandemic. Above all, it is mortgages that have increased and new mortgagors have taken larger loans than previously in relation to their income and the value of their homes. Growth in total corporate borrowing, both via banks and via the securities market, increased at the start of the pandemic but the rate of growth has slowed since the summer of 2020. Overall, companies' total borrowing is presently slightly higher than it was before the pandemic broke out. However, developments differ from sector to sector. For example, property companies have increased their total borrowing, while companies in severely impacted sectors such as hotels, travel and leisure have decreased their borrowing slightly. To a certain extent, however, their need for loans and support has been satisfied in other ways, for example through temporary tax-payment respite or other fiscal policy support measures. According to surveys, however, more companies than normal consider their funding situation to be strained.

The risk outlook reflects the uncertainty over the continued course and effects of the pandemic

The risk outlook both in Sweden and abroad continues to be dominated by the course and effects of the pandemic. It is unclear how vaccinations and possible mutations may affect the spread of infection and it is difficult to know how long restrictions and changed behaviour among households and companies will subdue economic activity. Any setbacks could impede the economic recovery and create stress on financial markets.

Risks remain even if the spread of infection decreases. So far, there have been few bankruptcies in Sweden and abroad but there is a risk that they will arise later. Possible problems in the corporate sector may become more apparent when the support measures are phased out. A minor increase in bankruptcies in the most badly affected sectors in Sweden need not have major direct consequences for economic growth or

financial stability. But the risks to financial stability will be greater if bankruptcies increase significantly and the problems spread between sectors, for example to highly leveraged property companies.

Existing vulnerabilities differ from country to country

In several respects, the risks are greater abroad than in Sweden. For example, the banking sector in the euro area was already vulnerable before the pandemic, with lower earnings capacity and a larger share of non-performing loans. In addition, some of the regulatory relaxation applied during the pandemic, for example banks not having to disclose and make provisions for non-performing loans in the same way as before, are leading to an underestimation of banks' underlying credit risks.[2] Furthermore, many countries in the euro area have weak public finances. It is thus not certain that all banks have sufficient resilience or that all countries have sufficient scope to implement the measures needed if bankruptcies increase and the crisis becomes deeper or more prolonged.

In other respects, the risks are greater in Sweden. While Swedish sovereign debt is low, the level of private sector indebtedness is high in comparison with other countries, and it has continued to increase during the pandemic. For a long time, the Riksbank has been pointing out that high household indebtedness is making the Swedish economy vulnerable. Banks are also significantly exposed to commercial property companies, an exposure which is also increasing, meaning that problems in the property sector may have major consequences for financial stability.

So far, housing and commercial properties in Sweden have avoided larger price falls during the crisis. On the contrary, housing prices have increased sharply. However, if market rates were to start to rise rapidly and unexpectedly, this could have major effects on households and property companies. This could lead both to falling prices for housing and commercial properties and to a reduction in household consumption, which, in turn, could have major macrofinancial consequences. In such a scenario, the banks could be impacted by significant loan losses and find it difficult to maintain credit supply without further support measures.

Necessary support measures are increasing vulnerabilities in the financial system

The support measures implemented around the world have helped the financial system to function satisfactorily through the pandemic and made it possible to avoid a financial crisis. At the same time, however, the measures are increasing vulnerabilities in the financial system in the longer run.

For a long time, structural factors have tended to push down global real interest rates, including central bank policy rates, contributing to lower and lower general interest rates. At the same time, central banks are now conducting expansionary monetary

[2] See the article "Non-performing loans in the euro area and financial stability" in this report.

policy to mitigate the effects of the crisis. This may increase expectations among market participants that interest rates will remain low for a long time and they may, as a result, increase their leverage more than otherwise. Risk appetite on financial markets remains high and many asset types have increased sharply in price and are highly valued. The Riksbank assesses that the risk of price falls and subsequent market turbulence is elevated.

The extensive fiscal policy support programmes are contributing to higher sovereign debt on a broad front around the world. As a rule, households also fund their housing purchases with loans and higher housing prices therefore lead to higher indebtedness. To some extent, companies have also used loans to cover for a loss of income during the pandemic. When debts increase, the participants in the financial system become more sensitive to shocks. Another risk is that the fiscal policy measures are not just providing temporary help to fundamentally viable companies but are also counteracting a necessary renewal of the business sector by providing support to companies without the long-term potential for survival.

The support measures may also be leading to problems with what is known as 'moral hazard', which is to say that the financial sector relies on government measures always protecting banks and other financial agents from losses in a crisis. In the longer term, this may also lead to excessive risk-taking and to vulnerabilities accumulating in the financial system.

The Riksbank considers that the negative side effects of the support measures have so far been subordinate to the risks linked to withdrawing the measures too soon. However, the suitability of the measures needs to be reviewed continually so that the advantages of stimulating the economy today are balanced against the vulnerabilities accumulating in the longer term, as these will have to be addressed going forward.

It is important that policy areas cooperate to both support the recovery and counteract financial imbalances

The economic recovery requires monetary policy and fiscal policy to remain expansionary.[3] The Riksbank's measures are helping to maintain credit supply and to keep interest rates low throughout the economy, at the same time as they are providing support to enable inflation to be close to target more persistently. Fiscal policy, on the other hand, is giving precise support to sectors in which the negative effects of the pandemic are particularly evident. At the same time, economic policy also needs to take longer-term vulnerabilities into account. The most appropriate way of combating these is via targeted structural measures, well-designed financial regulation and macroprudential policy. The Riksbank's measures are having a broad impact on the economy and are therefore not particularly appropriate for counteracting financial imbalances within individual sectors in the prevailing economic situation.

[3] See *Monetary Policy Report*, April 2021, Sveriges Riksbank.

Given the specific risks linked to high household indebtedness and the rapid price rises in the housing market, and the fact that the situation of mortgagors looks brighter as the economic outlook has improved, it is important that FI allows the temporary exemption from amortisation requirements to expire in August as has been communicated. Such a targeted measure reduces indebtedness and strengthens the long-term resilience of both households and the Swedish economy.

If economic developments improve in line with the Riksbank's main scenario from the Monetary Policy Report in April, FI should also announce that the countercyclical capital buffer will be increased, not least because the increases are implemented with a time-lag of twelve months. In light of banks continuing to have a margin down to the capital requirements, such a strengthening of their long-term resilience will occur without impairing their capacity to maintain credit supply. Taken together, economic policy can thereby continue to support the economic recovery, while at the same time counteracting the accumulation of financial imbalances to a certain extent.

FI's recommendation to restrict banks' dividend payments to their shareholders expires in September 2021.[4] If economic developments improve as expected and banks are deemed to have sufficient resilience, the Riksbank does not presently see any reason to extend the recommendation.

The risks linked to high household indebtedness need to be managed

To resolve the fundamental problems linked to the housing market and high household indebtedness, broad reforms are required in housing and tax policy that improve the balance between supply and demand in the housing market. Examples of feasible measures include reviewing the regulations regarding the new production of housing, the rent-setting system, the taxation of capital gains from housing sales, property tax and tax relief on interest expenditure. If such measures are not implemented in the near term and to the extent necessary, new macroprudential policy measures may need to be introduced, or the measures already implemented may need to be tightened to manage the increased risks. However, resolving the fundamental problems on the housing market is a better way forward than additional macroprudential policy measures because flaws in the housing market do not just lead to risks to financial stability but also to welfare losses in other respects. For example, households who are outside the housing market are disadvantaged.

It is deeply problematic that microdata on household assets and liabilities is not collected in Sweden. It is important that this flaw is remedied as soon as possible. It is therefore positive that the Government decided, in January, to appoint an inquiry into how individual-based statistics on household assets and liabilities could be produced and used to gain an adequate picture of households' financial positions and thus better assess household resilience to shocks. It is also positive that an inquiry has been

[4] See *Financial firms must be restrictive with dividends until September 2021*, December 2020, Finansinspektionen. Similar recommendations have been issued by several EU bodies, including the European Systemic Risk Board (ESRB) and European Central Bank (ECB).

appointed that will investigate how a register for tenant-owned apartments can be introduced. The system for tenant-owned apartments should be as reliable as it is for single-family homes and a central register can reduce the risk of individual households being impacted by economic losses.

The pandemic has highlighted vulnerabilities and the need to strengthen resilience in the financial system

The coronavirus pandemic has shown how rapidly and unexpectedly the economic situation can change with a substantial need of extensive support measures. It is therefore important to work on a broad front to rectify identified weaknesses and strengthen the resilience of the financial system. In light of the government support measures, it is particularly important for market participants to understand that the specific circumstances in a crisis determine which support measures are appropriate and that they cannot rely on the authorities always to take action.

During the pandemic, some regulations have temporarily been eased both in Sweden and abroad and there is a risk of these changes becoming permanent. Relaxed regulations have been necessary during the pandemic, but to strengthen the resilience of the financial system again, it is important that these relaxations do not become permanent. Once the economic situation allows it, the regulations will need to be restored. In this context, the Riksbank wishes to support FI as it aims, in more normal times, towards a positive level for the countercyclical capital buffer.[5] In addition, both Sweden and other countries should, in a timely, consistent and full manner, introduce internationally agreed standards such as Basel III.

The Swedish market for corporate bonds has obvious flaws in transparency and liquidity, which became clear at the start of the pandemic.[6] A lack of information on final prices and traded volumes contributed to the severity of the impact on the market. It is therefore important to implement measures to increase transparency on the market, and the Riksbank supports FI's initiative for this.[7] The Riksbank stresses the importance of participants on the securities market applying the self-regulation on transparency developed by the Swedish Securities Markets Association no later than in July 2021.[8] To ensure sufficient liquidity in the secondary market for issued bonds, tough requirements must also be imposed on issuers that use the market for their funding and banks that assist in the issuance process. This may be a matter of measures concerning resale agreements, the number of banks assisting in each issuance process and the size of the bond loans. The Riksbank wishes to see initiatives from both authorities and the private sector that lead to a better-functioning market

[5] See *FI's approach to setting the countercyclical capital buffer*, March 2021, Finansinspektionen.

[6] See, for example, S. Wollert (2020), Swedish corporate bonds during the coronavirus pandemic, *Staff memo*, Sveriges Riksbank.

[7] See *FI vill se ökad transparens på företagsobligationsmarknaden (FI wishes to see greater transparency on the corporate bond market)*, September 2020. Finansinspektionen. In Swedish only.

[8] See *Svensk Värdepappersmarknads rekommendation om transparens på den svenska obligationsmarknaden (Swedish Securities Markets Association's recommendation on transparency on the Swedish bond market)*, November 2020. Swedish Securities Markets Association. In Swedish only.

in terms of more transparency, better liquidity, more standardisation of issues and a more diversified group of investors than is currently the case.

The Riksbank also considers that funds that largely invest in relatively illiquid assets, such as corporate bonds, shall not be able to offer the opportunity to make daily redemptions. The business conditions and regulatory framework for investment funds therefore need to be reviewed to safeguard such a restriction. In addition, it is important for funds with holdings in corporate bonds to improve their liquidity preparedness, in particular by holding a larger share of liquid assets in their portfolios to increase resilience in the event of large redemptions.[9] Funds should not rely on being able to sell a large amount of corporate bonds in a market with a shortage of liquidity in order to cover redemptions. The information given by the funds to their investors must also correctly reflect existing liquidity risks.

Resilience also needs to be strengthened in other areas

The Riksbank considers bid-based reference rates, known as interbank rates (IBORs) to be insufficiently reliable. The Swedish interbank rate, STIBOR, is based to an excessive degree on judgements rather than actual transactions. The Riksbank has therefore undertaken to calculate and publish a fully transaction-based reference rate, SWESTR. Similar work is ongoing internationally with the support of institutions that set global standards and agents are increasingly starting to use the new transaction-based reference rates.[10] As the Swedish financial system is closely interconnected with those of other countries, it is important that this also takes place in Sweden. Market participants should therefore use SWESTR for contracts in Swedish kronor.

International financial integration means that the harmonisation of regulations must also continue in other areas. For example, many participants in the financial system conduct securities-related business in several different countries. One precondition for this to take place securely and efficiently is that the processes for managing securities transactions are harmonised, which is to say that this is done in the same way regardless of country or currency. One example is that the information sent between financial participants when a securities transaction is to be executed should be organised in the same way and should include the same type of data. The Riksbank has been involved in drawing up a plan for how the Swedish securities market's post-trade processes will be harmonised with European standards. The Riksbank now expects that market participants will implement the plan, which will require them, among other things, to allocate sufficient resources for this extensive work.

Cyber risks are a global phenomenon that is increasing in scope and complexity. At the same time, the financial sector is highly digitalised and the participants are tightly

[9] FI's ongoing work on reviewing the number of available liquidity management tools for the funds is also important in this respect. See *Finansinspektionen's appropriation directions for 2021*, December 2020, Swedish Ministry of Finance. However, these types of tool shall not be a substitute for good liquidity preparedness among investment funds.

[10] See the article "SWESTR is a part of the global reform of reference rates" in this report.

interconnected. Cyber attacks can thereby have major consequences for financial stability.[11] At present, there are several different forums for cooperation, both private and public. However, responsibility for specifying requirements, follow-up, development and coordination is spread across several different authorities and a sector-wide strategy for strengthening resilience is lacking. The Riksbank therefore considers that the division of responsibilities among authorities needs to be clarified and developed. In addition, cooperation needs to be strengthened, both between different authorities and between authorities and private participants. The forms for such cooperation should include both preventive work and routines for how cooperation should take place during a cyber attack on one or more participants in the financial sector.

The climate-related risks caused by global warming also need to be managed. In order for investors and lenders to be able to distribute capital sustainably and manage climate-related risks, they need access to accurate and comparable climate-related information[12]. It is therefore positive that a global standard for sustainability reporting is being developed at a rapid pace. The International Financial Reporting Standards Foundation (IFRS Foundation) has an active role in this work. The lack of reporting makes it difficult to assess and manage the climate-related risks.[13] It is therefore important that greater numbers of companies start reporting climate-related information in line with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD).[14] By starting to report, the companies are creating preparedness for future requirements in this area.

[11] See the fact box "A cyber attack can affect financial stability" in this report.

[12] During the Riksbank's work on reporting the carbon footprint of its holdings of corporate bonds, it has become clear that only 19 of 51 companies report their greenhouse gas emissions.

[13] Reporting the carbon footprint is only a part of climate-related reporting.

[14] See *Recommendations of the Task Force on Climate-related Financial Disclosures*, June 2017, Task Force on Climate-related Financial Disclosures. See also the fact box "The route to more and better climate-related information" in this report.

2 Risks and vulnerabilities in the financial system

In this chapter, the Riksbank presents developments in the financial system and analyses the risks and vulnerabilities that could threaten financial stability. The chapter is divided into six sections and underpins the overall stability assessment in Chapter 1.

Sweden is a small and open economy with considerable foreign trade and other cross-border operations. In addition, Swedish banks and companies obtain funding on global financial markets. Developments **abroad** are therefore of considerable significance for the real economy and financial stability in Sweden. Global phenomena such as cyber threats and climate change can also entail risks.

If the **corporate sector** were to develop weakly and bankruptcies increase, financial stability could be affected as a result of banks' loan losses rising. Swedish banks are particularly exposed to the property sector.

Households are the Swedish banks' biggest borrowers and their indebtedness has gone hand in hand with the rising housing prices. Developments in the household sector and on the housing market are therefore significant for both the real economy and financial stability.

The Swedish **banking system** is large, concentrated, interconnected, cross-border and dependent on global financial markets for its funding, making it sensitive to shocks. In addition, it plays a decisive role with regard to credit supply and other important functions in the Swedish financial system.

Other financial agents, such as investment funds and insurance companies, are interconnected with other parts of the Swedish financial system, including banks. Swedish funds and insurance companies have almost as large assets as the entire Swedish banking sector. Their actions can amplify market movements and spread risks to other asset types and agents.

The financial infrastructure refers to systems in which payments and transactions with financial instruments are made. These systems being stable and accessible is a necessary condition for it to be possible to make payments safely and efficiently.

2.1 Developments and risks abroad

After major falls in output during the first phase of the pandemic, the world economy has shown itself to be more resilient recently. Vaccinations and fiscal policy stimulation measures are helping to improve future prospects. On financial markets, longer-term bond yields have risen, but the level of interest rates remains low and financial conditions remain expansionary. Even so, there are still significant risks. Many asset types are highly valued and the risk of falling prices and market turbulence is elevated. In addition, bankruptcies may increase, which may entail problems for countries with weak banks and public finances. Other global factors that could threaten financial stability are cyber risks and climate risks.

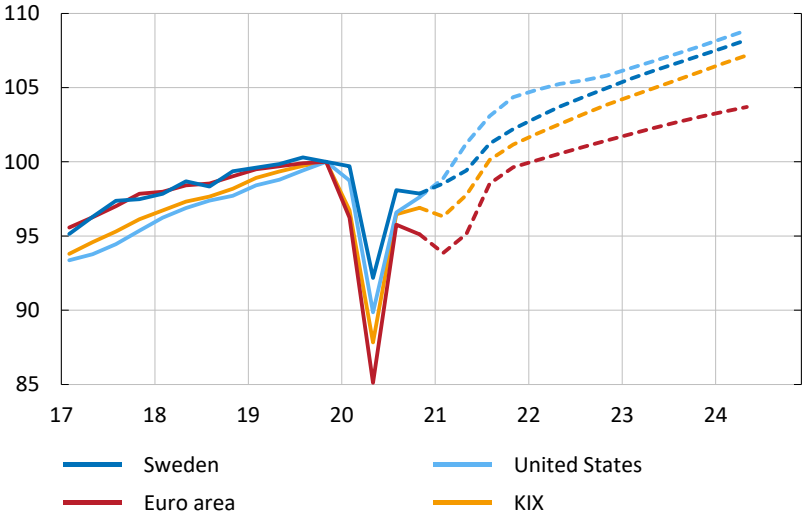
Continued recovery in the world economy but risk of setbacks

The coronavirus pandemic is continuing to restrict economic developments abroad (see Chart 1). However, extensive support measures have helped to mitigate the economic consequences and avoid a financial crisis. The economy has also turned out to be more resilient recently than at the start of the pandemic. The manufacturing sector has benefited from strong growth in China and global industrial production and world trade have now reached higher levels than before the crisis. On the other hand, parts of the service sectors are still under severe pressure as households have not been able to consume services as normal during the pandemic.

Over the winter and spring, further major fiscal policy stimulus packages have been launched, primarily in the United States, and central banks have continued with large-scale asset purchases and extensive lending programmes. The spread of infection has remained at a high level in many countries and the restrictions have remained extensive (see Chart 2). But as the percentage of people vaccinated increases, the spread of infection is expected to decline and the restrictions to be gradually eased. However, it remains to be seen whether mutations will arise that require new vaccines to be developed and it is uncertain for how long changed behaviour and restrictions will subdue economic activity going forward.

Chart 1. GDP in Sweden and abroad

Index, 2019 Q4 = 100

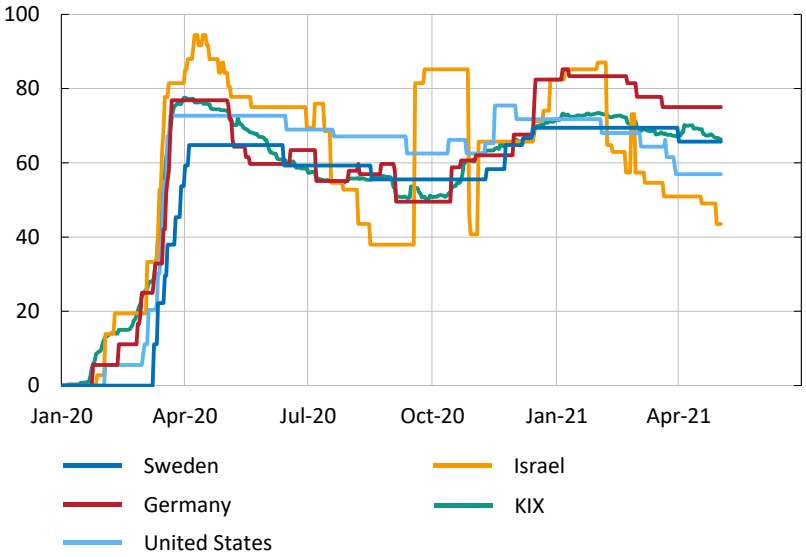


Note: KIX refers to an aggregate of 32 countries that are important for Sweden's international trade. The solid line represents outcome, the broken line represents the Riksbank's forecast from the Monetary Policy Report in April. Refers to seasonally adjusted data.

Sources: Bureau of Economic Analysis, Eurostat, national sources, Statistics Sweden and the Riksbank.

Chart 2. Degree of government restrictions to reduce the spread of infection

Index



Note: The index measures the extent of measures to combat the spread of COVID-19. The index consists of nine components that describe different types of restrictions, such as closing of schools and travel bans. Each component usually has a three-point scale corresponding to 'no measures', 'some kind of instruction' and 'a ban'. The index corresponds to the average of all components. KIX refers to an aggregate of 32 countries that are important for Sweden's international trade.

Sources: Oxford COVID-19 Government Response Tracker (OxCGRT) and the Riksbank.

Bankruptcies may rise in the period ahead, posing a risk to weak banks

Parts of the corporate sector abroad have been severely affected by the restrictions and behavioural changes brought about by the pandemic. The number of bankruptcies usually increases after major GDP falls, but, during the pandemic, the pattern has deviated from previous recessions in that the levels of bankruptcies in many countries has fallen instead (see Chart 49). One important cause of this is probably the extensive support measures. However, the major economic downturn caused by the pandemic indicates that bankruptcies may increase significantly in the period ahead, particularly if support measures are phased out quickly.[15] In turn, this would entail an elevated risk for loan losses among banks.

Many companies have also increased their indebtedness during the crisis by, for example, using loans under public guarantee schemes.[16] In Italy and Spain in particular, lending with state guarantees has been high during the pandemic (see Chart 3). Even if it has been important to meet companies' needs for credit during the crisis, the higher indebtedness means that companies will become more vulnerable in the longer term.

In the euro area, the banks' position prior to the pandemic was poor in many cases, with low profitability, high costs and large volumes of assets with poorer credit quality. Even if bankruptcies have been few so far, banks' loss provisions have increased slightly. There is a significant risk that the underlying problems are larger than they appear from the provisions and registered bankruptcies. Not least, some of the relaxed regulations during the crisis are probably contributing to the underestimation of banks' underlying credit risks.

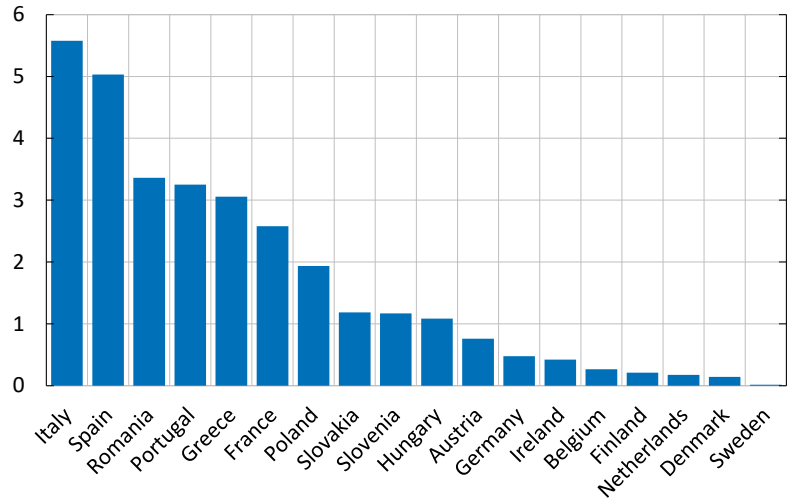
The crisis has also weakened public finances in many countries, due both to expansionary support measures and to decreased revenues. Sovereign debt, which in many cases was high before the pandemic, has thereby increased further in the euro area, the United States and many other countries. In addition, the use of government loan guarantees means that some of the loan losses would have a direct impact on public finances. In the euro area, increased loan losses thereby risk exacerbating the problematic link between banking systems and public finances in certain countries. If loan losses increase, there will also be a risk that interest rates on government loans will rise.

[15] See *Prevention and management of a large number of corporate insolvencies*, April 2021, European Systemic Risk Board.

[16] See the article "Non-performing loans in the euro area and financial stability" in this report.

Chart 3. Loans under public guarantee schemes as a percentage of total lending for different countries

Per cent



Note: The values refer to December 2020. Country-specific data includes foreign subsidiaries.

Source: European Banking Authority (EBA).

Continued strong development on financial markets but high valuations entail risk of falling prices

In comparison with the global financial crisis of 2008-2009, the course of which was relatively drawn out, stress on the financial markets has been brief during the pandemic. This is deemed to be due to the crisis not having originated in the financial sector this time, the banking system being more resilient and very extensive support measures at an early stage.

Longer-term bond yields have risen as a result of the major fiscal policy support packages in the United States, expectations of higher economic activity and increased inflation expectations, but nevertheless remain on low levels (see Chart 4).[17] The spread between corporate bond yields and government bond yields remains small (see Chart 5). Equity prices have recovered and, in many cases, are now significantly higher than prior to the pandemic (see Chart 6). The overall picture is that the financial conditions remain expansionary and that risk appetite among investors is high. This can be illustrated, not least, by the large amount of capital that has flowed into what are known as Special Purpose Acquisition Companies (SPACs).[18] The inflow of capital into these companies has been particularly substantial on the US market, but in March 2021, the Swedish market also gained its first listed SPAC.

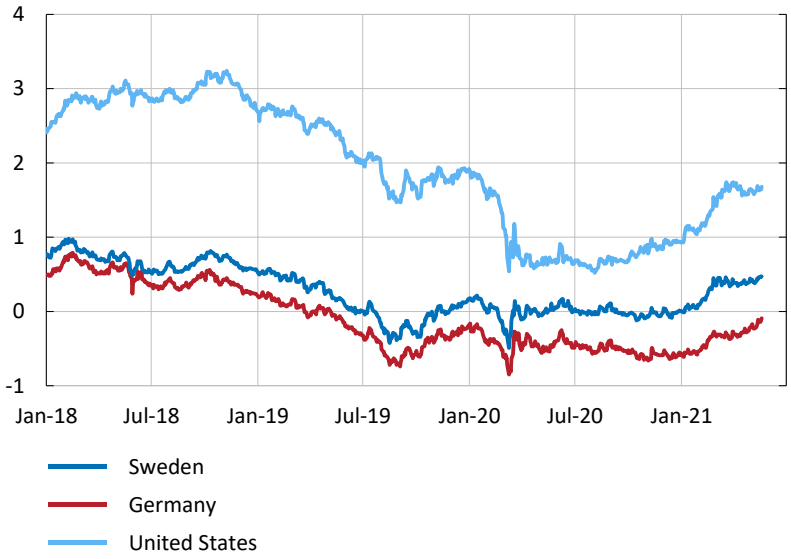
[17] For a longer discussion, see J. Alsterlind (2021), "Why have US long-term yields risen?", *Economic Commentaries*, no. 6, Sveriges Riksbank.

[18] SPACs are companies that aim to raise capital from investors through an initial public offering with the express purpose of conducting an acquisition of an unlisted company within a certain period of time. The company has no other operations. The investors do not know, in advance, which company will be acquired, but rely on the representatives being able to find a good candidate for acquisition.

During the pandemic, housing prices have risen strongly, both in Sweden and in other countries such as Denmark, Norway, the United Kingdom and United States (see Chart 23). Prices for commercial properties fell in many countries during the initial months of the pandemic, even if there were major differences between different segments.[19] Prices of properties focused on the retail trade, hotels and offices fell the most, while prices for industrial properties developed better. The market recovered later but, in some countries, prices for commercial properties remain somewhat lower than before the pandemic.

Chart 4. 10-year government bond yields in Sweden, Germany and the United States

Per cent



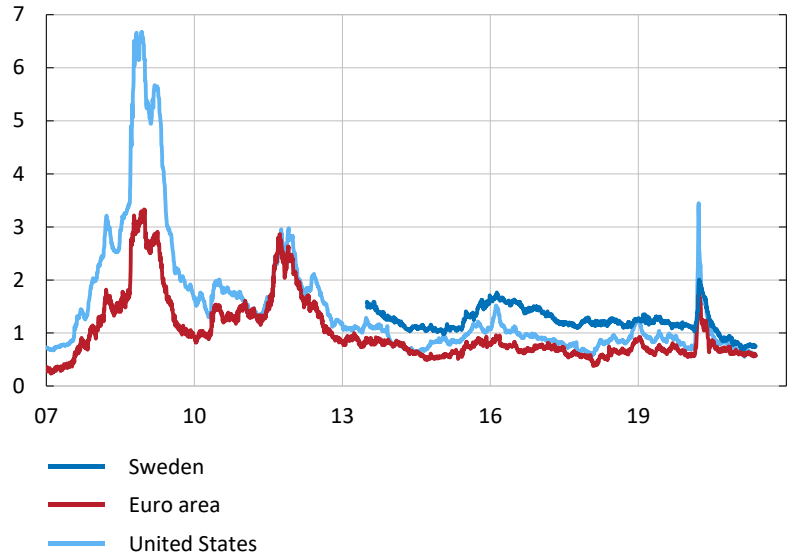
Note: Zero coupon rates for Sweden and Germany. 10-year benchmark rate for the United States.

Sources: National central banks, US Treasury and the Riksbank.

[19] See *Global Financial Stability Report*, April 2021, International Monetary Fund.

Chart 5. Difference between 5-year yields on corporate bonds and government bonds in the euro area, Sweden and the United States

Per cent

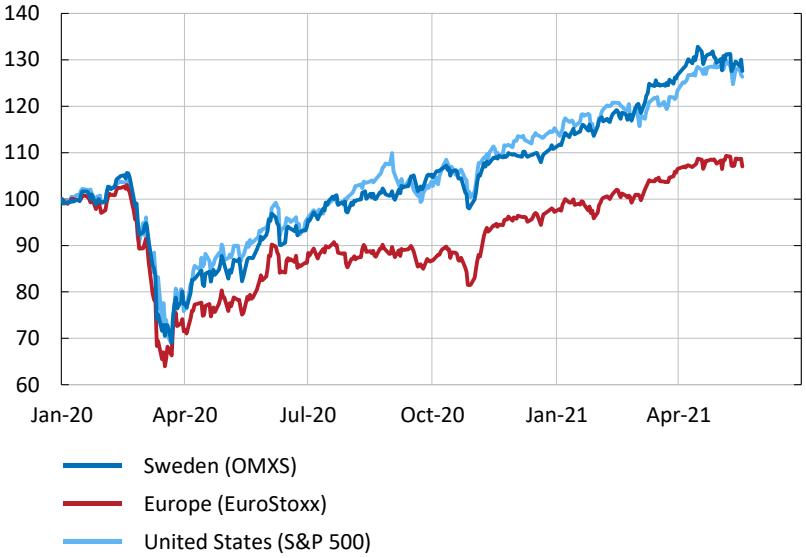


Note: The spreads refer to 5-year bonds issued by companies with good credit ratings and benchmark sovereign bonds respectively. The corporate bonds' credit ratings correspond to investment grade for Sweden, AA for the euro area and A for the United States.

Sources: Macrobond, Refinitiv and the Riksbank.

Chart 6. Stock market movements in domestic currency for the euro area, Sweden and the United States

Index, 2 January 2020 = 100

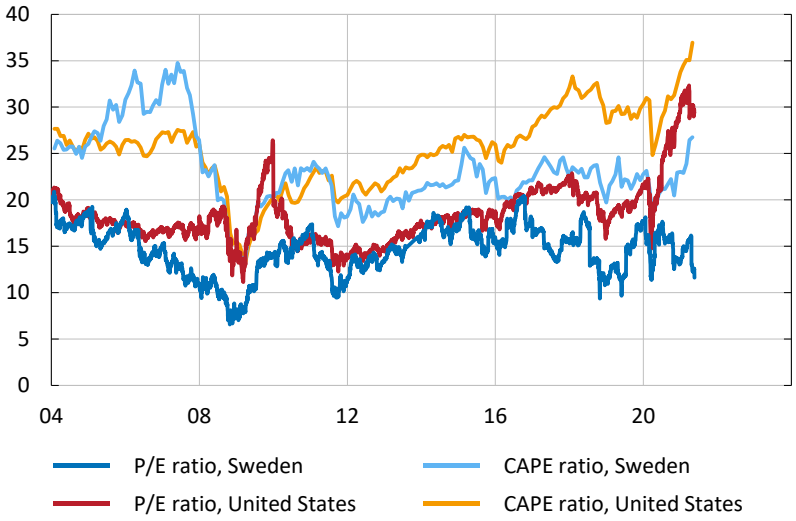


Source: Macrobond.

After a period of rising asset prices, there may be a risk that the assets are too highly valued, which may mean that the probability of falling prices is higher than normal.

Common measures of stock market valuation indicate that valuations in some quarters are now high, particularly in the United States (see Chart 7). However, these measures do not take account of the low level of interest rates. High valuations of equities and other assets may be due to optimism over the future and to interest rates being expected to remain low over the next few years. However, there is a risk that equity prices will fall, particularly if profit expectations for companies should not be realised, or if interest rates were to rise faster than expected.[20] For commercial properties too, there are a number of signs that valuations are high in some quarters.[21]

Chart 7. Measures of stock market valuation in Sweden and the United States
Ratio



Note: The P/E (price-to-earnings) ratio is the ratio of a company's share price to the company's earnings per share. The CAPE ratio is a cyclically adjusted P/E ratio in which the 10-year average earnings per share is used in the denominator. The P/E ratio and CAPE ratio for the United States are based on the S&P 500. The P/E ratio for Sweden is based on the OMXS30, while CAPE ratio for Sweden is based on the MSCI Sweden.

Sources: Barclays, Bloomberg and Macrobond.

Falls in asset prices, particularly together with high indebtedness, can threaten financial stability. How vulnerable the financial system is primarily depends on which participants are exposed and the extent to which different participants and markets are interconnected. For example, a broad fall in prices for commercial property would both damage property companies' financial position and reduce the value of the collateral that the companies have pledged to banks for their loans. Property companies have major loans from the Swedish banking sector, meaning that stress on the property market can spread to banks. The commercial property market has often played

[20] See, for example, *Financial Stability Report*, May 2021, Federal Reserve. The Federal Reserve considers that low interest rates can partly explain why asset prices are high, but that some assets seem to be highly valued even when measures of value that take account of the level of interest rates are used. In light of this, asset prices may fall sharply if market participants' risk appetite falls. See also *Financial Stability Review*, May 2021, European Central Bank.

[21] Prices have certainly fallen in some quarters during the pandemic, but fundamental factors are deemed to have deteriorated more than is reflected by the prices. See *Global Financial Stability Report*, April 2021, International Monetary Fund.

an important role in financial crises, both in Sweden and other countries. Even if falling asset prices do not necessarily lead to a financial crisis, there is still a risk of turbulence, for example through banks finding it more difficult to obtain funding.

Turbulence in global financial markets may spread to the Swedish financial system. Measures of financial stress abroad and in Sweden often move similarly (see Chart A.11 and Chart A.12 in the Chart Appendix). In addition, the Swedish banking system's cross-border operations and foreign funding make credit supply in Sweden largely dependent on the smooth functioning of global financial markets (see section 2.4 "The major banks' financial position is good, but the future is uncertain").

Significant support measures have been needed during the crisis, but may entail risks in the longer term

Extensive crisis measures have been necessary to restrain the economic downturn and avoid a financial crisis. At the same time, the measures are increasing vulnerabilities in the financial system in the longer term. If market participants have ever greater expectations that interest rates will remain low for a long time, this may lead to asset prices and debts rising further, which would make the economy more sensitive to an unexpectedly rapid or sharp rise in interest rates.[22] The measures are also causing sovereign debt to rise. Another risk is that the measures are not just providing temporary help to fundamentally viable companies but are also counteracting a necessary renewal of the business sector by being aimed at companies without the long-term potential for survival.

In addition, the support measures may lead to problems with 'moral hazard', which is to say that the financial sector relies on government measures always protecting banks and other financial agents from losses in a crisis. Such expectations may lead to increased risk-taking with increased vulnerability as a consequence. It is therefore important that market participants understand that the specific circumstances in a crisis determine which government measures are appropriate and that they cannot rely on the authorities always to take action. The risk of moral hazard needs to be reflected in the authorities' continued regulatory work.

Neither can it be ruled out that the long-term global trend of falling and low real interest rates will turn. Some analyses indicate that demographic trends may lead to both interest rates and inflation rising in the period ahead.[23] So far, however, interest rates remain on low levels even if they have risen slightly recently.

[22] See P. Di Casola and J. Iversen (2019), "Monetary policy with high household debt and low interest rates", *Staff Memo,* Sveriges Riksbank, and P. Gustafsson, M. Hesselman and B. Lagerwall (2017), "How are household cashflows and consumption affected by higher interest rates?", *Staff Memo,* Sveriges Riksbank.

[23] See, for example, C. Goodhart and M. Pradhan (2020), *The Great Demographic Reversal: Ageing Societies, Waning Inequality, and an Inflation Revival,* Palgrave Macmillan.

Cyber risks have increased in recent years

Cyber risks are a global phenomenon and, even if the threat outlook can vary from country to country for security policy reasons, threat actors act globally and the country in which a company is based may, in many cases, be of less importance. Financial agents are often cross-border, which also increases the risk of the consequences of major cyber attacks spreading internationally. A cyber attack against an agent or parts of the financial sector may lead to financial instability (see the fact box "A cyber attack could affect financial stability").[24] Neither are central banks immune to cyber attacks: for example, last winter, the Reserve Bank of New Zealand was affected.[25]

The number of cyber attacks on the financial sector is rising around the world. This has been increasingly highlighted in recent years, among other things by private agents and international organisations such as the International Monetary Fund (IMF).[26] One report estimated the number of automated scans of the Internet for vulnerabilities at 5.6 billion every year, worldwide.[27] Just like many others, the Riksbank is affected by numbers of attempted cyber attacks. For example, every day, the Riksbank is subjected to thousands of attempted attacks from the entire world.

It is difficult to use statistics to gain an overall view of how great the cyber threat actually is, particularly as regards targeted attacks, among other reasons because companies often refrain from reporting incidents. The difficulty of obtaining reliable information on cyber risks shows the importance of increased transparency. Greater openness about these risks could probably help to reduce the stigma attached to having been subjected to a cyber attack.

Consequently, as part of attempting to measure how cyber threats have developed over time, the Riksbank has conducted a survey of the Swedish financial sector. Responses show that the companies asked consider that cyber threats have increased in the last five years (see Chart 8). The responses also show that about half of companies feel that the pandemic has contributed to a rise in cyber risks. Overall, however, the survey responses show that financial companies consider the rising trend of cyber risks in recent years to be more important than the effects of the pandemic on cyber risks.

[24] See, for example, "Systemic Cyber Risk", February 2020, European Systemic Risk Board and "Effective Practices for Cyber Incident Response and Recovery", October 2020, Financial Stability Board and *Global Financial Stability Report,* October 2017, International Monetary Fund.

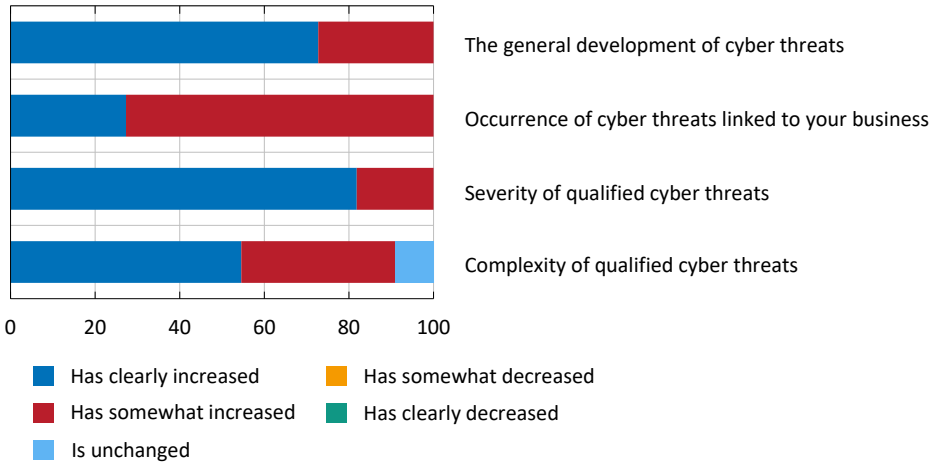
[25] See "Our response to Data breach", March 2021, Reserve Bank of New Zealand. News, last updated 16 March 2021. Accessed 3 May 2021, https://www.rbnz.govt.nz/our-response-to-data-breach.

[26] See *Systemic Risk Survey*, November 2018, Bank of England and "Cyber Risk and Financial Stability: It's a Small World After All", 2020, International Monetary Fund and *Global Financial Stability Report*, October 2017, International Monetary Fund.

[27] See "Attack Landscape H1 2020", September 2020, F-Secure.

Chart 8. Perceived development of cyber threats in the Swedish financial sector

Per cent



Note: In April 2021, the Riksbank carried out a survey in which 11 companies in the Swedish financial sector answered questions on how they perceive the development of cyber threats over the last five years.

Source: The Riksbank.

When cyber risks increase, the financial sector needs to strengthen its resilience. The Riksbank is trying to stimulate such a development, by means of, for example, continued work on TIBER-SE, which is a framework for testing cybersecurity among participants in the Swedish financial system in a concrete way.[28] This testing involves the simulation of a cyber attack against an organisation's people, processes and technology. Only a few individuals in the organisation are aware of the test, which means that the ability of the organisations to discover, resist and manage a cyber attack is tested. This framework can help critical actors obtain a better picture of their capacity to manage cyber risks, and it thus provides a base for strengthening resilience in the financial system.

At present, there are several different forums for cooperation between both private and public agents in the area of cyber risks. However, responsibility for specifying requirements, follow-up, development and coordination is spread across several different authorities, with some focusing on financial stability and others on cybersecurity more generally. This may make it difficult to coordinate the work on cyber risks affecting the financial sector. This coordination could be improved with a sector-wide strategy to strengthen resilience and a clarification of authorities' roles and responsibilities, both in preventive work and in the event of a cyber incident. Moreover, cooperation between authorities and private agents needs to be developed.

[28] TIBER-SE is the Swedish implementation of the TIBER-EU framework that was launched by the European Central Bank in May 2018; see *TIBER-EU Framework*, May 2018, European Central Bank.

FACT BOX – A cyber attack can affect financial stability

Digitalisation has resulted in banks and financial market infrastructures now being entirely dependent on their IT environments to provide their services. These include payments and settlement, interbank loans, transaction and savings accounts, and derivatives and securities trading. The financial system is thus vulnerable to cyber attacks and shocks can affect both companies and private customers.

Cyber risks differ from more traditional risks. Cyber risks can be seen as a kind of operational risk, but with some unique features. The clearest difference between cyber risks and other types of operational risk is that incidents are initiated by actors with malicious intent. In addition, cyber risks are characterised by speed and scalability.[29]

Cyber attacks can affect financial market participants, and financial stability can thereby be threatened. A cyber attack can affect companies and private individuals in many different ways, depending on the purpose, target and type of attack. For example, an attack may entail problems in connecting to an online or mobile bank, lead to changed or incorrect balance information or owner information for securities, or result in problems in carrying out various types of transaction. Cyber attacks are often directed at one or a few agents, either financial agents or third-party suppliers to the financial sector. This may cause disruption to the availability of some participants' services, which could have contagion effects in the financial system. This can happen through various channels, one of which is a lack of confidence among the general public, partly in the participant who has been affected, but also in other similar participants and the financial system in general. Ultimately, the impact on the participant(s) may become so great that financial stability is affected.[30]

Understanding the threat outlook is vital for managing cyber risk. This applies both to what parts of the financial system need to be protected and what they need to be protected against. For the financial system as a whole, state and state-sponsored actors are part of the threat outlook against which the system needs to be protected. These threat actors are the most advanced.

[29] See, among others, "Systemic Cyber Risk", February 2020, European Systemic Risk Board.

[30] See L. Elestedt, U. Nilsson and C-J. Rosenvinge (2021), "A cyber attack can affect financial stability", *Economic Commentaries,* no. 8, Sveriges Riksbank.

Great need for increased reporting from companies and banks on climate-related risks

Global warming and climate change are creating climate-related risks – physical risks and transition risks.[31] Climate-related risks can create financial risks that, in turn, can threaten financial stability.[32] How great these risks will be depends on whether or not the transition to a fossil-free society takes place gradually and in a controlled manner, and on whether society manages to transition in time. The rising price of emission allowances in the EU shows how transition risks have become more tangible. After a fall at the beginning of the pandemic, the trend price has risen and in mid-May was just about twice as high as before the pandemic despite a recoil in the most recent measurements (see Chart 9).[33] The heavy price rise indicates that the supply of emission allowances in the EU is expected to decrease over the coming years. The rapidly increased cost puts pressure on companies in sectors emitting large amounts of carbon dioxide, such as steel, oil and cement, to change their activities.

Chart 9. Price development for emission allowances in the EU

EUR per tonne of carbon dioxide

Note: The figures refer to the settlement price of emission allowances within the EU Emissions Trading System (EU ETS).

Source: Refinitiv.

To ensure an orderly transition, the international community will have to take powerful measures over the next few years. Even though it is primarily governments that are responsible for achieving the goals of the Paris Agreement, the financial system

[31] Physical risks concern climate-related events caused by gradual warming and extreme weather. Transition risks arise due to adaptation to an economy that is less dependent on fossil fuels.

[32] See "Climate-related risks are a source of financial risk", article in *Financial Stability Report*, November 2019, Sveriges Riksbank.

[33] There is a trading system within the EU for emission rights, which means that companies pay for the right to emit carbon dioxide. Emissions are restricted by limiting the amount of emission rights.

also plays an important role by mediating loans to companies and households and by steering capital to investments.[34]

One example of a measure that is now being prepared intensively within international bodies is to set a regulatory requirement for companies and banks to increase their reporting on climate-related risks. Being able to measure, price and manage climate-related risks requires uniform, comparable and reliable climate-related information and data from companies.[35] At present, however, the reporting of such information is limited and insufficient, largely because there is no global standard for sustainability reporting (see the fact box "The route to more and better climate-related information"). With better information, climate-related risks can be priced more correctly, creating better conditions for these risks to be taken into account by banks and investors.

It is of great importance that the agents in the financial system integrate climate risks into their ordinary risk analysis. A central part of this work involves the development of models that can form a basis for forward-looking scenario analyses and stress tests for banks, central counterparties, credit rating agencies and others. Increasingly taking account of climate-related risks in the rating of companies should be a priority issue for credit rating agencies. This would provide investors with better information and companies with major climate risks would receive an impetus to change. Useful lessons can be learned from insurance companies, which have long worked on the valuation of these risks. As far as authorities are concerned, central banks, supervisory authorities and international organisations are working on developing stress tests and other methods in the area.

[34] The Paris Agreement is a global climate agreement that entered into force in 2016. The core of the agreement concerns limiting global warming by reducing emissions of greenhouse gases.

[35] See M. Ferlin, J. Blixt and E. Brattström (2021), "Sustainability reporting - need for greater standardisation and transparency", *Economic Commentaries* no. 4, Sveriges Riksbank.

FACT BOX – The route to more and better climate-related information

Sustainability reporting is an area that is developing very rapidly and a global standard is expected to be agreed upon ahead of the UN climate meeting COP26 in November. The IFRS Foundation has played an active part in the work of developing a global standard for sustainability reporting, based on the recommendations from the TCFD.

In the absence of requirements in the area, many companies still do not report their greenhouse gas emissions, making it difficult for investors to assess and manage climate-related risks. It is therefore important that more companies report climate-related information in line with the voluntary recommendations from the TCFD, which was created on the initiative of the Financial Stability Board.[36] By April 2021, more than 2,000 companies and organisations globally had given their express support to the TCFD recommendations, 51 of which were Swedish. By starting to report, the companies are creating preparedness for future requirements in this area. Those who start to report early will gain knowledge and a head-start over those who are not reporting. Reporting also initiates a change process within the organisation or company, as well as a review of the climate-related risks.[37]

The Riksbank has recently started calculating and reporting the carbon footprint in its holdings of corporate bonds, thereby taking a first step towards reporting the climate-related risks in the Riksbank's balance sheet. This is important from a risk management perspective but also aims to promote transparency concerning climate-related information.

Another important piece of the puzzle for improving access to climate-related information is the EU's green taxonomy regulation, which starts to be applied on 1 January 2022. This contains a classification system that is to be used to determine when an economic activity shall be considered environmentally sustainable.[38] Larger companies must report how environmentally sustainable their operations are. In addition, requirements for sustainability reporting have been introduced for financial products and services. Among other things, the aim is to improve investors' confidence and awareness of environmental impact, create visibility and counteract the risk of 'greenwashing'.

The EU taxonomy will help companies to manage the transition to a low-carbon, resilient and resource-efficient economy. The primary objective is to steer capital to environmentally friendly and green operations, but the taxonomy may also be used for other purposes, such as calculating banks' exposures to different sectors and thereby to climate-related risks.

[36] See *Recommendations of the Task Force on Climate-related Financial Disclosures*, June 2017, Task Force on Climate-related Financial Disclosures.

[37] See M. Ferlin, J. Blixt and E. Brattström (2021), "Sustainability reporting - need for greater standardisation and transparency", *Economic Commentaries* no. 4, Sveriges Riksbank.

[38] In the first step, the taxonomy covers climate change. As a second step, it will be expanded to cover sustainable use and protection of water and marine resources, transition to a circular economy, pollution prevention and control, and the protection and restoration of biological diversity and ecosystems.

2.2 Divergent development in the Swedish corporate sector

The conditions for the Swedish corporate sector have improved since the autumn, but the development is divergent and several sectors remain under severe pressure from the pandemic. Support measures have mitigated the effects and bankruptcies remain few. The possibilities for companies to obtain funding remain good on the whole, even if conditions vary among sectors and sizes of company. The divergent development is also visible among property companies, where companies focusing on sectors affected by the crisis have been impacted more severely than others. At the same time, more office premises than previously are vacant and the longer-term effects of the pandemic on the office market remain uncertain.

The pandemic has had a varying impact on sectors

The Swedish corporate sector has been badly impacted by the pandemic, but developments differ between and within sectors. For the retail trade, for example, shops in city centres have generally struggled more, while e-Commerce has increased during the pandemic. There is also great variation within the service sector. Hotels and restaurants, and culture and entertainment companies have found it particularly difficult to adapt their operations to the circumstances, while consultants within computing, economics and law have fared better (see Chart 10).[39] Construction companies have experienced very weak demand for commercial properties, such as offices and hotels, while demand for housing has increased.

Even though the crisis has had a varying impact on companies, the conditions for the corporate sector as a whole seem to have improved since the autumn. For example, this is reflected in the Riksbank's Business Survey, where the surveyed companies generally have a brighter view of the future.[40] Larger companies in the manufacturing sector expect good global demand and a strong economic situation over the next few years as vaccination continues and restrictions are lifted. Demand expectations in the hard-hit service sector are also more optimistic than at the turn of the year and are now above the historical average, according to the Economic Tendency Survey.[41]

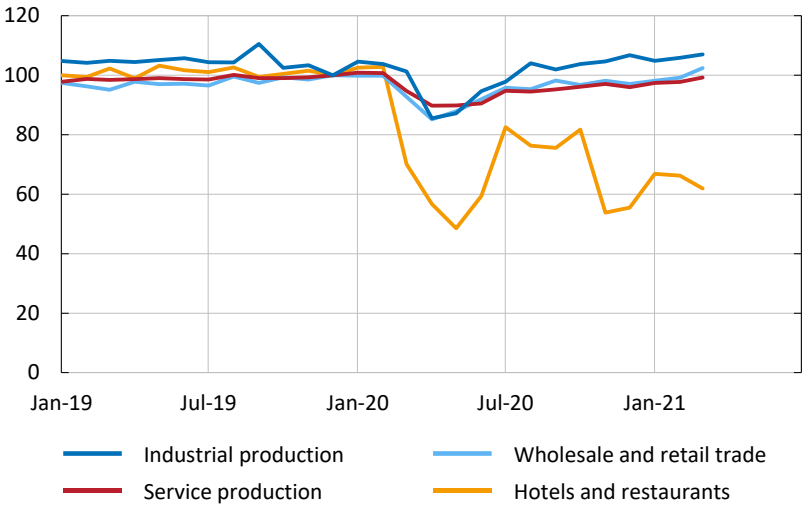
[39] See *Economic Tendency Survey*, April 2021, National Institute of Economic Research.

[40] See *The Riksbank's Business Survey*, February 2021, Sveriges Riksbank.

[41] See *Economic Tendency Survey*, April 2021, National Institute of Economic Research.

Chart 10. Output in selected sectors in Sweden

Index, 2019 Q4 = 100



Note: Production Value Index. Refers to seasonally adjusted data.

Source: Statistics Sweden.

Few bankruptcies due to extensive support measures

Normally, bankruptcies increase in conjunction with crises as economic activity falls and corporate revenues decrease.[42] This pattern was also observed at the start of the coronavirus pandemic, when bankruptcies in Sweden, unlike in many other countries, were more than in the equivalent period in earlier years.[43] Since the summer of 2020, however, bankruptcies have been fewer or in line with previous years (see Chart 11), more like developments in many other countries in Europe and the rest of the world. In Sweden, it has mainly been smaller companies operating in the hardest-hit sectors that have filed for bankruptcy (see Chart A.23 in the Chart Appendix). The development in bankruptcies during the pandemic differs from the global financial crisis of 2008-2009 and the Swedish crisis of the 1990s, when bankruptcies remained on a higher level for a longer period (see Chart 12).[44]

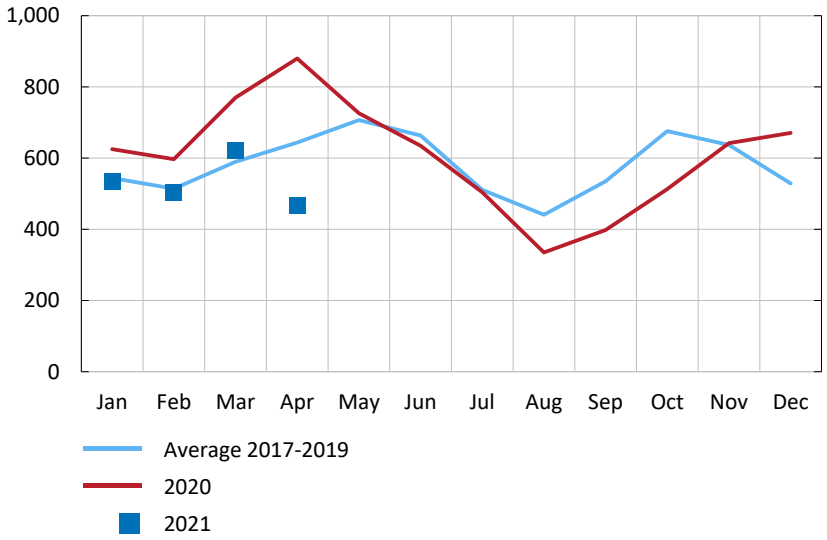
[42] If a company is unable to pay its debts, the company or its creditors can file for reconstruction or bankruptcy. The matter is decided on by a district court. Reconstruction occurs when the company has financial problems but can survive in the longer term. The aim is for the company to continue its operations. A bankruptcy takes place when the company cannot pay its debts, either now or in the future, and means that the company is wound up. If the company can pay its debts but the owners wish to wind up its operations, they can liquidate the company. The debts are then paid and any surplus is divided up among the owners.

[43] See C. Cella (2020), "Bankruptcy at the time of COVID-19 – The Swedish experience", *Staff Memo*, Sveriges Riksbank.

[44] The number of company reconstructions granted increased in 2020 compared with previous years, but the level remains low in relation to the number of companies entering bankruptcy, for example. Companies granted reconstruction in 2020 was generally smaller than those granted reconstruction in 2019.

Chart 11. Bankruptcies in Sweden 2017-2021

Number

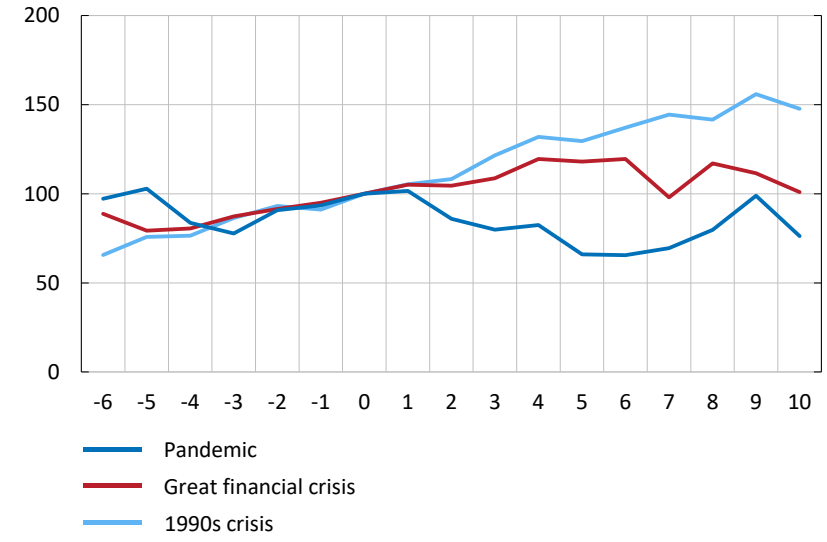


Note: Covers limited liability companies, self-proprietorships, partnerships etc.

Source: Statistics Sweden.

Chart 12. Bankruptcies in Sweden during the pandemic compared with the global financial crisis and the Swedish 1990s crisis

Index



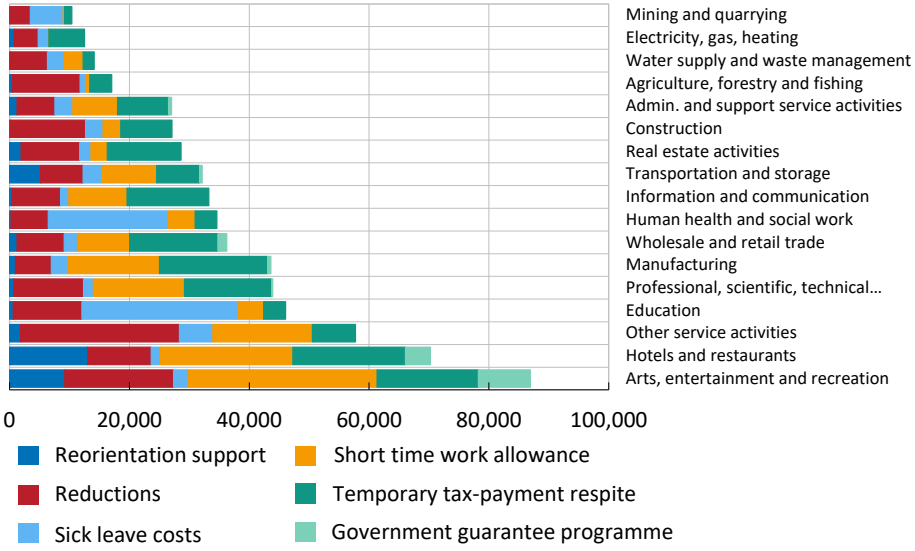
Note: Seasonally adjusted monthly data. The indexed number of bankruptcies equals 100 at the zero point where the crisis of the 1990s = 0 in October 1990, the global financial crisis = 0 in October 2008 and the pandemic = 0 in March 2020. The x-axis shows the number of months from the starting-point of each crisis.

Sources: Statistics Sweden and the Riksbank.

An important explanation for bankruptcies not having increased more is the extensive support measures implemented in several different policy areas.[45] For example, fiscal policy has supported companies, both with grants such as short-time work allowance and reorientation support, as well as with credit guarantees and loans in the form of temporary tax-payment respite. This support has been of varying reach. Some measures have been earmarked for specific sectors, while others, such as temporary cuts to employers' social security contributions, have been more general. Overall, the fiscal policy support has amounted to just over 4 per cent of Swedish GDP.[46] Support has gone to most sectors, even if the largest part calculated per employee has gone to companies in the worst affected sectors, such as hotels and restaurants, and culture, entertainment and leisure (see Chart 13). For example, employees in culture, entertainment and leisure have on average used support of around SEK 90,000, most of which has been in the form of short-time work allowance. However, support has been utilised to a lesser extent than the Government initially expected.

Chart 13. Fiscal policy support to different sectors

Swedish kronor per employee



Sources: Government Offices of Sweden, Swedish Tax Agency and Swedish Agency for Economic and Regional Growth.

At the same time, the Riksbank's expansionary monetary policy and support measures by other authorities have helped maintain ample credit supply during the pandemic, and companies have thereby been able to cover for reduced revenues using bank loans and by issuing corporate bonds and commercial paper. Due to the low borrowing rates, companies' interest expenditure has remained low. Companies' costs for

[45] The number of bankruptcies is one of several ways of evaluating activity in the corporate sector. Other ways include the number of wound-up companies or the number of newly started companies. From a financial stability perspective, bankruptcies are a relevant unit of measurement as a bankruptcy can lead to the company's creditors losing money. Consequently, a company that goes bankrupt, in contrast to a company that is wound up, can, for example, lead to loan losses for banks, which may affect financial stability.

[46] Refers to measures in 2020 that have had a budgetary effect. See *Det ekonomiska läget (The economic situation)*, April 2021, Swedish Ministry of Finance. In Swedish only.

obtaining funding via the market for commercial paper and corporate bonds have also been low. Taken together, this may also have helped to limit the number of bankruptcies.

Bankruptcies may increase if the crisis becomes prolonged and if support is withdrawn quickly

Even though bankruptcies have been few, the impetus in the economic downturn has affected turnover for many companies and thereby their financial positions. The National Institute of Economic Research estimates that turnover in the business sector has been between 10 and 20 per cent lower during the pandemic compared with a normal situation. Even though the average fall in turnover dropped from 15 per cent in November 2020 to 8 per cent in May 2021, it is still significant.[47]

There is a substantial risk that bankruptcies will increase in the period ahead, not least if the crisis becomes deeper or more prolonged, or if support measures are withdrawn quickly. A small increase in bankruptcies in the most badly affected sectors in Sweden, however, need not have such major consequences for economic growth or financial stability. Although these sectors employ a relatively large proportion of the population, their contribution to Sweden's GDP is small in comparison. Hotels and restaurants, together with culture, entertainment and leisure, account for about 7 per cent of employment in Sweden, while their contribution to GDP amounts to about 3 per cent. In addition, the Swedish banking sector has small exposures to them. The usage of commercial paper and corporate bonds by these sectors is also limited. However, if bankruptcies increase to a great extent and the problems spread among sectors, for example to highly leveraged property companies, risks to financial stability increase.

Property companies are affected by how the pandemic impacts their tenants

In general, property companies have coped well with the pandemic, but development within the sector varies depending on which kind of operations are conducted in the companies' properties. Companies with properties in logistics, which are exposed to increased e-Commerce, for example, have not been impacted particularly severely by the pandemic. This also applies to companies with housing properties, as demand for rented accommodation remains high. Companies with hotel properties have, however, been affected negatively by reduced travel. Companies with retail properties have also been negatively affected, for example as a result of weak rent growth, caused by low footfall and increased e-Commerce. However, there is variation within the retail trade, in which the non-durable goods trade has fared better, while clothing retailers in metropolitan city centres have fared worse.

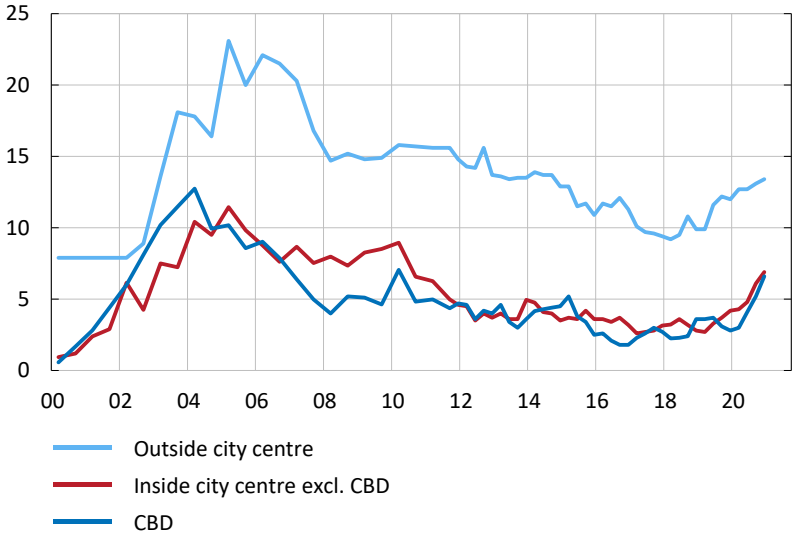
Offices make up the largest part of the commercial property stock in Sweden, in terms of value. Over most of the pandemic, property companies with large holdings of office properties have coped well, for example in comparison with companies holding hotel

[47] See *National Institute of Economic Research's special company survey*, May 2021, National Institute of Economic Research.

and retail trade properties. Recently, however, there has been an increase in the number of vacant office premises, above all in city centres, despite the operations conducted in the offices generally not having been affected so badly by the pandemic (see Chart 14). But as the pandemic has resulted in many people working from home, it may have accelerated a trend in which tenants reassess their need of office space over the longer term. Many tenancy agreements run for between three and five years, however, so it can take time before such a trend becomes clearer. If demand for office premises falls, this may be followed by lower rents.

Chart 14. Share of vacant office premises in different parts of Stockholm

Per cent



Note: CBD stands for Central Business District, the most centrally located office properties in the inner city of Stockholm. Share of vacant office premises (vacancies) refers to the proportion of vacant office space in relation to total office space. Vacancies include office premises that are vacant today or that will become vacant up to and including 30 June 2021.

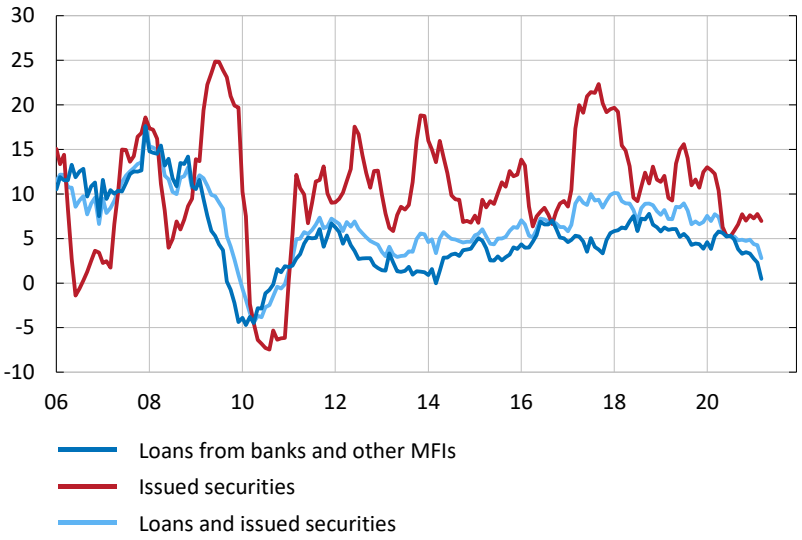
Source: CityMark.

Access to funding is generally good though variable

The support measures implemented during the pandemic have improved the capacity of companies to fund their operations via both banks and the securities market. However, the annual rate of growth in corporate borrowing from Monetary Financial Institutions (MFIs) has decreased over the year. The fall in the growth rate over the spring may partly be explained by borrowing being compared with the corresponding period last year when it increased considerably. Companies were then taking the uncertainty at the start of the pandemic into consideration and strengthened their finances with the help of new loans (see Chart 15). But it may also be due to larger companies satisfying their funding requirements via the securities market to a greater extent, where annual percentage growth increased somewhat at the beginning of the crisis and has since then remained stable. However, as companies' borrowing via MFIs is larger than securities borrowing, the annual growth rate in total borrowing has decreased since the start of the crisis.

Chart 15. Borrowing by the corporate sector

Annual percentage change



Note: Refers to non-financial companies. Loans from MFIs are adjusted for reclassifications and bought/sold loans. Issued securities are adjusted for currency impact and include corporate bonds and commercial paper.

Source: Statistics Sweden.

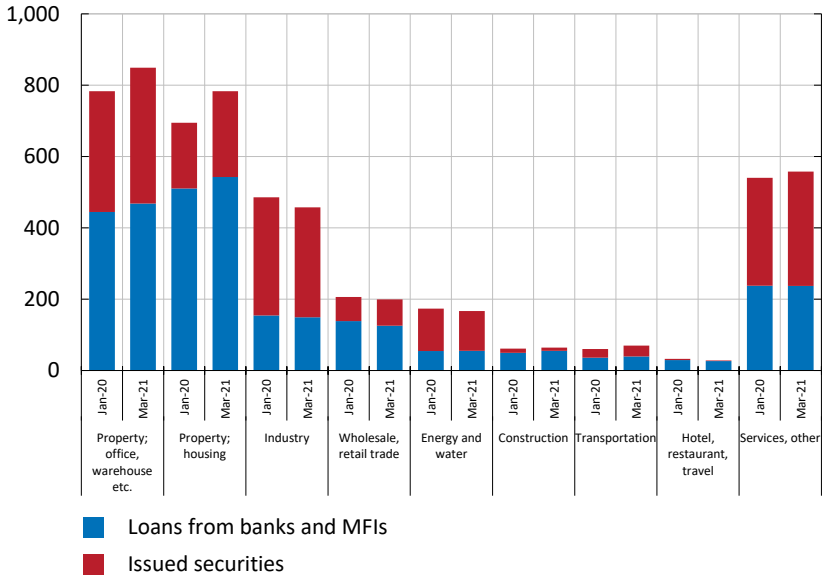
The figures conceal differences among different sectors and sizes of company. Property companies, for example, have increased their borrowing while companies in the wholesale and retail trade sector and the hotel, restaurant and travel sector, have reduced theirs somewhat (see Chart 16). Property companies, which borrow the most from banks and account for the largest volume of issued securities, have increased their total borrowing by 10 per cent over the last year. Over the same period, companies in the wholesale and retail trade sector and the hotel, restaurant and travel sector have instead reduced their total borrowing by 4 per cent and 14 per cent respectively. This may indicate that several of these companies are finding it more difficult to obtain loans or that they have become less willing to increase their loans as their financial situation has become increasingly strained during the crisis. But it may also reflect that companies in these sectors have, to a greater extent, had their funding requirements satisfied in other ways during the crisis, for example through temporary tax-payment respite or other fiscal policy support measures (see Chart 13).

Looking instead at company size, lending from MFIs to larger companies has decreased slightly since the autumn, while lending to smaller companies has increased somewhat (see Chart 17). This differs from the initial phase of the crisis, when lending primarily increased to larger companies.[48]

[48] See also E. Frohm, J. Grip, D. Hansson and S. Wollert "Two-tier credit developments during the coronavirus pandemic", *Economic Commentaries* no. 6, Sveriges Riksbank.

Chart 16. Borrowing by the corporate sector broken down by bank loans and issued securities

SEK billion

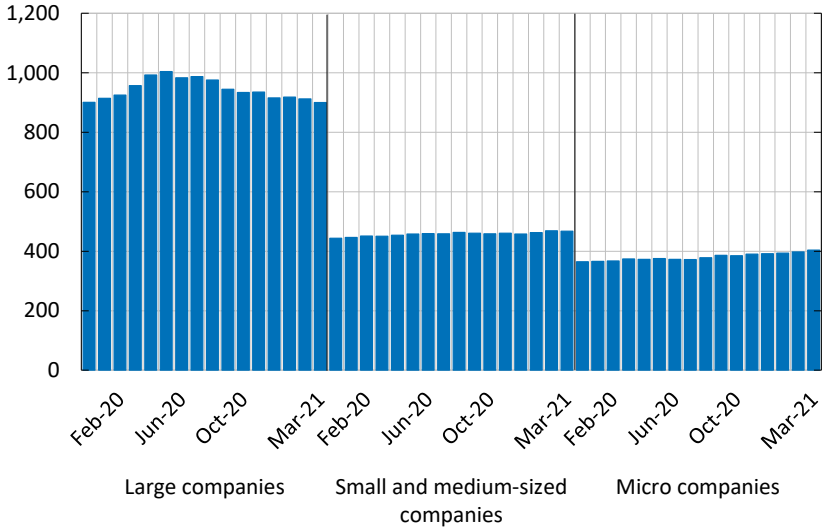


Note: Refers to non-financial companies. Borrowing by housing cooperatives has been excluded. Companies in the category "Services, other" include companies in R&D and information and communication, among others.

Source: Statistics Sweden.

Chart 17. Corporate bank loans broken down by size of company

SEK billion



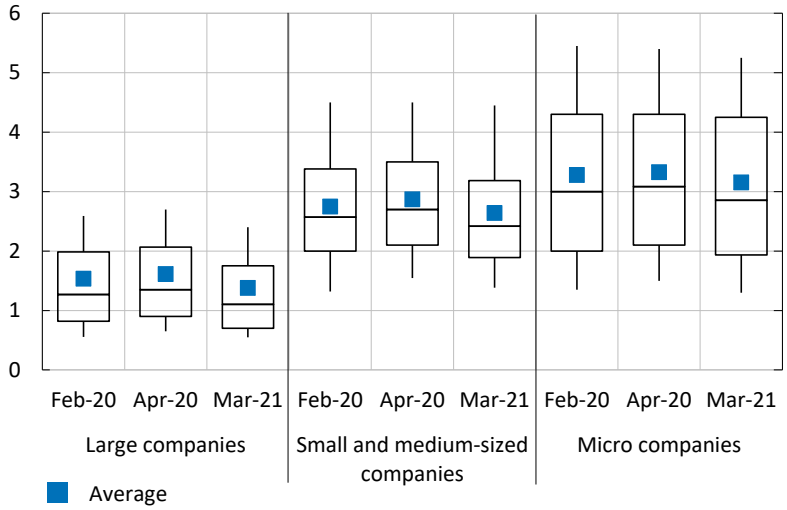
Note: Refers to lending to non-financial companies. Borrowing by housing cooperatives has been excluded. Loans in all currencies to Swedish non-financial companies from banks and other MFIs. Size breakdown in accordance with European Commission Recommendation (2003/361/EC), in which the combination of number of employees, turnover and assets determines the size classification.

Source: Statistics Sweden.

Market turmoil at the beginning of the pandemic caused banks' borrowing costs to rise, which increased lending rates somewhat to companies of all sizes.[49] The lending rates charged to companies have fallen since then, regardless of company size, and remain on low levels. Chart 18 illustrates the distribution of interest rate levels for different sizes of company in the form of a box chart, where the length of the box shows the rate spread. Large companies are offered similar interest rate levels (short box) while the interest rates vary more among smaller companies (long box). As the chart shows, the rate spread on loans to companies of all sizes has decreased somewhat since April last year.

Chart 18. Distribution of interest rates by size of company for bank loans

Per cent



Note: Loans in all currencies. Outstanding loans of at least SEK 25,000 to Swedish non-financial companies. The line in the box represents the median, the upper part is the (3rd) quartile and the lower part is the (1st) quartile. The vertical lines indicate the 10th and 90th percentiles respectively. The minimum loan amount limit of SEK 25,000 is set because many smaller loans are short-term loans, like overdraft facilities and credit card loans, which can have a zero interest rate for a period. Size breakdown in accordance with European Commission Recommendation (2003/361/EC). Excluding loans to housing cooperatives.

Source: Statistics Sweden.

Credit volumes and interest rates indicate that companies generally have good access to funding on favourable terms, but there are signs of differences between companies of different sizes and in different sectors. Overall, large companies consider that they still have good access to funding. The Riksbank's Business Survey shows that access to and the conditions for funding, both via banks and via the corporate bond and commercial paper market, have gradually improved for large companies since last spring. Several of the large companies in the survey also state that they have no need of external funding, which is partly explained by good cash flow. According to the Economic Tendency Survey, a relatively high percentage of small companies think it is

[49] See P. Gustafsson and T. von Brömsen (2021), "Coronavirus pandemic: The Riksbank's measures and financial developments during spring and summer 2020", *Sveriges Riksbank Economic Review*, no.1, Sveriges Riksbank.

more difficult or much more difficult to fund operations compared to before the pandemic, while the corresponding percentages for medium-sized companies are more similar to pre-pandemic levels. Companies in the sectors hit hardest by the pandemic emphasise that they have more difficulty than before in gaining access to external funding, and that the terms are worse. The Riksbank's overall assessment is that there are no clear signs of banks having tightened their lending.

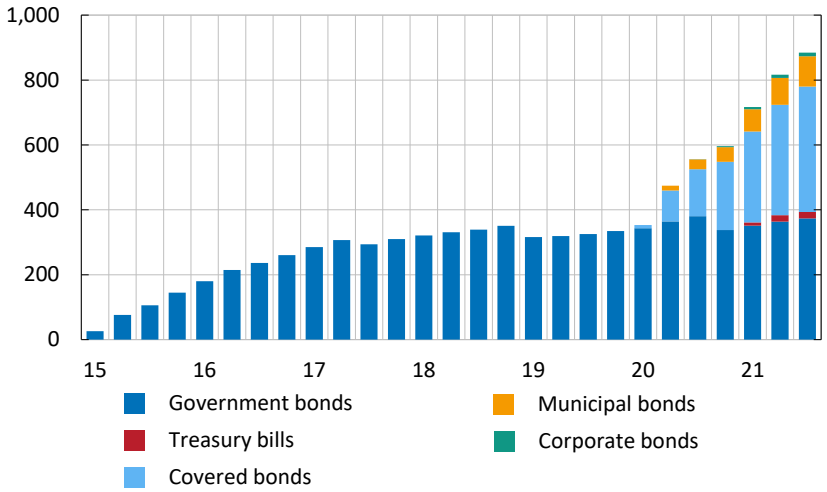
The corporate bond market has recovered but deficiencies remain

For a period at the beginning of the crisis, the Swedish corporate bond market stopped functioning when risk premiums rose sharply and liquidity rapidly deteriorated. The problems also spread to other parts of the financial system.[50] The market is now functioning satisfactorily again, which is indicated, for example, by the slightly lower interest rates for companies issuing on the primary market than before the pandemic, and the return of companies' issue volumes to the same levels as prior to the pandemic. The market for commercial paper has also recovered as regards interest rate levels, while issue volumes remain on lower levels than before the crisis.

An explanation for why the Swedish corporate debt market is now functioning more smoothly is that the Riksbank, like many other central banks, has purchased both corporate bonds and commercial paper. However, these purchases are very small in relation to the outstanding stock in these markets and they are also small in relation to other asset types purchased by the Riksbank (see Chart 19).

Chart 19. The Riksbank's holdings of securities by asset type

SEK billion



Note: Holdings of securities, excluding commercial paper, issued in Swedish kronor. Holdings according to decided purchases are shown for the second and third quarters of 2021. Nominal amount.

Source: The Riksbank.

[50] See S. Wollert (2020), "Swedish corporate bonds during the coronavirus pandemic", *Staff memo,* Sveriges Riksbank.

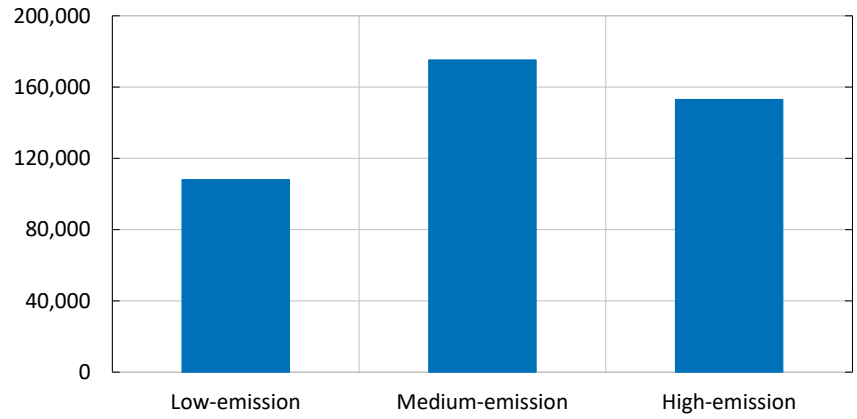
Climate risks can impair resilience in the corporate sector

Alongside the risks arising from the coronavirus pandemic, many companies are facing the challenge of having to adapt their operations in the longer term to the existing climate risks. In relation to this, there is also the declared goal that Sweden shall have net-zero greenhouse gas emissions by 2045.[51]

The Riksbank has analysed the greenhouse gas emissions of Swedish companies. The analysis, covering about 440,000 companies of different sizes, shows that there are about 150,000 companies with significant greenhouse gas emissions (see Chart 20). This can be compared with just over 100,000 companies with low emissions. If companies with large emissions also have a weak financial position, they may find it difficult to adapt to new emission requirements.[52] For example, this may be due to them not having scope to borrow more to invest in new production technology or in other solutions to reduce their emissions.

Chart 20. Companies broken down by greenhouse gas emissions

Number



Note: The breakdown has been done with the help of sector-level emission data from Statistics Sweden. The sectors have been categorised based on their emissions and then divided into quarters. The sectors making up the quarter that emits the most are labelled “high-emission”, the next quarter is labelled “medium-emission” and the sectors in the remaining two quarters are labelled “low-emission”. To create the chart, the number of companies in each sector has been added together. For more information, see C. Cella (2021), “Banking and climate-related risks, implications for financial stability in Sweden”, *Staff memo*. Sveriges Riksbank.

Sources: Statistics Sweden and Bisnode.

If companies do not manage to make the transition or if their existing assets fall in value because they generate too high emissions, it may affect them negatively. If these companies have loans, this may have negative consequences for their lenders, such as debt investors or banks.[53] To be able to assess and manage these risks better, it is important for companies to improve their reporting of emission data (see “Great need for increased reporting from companies and banks on climate-related risks”).

[51] For more information, see *The Swedish Climate Policy Framework,* June 2017, Government of Sweden.

[52] For more information, see C. Cella (2021), “Banking and climate-related risks, implications for financial stability in Sweden”, *Staff memo*, Sveriges Riksbank.

[53] See “Climate-related risks are a source of financial risk”, article in *Financial Stability Report*, November 2019, Sveriges Riksbank.

2.3 Good resilience in the Swedish household sector, but higher indebtedness is increasing vulnerability

Despite the deterioration of economic conditions for many households during the pandemic, their resilience overall has been strong. This has partly to do with the support measures that have eased the pressure on households. For example, the short-time work support scheme has led to fewer people losing their job. In addition, persons with financial and real assets have strengthened their wealth during the pandemic as equity and housing prices have risen. However, the higher housing prices also mean that many households are borrowing more than before. This makes them even more vulnerable if interest rates were to rise or housing prices to fall. If the risks associated with high household indebtedness were to materialise, it could have major consequences for the Swedish economy.

Worsened conditions for many households during the pandemic, but support measures have mitigated the effects

At the beginning of the pandemic, the economic conditions for many households deteriorated rapidly, mainly as a result of weak development in the labour market. Around 42,000 people were given notice of redundancy in March 2020, which is more than twice as many as in any one single month during the global financial crisis of 2008-2009 (see Chart 21). More than every other person given notice in March and April was also made redundant, and unemployment increased.

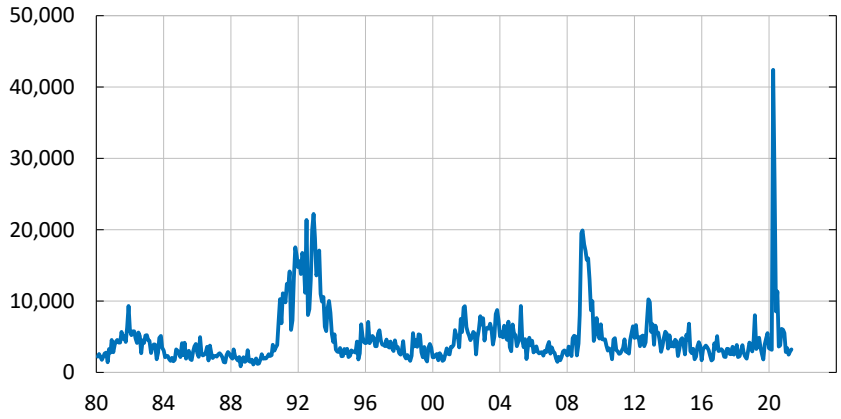
However, development in the labour market has been divergent and the crisis has had a particularly severe effect on employment for temporary employees, young people and foreign-born individuals. On the other hand, the number of persons with permanent employment has not decreased to any great extent.[54] The conditions for households have also generally improved somewhat as demand in the economy has increased and demand for labour has risen. According to statistics from the Swedish Public Employment Service, while unemployment remains high, it has fallen back from a high of 9.2 per cent in June 2020 to 8.1 per cent in May of this year.[55]

[54] See *Monetary Policy Report*, April 2021, Sveriges Riksbank.

[55] Statistics per 17 May. See ”Rörelser på arbetsmarknaden vecka 19” [Movements on the labour market, 10-16 May], May 2021, Swedish Public Employment Service. In Swedish only.

Chart 21. Number of persons affected by notice of redundancy

Number



Note: Refers to the number of new persons affected each month.

Source: Swedish Public Employment Service.

Despite weak development in the labour market, many households have coped well during the crisis overall. Support measures implemented by authorities have played an important role. For example, the short-time work support scheme has led to fewer people losing their job. In addition, the increased compensation levels in unemployment insurance have enabled many of those who have lost their job to maintain much of their income. Temporary amendments to the rules for unemployment insurance funds have also been adopted with the aim of allowing more access to unemployment benefits. In addition, central bank measures have helped to keep households' interest expenses low, which is illustrated by interest expenditure as a share of disposable income, known as the interest-to-income ratio, remaining at low levels. Mortgagors have also been able to utilise the temporary exemption from the amortisation requirements. Up until March of this year, over 246,000 households, or around 10 per cent of all mortgagors, had utilised the exemption, according to FI.[56]

The wealth of mortgagors has strengthened as real assets have increased in value during the pandemic in line with housing prices having risen.[57] At the same time, however, the higher housing prices are making it more difficult for households that still do not own a home and want to enter the housing market. As mortgagors are normally medium- and high-income earners, and therefore probably more likely than low-income earners to own financial assets, their wealth has also been strengthened by rising equity prices. Overall, households have also increased their bank deposits, which probably reflects that their consumption opportunities have been limited. As assets

[56] Exemptions have been granted for all or parts of the mortgage. See *The Swedish mortgage market*, March 2021, Finansinspektionen.

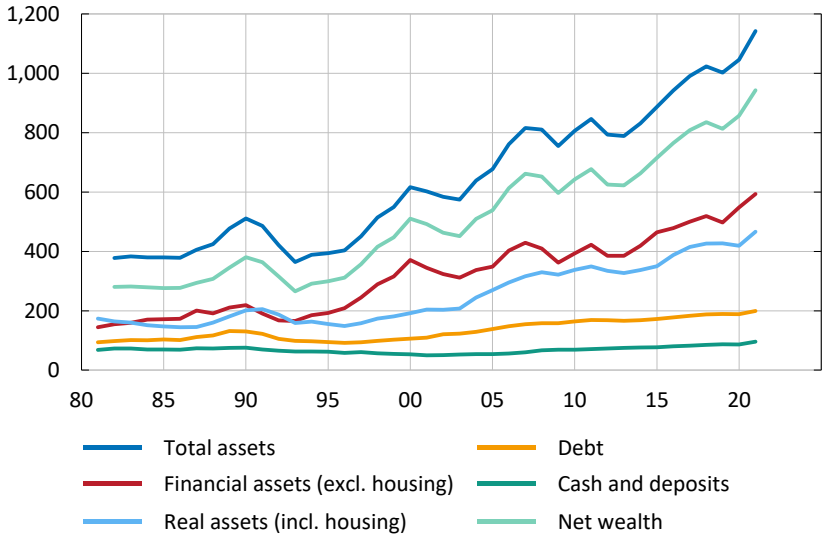
[57] The home is a real asset and is considered relatively illiquid. Any increase in its value is only realised when it is sold. On the other hand, households can increase their loan-to-value ratio if the value of the home rises.

have risen more than liabilities, total net wealth in the household sector has increased during the pandemic (see Chart 22).

However, these aggregated figures conceal significant disparities between different households. For example, there are indications that many highly indebted households in Sweden may have limited liquid assets, making them sensitive to both loss of income and higher interest expenditure.[58] As data on households' assets is not collected on the individual and household level, however, it is not possible to see exactly how resilience among various households has developed during the pandemic.

Chart 22. Household assets and liabilities

Percentage of disposable income



Note: Household wealth and debt in 2020 have been projected using Valueguard's HOX-index for housing and the Financial accounts for the remaining series.

Sources: Statistics Sweden and the Riksbank.

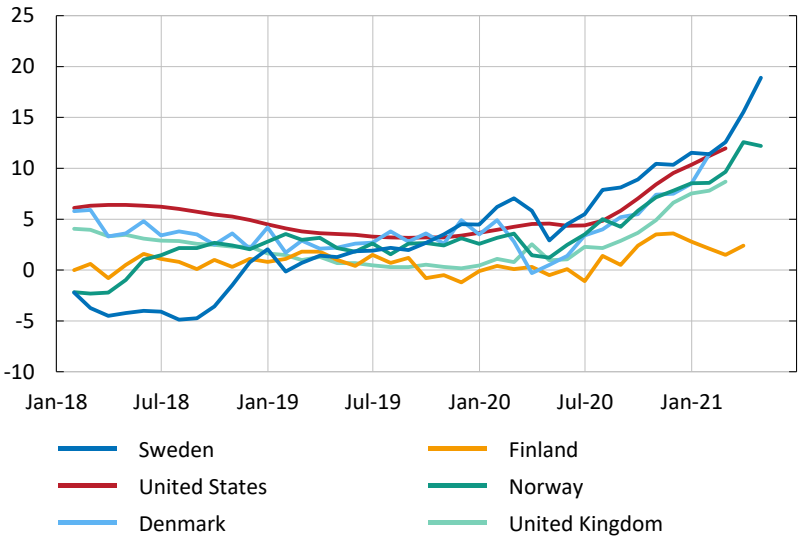
Sharply rising housing prices during the pandemic

The Swedish housing market has developed strongly during the pandemic. Between April 2020 and April 2021, housing prices have risen by 18.9 per cent according to Valueguard's composite price index HOX. Prices of tenant-owned apartments increased by 12.3 per cent and prices of single-family houses by 23 per cent. The increase in housing prices during the crisis is not unique to Sweden; developments have been similar in countries like Denmark, Norway, the United Kingdom and the United States (see Chart 23). This suggests that the strong price growth has been driven by factors that are fairly common among countries rather than country-specific.

[58] M. Andersson and R. Vestman (2021), "Liquid assets of Swedish households", *FI Analysis* no. 28, Finansinspektionen.

Chart 23. Housing price development in Sweden and other countries

Annual percentage change



Note: Housing prices for Sweden and Norway refer to prices for both single-family houses and tenant-owned apartments. Housing prices for Denmark, the United States and the United Kingdom refer to prices for single-family houses. Housing prices for Finland refer to prices for tenant-owned apartments.

Source: Macrobond.

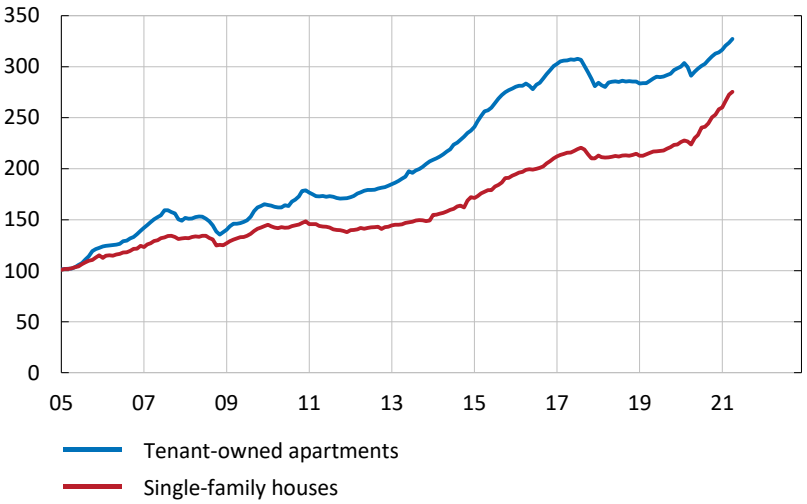
In both Sweden and other countries, it is mainly prices of single-family houses that have risen sharply (see Chart 24). This indicates that the pandemic may have shifted households' housing preferences, as a result of many households – all or part of the time – having to work from home.[59] For example, it may have increased household demand for larger living space, which may have contributed to the rise in prices of larger homes. In Sweden, fewer single-family houses have also been put up for sale during the pandemic compared with previous years, which might be due to households that already own a house appreciating their larger living space more than they did before the pandemic. A lower supply of single-family houses may therefore have led to more bidders competing for fewer units, which may have contributed to the rising house prices.

As has been noted previously, the crisis has hit groups with a weaker position in the labour market particularly hard. This is true, for example, for temporary employed persons, who normally find it more difficult to obtain a mortgage from the bank. Demand for housing may therefore have been held up by households that were already established in the housing market before the crisis and whose employment has been affected by the pandemic to a lesser extent. This, too, has probably contributed to the rising housing prices.

[59] See also "Rapidly rising housing prices despite the coronavirus crisis", article in *Monetary Policy Report*, April 2021, Sveriges Riksbank.

Chart 24. Housing prices in Sweden

Index, January 2005 = 100



Note: Housing prices are seasonally adjusted.

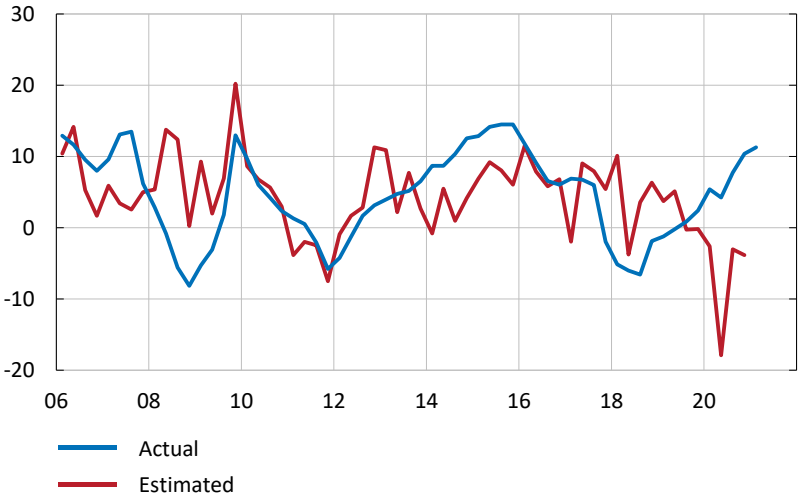
Sources: Valueguard and the Riksbank.

The price development has also differed from what could normally have been expected in an economic downturn. Historically, developments in mortgage rates and disposable household income have explained housing price growth in Sweden relatively well in the slightly longer term.[60] But as there has been weak growth in disposable income, including capital income, and mortgage rates have only fallen marginally, it is difficult to explain the sharp price upturn during the pandemic based on these variables alone. A simple regression analysis also shows that housing prices during the pandemic have been unusually high in relation to the level calculated using traditional explanatory factors such as mortgage rates and disposable household income (see Chart 25 and Chart A.15 in the Chart Appendix). As mortgage rates have not changed so much, it is difficult to draw the conclusion that the Riksbank's monetary policy has been a decisive factor behind the sharp price upturn during the pandemic. Instead, the most important explanations probably have to do with the unusual economic effects of the pandemic.

[60] See, for example, C-A Claussen (2013), "Are Swedish houses overpriced?", *International Journal of Housing Markets and Analysis* 6(2), P. Birch Sørensen (2013), "*The Swedish housing market: trends and risks",* report to the Swedish Fiscal Policy Council and M. Bjellerup and L. Majtorp (2019), "The Development of Swedish Housing Prices", *Focus Report*, May 2019, Swedish National Debt Office.

Chart 25. Actual and estimated housing prices

Annual percentage change



Note: In the model, housing prices are explained by household disposable income and a 3-month mortgage rate after tax and property tax. All variables are expressed in inflation-adjusted terms. The model is a modified version of the one used by C-A Claussen (2013), "Are Swedish houses overpriced?", *International Journal of Housing Markets and Analysis*, v. 6(2), pp 180-196.

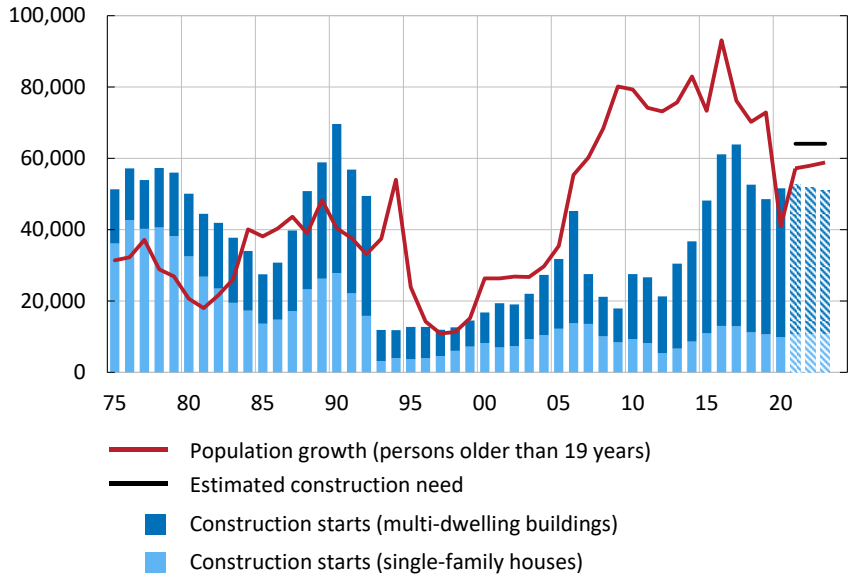
Sources: Valueguard and the Riksbank.

Housing prices have increased sharply not only during the pandemic but have been doing so for a long period of time. This is largely due to the structural problems that have characterised the Swedish housing market for a long time. For example, housing construction has been low for many years in relation to population growth (see Chart 26).[61] However, the amount of completed rental accommodation and tenant-owned apartments has increased in recent years and almost 60 per cent of new builds are rented accommodation. The percentage of rental accommodation in the housing stock has, however, decreased over time, while the percentage of tenant-owned apartments has increased. This trend has been particularly evident in Stockholm, where the proportion of rented accommodation in multi-dwelling blocks has decreased from 70 per cent to just over 40 per cent since the late 1990s. The reduced supply of and long waiting-lists for rented accommodation, coupled with inefficient utilisation of the rented accommodation stock, are making an increasing number of households feel that they are forced to buy a home instead, which is contributing to higher housing prices and indebtedness.

[61] There are several explanations for the low level of housing construction in Sweden. Factors often highlighted are weak competition in the construction sector, insufficient supply of land for new construction and comprehensive and complex planning processes. See, for example, R. Emanuelsson (2015), "Supply of housing in Sweden". *Economic Review* 2015:2, Sveriges Riksbank.

Chart 26. Housing construction and population growth in Sweden

Number of housing starts, number of new persons



Note: The construction need refers to need estimates made by the Swedish National Board of Housing, Building and Planning for 2020-2029. The patterned bars refer to the Riksbank's forecast for construction and the broken red line refers to estimated population growth.

Sources: Swedish National Board of Housing, Building and Planning, Statistics Sweden and the Riksbank.

Rising housing prices lead to rising debt

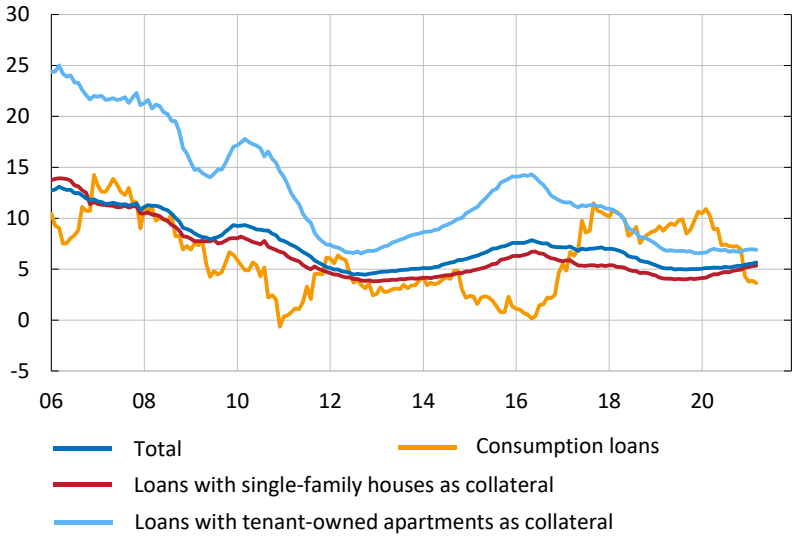
Household debt has been rising sharply for a long time and is historically high. Total household debt currently amounts to almost 90 per cent of Swedish GDP. The debt-to-income ratio, measured as total household debt in relation to disposable income, amounts to about 200 per cent, which is a high level also in international comparisons. The high indebtedness means that households are sensitive to different types of disturbance, such as loss of income, rising interest rates and a fall in housing prices.

During the pandemic, household debt has increased somewhat faster than previously, making households even more vulnerable in the longer run. In March, the growth rate in household loans from MFIs amounted to just over 6 per cent (see Chart 27). It is primarily mortgages with tenant-owned apartments and single-family houses as underlying collateral that have increased more rapidly. The increase in mortgages can in part be explained by the fact that higher housing prices have resulted in a household having to take out a larger loan than previously to finance the purchase. Similarly, some households have increased their mortgages by taking out a supplementary

loan.[62] The houses and tenant-owned apartments being constructed are also contributing to increased debt as this new housing is largely financed by households borrowing money.[63]

Chart 27. Lending to households broken down by collateral

Annual percentage change



Note: Refers to loans from MFIs. New and renegotiated agreements.

Sources: Statistics Sweden and the Riksbank.

Consumption loans have increased more slowly, but constitute a large share of total household interest expenditure

Households' consumption loans, which include loans without underlying collateral (also known as unsecured loans) and loans with collateral other than housing, have been characterised by relatively high growth in recent years - they now make up around 18 per cent of total household debt to MFIs. In the second half of last year and in the beginning of 2021, the growth rate decreased and in March amounted to 3.7 per cent as an annual rate (see Chart 27).

There are several reasons for the increase in consumption loans in recent years. Greater digitalisation and e-Commerce, together with a strong economy before the pandemic and low interest rates, have, for example, made it both easier and more accessible to shop on credit. Macroprudential policy measures may also have contributed to the increase in consumption loans.[64] The loan-to-value limit means for example that households may borrow 85 per cent of the value of the home. However, they

[62] See *The Swedish mortgage market*, March 2021, Finansinspektionen.

[63] For a discussion of the factors driving the increase in mortgages in Sweden, See R. Emanuelsson, G. Katinic and E. Spector (2018), "Developments on the housing market and their contribution to household debt", *Economic Commentaries* no. 14, Sveriges Riksbank.

[64] See P. van Santen (2017), "Drivers and implications of the strong growth in consumption loans", *Staff memo,* Sveriges Riksbank.

can finance the other 15 per cent with an unsecured loan. The interest on an unsecured loan is normally higher than the interest on a mortgage, however, and must be amortised faster.

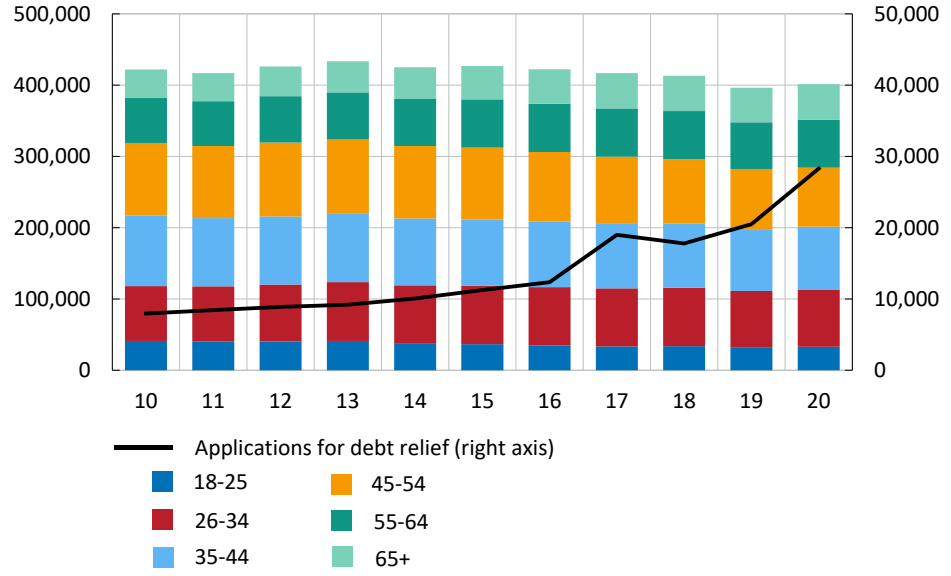
Even if consumption loans make up a clearly smaller percentage of total household debt than mortgages do, the high interest rates mean that the interest expenditure for these loans makes up 30 per cent of the household sector's total interest expenditure. For example, the average interest rate for new unsecured loans was just under 7 per cent in March, which can be compared to the average interest rate on new mortgages of just under 1.5 per cent. The interest-rate spread on consumption loans is large, however, and some households have to pay interest that can be far above the average. Interest rates also vary considerably depending on the size of the loan and among different credit institutions.

When the economy is in deep recession and many households are adversely affected by loss of income, the credit risk increases for this type of loan, which more often than with mortgages leads to payment problems. According to FI, it is primarily young borrowers and those with low incomes that run a higher risk of encountering payment problems when they take out consumption loans[65] – a group that has also been hit particularly hard during the pandemic. In parallel with the increased growth rate in consumption loans prior to the pandemic, the number of debt relief applications to the Swedish Enforcement Authority has also risen. However, the number of people with debt registered at the Enforcement Authority for collection has been relatively constant over the past year (see Chart 28). More thorough credit assessment, with information to lenders about existing loans, would reduce the probability of borrowers encountering payment problems.

[65] FI has examined why certain consumption borrowers experience payment problems. The analysis shows, among other things, that the probability of payment problems decreases as the borrower gets older and if the borrower's income is high. At the same time, borrowers with small loans experience problems earlier than those who take out large loans. See M.K. Andersson and G. Förster (2021), "Why do some borrowers experience payment problems?", *FI Analysis* no. 29, Finansinspektionen.

Chart 28. Number of people with debt registered at the Swedish Enforcement Authority for collection broken down by age, and number of debt relief applications

Number



Note: Refers to the whole of Sweden.

Source: Swedish Enforcement Authority.

New mortgagors have increased their indebtedness and are sensitive to shocks

According to FI's mortgage survey, indebtedness among new mortgagors has increased in 2020.[66] On average, both the loan-to-value ratio and the debt-to-income ratio have increased, that is the mortgage in relation to the value of the home and total debt in relation to income. Although the percentage of new mortgagors with a high debt-to-income ratio is lower than before FI introduced the stricter amortisation requirement in 2018, the percentage with a debt-to-income ratio of over 450 per cent has gradually increased over the last three years.

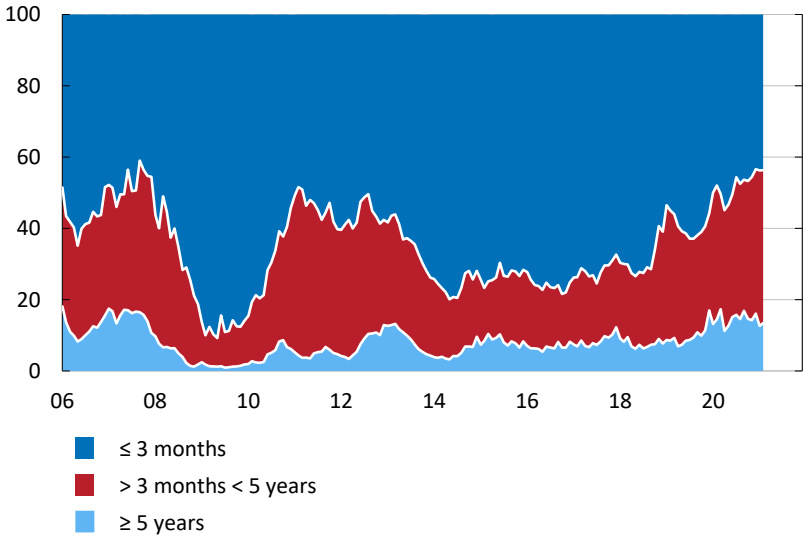
As more new borrowers are taking out larger loans in relation to their income, these households are more sensitive to interest-rate adjustments than previously. Just under half of the total mortgage stock is also still at a variable interest rate that is renegotiated every third month, which means that rising interest rates could have a rapid impact on households' interest expenditure. However, more households have chosen to transfer to a fixed rate for all or part of their mortgage over the past year (see Chart 29). One reason for this may be that interest rates on loans with somewhat longer fixation periods have fallen substantially in recent years and are now in some cases lower than a variable interest rate. The fixation period chosen by households for their mortgages is an important factor for how much their mortgage rate would be affected by temporary stress on the financial markets. The fact that a larger proportion of households are now choosing longer interest rate fixation periods than the shortest one is seen by the Riksbank as a positive development, particularly in a situation of

[66] See *The Swedish mortgage market*, March 2021, Finansinspektionen.

economic uncertainty. However, in international comparisons, Sweden still stands out as one of the countries with the shortest average interest-rate fixation periods for mortgages with fixed interest rates.[67]

Chart 29. Interest-rate fixation periods for new mortgages in Sweden

Percentage of mortgages



Note: Refers to new and renegotiated loans from mortgage institutions. Percentage of mortgages in each interest-rate fixation category is calculated based on the value of the loans (volume-weighted).

Source: Statistics Sweden.

As part of the FI mortgage survey, stress tests are performed in which the debt-servicing ability of new mortgagors is analysed in stressed situations with higher interest rates, loss of income and falling housing prices. The results show that new mortgagors have good margins overall to be able to service their debt even in a stressed economic situation.

The results in the FI stress tests also show that households that have applied for the temporary amortisation exemption had somewhat better resilience to rate rises than those who have not applied. On average, these households also had higher incomes and purchased more expensive homes. This may indicate that the exemption has not only been used by economically constrained households, but also by other households and for other purposes. FI's analysis also shows that about 9 per cent of all new mortgagors applied for the exemption. On average, these households have had an additional SEK 4,500 at their disposal every month.[68] However, in their credit assessments, the banks have continued to take account of the amortisation requirements.

[67] See, for example, U. Holmberg et al. (2015), "An analysis of the interest-rate fixation period for Swedish mortgages", Economic Commentaries no. 7, Sveriges Riksbank and U. Albertazzi, F. Fringuellotti and S. Ongena (2019), "Fixed rate versus adjustable rate mortgages: evidence from euro area banks", *ECB Working paper series* no. 2322, European Central Bank.

[68] The proportion of new mortgagors amortising in 2020 amounts to about 88 per cent. See *The Swedish mortgage market*, March 2021, Finansinspektionen.

Consequently, the exemptions are not deemed to have contributed to the price rise on the housing market to any greater extent.[69]

The FI stress tests aim to measure the debt-servicing ability of households and thus do not capture any effects on their consumption. Even if most households will probably be able to meet their debt payments, the high indebtedness may contribute to a larger decline in household consumption if the downturn in the Swedish economy also coincides with a larger fall in housing prices. This is because there is a mutual interdependence between the households' assets and liabilities, and the households' consumption and saving. For example, household wealth decreases when housing prices fall, meaning that households may feel poorer and consume less. Households may also wish to increase their saving if housing prices fall, as a precaution, as falling housing prices increase their loan-to-value ratios. This may also limit the ability of households to increase their mortgages via supplementary loans, which further restricts their scope for consumption.[70] In addition, banks may tighten their lending standards for other reasons if housing prices fall.

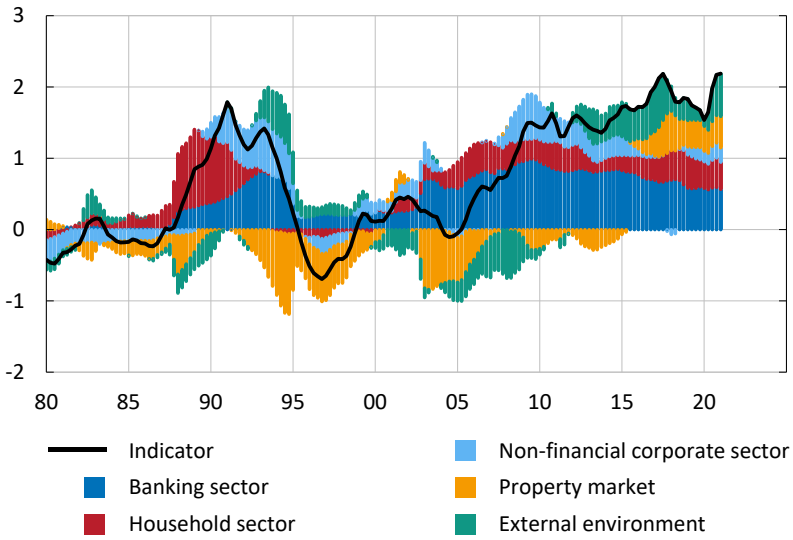
Rapidly rising housing prices and increasing indebtedness amplify vulnerabilities in the financial system

Housing prices and household indebtedness have been increasing for a long time, which has contributed to the build-up of vulnerabilities in the Swedish financial system. The increase has caused the Riksbank's indicator for measuring and illustrating financial risks and vulnerabilities to rise over time and it is now on a high level (see Chart 30). But other factors have also contributed to the increase. For example, many countries have been struggling with weak public finances and high sovereign debt for a long time. This situation has been exacerbated during the pandemic, which, coupled with increased uncertainty, has caused the indicator to rise in recent times (see also Section 2.1 "Developments and risks abroad").

[69] See also "Rapidly rising housing prices despite the coronavirus crisis", article in *Monetary Policy Report*, April 2021, Sveriges Riksbank.

[70] See J. Li, P. van Santen and X. Zhang (2020), "Home equity extraction activities in Sweden", *Staff memo*, Sveriges Riksbank and "The relationship between household indebtedness and consumption during the financial crisis of 2007-2009", box in *Financial Stability Report*, November 2019, Sveriges Riksbank.

Chart 30. Indicator of vulnerabilities and risks in the Swedish financial system
Standard deviation



Note: A higher value signifies higher risks and vulnerabilities. For all series included see D. Krygier and P. van Santen (2020), "A new indicator of risks and vulnerabilities in the Swedish financial system", *Staff memo*, Sveriges Riksbank.

Source: The Riksbank.

During long periods of low interest rates and rising housing prices, there is a danger of households underestimating the risk of rapidly changing economic conditions. Experience also shows that financial crises and housing price falls have previously led to deeper and more permanent consequences if they have been preceded by sharply rising indebtedness.[71] Like other authorities in Sweden and international actors such as the IMF, the Organisation for Economic Cooperation and Development (OECD), the European Commission and the European Systemic Risk Board (ESRB), the Riksbank has for a long time been warning about the risks and vulnerabilities posed by the high and growing debt of Swedish households and the importance of resolving the structural problems in the housing market. The fact that the most significant risks associated with household indebtedness have not materialised has played a major role in preventing a deeper crisis in Sweden.

[71] See, for instance, M. Schularick and A.M. Taylor (2009), "Credit Booms Gone Bust: Monetary Policy, Leverage Cycles and Financial Crises, 1870-2008", *American Economic Review* 102(2), A. Mian, A. Sufi and E. Verner (2017), "Household Debt and Business Cycles Worldwide", *Quarterly Journal of Economics* 132(4), "Dealing with household debt", *World Economic Outlook*, April 2012, International Monetary Fund, O. Jordà, M. Schularick and A.M. Taylor (2015), "Leveraged bubbles", *Journal of Monetary Economics*, 76:1-20 and O. Jordà, M. Schularick and A.M. Taylor (2014), "The great mortgaging: housing finance, crises and business cycles", NBER Working Paper No. 20501, NBER.

2.4 The major banks' financial position is good, but the future is uncertain

So far, during the pandemic, the major banks in Sweden have been able to maintain credit supply. Measures taken by the authorities have made it easier for banks to obtain funding, and increased deposits from households and companies have reduced the need for market funding. Moreover, the global and national requirements on banks' liquidity and capital, which were tightened after the global financial crisis, meant that the major banks entered the pandemic in a relatively good position and their loan losses have so far been relatively small. However, if bankruptcies increase, loan losses may rise. This risks reducing the major banks' profitability, capital levels and continued lending capacity. The Riksbank's stress test shows that if the crisis were to become deeper and spread to the property market, where banks have large exposures, they could suffer substantial loan losses.

Central bank measures have provided the major banks with good access to funding

The major banks in Sweden finance their lending with almost equal proportions of deposits from households and companies and the issuance of securities on the capital markets.[72] [73] Around two thirds of the latter is in foreign currency. This means that the banks are both dependent on confidence from depositors and investors, and on well-functioning domestic and international capital markets.

The authorities' support measures during the pandemic, both in Sweden and other countries, have aimed to facilitate credit supply in the economy by preventing increases in banks' funding costs from leading to higher interest rates for households and companies. For instance, the central banks' asset purchases have added more liquidity to the market.[74] The measures have had the intended effect and the major banks have had good access to funding. In addition, both households and companies have generally increased their bank deposits, probably as they have not been able to consume as usual during the crisis.[75] This has contributed positively to banks' funding positions. In particular, deposits from companies have increased (see Chart 31).

[72] The "major banks in Sweden" are Danske Bank, Handelsbanken, Nordea, SEB and Swedbank. The "major Swedish banks" are Handelsbanken, SEB and Swedbank.

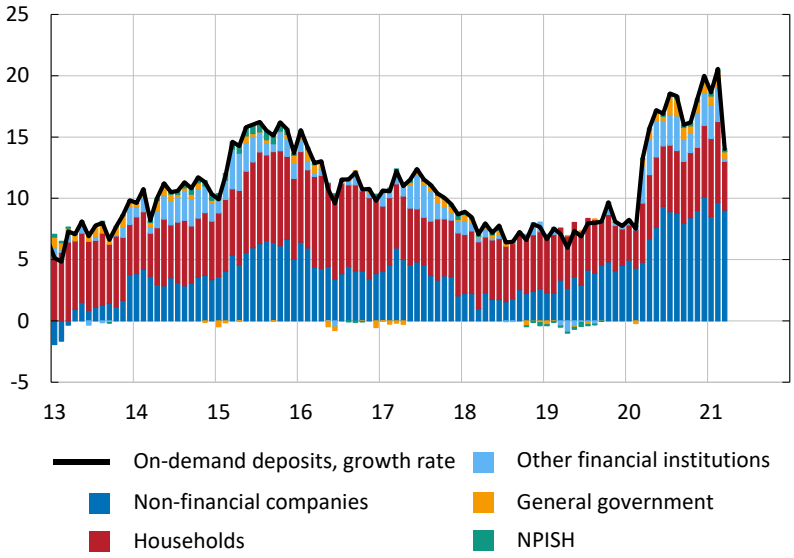
[73] The share of deposits in bank funding is currently somewhat higher than the share of issued securities.

[74] The Riksbank's measures include purchases of interest-bearing securities and loans to banks in Swedish kronor and US dollars. See www.riksbank.se for further information on the Riksbank's measures during the pandemic.

[75] One reason for a high level of deposits could be that deposits up to SEK 1,050,000 are under certain circumstances guaranteed by the state through the deposit insurance scheme. The Swedish National Debt Office is responsible for the deposit insurance scheme in Sweden.

Chart 31. On-demand deposits and contributions to on-demand deposits in monetary financial institutions

Annual percentage change and contribution to growth rate



Note: Refers to demand deposits, which constitute some of the M1 measure of the money supply, in total currency from the Swedish non-bank public to Swedish MFIs and government sector. Households refer to households excluding non-profit institutions serving households (NPISH). Other financial institutions refer to financial institutions excluding MFIs. General government refers to municipalities, regions and social insurance sectors.

Sources: Statistics Sweden and the Riksbank.

Banks' market funding costs continue to be low

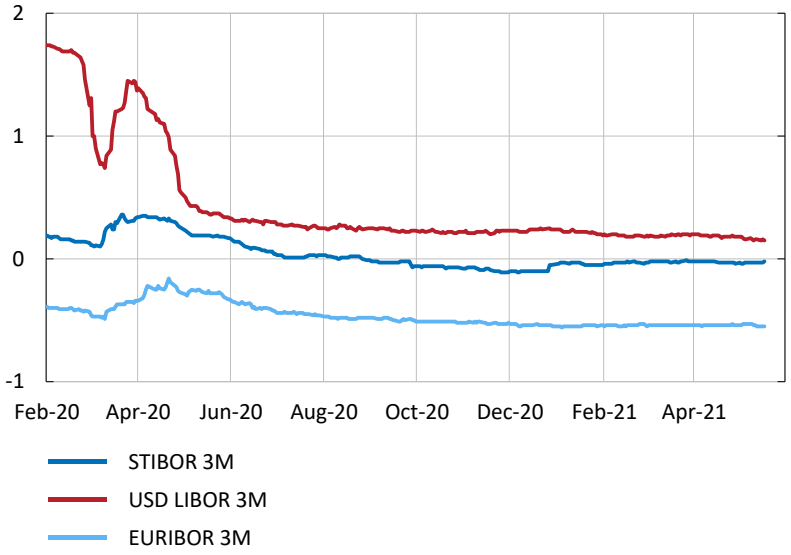
The major Swedish banks' short-term funding largely comes from borrowing in foreign currency, especially US dollars, which is then partly converted into Swedish kronor through various foreign exchange contracts.[76] The Swedish interbank rate (STIBOR) is the base for the lending rates charged to households and companies in Sweden, and is affected not only by the repo rate but also by how the banks' financing conditions in other currencies develop.[77] Thanks to expansionary monetary policy in both Sweden and other countries during the pandemic, not least the United States, STIBOR has been held down following the upturn last spring. Thus, the major Swedish banks' funding costs have remained generally low. Since the start of the year, STIBOR has been just under zero per cent, which is lower than the level prior to the pandemic (see Chart 32).

[76] Short-term funding is wholesale funding through instruments with a maturity of less than one year. The major Swedish banks' funding at short maturities consists of around 70 per cent of US dollars and 20 per cent of euros, and takes place by the banks issuing a certificate of deposit (CD), in which the counterparty makes a deposit at the bank for a fixed time at a fixed interest rate, or a commercial paper (CP). One reason why foreign currency is used is that the market in Swedish kronor is not very liquid.

[77] STIBOR stands for Stockholm Interbank Offered Rate. See also "How is STIBOR determined?", fact box in *Financial Stability Report*, May 2020, Sveriges Riksbank.

Chart 32. Interbank rates

Per cent



Note: STIBOR, USD LIBOR and EURIBOR are the interbank rates in Sweden, the United States and the euro area respectively.

Source: The Riksbank.

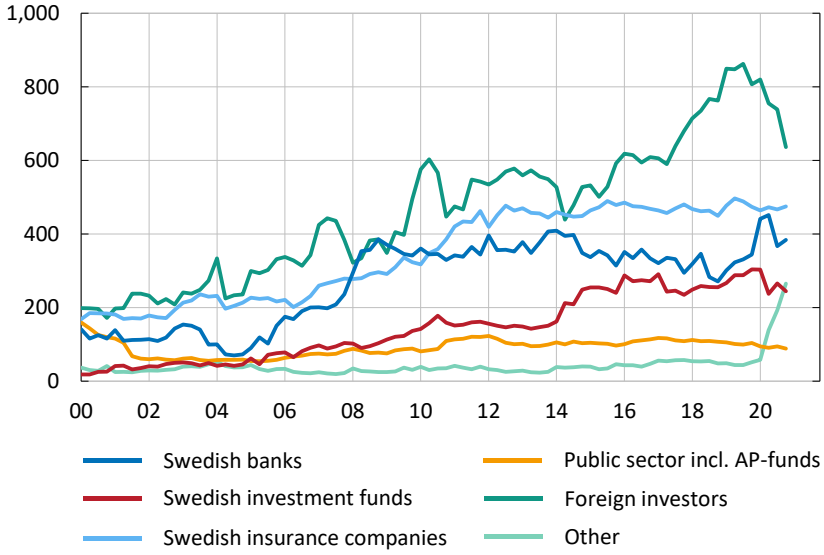
A large share of the banks' lending to households consists of mortgages, in which the property is used as collateral for the loan. Around 70 per cent of Swedish mortgages are financed through issuing of covered bonds, primarily in Swedish kronor but also in euro.[78] The total outstanding volume of Swedish covered bonds currently amounts to around SEK 2,500 billion. This can be compared with the total outstanding government bonds that amount to just over SEK 940 billion.

Since the outbreak of the pandemic in the spring of 2020, the outstanding volume of covered bonds has gradually declined from around SEK 2,600 billion. The reduction reflects the increased deposits from households and companies. The Riksbank's asset purchases have implied that the investor base for Swedish covered bonds has changed. For example, foreign investors have reduced their holdings, reflecting their volatile behaviour also seen in previous years (see Chart 33).

[78] An important difference between a covered bond and other bonds is that the investor has priority to a special collateral volume that mainly consists of assets in the form of mortgages, if a bank defaults.

Chart 33. Holders of Swedish covered bonds

SEK billion



Note: Refers to covered bonds issued by mortgage institutions. The Riksbank's purchases are included in the category "Other".

Sources: Statistics Sweden and the Riksbank.

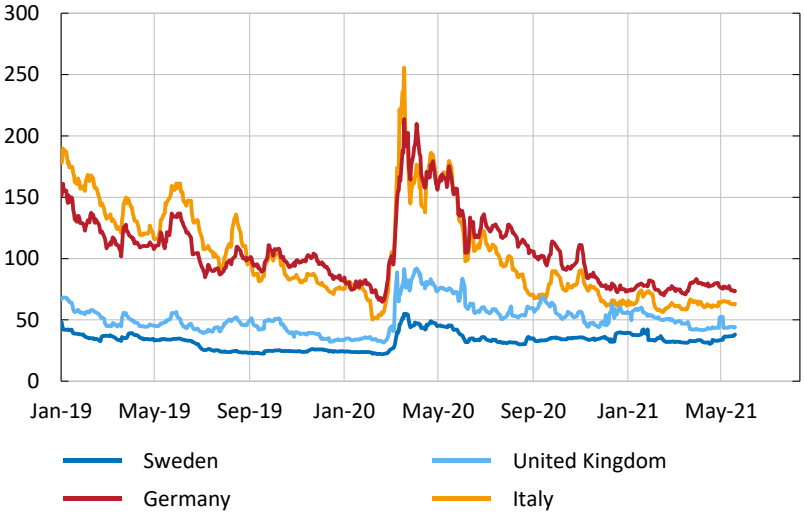
Issuance of unsecured bonds is another important source of funding for the major banks. Despite the fact that they currently have a relatively small funding need, they nevertheless issue certain volumes of these securities. For example, the purpose is to maintain liquidity in the market and to meet the Swedish National Debt Office's minimum requirement for eligible liabilities (MREL).[79] The banks' financing costs for unsecured debt can be illustrated through the CDS premium.[80] This increased at the beginning of the pandemic, but has thereafter fallen and is now approaching pre-crisis levels. The premium for the major Swedish banks has been relatively stable during the spring of 2021 and is lower than for banks in several other European countries. This could indicate that the investors still regard the risks in the Swedish banking sector as relatively low (see Chart 34).

[79] MREL stands for Minimum requirement for own funds and eligible liabilities. The purpose of the requirement is to ensure that a bank has sufficient capital and liabilities that can be written down or converted into capital in a crisis. To support the banks during the pandemic, the Swedish National Debt Office, which is the resolution authority in Sweden, has decided to extend the phase-in period to meet the minimum requirement with subordinated instruments.

[80] CDS stands for Credit Default Swap. See also the glossary in this report for further information on CDSs.

Chart 34. Five-year CDS premiums for banks

Basis points



Note: Refers to an average of comparable major banks domiciled in each country respectively. CDS premiums indicate the banks' costs for unsecured borrowing on the bond market. Sweden refers to a simple average for the three major banks.

Sources: Markit and the Riksbank.

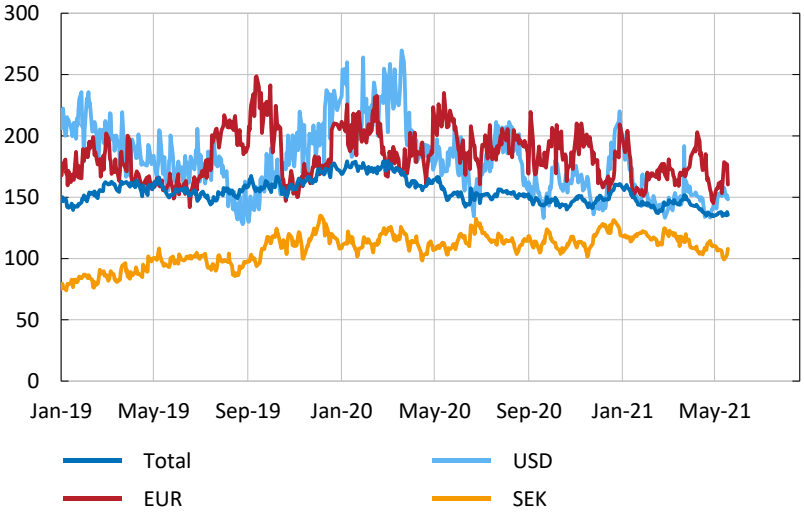
The major banks in Sweden continue to have liquidity and capital buffers above requirements

Following the global financial crisis in 2008-2009, more and stricter globally agreed regulations on banks' liquidity and capital have increased banks' resilience to shocks. These include requirements for larger liquidity buffers (LCR) and more stable funding (NSFR).[81] The major Swedish banks have long shown higher LCR levels than the requirements, both in total and in individual significant currencies (see Chart 35). However, FI currently allows the major Swedish banks to temporarily fall short of the LCR requirement during the pandemic in order to avoid the liquidity requirement hampering credit supply. In recent years, the average NSFR levels for the major banks in Sweden have exceeded 100 per cent and even increased somewhat during the pandemic, which is partly due to the increase in deposits.

[81] LCR stands for Liquidity Coverage Ratio and NSFR for Net Stable Funding Ratio. See also the glossary in this report for further information on LCR and NSFR.

Chart 35. LCR in various currencies for the major Swedish banks

Per cent



Note: Refers to a volume-weighted average for the major Swedish banks.

Source: The Riksbank.

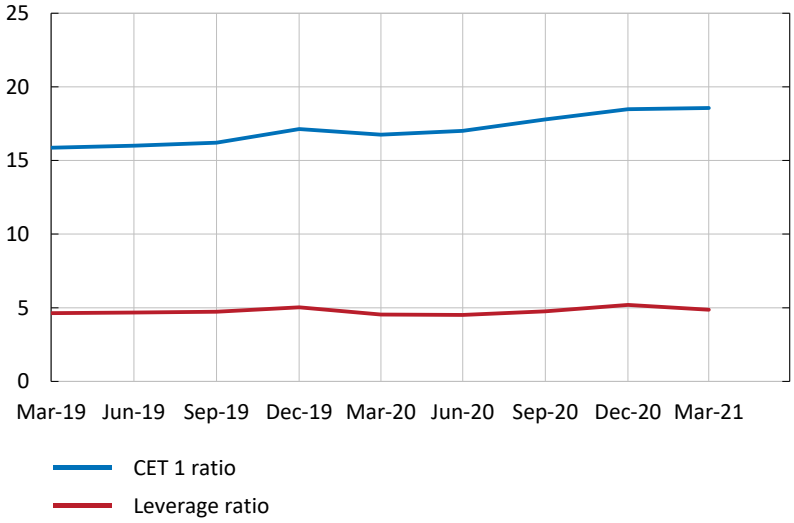
Overall, capital ratios for the major banks in Sweden increased in 2020, although they fell somewhat for some of the banks during the first quarter of 2021 (see Chart 36). On average, the CET 1 ratio amounted to just over 18.5 per cent at the end of the first quarter of 2021, and the leverage ratio was just under 5 per cent. The increased CET 1 ratios are largely due to the growth in the capital base while the risk exposure amount has remained relatively unchanged. The increased capital base can be attributed to good earnings and low loan losses, while dividends and share buybacks have been limited in accordance with the recommendations of the financial supervisory authorities. According to the recommendation by FI, the Swedish banks' dividends and share buybacks should not exceed 25 per cent of total aggregate net earnings for 2019 and 2020. The recommendation expires in September 2021 and if it is not renewed, the banks will be able to pay additional dividends after that. Some banks have already given notice of further dividends in the autumn.

FI has lowered the countercyclical capital buffer requirement to zero per cent and thereby increased the margin between the regulatory capital requirements and the banks' capital levels. This has given the banks greater scope to maintain or increase their lending to households and companies and thereby mitigated an economic downturn.

The banks currently have good capacity for lending to households and companies, and still have good access to funding and relatively high liquidity reserves. The margin between the banks' actual capital levels and the regulatory capital requirements has increased. This is a result of authorities' measures, which have played an important role, both before and during the crisis. So far, neither the regulatory requirements for liquidity nor capital has prevented the major banks in Sweden from maintaining credit supply.

Chart 36. CET 1 ratio and leverage ratio for the major banks in Sweden

Per cent



Note: Refers to a volume-weighted average.

Sources: Bank reports and the Riksbank.

Joint regulatory requirements reinforce financial stability

During 2021, the so-called banking package will be implemented, with the aim of further reinforcing the banks' resilience to shocks (see the fact box "EU implements parts of the Basel III agreement through the banking package"). In addition to this, further regulatory amendments will be made within the next few years. For instance, the European Commission will put forward a proposal in the autumn for how the final parts of the Basel III agreement shall be implemented within the EU. [82] [83]

Both the global financial crisis 2008-2009 and the current pandemic have clearly illustrated the scope of international contagion effects. Swedish financial stability is affected to a large degree by events outside Sweden. As a small country, it is therefore particularly important that global standards are introduced as agreed, not only in Sweden, but also in the EU and the rest of the world. Common minimum requirements, such as the current banking package, promote equal treatment between banks in different countries, competition on equal terms, and financial stability. This is particularly important for Sweden, which is an open economy with extensive foreign trade and which is dependent on the economic, financial and political developments in other countries. Moreover, the Swedish banking sector has extensive cross-border operations and is very dependent on global credit markets. Strict global regulations thus benefit the Swedish economy.

[82] For a description of the final parts of the Basel III agreement, see "Governors and Heads of Supervision finalise Basel III reforms", December 2017, Basel Committee on Banking Supervision.

[83] At a global level, the Basel Committee has agreed that the member states may postpone the implementation of the final parts of the Basel III agreement until 1 January 2023 instead of 1 January 2022, as a result of the pandemic, see "Governors and Heads of Supervision announce deferral of Basel III implementation to increase operational capacity of banks and supervisors to respond to Covid-19", March 2020, Basel Committee on Banking Supervision.

FACT BOX – EU implements parts of the Basel III agreement through the banking package

Several of the regulations governing the banks' liquidity and capital levels and the management of crisis-affected banks are based on standards negotiated at the global level, primarily in the Basel Committee on Banking Supervision and the FSB. During the spring of 2019, the EU adopted new regulations and directives that entail the EU officially implementing parts of these standards. The collective name for the changes the EU adopted in 2019 is the "banking package". These parts will mainly come into force in Sweden in June 2021. Some of the requirements introduced in law through the banking package have already been used in several countries, including Sweden.

Further parts of the global standards remain to be implemented later on. During the autumn, for instance, the European Commission will put forward a proposal for how the final parts of the Basel III agreement shall be incorporated into EU regulations. However, these regulatory amendments are not part of the banking package on this occasion.

The regulatory amendments in the banking package mean that an increasing number of joint requirements will be introduced, that aim to strengthen the European banking system's resilience to shocks. For instance, the banks will be obliged to hold a certain amount of capital in relation to their total exposures, through the introduction of a requirement for a leverage ratio of three per cent. Another important part of the banking package aims to prevent the banks from relying too much on short-term borrowing for financing assets with longer maturities. The banking package contains a binding requirement for a net stable funding ratio, NSFR, of at least 100 per cent. This means that the banks will be forced to have a certain level of stable funding in relation to their illiquid assets.

Risk-weighted capital requirements consist of the minimum requirement in pillar 1 and bank-specific requirements in pillar 2 decided by FI. Previously, FI determined the pillar 2 requirements for the banks without taking formal decisions. According to the banking package, this will no longer be possible. The Riksbank considers that taking formal decisions on pillar 2 requirements will be positive for financial stability, as the requirements will become clearer and legally binding.

The banking package also includes certain adjustments in the MREL requirement. For example, minimum requirements for systemically important banks' MREL levels and regulations regarding which types of financial instruments that may be used to attain these levels will be introduced, such as the proportion of the total instruments that need to be subordinated.

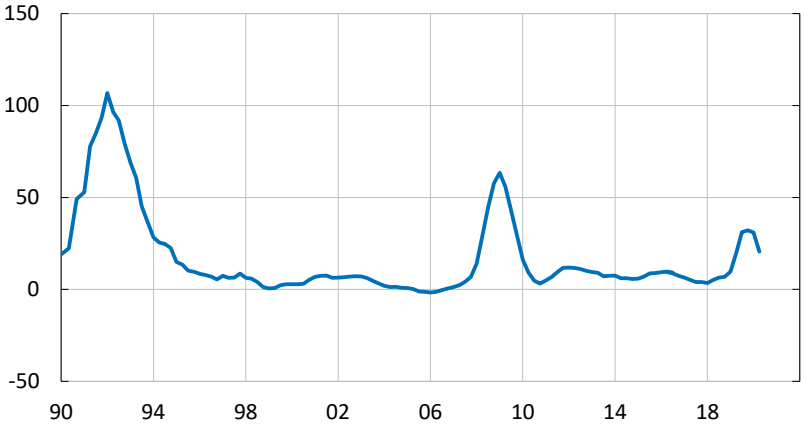
Continued good earnings for the major banks but further bankruptcies could lead to increased loan losses

The major banks in Sweden have had good profitability, good cost efficiency and small provisions for loan losses over a long period of time, in comparison with the European banking sector as a whole. This means that the banks had a relatively good starting point when the pandemic hit. During the pandemic, the volumes of mortgages, as well as deposits and assets under management, have continued to increase and have positively contributed to the banks' net interest income and net commission income. On the other hand, commission income from cards and payments have generally slowed down as consumption has declined. The loan losses during the pandemic have so far been lower than in earlier crises and, after an increase at the beginning of the pandemic, the major banks' loan loss provisions have now declined somewhat (see Chart 37). The support measures from various authorities during the pandemic have to a large degree mitigated the loan losses. But at the same time, the limited loan losses mean that the banks' future capital requirements risk being underestimated in other types of crisis, where support measures aimed at companies and households are not considered necessary. This is because historical loan losses affect the banks' calculations of expected future losses, for which a bank needs to allocate capital.

The major Swedish banks' stock prices and so-called price-to-book value, which indicates the market's valuation of the banks and expectations of their yield, have improved and are approaching pre-pandemic levels (see Chart 48). This shows that the banks are expected to continue to be profitable, which is probably due to the provisions for loan losses having declined and the negative impact on the banks' credit quality so far during the crisis having been lower than expected.

Chart 37. Loan loss provisions for the major banks in Sweden

SEK billion



Note: Loan loss provisions refer to accounting provisions for expected loan losses. These are made when a borrower cannot or is not expected to be able to meet their obligations to the bank, for instance, pay their interest or amortisation. Danske Bank is included with effect from 2017, which is the year that Danske Hypotek received a license from FI. Rolling four quarters, fixed prices.

Sources: Bank reports, Statistics Sweden and the Riksbank.

Although the banks have not made any major loan losses so far, there is still uncertainty over the economic development. Bankruptcies in the corporate sector risk increasing going forward, for example, if the crisis becomes more prolonged and if support measures are withdrawn quickly. While the banks have only limited loan exposures to companies in the sectors that have been hit the hardest during the pandemic, such as around 1 per cent in the category hotels, travel and leisure, there is still a possibility that problems in one sector can spread to other sectors in which the banks have larger exposures. For example, around half of the banks' corporate loan exposure is directed to the commercial property sector, whose customers can in turn be found in the vulnerable sectors.[84] The Riksbank's stress test shows that if the crisis were to deepen and spread to the property market, the banks could be subject to substantial loan losses (see the fact box "Stress test of banks' capital").

Structural vulnerabilities in the banking sector remain and new risks are arising

In addition to the pandemic-related risks in the banking sector, structural vulnerabilities still remain in the banking system that have been present for a long time. The Swedish banking system is large, concentrated and interconnected. For example, the major banks are large owners of each other's issued securities and they have similar and large exposures to certain sectors, such as the residential and commercial property sector. These connections, both direct and indirect ones, may further increase the negative consequences in case of a disruption to the financial system, as problems that affect one bank can easily spread to other banks or to the entire banking system. This also means that a loss of confidence in one bank or institution could have a negative impact on the entire Swedish banking system, for instance, as a result of a money laundering case or a cyber attack (see for example the fact box "A cyber attack can affect financial stability").

In addition, climate change and climate transition entail risks for the banks. As part of new climate-related requirements from authorities, customers and investors, companies in several sectors will need to transition to more sustainable operations. The banks therefore need to pay attention to climate-related risks in their lending to reduce the risk of suffering loan losses at a later stage. For instance, banks' exposures to companies in sectors with high emissions of greenhouse gases entail risks if companies' assets decline in value as a result of not meeting new climate-related criteria. According to the Riksbank's analysis, around SEK 250 billion, out of around SEK 2,000 billion in total corporate lending in December 2020, went to companies in sectors with high emissions of greenhouse gases.[85]

[84] Refers to loans in all currencies to Swedish non-financial companies from banks and other MFIs as of March 2021. Read more about banks' exposure to property in Section "2.2 Divergent development in the Swedish corporate sector".

[85] See C. Cella (2021), "Banking and climate-related risks, implications for financial stability in Sweden", *Staff memo*, Sveriges Riksbank. Other central banks have conducted similar studies on the impact of climate risks on banks and financial stability, for example, the European Central Bank (ECB) has published the study "Climate-related risks to financial stability", *Financial Stability Review* Issue 1, May 2021, European Central Bank.

FACT BOX – Stress test of banks' capital

A stress test is an analytical tool for assessing banks' resilience to financial and economic stress. To be able to carry out a stress test, a stressed scenario is required, that is, a hypothetical development for various macroeconomic and financial variables. The scenario should reflect a negative, but not entirely improbable development. In other words, a scenario should not be confused with a forecast.

For many years, real interest rates have fallen lower and lower around the world, which has caused asset prices and household and corporate debt to increase. Households and companies had therefore become more vulnerable even before the pandemic. The scenario in this report describes a situation where central banks and other authorities around the world continue to implement previously promised support measures to mitigate the economic effects of the pandemic. While the support measures are helping many households and companies to get through the crisis, they are also causing indebtedness to increase further.[86] Various market agents are also beginning to adjust their long-term inflation expectations upwards, which is leading to market rates increasing despite the economy still being weak. Risk premiums for various assets are also increasing, which makes prices of assets such as equities and property fall relatively substantially. When companies have high levels of debt and market rates increase, bankruptcies and unemployment also rise.

The hypothetical development described above has been quantified for some selected variables. Compared with the scenarios the Riksbank has used in earlier stress tests, this scenario (scenario 2021:1) is somewhat milder. In scenario 2021:1, the decline in the economy comes during the first two years of the scenario and during the third year the economy recovers somewhat (see Table 1).

Table 1. Scenario 2021:1 in the Riksbank's stress test

Per cent

	2021	2022	2023
GDP	-1.5	-2.4	2.9
House prices	-5.8	-4.9	2.5
Inflation	1.3	0.9	1.0
Unemployment	10.6	11.9	11.4
Equity prices	-20	15	9
Swap rate, 3 months	0.63	0.74	0.77
Swap rate, 5 years	1.42	1.69	1.97
Swap rate, 10 years	1.84	2.19	2.50

Note: GDP, house prices and equity prices are given as annual percentage change. Inflation is given as annual percentage change in price index. Unemployment and swap rates are specified as a percentage.

Source: The Riksbank.

[86] Support measures from authorities can affect the scenario, but in all other calculations in the stress test, the assumption is made that neither authorities nor banks implement any new measures to mitigate the stress.

FACT BOX – Stress test of banks' capital (cont.)

In the macroeconomic situation described in the scenario, banks' earnings decline somewhat in relation to the starting point in 2020 (see Table 2 for overall results). At the same time, their loan losses increase substantially as a result of poorer economic developments and falling property prices.[87] This means that the leverage ratio and CET 1 ratio fall somewhat. The CET 1 ratio is also negatively affected when banks' loan portfolios are assessed to be riskier and therefore risk-weighted assets increase. Both the leverage ratio and the CET 1 ratio still exceed the capital requirements in the scenario.

Table 2. Results of the Riksbank's stress test

	Scenario 2021:1
Earnings before loan losses (SEK billion)	236
Total loan losses (SEK billion)	189
Leverage ratio, 2020 and the lowest level in the scenario (%)	5.4/5.3
CET 1 ratio, 2020 and the lowest level in the scenario (%)	18.5/16.4

Note: Earnings and total loan losses are added together for the four banks Handelsbanken, Nordea, SEB and Swedbank for all three years in the scenario. The lowest level for the leverage ratio and CET 1 ratio is attained during the second year.

Source: The Riksbank.

Developments on the property market have great significance for the results. A stress test is always a simplified picture of reality and the results are affected by a number of different assumptions in the models included. One such assumption is how house prices are treated in the model for loan losses. In the Riksbank's model, the development of house prices has a relatively large effect. This is because, in the model, we allow falling house prices to have a relatively larger effect than rising house prices.[88] The reason we have chosen to do this is that house prices can be regarded as an indicator of not only the state of the property market but also the economy in general.

To illustrate the importance of house prices, we have created four alternative scenarios based on percentiles of historical house price developments. In two of them, house prices fall more than in scenario 2021:1, and in the other two house prices fall less. All of the other variables - GDP, inflation, unemployment, equity prices and interest rates - are the same as in scenario 2021:1. Over the three years in the scenario, house prices in total fall by 8.2 per cent in scenario 2021:1, in the two harder alternative scenarios house prices fall by 19.8 per cent (scenario A) and 13.6 per cent (scenario B) and in the two softer ones by 4.7 per cent (scenario C) and 1.9 per cent (scenario D) respectively.

[87] It is assumed in the stress test that banks follow the guidelines for dividends published in the interim reports for the first quarter of 2021, given that they make a profit during a single year.

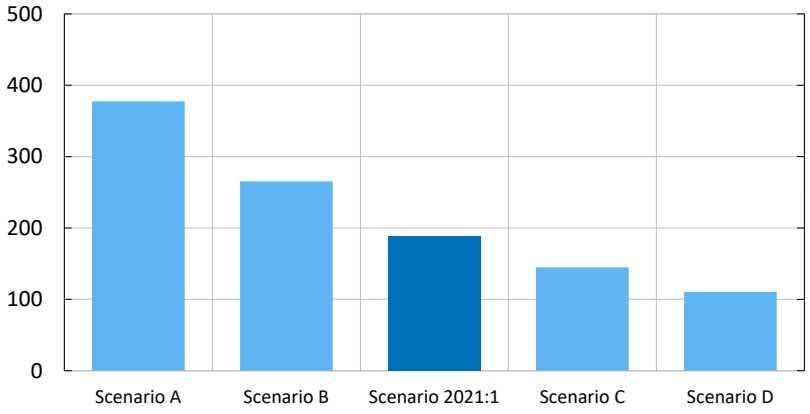
[88] For more details, see D. Buncic, J. Li, P. van Santen, P. Wallin and J. Winstrand (2019), "The Riksbank's method for stress tests of banks' capital", *Staff Memo,* Sveriges Riksbank.

FACT BOX – Stress test of banks' capital (cont.)

In the alternative scenario with the largest fall in house prices (scenario A), total loan losses are almost twice as large as those in scenario 2021:1 and in the mildest scenario (scenario D) they are almost half as small (see Chart 38).[89] House price developments in the scenario thus have a relatively large effect on loan losses in the stress test.

Chart 38. Total loan losses in different scenarios for house prices

SEK billion



Note: Scenario 2021:1 is based on the 5th percentile of the historical development of house prices, scenario A is the first percentile, scenario B is the 2.5th percentile, scenario C is the 7.5th percentile and scenario D is the 10th percentile.

Source: The Riksbank.

However, it is not only house prices that affect the results in the model for loan losses. The way in which the model is specified otherwise, that is to say which other real economic and financial variables are used to explain the development of loan losses, also affect the results. There is no single way of specifying loan loss models that is the only correct way. However, there are various economic correlations that can be used as a basis and there are also various statistical measures that can be used to determine whether a specific model works well or poorly.

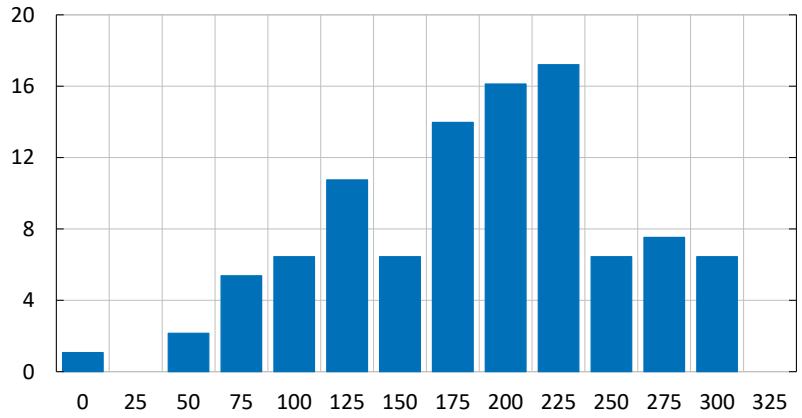
In the Riksbank's Financial Stability Report, which was published in autumn 2020, we illustrated this uncertainty by showing the results, given the same scenario, from around 700 different specifications of the model for loan losses that all met a number of statistical criteria. By adding more possible variables and increasing the number of selection criteria, one can refine the analysis. The new analysis, given scenario 2021:1 (see Table 1), illustrates how the results from the Riksbank's model differ from the results of more than 90 other specifications of the model for loan losses (see Chart 39).

[89] As a comparison, the total loan losses for Handelsbanken, Nordea, SEB and Swedbank were around SEK 80 billion in 2008-2010 when the global financial crisis was at its deepest.

FACT BOX – Stress test of banks' capital (cont.)

Chart 39. Uncertainty in the Riksbank's model for loan losses

Percentage of model specifications



Note: The horizontal axis refers to total loan losses in SEK billion.

Source: The Riksbank.

The Riksbank's specification of the model for loan losses gives in total SEK 189 billion in loan losses over the three years, which is somewhat less than the average (SEK 199 billion) of the different alternative specifications.

Both of these sensitivity analyses for the model for loan losses illustrate how uncertain stress tests are. This means that the results should be interpreted with caution, and if the situation in the scenario is realised, the loan losses could be much greater or smaller. By regularly carrying out stress tests, however, one gains a good overview of how the banks' resilience develops over time.

Overall, the stress test indicates that the banks have the capacity to manage a macroeconomic development like the one in the scenario, and can maintain the supply of credit. The results are somewhat better than in the Riksbank's earlier stress test, which is largely because the scenario is somewhat milder. However, the sensitivity analysis shows that if house prices fall more than in the scenario, loan losses can become significantly larger and in such a situation, the banks may have difficulty in maintaining credit supply without further support measures.

2.5 Vulnerabilities persist for some funds and insurance companies

Funds and insurance companies remain vulnerable to shocks on the financial markets. One of the reasons is that the Swedish corporate bond funds offer the possibility of making daily redemptions at the same time as they are investing in illiquid assets. If turbulence increases on the corporate bond market, they may find it difficult to manage major redemptions by their investors, in the same way as at the start of the pandemic. If there is turbulence on the equity and foreign exchange markets, insurance companies, with their significant equity holdings, may have to make adjustments to their asset management, for example through large reallocations in their portfolios, which, in turn, may further increase the turbulence. The low interest rates are also continuing to pose a challenge to insurance companies and may lead to them choosing to hold riskier assets in their portfolios to meet existing required rates of return.

Remaining liquidity risks in funds that have invested in Swedish corporate bonds

In the initial phase of the pandemic, when stress levels on the financial markets were high and the pricing for corporate bonds was very uncertain, large redemptions of capital were made from funds that had invested in corporate bonds. Many funds then had to sell corporate bonds to be able to meet these redemptions. When many funds simultaneously wanted to sell corporate bonds in an already turbulent market, trading difficulties arose. In addition, a lack of transparency in the market in combination with selling pressure made it even more difficult to value mutual funds shares. Several funds therefore had to stop trading temporarily.

When funds stop redemptions in this way, there is a risk that the problems will spread. It may be a matter of fund investors increasing their redemptions from other corporate bond funds because they are worried they will also close, which can lead to even higher selling pressure in the corporate debt market. Increased turbulence also affects other actors that are dependent on a functioning corporate debt market. Increased redemptions from funds could also lead to these selling other types of asset, such as covered bonds. As funds invest heavily in covered bonds, this could affect the market negatively (see Chart 33).

On behalf of FI, the Swedish Securities Markets Association has produced a sector recommendation to improve transparency on the Swedish bond market. Where valuation problems are due to insufficient information on executed transactions, this could reduce some of the risk of the kind of stress that arose last spring. However, it does not necessarily reduce the funds' vulnerability to large redemptions that arise due to them investing in less liquid assets that are difficult to sell in a stressed market. In the event of renewed turbulence on the market for corporate bonds, there is therefore a

risk of fund investors wanting to make major redemptions once again and of funds being forced to close for redemptions (see also Chapter 1).

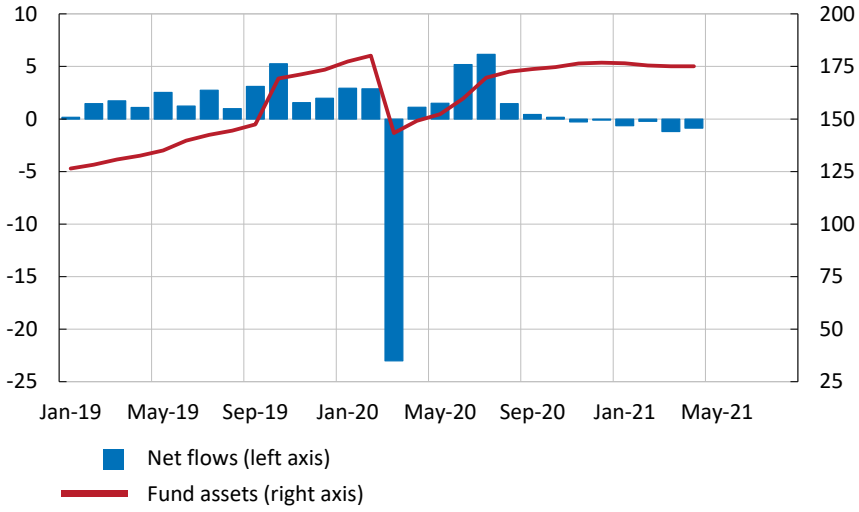
Neither are there any new tools to manage liquidity shocks in funds. From an international perspective, Swedish funds are among those with access to the smallest amount of tools. The IMF has previously recommended Swedish authorities to develop tools to oversee runs on fund shares.[90] FI is currently analysing the need for additional liquidity management tools.[91]

The corporate bond funds are as large today as they were before the pandemic

Over the full-year 2020, the inflow of capital to the corporate bond funds has corresponded to the major redemptions made in March last year. The fund assets in corporate bond funds has thereby returned to the same levels as before the outbreak of the pandemic (see Chart 40).[92]

Chart 40. Fund flows and fund assets in Swedish corporate bond funds

SEK billion



Note: Refers to net fund flows, which is to say the difference between purchases and redemptions.

Source: Macrobond.

[90] See "Financial System Stability Assessment: Sweden", *IMF Country Report No. 16/355*, November 2016, International Monetary Fund. In addition, the ESRB recommends greater harmonisation with regard to liquidity management tools among EU Member States (see *Recommendation of the European Systemic Risk Board of 7 December 2017 on liquidity and leverage risks in investment funds*, 2017, European Systemic Risk Board

[91] See *Finansinspektionen's appropriation directions for 2021*, December 2020, Swedish Ministry of Finance.

[92] Fund assets are affected both by the fluctuations in the value of the assets in the funds and by in and outflows from the funds.

FACT BOX – Funds and other asset managers receiving international attention

Funds and other asset managers often invest across borders. In addition, fund investors often buy foreign mutual funds shares. In this way, the Swedish fund and asset management sector is a part of the international market.

The liquidity risks to which corporate bond funds were exposed during the pandemic also affected some types of money market funds in Europe and the United States.[93] Money market funds are important both for issuers wishing to obtain short-term funding and for investors, as these funds act as an alternative to bank accounts. Investors count on being able to redeem from the money market funds at short notice. If money market funds' holdings are not sufficiently liquid to be able to cover larger redemptions, this may have consequences for investors and others.

Hedge funds and similar activities have also received international attention recently. In March 2021, a US asset manager, Archegos Capital Management, encountered major problems after equity price falls in some US media companies. Archegos had major exposures towards these equities through the purchase of a kind of derivative known as total return swap. This meant that Archegos was speculating in the fluctuations in the value of the equities without having to buy any itself. The counterparties in these swaps were a number of banks that, to protect themselves from movements in equity prices, owned large positions in the same equities. When the equity price fell and the counterparty risk in the swaps with Archegos increased for the banks, Archegos had to make payments to the banks. When Archegos was unable to make these payments, the banks were forced to sell their equities. As large amounts of equities were sold simultaneously, the price fell further, which led to major losses for a couple of banks. At the start of the year, certain hedge funds also gained considerable attention as they made major losses on their shortselling positions in the so-called Gamestop turbulence.[94]

As non-banks, such as funds and other asset managers, are interconnected with other agents in the financial system, their problems can spread. It is therefore important to follow developments for funds and similar activities both in Sweden and internationally. Due to the events of last spring, work is now being conducted on an international level to strengthen resilience in the non-banking sector. In 2021 and 2022, among other things, the FSB plans to review the resilience of money market funds, liquidity risks in funds that offer the possibility of daily redemptions, frameworks for margin calls for derivative positions and the market structure for bonds.[95]

[93] See, for example, "How effective is the EU Money Market Fund Regulation? Lessons from the COVID-19 turmoil", *ECB Macroprudential Bulletin* issue 12, April 2020, European Central Bank, and "Overview of Recent Events and Potential Reform Options for Money Market Funds", *Report of the President's Working Group on Financial Markets*, December 2020, President's Working Group on Financial Markets.

[94] Shortselling entails selling a borrowed security and then buying it back. In cases where the price of the asset has fallen, the transaction makes a profit.

[95] See *Holistic Review of the March Market Turmoil*, November 2020, Financial Stability Board. The FSB's review includes the entire non-banking sector.

Continued search for yield in the low interest rate environment for insurance companies

Even if yields on bonds with longer maturities have risen slightly recently, the general level of interest rates is expected to remain low over the next few years. This affects insurance companies and their capital investments, in particular the insurance companies that offer life insurance with guaranteed commitments towards their customers as these have required rates of return that need to be maintained. The search for yield in this low interest-rate environment may lead insurance companies to invest in riskier assets. For example, their equity holdings have gradually increased, while their bond holdings have decreased. Swedish insurance companies' equity holdings amount to just over half of their total portfolios (including own fund holdings, but excluding unit-linked life insurance policies). This is a significantly larger proportion than the average for European insurance companies. Their average proportion has been around 20 per cent in recent years.[96] At the same time, interest for alternative assets that may be more complex and less transparent is increasing.[97]

The size of the equity holdings make Swedish insurance firms sensitive to equity market movements. For example, their solvency was clearly affected by the fall in equity prices last spring, but, as the equity market has recovered, the insurance companies' solvency has also improved and is now on approximately the same levels as before the outbreak of the crisis.[98]

Risk of downgrades still an important factor

For investors in interest-bearing assets, credit ratings are an important factor in the mandates stipulating how they may invest. The mandate often restricts the possibility of purchasing and holding instruments with ratings below a certain minimum level, with an important division being the segments Investment Grade and High Yield.[99] This means that rating adjustments can create large movements on the financial markets when certain investors may be forced to purchase or sell assets to comply with their mandates. If many assets are downgraded from Investment Grade to High Yield and become 'Fallen Angels', this may result in some investors having to sell off their assets automatically. At the same time, other participants need to purchase large amounts of the downgraded assets, which could be problematic as the actors on the smaller High Yield market may find it difficult to absorb the downgraded assets.[100]

In a scenario with many downgrades, the Swedish insurance companies run a small risk of needing to sell Fallen Angels, as their holdings are concentrated to assets with high credit ratings (see Chart 41). In addition, insurance companies have no immediate liquidity need, like funds do, to be able to meet outflows. There is, however, a risk

[96] See *Insurance firms' capital investments*, March 2021, Statistics Sweden, and *Financial Stability Report*, December 2020, European Insurance and Occupational Pensions Authority.

[97] Alternative investments are typically not market-listed, are less liquid and may have less transparency.

[98] See *Stability in the financial system 2020:2*, November 2020, Finansinspektionen.

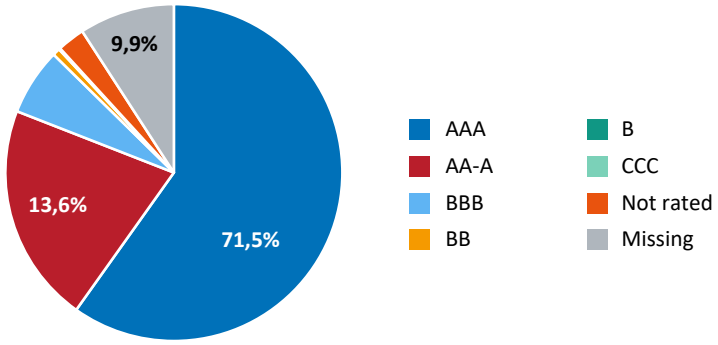
[99] Investment Grade is credit ratings from AAA/Aaa to BBB-/Baa3. High Yield is BB+/Ba1 and below.

[100] See *A system-wide scenario analysis of large-scale corporate bond downgrades*, July 2020, European Systemic Risk Board.

that their holdings will be affected indirectly by other participants' sales, through pricing and return on the assets. So far, the credit ratings have not been downgraded to any great degree in their holdings. However, considering that the consequences of the pandemic are so uncertain, it cannot be ruled out that there will be more downgrades in the period ahead.

Chart 41. Insurance companies' interest-bearing assets

Per cent



Note: Proportions of total market value per 31 December 2020.

Sources: Dealogic, Statistics Sweden and the Riksbank.

Foreign exchange market remains calm but vulnerabilities remain

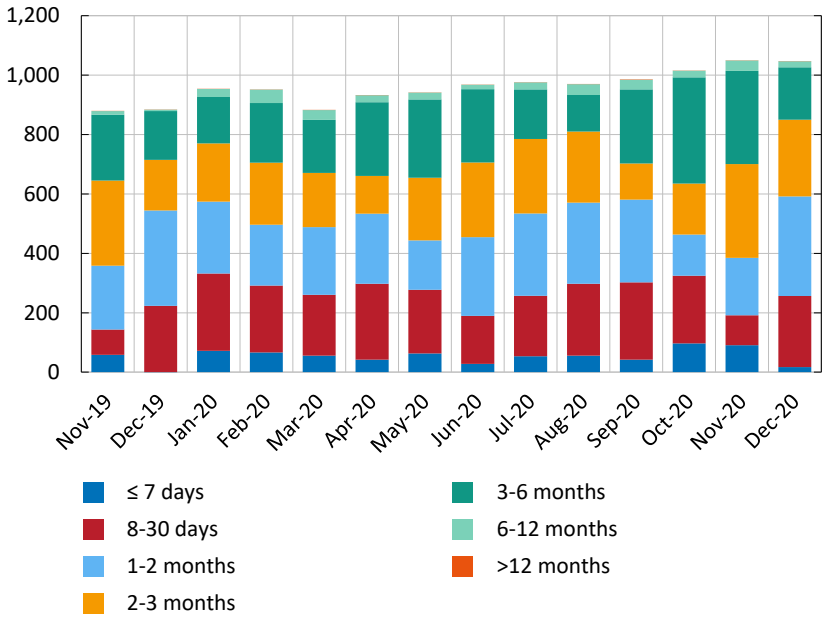
For diversification reasons, a large proportion of Swedish insurance companies' portfolio holdings consists of foreign assets. To protect themselves against exchange rate fluctuations, the companies can hedge their investments. They achieve this by using foreign exchange (FX) swaps to obtain liabilities in foreign exchange, for example in US dollars.[101] This is a matter of significant amounts, just over SEK 1,000 billion at the end of 2020 if the National Pension Funds' currency hedging is also included.[102] A large proportion of this hedging takes place with short maturities. For example, if the FX swap market were to cease functioning for a month, US dollar hedges worth about SEK 250 billion would mature (see Chart 42). If insurance companies are unable to extend their swaps, they will face an open currency risk or may be forced to sell assets in foreign currency. At present, the dollar market is functioning well and the Swedish insurance companies have good opportunities to hedge their assets.

[101] See "The interconnectedness of insurance firms, AP Funds and banks via the foreign exchange market" article in *Financial Stability Report*, May 2020, Sveriges Riksbank.

[102] The National Pension Funds are also important participants in the FX swap market. Like insurance companies, the National Pension Funds use FX swaps to hedge parts of their holdings in foreign assets and thereby also take a strong interest in the functioning of the market. It may thereby also be relevant to include these participants when hedging for insurance companies is discussed.

Chart 42. US dollar hedging by insurance companies and National Pension Funds

SEK billion



Note: Net positions per remaining time to maturity. Based on notional amounts for outstanding contracts on the last trading day of each month. Refers only to contracts where US dollars are exchanged for Swedish kronor or vice versa.

Source: The Riksbank.

2.6 The financial infrastructure is functioning well at present, but vulnerabilities remain

The financial infrastructure systems have functioned well during the pandemic. The financial market infrastructures (FMIs) have a margin to the capital requirements' minimum levels, but there is a risk that they are underestimating the amount of capital needed in stressed situations. A new regulation for the resolution and recovery of central counterparties (CCPs) will begin to apply next year. This will improve the possibilities for the authorities to act quickly in a situation where a CCP defaults. Companies' considerable outsourcing of critical operations may lead to shocks and place high demands on good governance and control. A structural transformation is under way in the areas of both payments and securities, which will affect both FMIs and their participants. The change work is important in order for the infrastructure systems to retain their efficiency, and it should be prioritised.

Good availability in the infrastructure systems and margins to the capital requirement's minimum levels

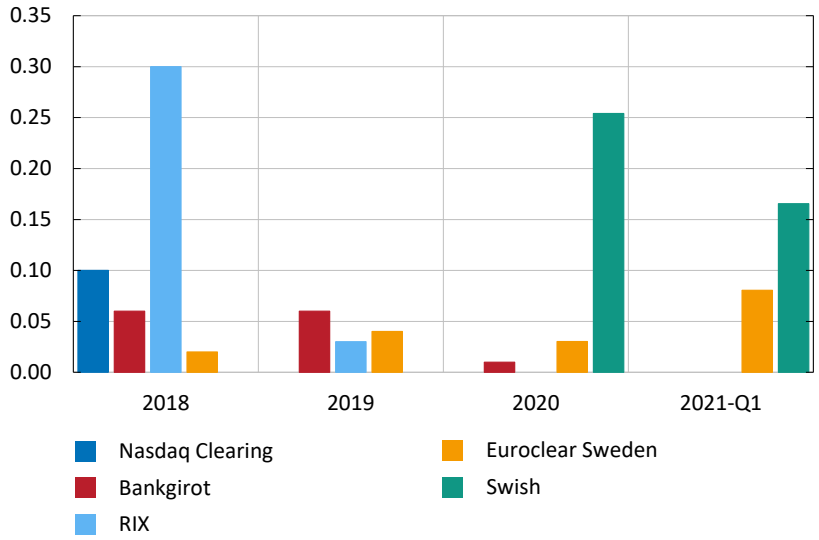
The Swedish financial infrastructure systems have functioned well during the pandemic and availability has remained high (see Chart 43).[103] It is important that the FMIs have a good ability to maintain availability as it is not possible to execute payments or transactions with financial instruments when the infrastructure systems are down. In such a situation, other agents in the financial system may rapidly encounter problems in running their operations. In 2020 and the first quarter of 2021, the technical systems have generally been stable. This has made it possible to execute payments and transactions with financial instruments efficiently. Swish, however, has had more interruptions than the other systems. Among other things, this is because the three different systems that affect Swish have had a number of technical problems.[104]

[103] The FMIs under the Riksbank's oversight are Bankgirot, Euroclear Sweden, Nasdaq Clearing and RIX.

[104] Getswish, BankID and Bankgirot's platform Payments in Real Time.

Chart 43. Interruptions to the Swedish infrastructure systems

Per cent



Note: 0 per cent shows that the system has been available the entire time without interruption. 0.2 per cent corresponds to an interruption of 5 hours over a period of one year. Over a period of one quarter, 0.2 per cent corresponds to about 1 hour and 15 minutes. Corresponding interruption times for Swish are about 17.5 hours and 4 hours respectively, as the service is available around the clock, every day of the year. Interruptions in Swish are calculated as the total interruption time for the Bankgirot platform Payments in Real Time, BankID and Getswish. Note that the chart shows availability figures for Swish with effect only from 2020.

Sources: Bankgirot, BankID, Euroclear Sweden, Getswish, Nasdaq Clearing and Sveriges Riksbank.

The central role of FMIs in the financial system makes it necessary for them to have sufficient capital as a buffer in stressed situations, including extraordinary one-off losses.[105] The capital buffers contribute towards safeguarding the companies' long-term survival, which is necessary because there would be major negative consequences for the entire financial system if any of the companies were to be unable to maintain operations. At a minimum, the FMIs should have capital corresponding to six months' operating expenses. At present, they fulfil the minimum capital level by a relatively good margin, as the FMIs' Orderly Wind Down (OWD) ratios make clear (see Chart 44).[106] However, Nasdaq Clearing's OWD ratio has decreased substantially between year-end 2018 and year-end 2019. This is linked to a participant default in 2018, which caused assets to decline and costs to increase.[107]

[105] This is specified in the principles, CPMI-IOSCO's Principles for Financial Market Infrastructures (PFMI), on which the Riksbank bases its oversight of FMIs.

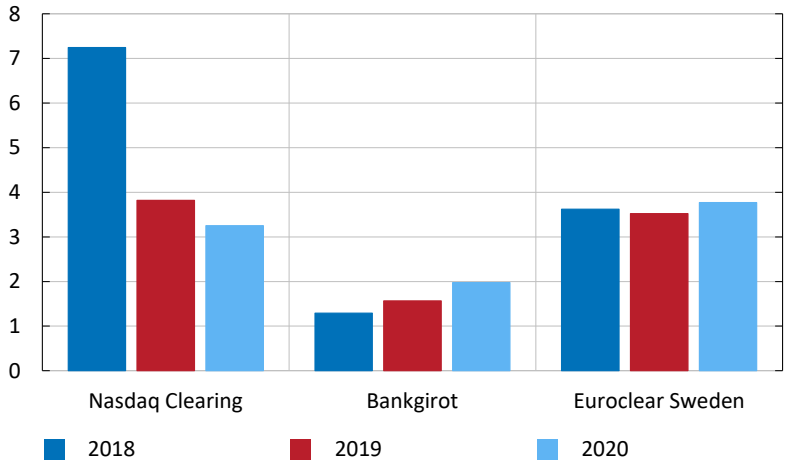
[106] This is calculated as the ratio between an FMI's net liquid assets (equity that is easily accessible) and average half-year expenses (operating expenses including interest) for the last 3 years. An OWD ratio of 1 means that operations can continue for 6 months without income. In addition, CCPs have a special requirement for capital to cover participant default. This capital is not included in the calculation of the OWD ratio and is not discussed in this text. For more information, see *Financial Infrastructure*, March 2017, Sveriges Riksbank.

[107] This is a reflection of how a larger part of Nasdaq Clearing's total equity was earmarked to cover participant default and was excluded from the OWD ratio.

However, the Riksbank notes that there is a risk that the FMI's underestimate the amount of capital needed to manage stressed situations. This is because they tend to base their capital adequacy calculations on the minimum levels instead of making complete analyses of stressed scenarios and calculating what an adequate amount of capital would be on the basis of these.

Chart 44. OWD ratios for FMIs

Ratio



Note: The Orderly Wind Down (OWD) ratios correspond to the economic position of the FMIs at year-end. The OWD ratio is calculated as the ratio between an FMI's net liquid assets and average half-year expenses (operating expenses including interest) for the last 3 years. An OWD ratio of 1 means that operations can continue for 6 months without income. The ratios are calculated as of 31 December of the respective year.

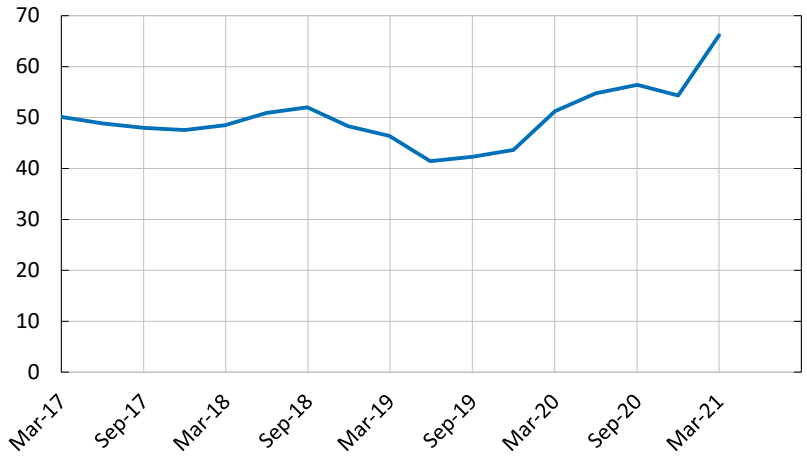
Sources: Bankgirot, Euroclear Sweden and Nasdaq Clearing.

CCPs' central role requires continual preparedness for new market turbulence

At the start of the pandemic, there was substantial turbulence on the financial markets, which increased the risk of participant defaults and thereby the risk of losses for CCPs and their participants. The CCPs in both Sweden and Europe were affected by market turbulence and have therefore regularly adjusted their risk management to increase resilience should defaults occur. As a consequence, the participants have been required to provide more collateral. Even if the situation in the financial markets is now more stable than at the start of the pandemic, margin requirements (so-called initial margins) for Nasdaq Clearing's participants remain higher than prior to the pandemic (see Chart 45). Above all, this is due to higher volumes of equity-related derivatives in the financial clearing requiring more initial margins to cover the risks. The higher requirements for initial margins are also a consequence of the increased volatility in 2020.

Chart 45. Total initial margins for Nasdaq Clearing participants

SEK billion



Note: To reduce their risk exposures, CCPs place initial margin requirements on their participants. The collateral a participant pledges to the CCP to cover its initial margin requirement is intended to cover the losses that may arise during the time it takes for the CCP to close-out the participant's positions if the participant were to default. The chart shows the total sum of Nasdaq Clearing participants' respective initial margin requirement, which is to say for both the financial clearing and the commodities clearing.

Source: Nasdaq Clearing.

If something unpredictable happens and the CCPs do not have enough operational and financial preparedness to manage the situation, the problems risk spreading to the rest of the financial system. It is therefore positive that there now exists a European regulation on a framework for the recovery and resolution of CCPs.[108] Among other things, the regulation makes it possible for the authorities to act rapidly in a situation where a CCP defaults, which helps to strengthen financial stability and maintain critical functions. The regulation stipulates that a resolution authority shall be appointed in each respective country. The government has proposed that the Swedish National Debt Office should be responsible for this task in Sweden.[109] However, the main responsibility for preparedness and managing the financial risks that arise when the markets are turbulent still lies with the CCPs.

Swedish financial agents do not only use the Swedish CCP to clear various financial instruments issued in Swedish kronor. A significant proportion of clearing also takes place using the UK CCP, LCH.[110] Due to Brexit, the legal conditions for the UK CCPs changed, as they could no longer automatically offer their services to EU agents, including Swedish agents. The European Commission has therefore decided on transitional regulations until 30 June 2022, which means that at present there are no legal

[108] The new regulation for the recovery and resolution of CCPs enters into force on 12 August 2022.

[109] For further information, see "Consultation response on the memorandum Supplementary provisions to the regulation on the recovery and resolution of central counterparties (DS 2020:30)", May 2021, Sveriges Riksbank.

[110] For more information, see J. Billborn (2017), "The Riksbank's oversight of the financial infrastructure", *Economic Commentaries* no. 7, Sveriges Riksbank.

impediments preventing Swedish agents from clearing at LCH. It is, however, uncertain what will happen after this date. To enable Swedish agents to continue using LCH as a CCP after June 2022, LCH needs to have permission for this. This issue is currently being analysed within the European Securities and Markets Authority and the Riksbank, as issuer of Swedish kronor, is also involved in this analysis.

Outsourcing of operations can be positive, but creates risks

Even if availability has remained good in the infrastructure systems, some vulnerabilities remain, linked to how companies manage their operational risks. Among other things, some of the companies have insufficient processes for internal governance and control, which may entail shortcomings in their handling of disruptions and operational risks. The Riksbank has pointed this out earlier and the FMIs have now produced various policy documents, for instance containing routines for identifying and managing operational risks, so that the shortcomings can be remedied. However, the FMIs must still fully comply with these under the existing international principles.[111]

Good governance and control are particularly important for the FMIs to be able to manage the vulnerability that arises from their increasing outsourcing of critical operations. Even if outsourcing itself may be a way for FMIs to manage their risks, it involves challenges. One of these is that the risk landscape will change, among other things due to the FMIs themselves not having access to the information they would have had if the services were provided internally. From this, it follows that the FMIs need to have good vendor management to be able to understand the operational risks and how these may affect availability. Another challenge is that they become increasingly dependent on the critical service providers. The FMIs therefore need to have plans in place in case of problems with providers. At present, there are some shortcomings in the FMIs' vendor management, meaning that they do not fully comply with the requirements that need to be fulfilled in outsourcing.[112] In particular, there is a lack of clear plans to ensure that their services can always be provided, even if problems were to arise with the service providers. It is therefore necessary that they strengthen their ability to manage their outsourced operations going forward.

Structural transformation is important for efficiency, but the change work must be planned carefully

A structural transformation is under way in the areas of payment and securities, in both Sweden and the rest of Europe, with a clear focus on harmonising processes and standardising message formats.[113] This structural transformation is being driven by

[111] These principles are the PFMI (see footnote 106 above). At least every two years, or more frequently in the event of major changes, FMIs under oversight must publish a disclosure report, in which they present how they fulfil the requirements set by the Riksbank.

[112] Among other things, this concerns the requirement that the FMI shall have access to all necessary information and that the company shall identify the risks that arise through outsourcing and be able to manage them.

[113] For example, the standardisation of the message formats means that the information sent between different participants in the financial system upon settlement of a payment or securities transaction shall be formed in the same way by all participants.

various forces, including the aim to complete the Capital Markets Union. Rapid technological developments, which enable faster transactions, are another driving force. The current structural transformation is affecting operations among FMIs and their circles of participants, and means that they must adapt their operations to the changes.

Structural transformation and further development are necessary to maintain the efficiency of the financial infrastructure systems. Moreover, harmonisation strengthens the stability of the financial system. For example, joint solutions minimise the need for specific adjustments, which can be inefficient and create a risk for disruptions. On the other hand, structural transformation and the process of change themselves can temporarily increase the risk of disruptions. Consequently, the processes for the change work need to be planned carefully and sufficient resources and skills must be present for the work.

On the Swedish securities market, the focus lies on the harmonisation of post-trade processes with European standards.[114] A cooperation forum, in which market participants and the Riksbank have participated, has produced a plan for such harmonisation.[115] When the harmonisation plan is implemented, the Swedish market will have come a long way towards approaching the European market. The aim of the harmonisation is to maintain the efficiency of the Swedish securities market and facilitate cross-border activities for both Swedish and foreign participants.

Harmonisation is also a prerequisite for central banks to be able to share platforms with one another.[116] The Eurosystem's technical platform TARGET2-Securities (T2S) is used by several different central banks to supply central bank money for securities settlement. The Riksbank is currently investigating how central bank money shall be supplied in the future for securities settlement in Swedish kronor, and whether T2S is a suitable platform.[117] Platform sharing can provide economies of scale, lower barriers for cross-border activities and increase competition. However, the benefits of platform-sharing need also to be weighed against various challenges, such as the Riksbank's capacity to participate in decisions linked to the development of the platform.

[114] The term 'post trade' refers to activities taking place after order and trade of a security and includes the settlement of the securities transaction, among other things.

[115] For further information, see *Harmonisation road map for the Swedish post-trade securities market*, January 2021, Coordination Forum for Swedish Post-Trade Harmonisation. The report is available on the Riksbank's website.

[116] For the Riksbank, platform sharing with other central banks means that the Riksbank would enter into an agreement with the central bank(s) owning and running the platform. The Riksbank would thus outsource some tasks that would take place on the technical platform, but the Riksbank would continue to be responsible for the services to its participants.

[117] At present, the Riksbank outsources Riksbank accounts to the Swedish central securities depository, Euroclear Sweden, for securities settlement in central bank money in Swedish kronor. This means that the Riksbank has a bilateral agreement with Euroclear Sweden. Central banks outside of the euro area that use T2S have signed what is known as the T2S Currency Participation Agreement with the Eurosystem.

It is also a decisive factor that the Riksbank maintains its freedom of action to promote financial stability when needed. However, the Riksbank deems the advantages of platform sharing to be substantial.[118]

[118] For further information, see E. Hellström, A. Börestam and H. Eklööf (2021), "Harmonisation and platform sharing in the financial market", *Riksbank Studies* no. 2, Sveriges Riksbank.

ARTICLE – Non-performing loans in the euro area and financial stability

The banking sector in the euro area has for a long time suffered problems with high costs, low profitability and large volumes of non-performing loans – a situation that risks worsening because of the pandemic. Many banks in Europe have also increased their provisions for loan losses during the pandemic. At the same time, support measures have been introduced to secure the supply of credit and maintain economic activity. Authorities in the EU, for instance, have introduced temporary amendments to regulatory frameworks, which imply that banks no longer need to disclose and make provisions for non-performing loans in the same way as before. The volume of non-performing loans may therefore be larger than is apparent from the financial reporting. If non-performing loans increase in the euro area, this could lead to stability risks that can spread to Sweden through the Swedish banks' cross-border operations.

High ratio of non-performing loans in the euro area even before the pandemic

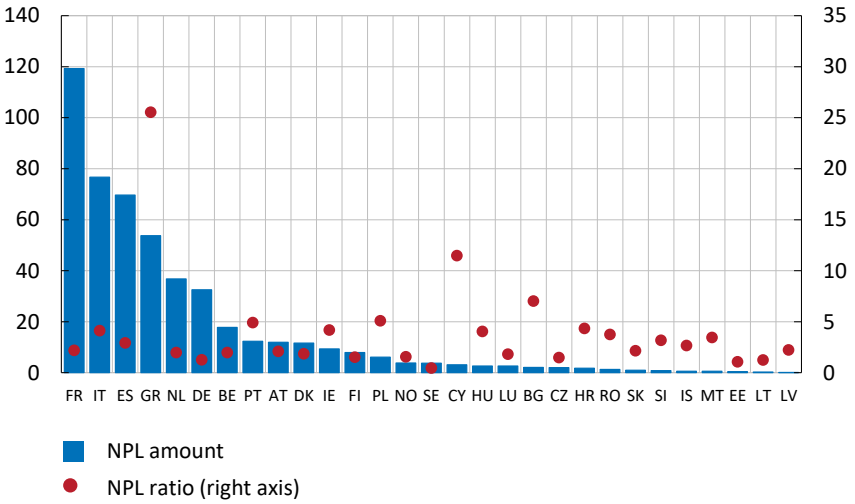
The ratio of non-performing loans, NPLs, has been a major problem for many banks in Europe since the global financial crisis 2008-2009, especially in Greece, Italy and Spain (see Chart 46).[119] The levels have declined, but relatively slowly (see Chart 47).[120] The number of companies suffering financial problems now risks increasing in the wake of the pandemic. This should lead to the number of non-performing loans at the banks increasing again, something that has also begun to show in the reporting of loan loss provisions. The market has also been valuing shares for several European banks lower than the book value of their equity for a long time (see Chart 48). This differs from the major Swedish banks, where the market value exceeds the book value somewhat instead.

[119] A non-performing loan is a loan where the borrower has stopped paying the bank according to the terms of the loan, or where there is some other indication that the borrower will have difficulty repaying the loan. Normally a loan should be classified as non-performing 90 days after a payment is missed. Non-performing loan is a regulatory concept, unlike expected loan losses, which is an accounting concept. For a discussion on non-performing loans and how banks manage them, see O. Fredriksson and N. Frykström, (2019), "Non-performing loans and their effects on banks and financial stability", *Economic Commentaries*, no. 2, Sveriges Riksbank.

[120] The total volume of non-performing loans among European banks amounted to EUR 468 billion in the fourth quarter of 2020. This corresponds to about 2.6 per cent of the outstanding loans.

Chart 46. Amount and share of NPLs in Europe

EUR billion, per cent

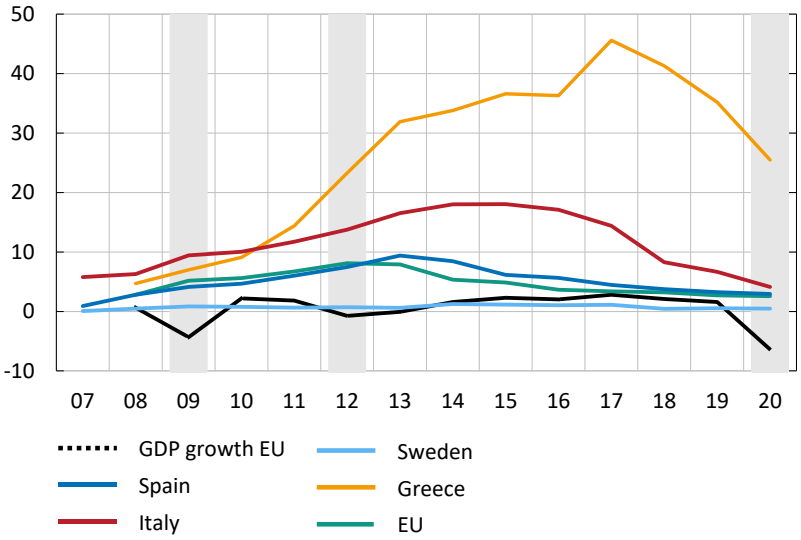


Note: The share of NPLs in the banks' lending. Refers to amount and proportion at end of December 2020.

Source: European Banking Authority (EBA).

Chart 47. The share of NPLs in the banks' lending and GDP growth

Per cent

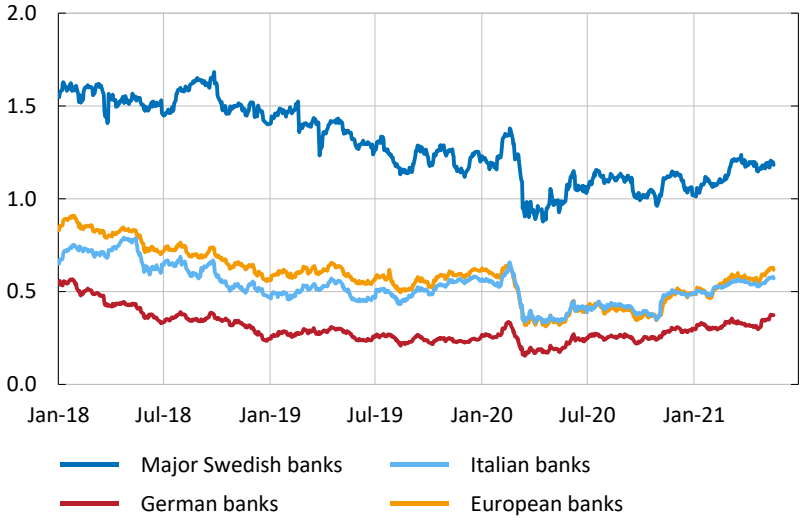


Note: The shaded areas correspond to the financial crisis, the European banking crisis and the coronavirus pandemic.

Sources: European Banking Authority (EBA) and Eurostat.

Chart 48. Price-to-book – market value in relation to equity

Ratio



Note: Average for banks in different countries. Price-to-book refers to the stock market value in relation to the book value of the banks' equity. If the price-to-book value is lower than 1, the market values the company less than the book value.

Source: Bloomberg.

High levels of non-performing loans reduce the banks' profitability and limit their capacity to provide new loans, at the same time as they must reserve capital for future losses on non-performing loans.[121] Non-performing loans also risk impairing long-term economic growth and increase uncertainty in the banking system, resulting in elevated financial stability risks. European authorities have therefore worked actively to address the large volume of non-performing loans in Europe.

To reduce the amount of non-performing loans on banks' balance sheets after the financial crisis, the authorities in Europe introduced several measures (NPL action plan)[122]. For instance, they have introduced stricter transparency requirements with regard to non-performing loans and produced a model (blueprint) for setting up a company to manage non-performing loans, a so-called asset management company (AMC).[123] Last year, the EU also introduced new, more generous capital requirement rules for securitisation of non-performing loans.[124] For example, Italy has in recent years been working on reducing the percentage of non-performing loans by using an AMC and improving its administrative processes for managing non-performing loans.

[121] When referring to non-performing loans, it is also relevant to consider the level of provisions made by banks for non-performing loans. The coverage ratio refers to how much funding a bank has set aside in relation to the nominal value of the non-performing loans. There are substantial differences among the EU countries. The average coverage ratio for the EU has been stable in recent years, and was 44.9 per cent at the end of 2020. See *Risk Dashboard*, Q4 2020, European Banking Authority.

[122] The European Commission introduced a preliminary NPL action plan in 2017, with the purpose of managing the large volume of non-performing loans in the European banking sector.

[123] See *Commission staff working document AMC*, swd/2018/072, 2018, European Commission.

[124] See "Coronavirus response: How the Capital Markets Union can support Europe's recovery", 24 July 2020, European Commission.

The risk of a new wave of non-performing loans has led to the EU producing a new action plan for managing such a potential wave now.[125] It involves, for instance, developing secondary markets for non-performing loans in the EU, supporting the development of national AMCs and improving the regulatory framework for managing insolvency. Institutions within the EU, such as the European Banking Authority (EBA) and the ESRB, are working on solutions to the problems regarding non-performing loans and the effects of support measures on financial stability.[126]

Unexpectedly few bankruptcies during the pandemic

The number of bankruptcies largely follows the development of the economy; when economic activity declines, the number of bankruptcies increases. However, developments have not followed this pattern during the pandemic (see Chart 49). Instead, the number of bankruptcies in developed countries has declined in relation to earlier comparable periods. The picture in the euro area is similar (see Chart 50).

There may be several explanations for this. For instance, the administration around bankruptcies and the management of insolvent companies has come to a halt in several countries because of the pandemic.[127] This has led to a delay in the reporting of the number of companies that have become insolvent, which probably indicates that the number of bankruptcies will increase in the future.[128] Another explanation is the support measures the authorities have introduced during the pandemic, which have helped many companies to survive.

[125] The European Commission launched a second NPL action plan in 2020 to manage non-performing loans in the wake of the pandemic. See "Action plan: Tackling non-performing loans (NPLs) in the aftermath of the COVID-19 pandemic", 16 December 2020, European Commission.

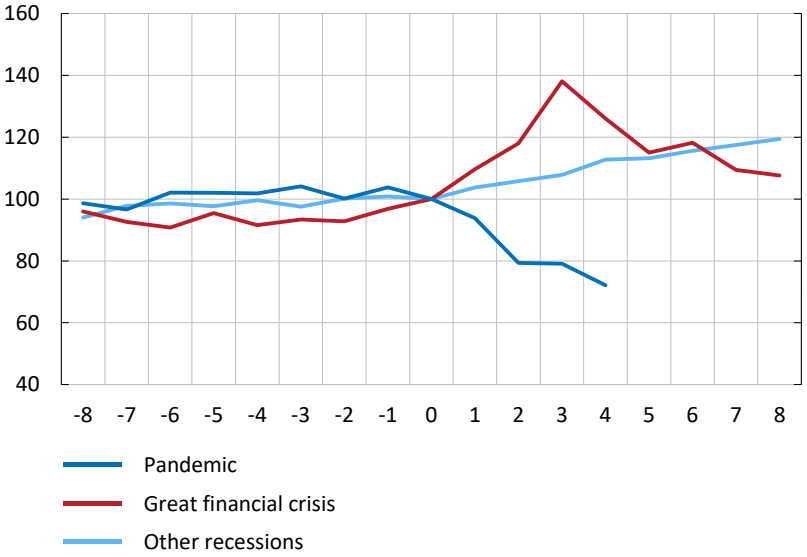
[126] See "Financial stability implications of support measures to protect the real economy from the COVID-19 pandemic", February 2021, European Systemic Risk Board.

[127] See B. Becker and M. Oehmke (2021), "Preparing for the post-pandemic rise in corporate insolvencies", *ASC Insight* no. 2, European Systemic Risk Board.

[128] Allianz research (2020) is assuming that the number of insolvent companies will increase by 35% (globally) during 2021.

Chart 49. Development of bankruptcies in earlier recessions

Index

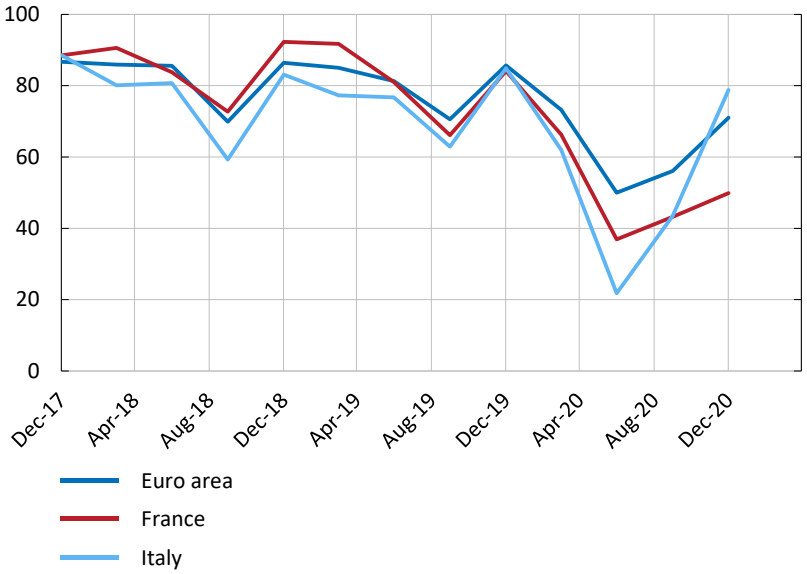


Note: Recession quarter. Index, the most recent quarter prior to recession = 100. This development refers to data from 13 countries during the period of 1990 Q1 to 2020 Q3. The lines refer to the average number of bankruptcies for the respective category per quarter. 'Other recessions' refers to periods of negative growth two quarters in a row during the periods of 1990-2006 and 2009-2019.

Source: International Monetary Fund.

Chart 50. Development of bankruptcies in the euro area 2017-2020

Index, 2015 = 100



Source: Eurostat.

Support measures have been introduced to maintain credit supply

To dampen the economic effects and support credit supply during the pandemic, extensive fiscal policy stimulation programmes have been combined with measures by central banks and other authorities. Many EU countries have introduced temporary programmes, where the state guarantees loans to companies.[129] However, the design of the programmes differs between countries. For instance, some countries guarantee the entire loan, while others only guarantee a part of it. Within the EU, loans guaranteed by a state receive a lower risk weight than otherwise, which helps to reduce banks' capital requirements. Several European countries that have had a positive countercyclical capital buffer have lowered it, and many have recommended that banks be restrictive regarding dividends.[130]

Authorities have also introduced temporary relaxation of the regulations on reporting loan losses pursuant to IFRS 9.[131] For example, they have introduced a two-year extension of the phase-in arrangements for IFRS 9 into the capital requirement regulations.[132] In addition, the EBA has issued guidelines on moratoriums, according to which loan payments that are subject to deferral due to the pandemic should not automatically be classified as non-performing loans. This measure implies that banks do not need to reserve capital just because, for example, a company does not make the payments on its loan. However, banks must continue to monitor borrowers who may experience long-term financial difficulties and classify these exposures according to the current regulations. The measures cover moratoriums that were granted up to the end of March 2021.[133]

The share of loans with moratoriums in the EU amounted to around 6 per cent of all loans in the second quarter of 2020.[134] The total volume of loans with moratoriums to the corporate sector was EUR 495 billion in the second quarter of last year.[135] Loans

[129] The Swedish loan guarantee programme applies to loans granted up to 30 June 2021. It is aimed at small and medium-sized enterprises and means that the state bears 70 per cent of the risk. The guarantee framework was reduced at the start of the year from SEK 100 billion to SEK 50 billion. The loans are issued via the banks' ordinary credit process.

[130] The ESRB has issued recommendations that banks shall be restrictive with dividend payments up to the end of September 2021.

[131] With effect from January 2018, banks must apply IFRS 9, see N. Frykström and J. Li (2018), IFRS 9 – New reporting standard for financial instruments, *Economic Commentaries* no. 3, Sveriges Riksbank.

[132] Under these arrangements, the application of which is voluntary, the effect of IFRS 9 on CET 1 capital will be phased in over several years. The reported capital adequacy will thus be higher during the phasing-in period than would otherwise have been the case.

[133] Moratoriums granted prior to March 2021 apply until the respite comes to an end. The respite runs at different time intervals, but the number of loans with moratoriums will decline over time, as no new loans with moratoriums can be granted after March 2021. In Sweden, FI has decided that the respite will end on 31 August 2021. At the end of the first quarter of 2021, around 230,000 households in Sweden were granted an exemption from the amortisation requirement

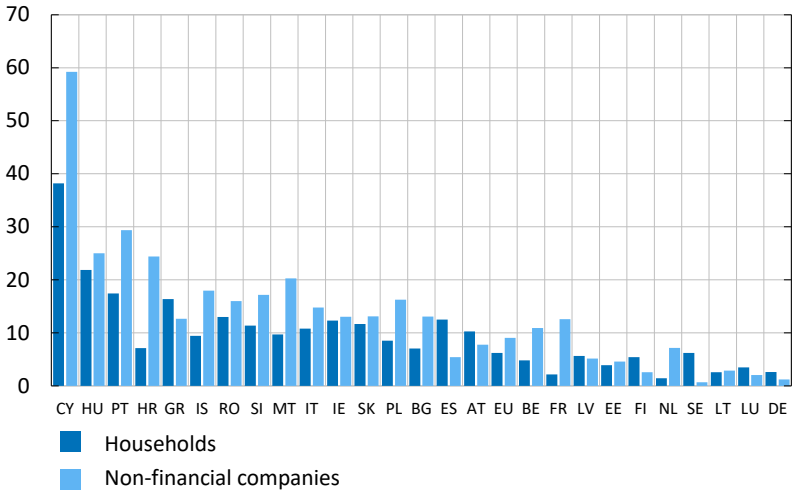
[134] See "Financial stability implications of support measures to protect the real economy from the COVID-19 pandemic", February 2021, European Systemic Risk Board.

[135] Small and medium-sized enterprises (SMEs) accounted for a significant percentage of this support, namely EUR 387 billion. Around 16 per cent of all SME loans were reported to be with moratoriums.

with moratoriums to households amounted to EUR 365 billion.[136] The way that moratoriums are used differs substantially between countries and banks (see Chart 51).[137] In Cyprus, for instance, around 60 per cent of all loans to companies had moratoriums. Some banks report that more than 40 per cent of all loans to households and companies had a grace period on payment.[138] In countries where the share of non-performing loans was high even before the pandemic, many borrowers have requested moratoriums.

Chart 51. Share of loans with moratoriums per household and company

Per cent



Note: Refers to the share of loans with moratoriums at the end of June 2020.

Source: European Banking Authority (EBA).

At the end of 2020, the total volume of loans with moratoriums in the EU had declined to EUR 318 billion. In Sweden, the use of moratoriums and loan guarantees[139] has been relatively low. The major Swedish banks had around SEK 250 billion under moratoriums during the fourth quarter. The largest share refers to exemption from amortisation requirements with regard to mortgages, and only a very small share refers to companies.

Support measures can lead to non-performing loans being postponed

The support measures introduced to maintain credit supply and alleviate the economic effects of the pandemic may also increase the vulnerabilities in the financial

[136] See *Risk Dashboard*, Q3 2020, European Banking Authority.

[137] The percentage of loans that are under renegotiation, that is, where the loan is modified (forbearance), has also increased. These loans are not with moratoriums. This indicates that banks change the loan terms and conditions to make it easier for borrowers who do not have moratoriums. See *Financial Stability Review*, November 2020, European Central Bank.

[138] See *First evidence on the use of moratoria and public guarantees in the EU banking sector*, November 2020, European Banking Authority.

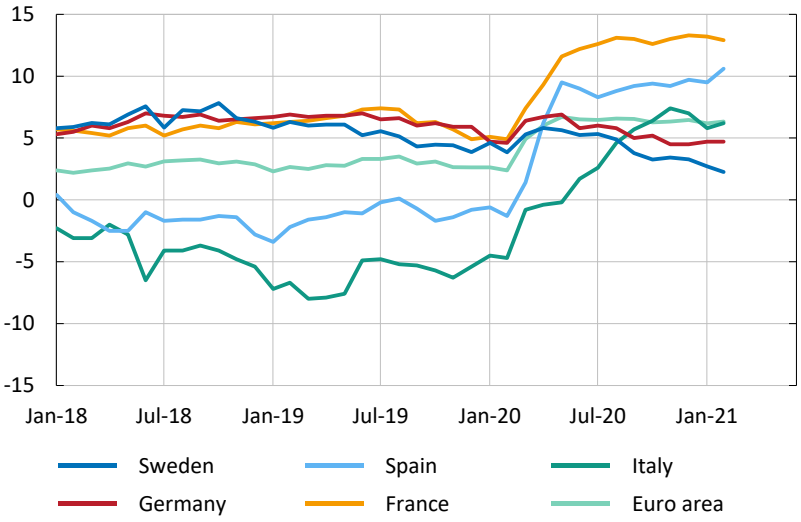
[139] See Företagsakuten, Swedish National Debt Office.

system. For instance, they may lead to an increase in sovereign debt, and many companies have increased their indebtedness to remain liquid during the pandemic. The liabilities make everyone more sensitive to changes in economic conditions.

Companies in countries such as France, Italy and Spain have taken large loans during the pandemic (see Chart 52). This is probably due to the business sectors in these countries being relatively concentrated to the sectors that have been hit hardest - during the second quarter of 2020 these sectors had a lending growth of around 70 per cent on average in the EU. These loans have helped companies with liquidity problems and probably also helped to limit the number of bankruptcies.

Chart 52. Lending to companies in Europe

Per cent



Note: Refers to lending from Monetary Financial Institutions (MFIs) to companies.

Source: Statistics Sweden.

However, there is a risk that banks, during the pandemic, have eased their credit processes and granted loans that they would not normally approve, not least because the use of state loan guarantees has been relatively widespread in some countries.[140] This type of problem is made more difficult by the fact that the recovery in corporate sectors that have been hit hardest may take a long time and it is difficult to assess individual companies' future survival capacity.

Some individual measures, in particular moratoriums, may also contribute to difficulties in assessing the borrower's debt-servicing ability. As mentioned above, during the pandemic, banks do not automatically need to classify loans with moratoriums as non-performing loans, as the hope is that the pandemic is a temporary strain on companies. However, some of the companies with moratoriums will not be viable in the long run, and when the support is withdrawn they may default. This indicates that the banks' reporting of non-performing loans does not paint a very accurate picture of the actual credit risk in the banks' loan portfolios at present. One specific challenge during

[140] See *Risk Assessment Questionnaire – Summary of Results,* autumn 2020, European Banking Authority.

the pandemic is therefore to ensure that the banks' financial reports are sufficiently transparent regarding credit risk in the loan portfolios.

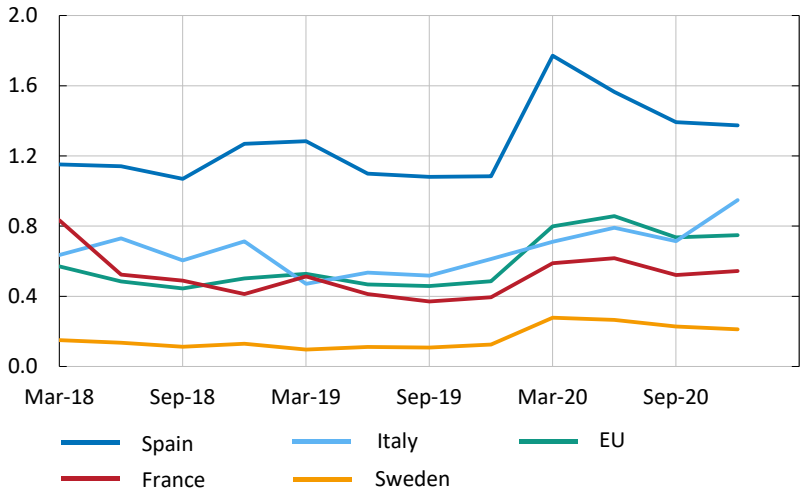
Reduced clarity in the banks' reporting of credit risks during the pandemic

According to the internationally agreed accounting regulations IFRS 9, banks should estimate their expected loan losses based on the forecasts of future macroeconomic conditions.[141] If the risks increase, the bank should reclassify its loans to a higher risk class. This should be the effect if macroeconomic prospects deteriorate. As a result of the considerable uncertainty, however, some relaxation in IFRS 9 was introduced at the beginning of the pandemic – for instance, banks can rely more on historical data in their assessment of future loan losses.

In Europe, there was an increase in provisions for expected loan losses at the beginning of the pandemic (see Chart 53). After that, the provisions in several countries declined and were only slightly higher in the fourth quarter of 2020 than they were prior to the pandemic. Banks in the euro area have also made much fewer provisions for expected loan losses than the ECB's forecast.[142] The ECB therefore believes that some banks' provisions for expected loan losses may be inadequate.

Chart 53. Loan loss provisions in relation to loans

Per cent



Note: Loan loss provisions in relation to loans (cost of risk).

Source: European Banking Authority (EBA).

[141] IFRS 9 allows banks to calculate their loan losses according to their own loan loss model. This means that banks will report loan losses differently if they make their own macroeconomic assumptions.

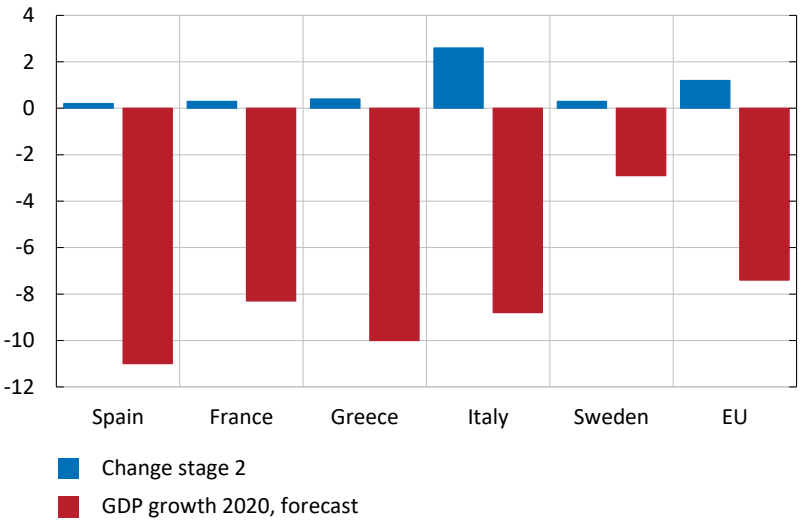
[142] See *Financial Stability Review*, November 2020, European Central Bank.

Nor is there any clear correlation that points to loans to a greater extent being reclassified to a higher risk class[143] (according to IFRS 9 from stage 1 to stage 2 or stage 3) in countries where the economic downturn has been severe.[144] Instead, several banks in countries that have been hit harder have reclassified their loans to a lesser degree than others. The link between loan loss reporting and the macroeconomic outlook is therefore less clear.

Overall, in the EU, the percentage of loans classified in the higher risk class (stage 2) declined between the second quarter (8.2 per cent) and third quarter of 2020 (8 per cent).[145] However, there are large differences between countries and banks, which may be due to structural factors and to different assessments of the future recovery. For instance, in Spain, France and Greece, loans in the higher risk class have increased marginally from prior to the pandemic to the third quarter of 2020, while GDP falls have been substantial (see Chart 54). The change in the highest risk class (stage 3) has been scarcely tangible during the same period.

Chart 54. Change in IFRS 9 stage 2 compared with GDP growth

Per cent



Note: Change in IFRS stage 2 refers to the change from 2019 Q4 to 2020 Q3. GDP growth refers to forecast for 2020. The risk class in IFRS stage 2 is for loans with increased credit risk.

Sources: Eurostat and European Banking Authority (EBA).

All in all, there is a risk that the financial reporting will not reflect the real credit risks in all banks. The loan losses may thus be larger, and it is possible that they will increase going forward.

[143] According to IFRS 9, loans are classified in three risk classes. Stage 1 is for loans that have not shown any signs of increased credit risk, stage 2 is for loans with increased credit risk, and stage 3 is the highest risk class for loans that have had a default event.

[144] See *Financial stability implications of support measures to protect the real economy from the COVID-19 pandemic*, February 2021, European Systemic Risk Board.

[145] See *Risk Dashboard*, Q3 2020, European Banking Authority.

Non-performing loans must be managed quickly

A high percentage of non-performing loans limits the banks' capacity to grant new loans and has a negative impact on economic development. As noted initially, the share of non-performing loans in the euro area increased after the financial crisis to very high levels and in many cases non-performing loans remained in the banks for several years before they were managed. If non-performing loans increase in the euro area, this could entail stability risks that can spread to Sweden through the Swedish banks' extensive cross-border operations.

The EU work on improving transparency regarding non-performing loans and their management is therefore important. As an example, the reporting of non-performing loans has some time lag. It is therefore important to implement measures that enable earlier detection of non-performing loans. At the same time, banks should have sound lending with thorough credit assessments and efficient loan monitoring with improved management of borrowers with payment difficulties. A transparent secondary market is also an important condition for better valuation of non-performing loans. This enables banks to sell portfolios with non-performing loans to a greater degree. In the long run, this can strengthen the European banks' financial situation and reduce potential future loan losses. Countries can also prepare and analyse how a potential national AMC could contribute to more efficient valuation and help banks to reduce the level of non-performing loans in their balance sheets. It is therefore necessary to take measures as soon as possible, both at EU level and nationally, to effectively manage the risks of non-performing loans.

ARTICLE – SWESTR is a part of the global reform of reference rates

The traditional reference rate in Swedish kronor, STIBOR, is based to an excessive degree on judgements rather than actual transactions. To maintain confidence in Swedish reference rates, the Riksbank considers it important that market participants stop using STIBOR and instead use transaction-based reference rates. The Riksbank has therefore undertaken to calculate and publish a fully transaction-based reference rate, which has been named SWESTR. Market participants should as soon as possible stop using STIBOR at its shortest maturity and instead use SWESTR. In the longer run, the Riksbank considers that STIBOR should cease for all maturities. A transition needs to take place in an orderly manner, and is therefore a development project over the course of several years.

The Riksbank producing a new reference rate is part of international work aimed at reducing the dependence on traditionally used reference rates (so-called interbank rates) in favour of new transaction-based reference rates. All around the world, more and more central banks are beginning to publish this type of rate, and these rates are now being used on the financial markets.

Reference rates fulfil an important function in the financial system

A reference rate functions as a benchmark in the pricing of financial contracts. The aim is for pricing to follow market developments, and for none of the parties to the contract to be able to steer its level. Reference rates are used around the world in a number of different contracts and for large contract values, for instance, when pricing loans with variable rates offered to households and companies, and when pricing derivatives and establishing rates on bonds with variable coupons. As reference rates have such an important function on financial markets, it is important that they reflect fair pricing and inspire a high level of confidence.[146]

[146] See *Reforming major interest rate benchmarks*, July 2014, Financial Stability Board.

Interbank rates have become less relevant

For almost 40 years, what are known as Interbank Offered Rates, IBORs, have been used as reference rates. Interbank rates are determined daily by a panel of banks, and their purpose is to reflect the interest rates used by the banks when lending to one another.[147] When the interbank rate is to be established, the panel banks report bids. If there are not enough transactions, the bids are instead based on the banks' judgements.

For contracts in Swedish kronor, the reference rate has been STIBOR (Stockholm IBOR) for almost 40 years now.[148] STIBOR has been used, for instance, in pricing derivatives, in diverse leasing agreements and in lending at variable rates to companies and housing cooperatives. Changes in STIBOR tend to be followed by changes in mortgage rates charged to households.[149] As in the case of other interbank rates, STIBOR is based on contributions or bids from the panel banks.[150]

Over time, the number of transactions on which to base the bids has declined, as interbank loans are not the banks' primary funding source today. The banks do not obtain funding in the same way now as they did when interbank rates were first used. As the number of transactions declines, the bids are increasingly based on judgements. This has led to a fall in confidence in the traditional interbank rates. During the so-called LIBOR scandal in 2012, it was also revealed that several panel banks had manipulated bids for their own gain. The need to reform reference rates became even clearer.

For several years now, there has been international work on reforming reference rates, which has had two clear objectives.[151] Firstly, when calculating interbank rates (including STIBOR) actual transactions shall be used as far as possible and the use of judgements reduced. Secondly, new and completely transaction-based reference rates shall be developed.

STIBOR is too rarely calculated using actual transactions

STIBOR's administrator, the Swedish Financial Benchmark Facility (SFBF), is now reforming STIBOR with the purpose of ensuring that it meets the requirements in the EU Benchmark Regulation. If STIBOR is to continue to be used after 2021, the SFBF must apply to FI for authorisation by the end of this year. If STIBOR receives authorisation,

[147] In Sweden, seven banks take part in the STIBOR panel.

[148] According to the SFBF, The total value of financial instruments and financial contracts referencing STIBOR is about eight times larger than the gross national product of Sweden. See "The Evolution of STIBOR, SFBF Consultation Paper", March 2021, Swedish Financial Benchmark Facility.

[149] There is no explicit mechanical link between STIBOR and the banks' mortgage rates, but changes in STIBOR also tend to be followed by changes in mortgage rates. See R. Eidestedt, D. Forsman and E. Ünlü (2020), "The funding of the major Swedish banks and its effect on household mortgage rates", *Economic Commentaries* no. 8, Sveriges Riksbank.

[150] STIBOR's administrators describe the contribution of a panel bank as being based on actual transactions, when these are available, and on a combination of other sources of information and modelling techniques when transactional evidence is insufficient, see SFBF Consultation Paper, p. 11, Swedish Financial Benchmark Facility.

[151] For a more in-depth description of the background to the global reform of reference rates, see the article "A new reference rate - the way forward" in *Financial Stability Report,* May 2020, Sveriges Riksbank.

FI will in accordance with the Benchmark Regulation continuously assess STIBOR's capacity to measure the underlying market and evaluate whether it still lives up to the requirements of the Regulation.

The EU's Benchmark Regulation requires that when calculating the rate, one should use actual transactions as far as possible, instead of the banks' judgements. In the proposal for a reformed STIBOR, the SFBF has therefore for instance extended the permitted transaction base so that more types of transaction than before can be used as a basis for calculating STIBOR.

In March, the Riksbank responded to SFBF's open consultation on reforming STIBOR. The Riksbank notes that the proposal means that the rate would, despite the proposed reforms, be calculated to a large degree based on judgements and mathematical methods, rather than on actual transactions. And this applies to all maturities at which STIBOR is supplied. Moreover, there are deficiencies with regard to transparency concerning STIBOR. The ongoing reform of STIBOR therefore does not instil confidence. Nor is it possible to judge whether STIBOR is fair with regard to the underlying market, as the calculation is based to such a large degree on judgements. This applies in particular to STIBOR at the shortest maturity (T/N), where 90 per cent of the calculation is based on so-called level 3 contributions. Level 3 contributions are the type of contribution to the calculation that leaves the largest scope for the banks' own judgements. STIBOR is used in pricing many different kinds of financial contract, and thus affects the interest expenses faced by households and companies, among others. It is therefore not acceptable from a consumer protection perspective that the rate should rely to such a large extent on the banks' judgements.[152]

Reference rates in global transition

As the traditional interbank rates have become less relevant, the central banks in many countries have taken an active role in the reforms by calculating and publishing new, fully transaction-based reference rates for the shortest maturity. With regard to some currencies, it has been established that these new, transaction-based reference rates will replace the interbank rate. With regard to other currencies, the new and the old reference rates will exist side by side; but even in these jurisdictions there is a clear ambition to use the transaction-based reference rates to an increasing extent. The Riksbank has also undertaken to calculate and publish a fully transaction-based reference rate. The Swedish rate has been given the name SWESTR (Swedish krona Short Term Rate). The Riksbank calculates SWESTR based on transactions in Swedish kronor that are made on the money market overnight (O/N).[153] SWESTR thus aims to reflect the current rate on the overnight market.

[152] For a more detailed account, see "The Riksbank's response – Open consultation on reform of STIBOR", March 2021, Sveriges Riksbank.

[153] SWESTR is calculated based on transactions without collateral with banks, financial institutions and non-financial companies that lead to deposits with the Riksbank's monetary policy counterparties. See the Riksbank's website for more information.

The global reform of reference rates is thus in full swing. The methods used to produce interbank rates have, in many cases, been adjusted and new, transaction-based reference rates have been produced. The most commonly used interbank rate globally, LIBOR, will cease to exist entirely. The Bank of England states that as LIBOR is based to such a large extent on judgements, one cannot rely on it taking into account the users' interests in times of stress.[154] There is thus a clear consumer protection perspective in the aim to abandon interbank rates. The British supervisory authority, the FCA, confirmed in March 2021 that LIBOR will cease to exist.[155] LIBOR in all its currencies will be replaced by several different transaction-based reference rates, depending on the currency concerned. Enormous contract values need to be changed over, in many different types of contract. And this affects not only the banks reporting bids to LIBOR, but also the actors using LIBOR as reference rate in contracts. It therefore also affects Swedish banks that have entered into contracts with LIBOR as reference rate.

Within the euro area, there are several reference rates in EUR. At the shortest maturity, the EONIA interbank rate (O/N maturity) will cease in January 2022, and then be entirely replaced by the ECB's transaction-based reference rate €STR. There is at present no decision that the interbank rate for longer maturities in EUR, EURIBOR, shall cease. The ECB states that the average rates it calculates that are based on historical listings for €STR can be used partly in new contracts with longer maturities, and partly as the base for a fall-back rate to EURIBOR.[156, 157] In Norway, the Norwegian working group shows that it has the same vision when it describes the average rate for the transaction-based NOWA at 3 months as an alternative to using the NIBOR interbank rate for the 3-month maturity.[158] See Table 3 below for an overview of the status in a sample of countries.

[154] "We are acutely aware this is a difficult time for many businesses, facing an uncertain future in the midst of the Coronavirus epidemic. But it's just not safe to keep relying on LIBOR. And it's not good for your business either. A benchmark based on guesswork can't be relied upon to behave in your interests at times of stress." See A. Hauser (2020), "From LIBOR to SONIA: A bridge to the future", 21 September 2020, Bank of England.

[155] LIBOR will cease to exist with regard to most currencies and maturities on 31 December 2021, and for the remaining maturities (in US dollars) on 30 June 2023. See "Announcements on the end of Libor", March 2021, Financial Conduct Authority.

[156] The fallback rate to EURIBOR is the rate that will be used instead if EURIBOR ceases during the contract period.

[157] See "Public consultation on the publication by the ECB of compounded term rates using the €STR", July 2020, European Central Bank.

[158] See Consultation – principles for calculating and publishing Nowa, 15 October 2020, The Norwegian working group for reference rates (ARR).

Table 3. Transaction-based reference rates published by central banks

The table contains a selection of rates published by central banks

Country/area	Traditional reference rate	Status	New reference rate	Launch
EU	EONIA	Will cease on 3 January 2022	€STR (replaces EONIA)	2 October 2019
EU	EURIBOR	Adjusted method, no cessation date	€STR	2 October 2019
EU	LIBOR (EUR)	Will cease on 31 December 2021	€STR	2 October 2019
United States	LIBOR (USD)	Will cease on: - 31 December 2021 (1W & 2M maturities) - 30 June 2023 (other maturities)	SOFR	3 April 2018
United Kingdom	LIBOR (GBP)	Will cease on 31 December 2021	SONIA	Original version: March 1997 Updated version: 23 April 2018
Sweden	STIBOR	Proposal for adjusted method, no cessation date	SWESTR	Late summer 2021 (test period from 27 January 2021)
Norway	NIBOR	Adjusted method, no cessation date	NOWA	Original version: 2011 Updated version: 1 January 2020
Denmark	CIBOR	Partially adjusted method, no cessation date	DESTR	Preliminary: launch in early 2022

Note: Note that LIBOR for the various currencies can be classified under several countries and that LIBOR is in practice used much more broadly than is specified in the table above. To provide a better overview of the various rates, however, we have classified them in this table so that LIBOR for each currency respectively appears under the country in which the currency originates.

Sources: Website of each administrator (for the traditional interbank rates) and central bank (for the new reference rates).

The Riksbank supplies SWESTR – a fully transaction-based reference rate

In January, the Riksbank began an approximately six-month long test period for the SWESTR reference rate.[159] The purpose of the test period is partly to give market participants a chance to familiarise themselves with SWESTR, and partly to give both the Riksbank and the reporting banks an opportunity to test their routines and systems. The evaluations are still ongoing, but the Riksbank's assessment so far into the test

[159] During the test period, SWESTR will only be published for information purposes and shall not be used in financial contracts.

period is that the daily process for establishing and publishing SWESTR works well. Towards the end of summer 2021, the Riksbank will begin publishing the official SWESTR.

The traditional interbank rates are supplied at several different (forward-looking) maturities.[160] The reason why SWESTR, like its international equivalents, is only calculated for the shortest maturity (O/N) is that there needs to be a sufficient amount of transactions in Swedish kronor each business day to use to calculate the rate, for it to be credible and representative. It is namely at shorter maturities that most transactions without collateral in Swedish kronor take place, and with a sufficiently steady flow to enable calculation of a reference rate without any individual agent being given too much weight.

An increasing number of central banks calculate average rates

Work is now under way around the world to enable the new reference rates to also be used in contracts with maturities that are longer than the very shortest. At present, there are two possible ways. One way is to calculate backward-looking average rates based on the history of the transaction-based reference rate. These rates are calculated as averages over periods back in time (for instance, a three-month average rate for SWESTR is calculated as the average of the past three months' published values for SWESTR).[161] The other way is to create, in addition to backward-looking rates, forward-looking rates that are based on traded derivatives with the new rates as a base. However, in most countries the derivative markets with the new reference rates as a basis are currently not large enough to form the foundation for reliable forward-looking reference rates. Only two countries, the United Kingdom and Japan, have recently managed to generate enough trade in the new reference rates for private agents to be able to calculate and publish forward-looking term rates.[162] When the use of SWESTR increases, a derivative market with SWESTR as a base may well

[160] STIBOR exists at the maturities Tomorrow-Next (T/N), 1 week, 1 month, 2 months, 3 months and 6 months.

[161] The proposed formula for calculating the average rate for SWESTR, p. 11 in the consultation "Calculation of average interest rates and an index for the SWESTR reference rate", April 2021. Sveriges Riksbank.

$$Compounded\ average\ rate = \left[\prod_{i=1}^{d_b}\left(1+\frac{r_i \times n_i}{N}\right)-1\right]\times\frac{N}{d_c}$$

where,

i = an index that represents each business day in the interest period, r_i = the SWESTR value published on business day i (which is based on transactions made on the previous business day, i-1), n_i = number of calendar days for which rate r_i applies (generally 1 day, except for Mondays where it will be 3 days to account for the accrual over the weekend or where adjustment is needed due to other holidays) = number of calendar days for which r_i is compounded, N = Number of days in the year, i.e. 360, d_c = Number of calendar days in the interest period, d_b = Number of business days in the interest period.

[162] In the United Kingdom, two official versions of forward-looking rates for the SONIA reference rate have been published since the beginning of 2021: Refinitiv Term SONIA and ICE Term SONIA Reference Rate. In Japan, test rates have been published by the company Quick Corp since May 2020, the aim being to publish these officially, and thus be able to use them in actual contracts, from the middle of 2021.

emerge, with which forward-looking transaction-based rates can also be calculated in Sweden.

Many central banks have chosen to calculate and publish backward-looking average rates. For instance, the central banks in the EU, Norway and the United States have already begun to publish such rates.[163] Several other central banks have announced that they intend to do the same shortly. This also applies to the Riksbank. The plan is to begin publishing average rates for SWESTR during the third quarter of this year.[164]

International practice is to calculate the average rates as a compounded average of already published values for the transaction-based reference rate, in Sweden's case SWESTR.[165] As the average rates are calculated based on historical values, they are backward-looking. When a financial contract is based on this type of rate, one does not know until afterwards (when maturity is reached) what the actual rate will be.

The purpose of calculating average rates is so that the transaction-based reference rates can also be used in contracts with longer maturities, that is, the type of contract where traditional reference rates are currently used. Average rates do not in themselves have longer maturities (as they are backward-looking), but they can be used in contracts with longer maturities.

The EU Benchmark Regulation also makes requirements that mean that a so-called fall-back solution must be included in contracts where STIBOR is used.[166] This means that the contract shall contain a description of what happens if STIBOR ceases to apply during the contract period. In current international practice, the basis of the fall-back solution is the average rate for a transaction-based reference rate - in our case the average rate for SWESTR. The average rates for SWESTR can thus be used both in new contracts and as a fall-back solution to STIBOR.

When SWESTR begins to be used later this year there will be a better alternative than STIBOR

When the Riksbank's reference rate SWESTR comes into use at the end of the summer, there will thus be two Swedish reference rates which market participants can choose to refer to when entering into new financial contracts in Swedish kronor.

In the initial stage, SWESTR will be a complement to STIBOR. However, there are good reasons to replace STIBOR in the near term at the shortest maturity (STIBOR T/N) with

[163] Compounded €STR average rates (European Central Bank), NOWA compounded averages (Norges Bank) and SOFR Averages (Federal Reserve Bank of New York).

[164] See "Calculation of average interest rates and an index for the SWESTR reference rate", April 2021, Sveriges Riksbank.

[165] Using a compounded average takes into account the compound interest effect, which can be considered to give a more accurate average as it better reflects the change in value over time. Another alternative is to calculate a simple average, that is, the mathematical average.

[166] See Article 28.2, Regulation (EU) no. 2016/1011 of the European Parliament and of the Council of 8 June 2016 on indices used as benchmarks in financial instruments and financial contracts or to measure the performance of mutual funds and amending Directives 2008/48/EC and 2014/17/EU and Regulation (EU) No 596/2014 (Benchmark Regulation).

SWESTR, in line with international practice. SWESTR's maturity (O/N) is moreover similar to STIBOR's shortest maturity. The need for this kind of changeover in Sweden will become even clearer as STIBOR, even after the current reform, will be based to an excessive degree on judgements instead of actual transactions.

For contracts with longer maturities, average rates for SWESTR can be used instead of STIBOR at its longer maturities. Now that average rates are beginning to be used globally in various types of financial contract, it will show what kind of development we can expect in Sweden, too, going forward.

With the advent of SWESTR, the prerequisites will be in place for a fully transaction-based reference rate to take a larger place on the Swedish financial markets going forward. The new transaction-based reference rates are being used increasingly around the world, which means that agents are beginning to get used to them and they are becoming increasingly established. In the long run, we cannot hold onto our own national solutions in Sweden. The changeover we are now seeing on a global level also needs to take place here – by market participants beginning to use SWESTR when it starts being published. In the short term, SWESTR should replace STIBOR at its shortest maturity. In the longer run, the Riksbank considers that STIBOR should cease for all maturities, as it no longer inspires confidence. A transition needs to take place in an orderly manner, and is therefore a development project over the course of several years. The Riksbank will be active in, and support, this transition.

Glossary

Bankruptcy: A company or its creditors can file for the company to be put into bankruptcy. The decision is taken by a district court. A bankruptcy takes place when the company cannot pay its debts, neither now nor in the future, and means that the company is wound up.

Capital requirements: Rules for the minimum amount of loss-absorbing capital a financial undertaking must hold to cover its risks.

CCP, Central Counterparty: An agent that acts as intermediary in financial transactions and goes in as buyer to all sellers and seller to all buyers, respectively. This means that the original parties in a transaction have a claim on, or debt to, the central counterparty instead of each other.

CDS, Credit Default Swap: Contract between participants on the credit market aimed at transferring the credit risk in an underlying asset from one participant to another. The annual cost in basis points of buying such a contract is called the CDS premium. CDS premiums are often used as an indication of banks' costs for unsecured funding.

Climate-related risks: Risks associated with not only the effects of global warming but also of the transition itself.

Commercial paper: Securities issued by non-financial companies in order to borrow money. The maturity of these instruments is usually shorter than one year.

Commercial property: A property owned in order to generate income via letting.

Common Equity Tier 1 (CET 1) capital: Tier 1 capital with a deduction for capital contributions and reserves that may be included in the capital base as Tier 1 capital in accordance with the Capital Adequacy Directive.

Common Equity Tier 1 (CET 1) capital ratio: Common Equity Tier 1 in relation to risk-weighted assets.

Corporate bond: Securities issued by non-financial companies in order to borrow money. The maturity is usually longer than one year.

Countercyclical capital buffer: A time-varying capital requirement aimed at protecting the banking sector from future losses. The primary objective is to increase resilience in good times in order for banks to better withstand problems in bad times. A secondary objective is to soften excessively volatile fluctuations in the credit market.

Covered bond: A bond whose holder has a special benefit right in the event of a bankruptcy. Covered bonds normally entail a lower credit risk than unsecured bonds, which means that the borrowing costs are lower.

Credit facility: An agreed borrowing limit with credit up to a specific amount, for which the borrowing company normally pays a fee.

Credit guarantee: A guarantee commitment by, for example, the state to guarantee repayment of a loan amount.

Credit risk: The risk of a borrower failing to meet commitments.

Currency swap: An agreement to buy or sell a currency at the daily rate and then sell or buy back the same currency on a later date at a pre-determined rate.

Cyber risk: Combination of the probability of cyber incidents and their consequences, where a cyber incident is an event in an information system that jeopardises security in the information system or contravenes security policies.

Debt-to-income ratio: Total household debt in relation to disposable income.

Disposable income: A person's or household's total income less taxes and charges.

Equity: Item in a company's balance sheet showing the difference between assets and liabilities, including, for example, capital provided by owners, retained profits and reserves.

Greenwashing: When an issuer tries to create an image of being environmentally friendly, despite conducting operations that are more or less damaging to the environment. Greenwashing is thus a form of misleading marketing.

IFRS, International Financial Reporting Standards: A global reporting standard developed by the International Accounting Standards Board (IASB). All listed companies within the EU are obliged to apply the IFRS reporting standards.

IFRS Foundation, The International Financial Reporting Standards Foundation: A nonprofit accounting organisation whose main objectives include the development and promotion of the International Financial Reporting Standards (IFRS Standards) through the International Accounting Standards Board (IASB), which it oversees.

Interbank rate: The interest rate on unsecured loans that the banks offer other banks. STIBOR (Stockholm Interbank Offered Rate) is usually used as a measure of the Swedish interbank rate. STIBOR is used as a reference for rate-setting or pricing of derivative contracts.

Intraday-margin call: Intraday-margin call (IDMC) is when a participant has to provide further collateral during the course of a trading day to cover its risk exposure. This happens when the risk in a participant's portfolio exceeds a predetermined level.

LCR, Liquidity Coverage Ratio: Liquidity measurement defined by the Basel Committee that measures a bank's ability to deal with a stressed net cash outflow for 30 days. In simple terms, an LCR of 100 per cent means that a bank's liquidity reserves are adequate to enable the bank to manage an unexpected liquidity outflow for 30 days.

Leverage ratio: A measure that specifies a bank's Tier 1 capital in relation to its total assets and off-balance-sheet commitments. The measure is used as a complement to the risk-based capital adequacy requirements.

Liquidity: Measure of the ability of a company or organisation to meet its payment obligations in the short term.

Liquidity buffer: Funds an institution holds to ensure its short-term debt-servicing ability.

Liquidity risk: The risk of not being able to meet payment commitments due to a lack of liquidity.

Loan loss: Loss made by credit institutions and banks when borrowers cannot pay interest or amortisation on their loans.

Marginal collateral requirement: Requirement imposed on a counterparty in a derivative contract to pledge additional collateral because the value of the underlying assets has changed.

Moratorium: A decision by an authority that the borrower no longer has to pay interest or amortisations for a limited period. Payments are postponed and must be paid later on.

MREL (Minimum Requirement for own funds and Eligible Liabilities): A regulatory framework aimed at ensuring that banks and institutions have a sufficiently large share of capital and bail-in-able liabilities that can be written down and converted into capital if they are affected by a crisis.

NSFR, Net Stable Funding Ratio or **structural liquidity ratio**: Measure of how much stable funding a bank has in relation to its illiquid assets.

Orderly Wind Down (OWD) ratio: The OWD ratio measures a company's financial conditions to continue operating in a situation with no income, based on historical costs. It is calculated as the ratio between a company's liquid net assets and average six-monthly costs (operational costs including interest) for the past three years. An OWD ratio of 1 means that operations can continue for six months without revenue.

Reconstruction: A company or its creditors can file for the company to be reconstructed. The decision on this is taken by a district court. Reconstruction takes place when the company has financial problems but might survive in the long run. The aim of the reconstruction is for the company to be able to continue its operations.

Risk premium: The additional return an investor requires as compensation for an additional risk.

Risk weight: In simplified terms, to calculate a bank's risk-weighted assets, the amount lent is multiplied by a risk weight. The risk weight is determined on the basis of how likely it is that the borrower will be unable to fulfil its loan obligations and thus varies from borrower to borrower – a high risk weight implies a greater risk than a low risk weight.

Risk-weighted exposures or **risk-weighted assets**: Assets on the balance sheet and off-balance sheet obligations valued in terms of credit, market and operational risk in accordance with the capital adequacy regulations.

Solvency: Financial measure of a company's ability to fulfil its commitments. Also a measure of an insurance company's financial position that gauges the size of the companies' assets in relation to their debts, which mainly consist of their total commitments.

Systemically important: An agent, market or part of the financial infrastructure is regarded as being systemically important if problems that arise there could lead to shocks in the financial system that would result in potentially large costs to society.

TCFD, Task Force on Climate-related Financial Disclosures: Created in 2015 by the Financial Stability Board to develop recommendations for voluntary and consistent reporting of climate-related financial risks and opportunities.

TIBER-SE: The Swedish adaptation of the European Central Bank's TIBER-EU framework. The framework enables the standardised testing of resilience to cyber risks among critical participants in the financial system.

Tier 1 capital: Equity less proposed dividends, deferred tax assets and intangible assets, such as goodwill. Tier 1 Equity may also include some types of subordinated loan.

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