

Financial Stability

2022:2



The Riksbank's Financial Stability Report

The Riksbank's Financial Stability Report is published twice a year. In the report, the Riksbank presents its 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 thus directly linked to the Riksbank's task of promoting a safe and efficient payment system. By publishing the results of its analysis, the Riksbank aims to draw attention to and warn of risks and events that may pose a threat to the financial system, and to contribute to the debate on the subject.

The Executive Board of the Riksbank has discussed the report on two occasions – on 26 October and on 8 November 2022. The report is available on Sveriges Riksbank's website, www.riksbank.se. The report takes account of developments up to and including 1 November 2022, but also includes the latest policy rate decisions by the Federal Reserve and the Bank of England.

The Riksbank and financial stability

A prerequisite for the economy to function and grow is that the financial system is stable and functioning well.¹ However, the system is sensitive, as its central parts are vulnerable. For example, banks finance their operations at short maturities, but lend at longer maturities, making them dependent on public and market confidence. If this is lost, serious problems can arise rapidly. Moreover, the participants in the financial system are interconnected. Trade between banks and other market participants is, for example, extensive. In addition, banks have similar operations. Problems that arise at one participant in a market, or in a system, can therefore quickly spread throughout the system, both directly and via concerns that similar participants might also have problems.

A crisis in the financial system risks leading to significant economic and social costs. The importance of the financial system, combined with its vulnerability, means that the state has a particular interest in preventing threats to financial stability. Banks and other market participants do not themselves have an incentive to take full account of the stability risks they may pose. In the event of a crisis, the state may also need to intervene. At the same time, this should be done at the lowest possible cost.

According to the Sveriges Riksbank Act, the Riksbank shall promote a safe and efficient payment system.² This means that the Riksbank has a responsibility to promote financial stability. The Riksbank has defined this as ensuring that the financial system is able to mediate payments, convert savings into funding and manage risks. In addition, the system must be resilient to shocks that threaten these functions.

The Riksbank can provide liquidity support to individual institutions if problems arise that threaten financial stability. This means that the Riksbank needs to be well prepared in the form of a well-functioning crisis organisation with good information channels and analysis tools, as well as well-developed cooperation with other authorities.

The Riksbank therefore regularly analyses the stability of the financial system to detect and highlight, at an early stage, changes and vulnerabilities that could impair the system's functioning.³ In some cases, the Riksbank recommends specific measures to counter risks and increase resilience. The recommendations may be addressed to banks and other market participants as well as to regulators and other authorities.

The Riksbank shares responsibility for promoting financial stability with the Ministry of Finance, Finansinspektionen (the Swedish Financial Supervisory Authority) and the Swedish National Debt Office. The interplay between the authorities is important both in preventive measures and in the event of crisis management. This also applies internationally, since financial companies operate across national borders.

¹ The financial system refers to banks and other financial agents, as well as financial markets and the infrastructure in the form of technical systems required to make payments and exchange securities. The system also includes the financial regulatory framework in the form of legislation, regulation and other standards.

² The Sveriges Riksbank Act (1988:1385).

³ The analysis focuses on the five major banks in Sweden: Danske Bank, Handelsbanken, Nordea, SEB and Swedbank, and the markets and infrastructure that are important for their funding and risk management.

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IN BRIEF – The Riksbank’s stability assessment



Both the Swedish and the global financial system are facing significant challenges. Russia's invasion of Ukraine has caused serious disturbances in the energy market in Europe, and electricity prices are very volatile and periodically at very high levels. Inflation is high and the central banks have therefore tightened monetary policy swiftly. In several countries, the financial conditions have tightened considerably. The combination of high inflation and higher interest rates has contributed to a deterioration in growth prospects abroad.



The risks to financial stability in Sweden have increased. After many years of low inflation and very low interest rates, rising asset prices and increasing indebtedness, it is uncertain how economic agents will manage a rapid rise in inflation and interest rates. This applies especially in light of the vulnerabilities that have been building up in the Swedish financial system for a long time. Vulnerabilities primarily include the banks' exposure to the highly indebted commercial property companies, but also the high level of indebtedness among households.



Current developments entail an increased risk for major loan losses among the major Swedish banks. To enable them to cope with potential losses and remain well-placed to provide credit to the economy, it is important that the resilience of the banking sector is high. The Riksbank considers that the banks should exercise restraint regarding large dividends and share buy-backs to allow greater financial flexibility.



The current economic and geopolitical situation means that both Swedish and foreign authorities with financial stability responsibilities must monitor developments closely and be ready to take action if the situation requires it. The Riksbank has, for example, the possibility to provide liquidity if necessary. However, it is important that market participants realise that they cannot always count on support measures, since it is not within the Riksbank's mandate to facilitate for individual agents who have taken excessive risks.



The Riksbank considers that the macroprudential measures introduced by Finansinspektionen should be retained. Although the economic outlook has worsened, it is also important to take the structural measures required to create long-term sustainable debt development and a better-functioning housing market.



The cyber threat has increased recently and it is therefore important to rapidly strengthen the ability to prevent, detect and manage cyber threats. The Riksbank notes that this work is progressing, but the ambition and pace should be increased. The Riksbank also considers that the Swedish banks should now report their exposures to climate risks in accordance with the recommendations of the Task Force on Climate-related Financial Disclosures.



The corporate bond market needs to be more robust, transparent and liquid. The Riksbank also calls on market participants to use fully transaction-based reference rates, such as SWESTR, in financial contracts to avoid falling behind the international community in the use of such rates. To promote such a transition, the Riksbank has established a forum for market participants.

1 Overall stability assessment

Russia's invasion of Ukraine, high inflation and rising interest rates are leading to a deterioration in growth prospects

The world economy is currently impacted by inflation rising to levels that have not been seen for decades. Several factors have contributed to this. During the pandemic, global supply and demand imbalances arose, which led to a sharp rise in the prices of several important commodities and inputs.⁴ Moreover, Russia's invasion of Ukraine has pushed up prices even further for, for instance, food and created serious disruptions to the energy market in Europe, which has periodically caused electricity prices to rise to very high levels.

To counteract the high inflation, many central banks have rapidly tightened monetary policy and communicated that further tightening is necessary. If monetary policy does not act to bring inflation down now, there is a risk it will become entrenched and force central banks to raise interest rates even more further ahead. In parallel with policy rates being increased, the prices of various real and financial assets have fallen, interest-rate spreads between riskier assets and government bonds have risen and volatility in several markets has increased. International financial conditions have thus become considerably tighter during the year.

The combination of high inflation and higher interest rates has contributed to a significant deterioration in growth prospects abroad. In China, economic development is affected by the zero tolerance strategy to COVID-19, and growth has slowed down in recent quarters. Several property companies in the country have also suffered from significant financial problems and there is considerable uncertainty in the sector.

The risks to financial stability have increased

The fact that inflation is high and interest rates are continuing to rise, while growth prospects are deteriorating, poses challenges for the stability of the global financial system. There is considerable uncertainty with regard to how much central banks will need to raise policy rates to contain the high inflation. After many years of low inflation and very low interest rates, increasing asset prices and rising indebtedness, it is also uncertain how economic agents can cope with a rapid rise in inflation and interest rates. For example, there is an increased risk that households and companies will not be able to pay their loans. Rising interest rates can also cause problems in countries with high sovereign debt. Furthermore, the policy rate hikes by the Federal Reserve have led to a substantial strengthening of the US dollar against other currencies, which is causing problems for developing economies with large loans in dollars, because it causes their debts in domestic currency to grow.

⁴ See *Monetary Policy Report*, September 2022, Sveriges Riksbank.

In Sweden, major vulnerabilities have built up over time in the financial system, which could lead to problems for financial stability. This primarily concerns the banks' exposure to the highly indebted commercial property companies, but also the high level of indebtedness among households. The strains on many agents are also clear and the risks to financial stability have increased. Households and companies are being deeply affected by the higher costs, not least by the high electricity prices. Housing prices are continuing to fall. It has also become significantly more expensive for property companies to issue new bonds and commercial paper.

Property companies and households are under pressure from several directions

The banks' lending to non-financial corporations has grown strongly over the past year. Property companies account for a significant proportion of banks' lending to the corporate sector, and their loans have grown rapidly in recent years. This has made them increasingly interest-rate sensitive. In recent years, borrowing by property companies via the capital market has also increased significantly. Reduced access to wholesale funding and higher funding costs, combined with a weaker economy and subdued rental income, could lead to a sharp fall in property prices. This could have major consequences for both individual property companies and lenders and, by extension, for financial stability. The Riksbank has long noted the stability risks associated with the commercial property sector.

The Riksbank has also long pointed out that the high level of household indebtedness makes the Swedish economy vulnerable. Higher costs of living, as a result of broad price increases and higher interest rates, are forcing many borrowers to make significant adjustments. The vast majority of mortgagors are expected to be able to meet their debt payments, but some households may struggle to service their loans.⁵ This is particularly the case for households with consumer loans, as they generally have a lower debt-servicing ability than mortgagors, which in turn may lead to increased loan losses for consumer credit companies in particular. There is a risk that households will reduce their consumption to such an extent that the profitability of the corporate sector will start to deteriorate. This could lead to a large increase in the number of bankruptcies and thereby increase the loan losses of the banks from corporate lending. One major problem is the lack of up-to-date microdata on household assets, liabilities, savings and consumption. This makes it difficult to assess how households might adapt their consumption and savings to the new conditions. It is urgent that the inquiry on household asset and debt statistics, which was recently submitted to the government, should address the lack of data.⁶

⁵ Here we assume the same interest rate development in the coming years as in the September Monetary Policy Report.

⁶ *New statistics on household assets and liabilities*, October 2022, SOU 2022:51.

Authorities need to closely monitor developments

The economic policy framework introduced after the crisis of the 1990s and the strengthening of the financial regulations that took place following the global financial crisis of 2008-2009 have helped to ensure that the Swedish economy, in many respects, is well-placed to cope with crises. However, the current economic and geopolitical situation, combined with the vulnerabilities built up in the Swedish financial system, means that the challenges may be significant in the future. It is difficult to predict where and when problems in the financial system may arise. Experiences from the United Kingdom, where an unfinanced draft budget in October led to turbulence in the country's financial markets, show that financial stability can quickly be adversely affected.

The authorities responsible for financial stability, both in Sweden and abroad, must therefore be very vigilant regarding developments and be ready to take the necessary measures, should the situation require it. However, it is important for market participants to realise that they cannot always count on support measures. The exceptional measures implemented by the central banks during the pandemic were aimed at avoiding a financial crisis in a very special situation, not at supporting individual sectors or agents. The situation now is different. Although the Riksbank, for example, has the possibility when needed to provide liquidity, the Riksbank's task is not to facilitate for individual agents who have taken excessive risks.

Good resilience in the banking sector is important

The economic development entails an increased risk for major loan losses among major Swedish banks. To be able to cope with potential losses and remain well-placed to provide credit to the economy even in times of stress, it is important that the resilience of the banking sector is good. This applies not least because the Swedish banking system is large, interconnected, concentrated and highly dependent on depositor and investor confidence and well-functioning international capital markets.

The Riksbank's new stress tests of the banks' exposures to Swedish non-financial corporations indicate that loan losses on corporate lending could be significant in a severe scenario.⁷ However, the major Swedish banks' capital situation and expected operating profit contribute to the assessment that they can manage the losses in the scenario. The stress test does not cover the banks' total loan portfolios, however, and loan losses may be greater than indicated in the results. In a situation where macroeconomic developments are deteriorating in line with the scenario in the stress test, it is possible that the banks' ability to provide credit will deteriorate.

Since the risks in the Swedish financial system are high, the Riksbank considers that banks should be restrictive with regard to large dividend payments and share buy-backs to allow greater financial room for manoeuvre. Additionally, the Riksbank considers it important that Finansinspektionen continues to raise the countercyclical

⁷ The scenario corresponds to a development that is significantly worse than the Riksbank's forecast in the *Monetary Policy Report* from September 2022.

buffer rate from 2 to 2.5 per cent. This should be done as soon as possible, as it will take 12 months before the decision can be implemented. As the banks currently have a good margin down to the capital requirements, an increase in the countercyclical capital buffer is not expected to affect banks' ability to provide credit.

It is also important to reduce the risk of disruptions and increase the resilience of the banking system in the EU. In October 2021, the European Commission presented a proposal for the implementation of the final elements of Basel III in the EU (the 2021 Banking Package), which now forms the basis for negotiations in the European Parliament and the Council.⁸ The Riksbank advocates a full, timely and consistent implementation of Basel III in the EU. Harmonised global regulations benefit the economy and financial stability in the countries concerned.

Structural measures needed to tackle household indebtedness risks

Improving the functioning of the housing market and managing the risks of household indebtedness require broad reforms in housing and tax policy, such as a review of tax relief on interest expenditure, property tax and the regulatory framework for new housing production. Earlier implementation of such reforms could have helped to slow the build-up of debt and reduce risks in the financial system. Instead, the need for reform remains. Although the economic outlook has worsened, it is important to take the structural measures required to create long-term sustainable debt development and a better-functioning housing market.

The absence of reforms has contributed to the need to adopt macroprudential policy measures. The measures taken by Finansinspektionen, such as amortisation requirements and the loan-to-value limit, have contributed to households amortising more and taking out smaller loans than would otherwise have been the case. All else being equal, this means that their interest-rate sensitivity has declined.⁹ The Riksbank considers that these measures should be retained and that they should not be changed in the event of an economic downturn or used more generally to compensate households for various cost increases. The Riksbank also shares the opinion of Finansinspektionen that it would be inappropriate to introduce a general exemption to the amortisation requirements at the present time.

Swedish households generally have short interest-rate fixation periods on their mortgages. A lower cost for early repayment would give households greater incentives to choose loans with longer interest rate fixation periods and help to make the household sector as a whole less interest-rate sensitive. During 2022, Finansinspektionen submitted a request to the Government for a change in the regulation of the interest

⁸ Proposal for a Regulation of the European Parliament and of the Council amending Regulation (EU) No 575/2013 on prudential requirements for credit institutions as regards requirements for credit risk, credit valuation adjustment risk, operational risk, market risk and the output floor, COM/2021/664 final, October 2021.

⁹ For a more comprehensive review, see *Borrower-based measures in case of high inflation and rising interest rates*, October 2022, Finansinspektionen.

rate differential compensation and, together with the Swedish National Debt Office, the Riksbank has supported the proposal.¹⁰ It is important that the inquiry that the Government has now appointed into the issue really does lead to a change.

The Riksbank supports the proposal that a central register of tenant-owned property should be introduced, as this would make the tenant-owned apartments safer collateral.¹¹ This would improve the functionality and transparency of the housing market. The Riksbank also supports the initiatives that have been taken to investigate the need for a national debt register. Properly conducted credit assessments can prevent individuals from falling into debt traps. It is therefore problematic that there is no system showing all the debts of borrowers, because lenders therefore base the credit assessment on insufficient background information.

The corporate bond market needs to be more robust, transparent and liquid

In recent years many companies, particularly property companies, have to a large extent obtained funding through the capital market (see the article “Financial sector linkages with the commercial property sector”). Swedish and foreign funds are major investors in these securities. As the sources of funding multiply, it may become easier for the financial system to cope with potential losses, but this also requires that the agents providing capital have the capacity to bear losses. As many investors operate in a global capital market, the work of strengthening resilience needs to be pursued at the international level and through international standards, for example at the Bank for International Settlements (BIS) and the Financial Stability Board (FSB).

It is also important to continue the work at the national level on reducing the vulnerabilities of Swedish corporate bond funds. This concerns, for example, the liquidity risks of funds that invest heavily in relatively illiquid assets. Since several funds had to close temporarily for trading in March 2020, investment funds have not significantly increased their cash reserves nor changed the redemption conditions. The possibility for unitholders to make daily redemptions from the funds therefore needs to be restricted to correspond better to the liquidity in the fund’s assets. The funds must also make it clear to the unitholders that their holdings are not liquid in all market situations and that it therefore may not always be possible to make immediate redemptions. The Riksbank supports Finansinspektionen’s proposed amendments to fund legislation to facilitate the use of more liquidity management tools, to make it possible to offer a lower frequency of redemptions than is now the case and to allow notice periods in Swedish funds.¹²

¹⁰ See *Hemställan om ändring av reglerna om ränteskillnadsersättning* [Request for a change in the rules on interest rate differential compensation], Only in Swedish, February 2022, Finansinspektionen.

¹¹ See the Riksbank’s consultation response to *Ett register för alla bostadsrätter* [Consultation on a register of all tenant-owned apartments], Only in Swedish, October 2022.

¹² See *Likviditetsverktyg i värdepappersfonder och specialfonder* [Liquidity management tools in UCITS and special funds], June 2021, Finansinspektionen.

The Riksbank has long pointed out that the corporate bond market needs to become more transparent and liquid. It is therefore important that Swedish companies, and the banks that support them when they are issuing, commit to issuing bonds in accordance with the Swedish benchmark standard.¹³ Issuers should also contribute by making greater use of credit ratings. The shortcomings in the corporate bond market also underline the importance of issuers having other financing options available, not least during more turbulent times.

Resilience needs to be strengthened in other parts of the financial system as well

The recent extreme price developments in European electricity markets have had implications for participants active in the electricity derivatives market. In accordance with existing requirements, participants have had to provide substantial amounts of collateral when these contracts are cleared in a CCP. The purpose of the margin requirements is to protect the CCP in the event that participants are unable to fulfil their obligations under the derivative contract. The increased margin requirements led to the risk of certain market participants, who did not have sufficient liquidity available, not being able to fulfil their commitments, with potentially serious consequences for the CCP and therefore for financial stability. In September, the Riksdag therefore decided on a state credit guarantee for bank loans to electricity producers active at Nasdaq Clearing. The situation in the electricity derivatives market has since calmed down and the guarantee has not yet been used.

The European Commission has recently proposed some measures to facilitate the provision of collateral by market participants. The Riksbank considers that standardised derivative contracts should be CCP-cleared to the greatest extent possible, that it is important that potential measures do not impair the CCP's risk management and that market participants should take their exposures into consideration in their liquidity planning. Given that the Commission proposes relatively limited and temporary measures, the Riksbank considers that the proposals would not significantly affect CCP's risk management negatively.

A reference rate serves as a benchmark in the pricing of financial contracts and is therefore an important building block in financial markets. To strengthen confidence in the reference rates, the Riksbank considers that these should be based on actual transactions, which is now done in large parts of the world. The Riksbank has therefore produced a fully transaction-based reference rate, SWESTR. However, Sweden still lags behind the rest of the world in the use of transaction-based rates. During the autumn, the Riksbank has therefore established a forum for market participants to promote a transition to fully transaction-based reference rates. The Swedish Bankers' Association has also set up a working group to prepare recommendations on how and

¹³ See opinion piece by E. Thedéen, S. Ingves and H. Lindblad (2022), 28 January, [Debatt: Dags för en svensk benchmarkstandard för företagsobligationer](https://www.di.se/nyheter/2022/01/28/debatt-dags-for-en-svensk-benchmarkstandard-for-foretagsobligationer) [Time for a Swedish benchmarking standard for corporate bonds] ([di.se](https://www.di.se)).

when the market can move over from the most short-term STIBOR rate (STIBOR T/N) to SWESTR.

Recently, the market has also begun to offer cleared financial contracts that refer to SWESTR, and a first deal was completed in October.¹⁴ It is positive that steps have been taken towards the increased use of fully transaction-based reference rates, but the work needs to continue. Such a transition is important, not least in view of the recent attention to the increase in volatility in STIBOR, following the change in the method for calculating this interest rate.¹⁵

Global challenges require cooperation and action

Cyber threats, already assessed as one of the main threats to financial stability, have increased with the significant deterioration of the security situation in 2022. The need to rapidly strengthen the ability to prevent, detect and manage cyber risks has thus increased further. Some progress has been made. For example, the National Cyber Security Centre has launched a pilot project for private-public partnership to enhance cybersecurity in the financial sector. In addition to this, however, it is important that the National Cyber Security Centre urgently continues its work to clarify its own role and tasks in the financial sector.

Together with Finansinspektionen and the Swedish National Debt Office, the Riksbank is working to strengthen cybersecurity in the sector. As part of this, a joint action plan for cybersecurity in the financial sector has been produced within the framework of the Financial Stability Council's work. The Riksbank's work with TIBER-SE is also an important contribution to the financial agents' efforts to strengthen their resilience to cyber threats. Overall, the Riksbank notes that work on cybersecurity is progressing. However, the deteriorating security situation and the increased need to strengthen preparedness mean that the ambition and pace of this work need to be increased.

With geopolitical uncertainty high, it is also important to have a well-functioning cash supply chain. Banks need to be prepared to meet increased demand for cash and to deal with disruptions in the system. In order not to risk undermining confidence in the financial system, it is also important that the banks have plans in place to deal with customers who need manual service in a crisis or similar situation.

The need to urgently reduce the use of fossil fuels has become even clearer this year, partly because global warming is accelerating faster than previously estimated and partly because the Russian invasion of Ukraine has highlighted the risks of relying on fossil fuels from countries that could reduce their deliveries for geopolitical reasons. The recent extreme weather is also an illustration of the increased financial risks run by institutions who lend money against physical collateral in properties, for example.

¹⁴ Since October, the market also offers clearing of short-term interest-rate swaps (so-called overnight index swaps, OIS) that refer to SWESTR. These comprise an alternative to the short-term interest-rate swaps that have been available so far and that refer to STIBOR (so-called STINA swaps).

¹⁵ The Swedish Financial Benchmark Facility (SFBF), which administers and calculates STIBOR, has undertaken a reform of the methodology to better reflect the market and align it with the requirements of the Benchmark Regulation (BMR).

Financial institutions therefore need to contribute to the green transition by allocating capital to activities that contribute to sustainable economic development. As part of this, the institutions should incorporate climate change risks into their analyses, and into their internal governance and reporting to ensure that their ability to meet their obligations is not compromised. This requires the availability of accurate and comparable climate-related information. It is therefore positive that a global standard for sustainability reporting is now being developed and that a new EU regulation is introducing requirements for increased transparency.¹⁶ The Riksbank considers that the Swedish banks should already report their exposures to climate risks in accordance with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD).¹⁷

The market for crypto-assets currently represents a relatively small risk in the Swedish financial system.¹⁸ However, the market has grown rapidly and financial regulation work therefore needs to be speeded up. The EU regulation Markets in Crypto-Assets (MiCA) is a step in the right direction and should therefore be implemented as soon as possible.¹⁹ Continued international cooperation and coordination is also important to create a common view on how issuers of crypto-assets should be classified and how the risks that they pose should be managed. As a result of the current energy crisis, the European Commission has called on Member States to take targeted measures to reduce the electricity use associated with the mining of crypto-assets.²⁰ The Riksbank, like Finansinspektionen and the Swedish Environmental Protection Agency, considers that, pending a possible ban at EU level, Sweden should counteract the widespread establishment of mining using the proof of work method.²¹

¹⁶ The European Parliament and the Council have reached a preliminary political agreement on a new Corporate Sustainability Reporting Directive (CSRD) that will revise and strengthen the current rules.

¹⁷ See Final Report Recommendations of the Task Force on Climate-related Financial Disclosures, June 2017, Task Force on Climate-related Financial Disclosures.

¹⁸ See *Financial Stability Report 2022:1*, Sveriges Riksbank.

¹⁹ See proposal for a Regulation of the European Parliament and of the Council on markets in crypto-assets and amending Directive (EU) 2019/1937, COM/2020/593 final, September 2020.

²⁰ The European Commission has clarified the EU Action Plan on the digitalisation of the energy system in a Communication to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions.

²¹ See debate article by E. Thedéen and B. Risinger (2021), 5 November, FI and the Swedish Environmental Protection Agency. [Crypto-assets are a threat to the climate transition – energy-intensive mining should be banned | Finansinspektionen](#)

2 Vulnerabilities and risks 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. Swedish banks and companies also finance themselves in 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 also entail risks.



If profitability declines in the **business sector** and corporate financing becomes more difficult or expensive, financial stability may be affected, for instance, by an increase in loan losses for banks. This is underlined by the fact that Swedish banks are particularly exposed to property companies that are sensitive to both falling revenues and rising interest rates.



The banks' largest borrower group is **households**, and their indebtedness has increased in parallel with housing prices rising over a long period of time. Developments in the household sector and 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 uses global financial markets for its funding. This makes it sensitive to shocks. In addition, it plays a decisive role with regard to credit supply and other important functions in the financial system.



Other financial agents, including mutual funds and insurance companies, manage assets that are almost as large as those of 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 Vulnerabilities and risks linked to international developments



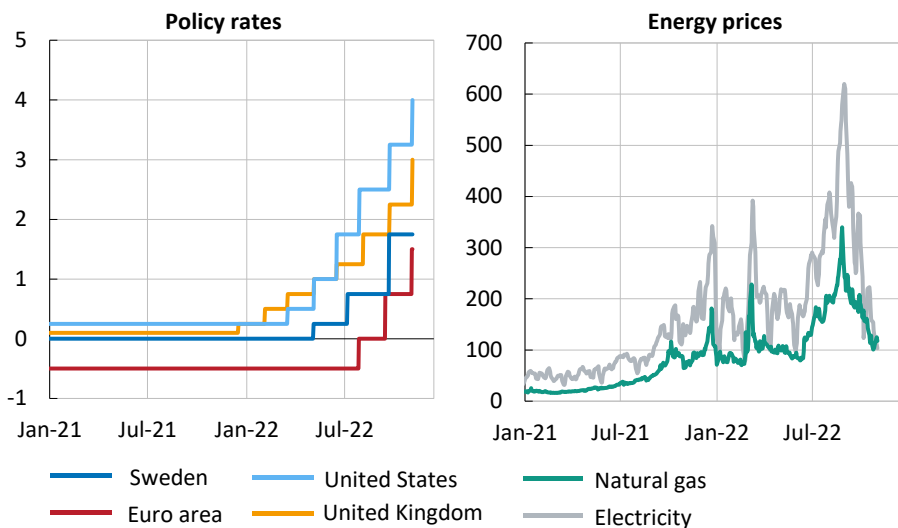
Inflation has risen rapidly and is high both in Sweden and abroad. Not least electricity and gas prices have risen sharply in Europe. Several central banks have had to tighten monetary policy rapidly, which has also contributed to substantial fluctuations in financial markets. Government bond yields have risen rapidly, which may entail strains for countries with high government debt. In addition, high energy prices pose short-term challenges for society's transition to manage climate change. The geopolitical and security situation also means that cyber risks are heightened.

Rising inflation and interest rates

Inflation has risen rapidly and is high in several countries. This is partly due to the supply shocks that have affected the world economy following the pandemic, but also to Russia's invasion of Ukraine, which has, among other things, led to higher food and energy prices. Russia's restricted natural gas exports, combined with reduced production of German coal and French nuclear power due to extreme weather, has led to a sharp rise in energy prices in Europe, although prices have fallen slightly since the summer. To curb inflation, several central banks have raised their policy rates both more and faster than was expected in the spring (see chart 1).

Chart 1. Policy rates and energy prices

Per cent (left chart), euro per MWh (right chart)



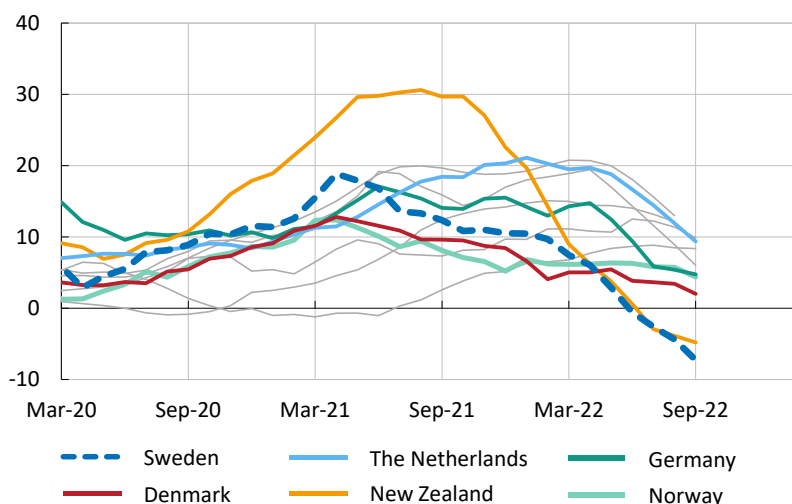
Note. For the euro area, the ECB's deposit rate is shown. Prices of electricity and natural gas for Germany. The electricity price refers to the spot price, 5-day moving average. The natural gas price refers to the forward price for the coming month.

Source: Macrobond.

Rapidly rising prices and higher interest rates are eroding household purchasing power in many parts of the world, and not least higher heating costs look set to have a major impact on European household finances this winter. The fact that housing prices have begun to slow down, and in some countries to fall, also means that the value of households' real assets will fall (see chart 2). The resilience of the business sector is also being tested as demand declines at the same time as costs are increasing. The profitability of European companies has been maintained during the summer, partly due to the easing of pandemic-related restrictions. However, high energy prices and uncertainty about energy supply have reduced industrial output in the gas and electricity-intensive industries in Europe. The less energy-intensive services sector is also affected, as rising prices generally dampen demand from households and companies.

Chart 2. Rate of increase in housing prices in Sweden and other countries

Annual percentage change



Note. Housing prices refer to prices for both single-family houses and tenant-owned apartments. The other grey lines in the chart represent a selection of other countries in Europe and the rest of the world.

Source: Macrobond.

In combination with increased interest expenditure, the likelihood of a recession in the euro area has increased recently.²² In the United States, energy prices have slowed down somewhat in recent months, but underlying inflation remains high. As a result, interest rate hikes by the Federal Reserve have been sharp, leading analysts to see a US recession ahead as more likely than last spring.

Highly indebted countries may face problems as interest rates rise rapidly

The credit quality of banks is expected to be negatively affected as pressures on companies and households increase. Banks with exposures to sectors that were already

²² The September Monetary Policy Report foresees a recession in the euro area extending from the fourth quarter of 2022 until the first quarter of 2023.

vulnerable to the pandemic are particularly exposed. While the share of non-performing loans in European banks has declined over the year, the share of non-performing loans subject to public guarantees has increased. Guarantees are concentrated in France, Spain and Italy, totalling EUR 328 billion in these countries, and between 4 and 8 per cent of GDP in each country.²³

The guarantees are an example of government policy measures that, combined with tighter monetary policy, could pose problems for many countries' public finances going forward. However, policy errors such as an overly expansionary fiscal policy could also create problems, for example as happened in the United Kingdom in October. After the country's government presented proposals for extensive unfinanced tax cuts in a situation of rising inflation, yields on its government bonds rose sharply, at the same time as trading in these bonds declined sharply. This meant that UK pension funds suffered liquidity stress. This led to the Bank of England deciding to temporarily buy government bonds to stabilise the market and postpone the date when they would start reducing their holdings of government bonds (see also section 2.5 "Vulnerabilities and risks among other financial agents"). Several proposals were withdrawn by the government and the Prime Minister subsequently resigned. The market turbulence has since decreased and the Bank of England has started selling government bonds in its asset portfolio to tighten monetary policy, albeit later than originally planned.

On the whole, government bond yields have risen rapidly as a result of tighter monetary policy by central banks.²⁴ To this should be added the cost of support measures aimed at reducing the impact of high energy prices on households and companies (see chart 3). In relation to GDP, the cost of these measures is high in several European countries but they can be partly financed by increased taxes on profits from energy companies following the EU agreement on a windfall tax.²⁵ Moreover, if bank loan losses increase, there is a risk that government bond yields will rise further, above all in countries where banks have used government guarantees on a large scale, as governments will then have to bear part of the losses associated with bank lending.

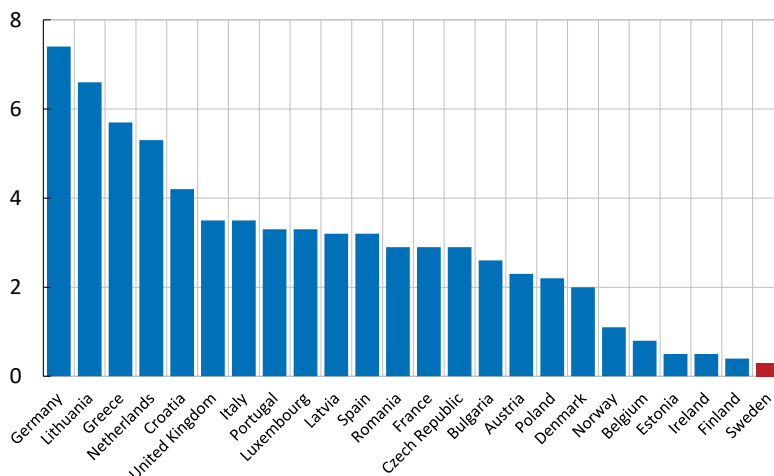
²³ These three countries together account for 90% of loans subject to state guarantees. See Risk Dashboard, Q2 2022, EBA.

²⁴ See Chart A.1 in the Chart Appendix.

²⁵ A windfall tax is a one-off tax on companies aimed at taxing profits resulting from circumstances for which the company cannot be considered responsible, in this case as a result of increased energy prices caused by Russia's invasion of Ukraine. See press release "Council agrees on emergency measures to reduce energy prices", September 2022, Council of the European Union. Last updated 30 September 2022. Retrieved 28 October 2022, [Council agrees on emergency measures to reduce energy prices](#).

Chart 3. State aid measures to protect households and companies from high energy prices

Per cent of GDP



Note. Refers to state aid in the period September 2021 to October 2022. Also includes measures presented by states that have not yet entered into force. The Swedish Government has presented proposals for high-cost protection for high electricity prices, but the proposal is not included in the chart as the details were not available in time for the publication of this report.

Source: Bruegel.

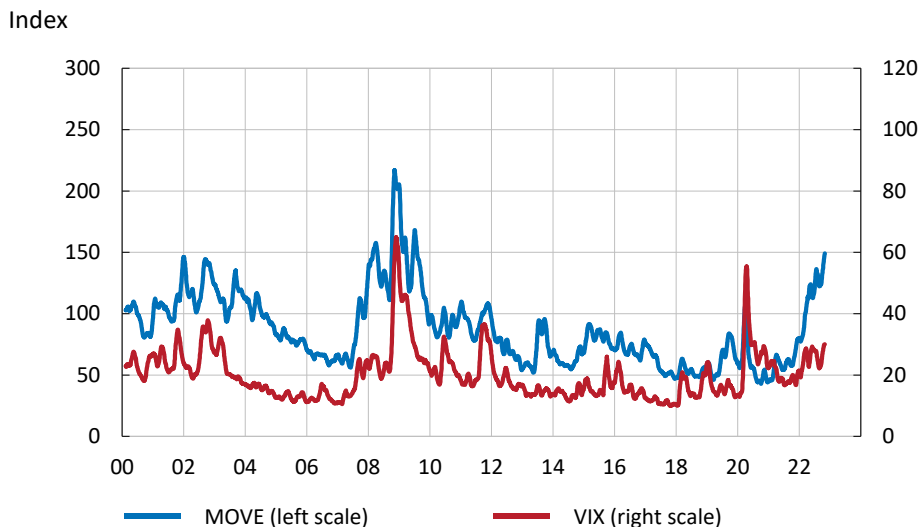
The fiscal situation may be strained in other parts of the world as well. Higher interest rates in the United States have also caused the US dollar to strengthen considerably against other currencies, which has particularly affected emerging market economies that have dollar-denominated loans and have thus seen their debt grow in domestic currency.

In China, the economy has grown at a rate below the country’s official growth target in recent quarters due to extensive pandemic lockdowns, and the uncertainty in the property sector remains high. Demand has slowed and several property companies are facing serious financial problems, prompting the government to take support measures to stabilise the property sector, which has accounted for a significant part of the country’s economic growth in recent years. If the problems in the property sector continue, they could spread to the banking sector and cause major economic difficulties.

Volatile markets and reduced demand for risky assets

The uncertainty over future prospects is also visible in the financial markets, where prices have fluctuated substantially, not least in the fixed income market. The so-called MOVE index, which reflects expected volatility in the US government bond market, is at historically elevated levels (see chart 4). Volatility in the foreign exchange market has also been elevated recently.

Chart 4. Volatility in US equity and government bond markets



Note. VIX and MOVE are indices that show the expected volatility of the US equity and government bond markets, respectively. They are calculated based on options pricing for the respective asset classes. Refers to a 30-day moving average.

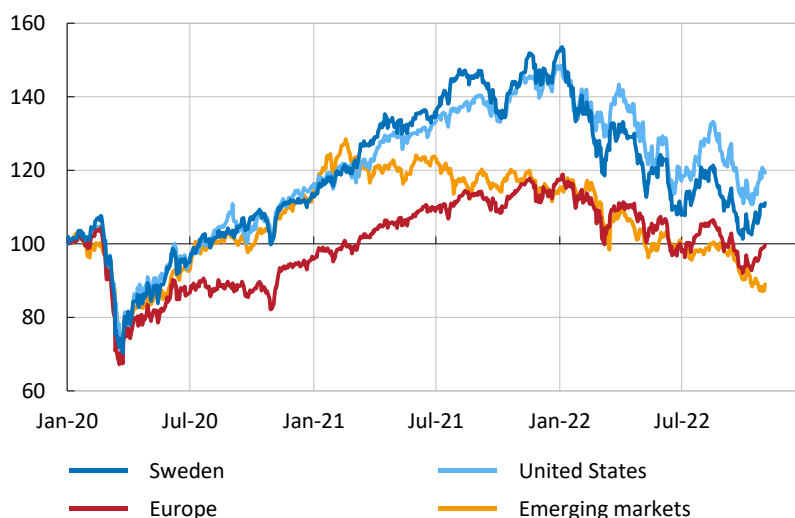
Source: Macrobond.

The current situation has also affected the demand for risky assets. For example, risk premiums on European and US corporate bonds have risen.²⁶ Equity prices have continued to fall in many areas (see chart 5). Falling equity prices do not necessarily pose a problem for financial stability, but they can lead to significant losses for some agents. As yields in the fixed-income market are now increasing, this is also affecting how investors allocate their assets, as interest-bearing assets can become more attractive. As investors change their asset allocation, there is a risk that there could be further turbulence ahead, leading to further falls in asset prices, particularly for riskier assets.

²⁶ See Chart A.2 in the Chart Appendix.

Chart 5. Equity price performance in selected countries and regions

Index, 1 January 2020 = 100



Note. Broad equity indices in local currencies.

Source: Macrobond.

The market for crypto-assets is a particularly clear illustration of the volatile situation.²⁷ Following the collapse in the value of TerraUSD in May, the market for crypto-assets has been characterised by broad price falls.²⁸ In addition, a number of agents with connections to crypto-assets, such as some funds, have been adversely affected and in some cases have filed for bankruptcy. So far, however, the problems have not spilled over into the traditional financial system to any great extent. Crypto-assets are not currently considered to pose a risk to financial stability and the market remains relatively small compared to the rest of the financial system.²⁹ There is a lot of work under way on regulations and various kinds of international standards to ensure that crypto-assets do not pose any stability risk in the future either.³⁰

Higher interest rates coupled with an uncertain economic outlook have affected FinTech companies. For example, the MSCI Fintech Innovation Index, a global stock index of listed FinTech companies, has fallen by almost 40 per cent since the start of the year. By comparison, the broader global MSCI World index has fallen by approximately 20 per cent over the same period.

²⁷ See Chart A.3 in the Chart Appendix.

²⁸ TerraUSD was a stablecoin whose market value peaked at about SEK 185 billion.

²⁹ See for example ESMA (2022), "Crypto-assets and their risks for financial stability", October 2022, European Securities and Markets Authority.

³⁰ See, for instance, FSB (2022), "Regulation, Supervision and Oversight of Crypto-Asset Activities and Markets: Consultative Report", October 2022, Financial Stability Board, FSB (2022); "Review of the FSB High-level Recommendations of the Regulation, Supervision and Oversight of 'Global Stablecoin' Arrangements: Consultative Report", October 2022, Financial Stability Board and CPMI-IOSCO (2022); "Application of the Principles for Financial Market Infrastructures to stablecoin arrangements", July 2022, Bank for International Settlements and International Organization of Securities Commissions.

Increased cyber threat in a deteriorating security situation

Globally, the cyber threat is considered by many analysts to be one of the greatest threats to financial stability. The Riksbank has also pointed out that cyber attacks can pose a significant threat to financial stability.³¹ In Europe, the security situation has seriously deteriorated in 2022. Over the autumn, the Swedish Security Service has highlighted that this, in turn, may increase the risk of attacks on critical infrastructure such as a country's electricity supply, communications or payment systems. Such attacks may take the form of cyber attacks, directed both at countries in our neighbourhood and at Sweden.³²

Cyber attacks are often directed at one or a few agents, either financial agents or third-party suppliers to the financial sector. However, the interconnection that exists between various agents and markets means that the effects of an attack can spread in the financial system. Ultimately, the impact may be so great that financial stability is affected, both nationally and internationally.

Of the various types of cyber attacks, ransomware and DDoS attacks are still considered to be common.³³ However, during the year there has been an increase in various types of wiper attacks against Ukrainian operators. The purpose of these attacks is not usually to extort money from the victim but rather to cause damage by deleting data.³⁴ However, it is difficult to get an overall picture of the scale of the cyber threat from available statistics, partly because many incidents go unreported and because in many cases qualified breaches can be difficult to detect.

The extreme weather and the energy crisis show that the need for an orderly green transition is urgent

The impacts and risks of climate change are becoming increasingly complex and difficult to manage. This becomes particularly evident when the effects of climate change coincide with the materialisation of other risks. One example is extreme weather, which this year coincided with Russia's invasion of Ukraine. The extreme heatwave in Europe during the summer means that demand for energy increased, at the same time as output from normally reliable energy sources such as coal and nuclear power declined. In Germany, low water levels in the Rhine River affected the ability to transport coal to coal-fired power plants, and in France, nuclear power plants have

³¹ See S. Doerr, L. Gambacorta, T. Leach, B. Legros and D. Whyte (2022), No 1039 "Cyber risk in central banking", and FEDS Notes, May 2022, [The Fed - Implications of Cyber Risk for Financial Stability \(federalreserve.gov\)](#) and L. Elestedt, U. Nilsson and C-J. Rosenvinge (2021), "A cyber attack can affect financial stability", *Economic Commentaries*, No. 8. Sveriges Riksbank.

³² See Security Police 2022. Retrieved 4 October 2022, [Följer allvarligt omvärldsläge - Säkerhetspolisen \(sakerhetspolisen.se\)](#) and Security police 2022. Retrieved 4 October 2022, [Det breddade hotet - Säkerhetspolisen \(sakerhetspolisen.se\)](#) and News item "Ökad risk för sabotage mot elnätet" [Increased risk of sabotage against electricity network], most recently updated 11 October 2022, [Säpo varnar: Ökad risk för sabotage mot elnätet | SVT Nyheter](#).

³³ See ENISA Threat Landscape for Ransomware attacks, July 2022 and "Cybersecurity and Financial System Resilience Report", July 2022, Board of Governors of the Federal Reserve System.

³⁴ See AT&T Cybersecurity, most recently updated 2 May 2022, [Analysis on recent wiper attacks: examples and how wiper malware works | AT&T Alien Labs](#).

had to reduce output since rivers used to cool the reactors became too warm. Together with Russia's reduced exports of natural gas, this has led to a reduction in energy supply, resulting in large price increases (see section "Vulnerabilities and risks in the financial infrastructure" for a description of the impact on clearing in commodity markets).

Extreme weather in itself has also become more common as a result of climate change.³⁵ This shows that there are increased financial risks for agents who lend money against physical collateral. For example, the value of real estate, which constitutes a large part of the banks' collateral volume, may be adversely affected if this is damaged by flooding. However, the financial risks are not limited to the effects of climate change. The banks are also exposed to transition risks because they lend money to agents who emit large volumes of carbon dioxide and these companies may face significant challenges in making the transition. This may in turn lead to difficulties for companies to pay their loans.³⁶ If both companies and banks improve their sustainability reporting, these risks can be better analysed, thus creating the conditions for better management.

The conditions for an orderly green transformation have, however, been affected by Russia substantially reducing its exports of natural gas. In the short term, the availability of sustainable substitutes for Russian gas is limited, which has led several countries to decide to restart closed coal-fired power plants, or to postpone plans to close them, to meet energy needs. At the same time, governments, households and companies in several European countries have been forced to reduce their electricity consumption, which instead facilitates the transition. Furthermore, in the longer term, high energy prices may provide an opportunity to hasten the transition, as the returns on renewable energy are significantly higher now than when energy prices are lower. All in all, it is difficult to determine how the conditions for the transition have been affected, but the situation has shown that the need for an orderly green transition is urgent.

³⁵ See "Summary for Policymakers of IPCC Report AR6 Climate Change 2022: Impacts, Adaptations and Vulnerability", February 2022, IPCC.

³⁶ See C. Cella (2020), "Banking and climate-related risks, implications for financial stability in Sweden", *Staff memo*, Sveriges Riksbank.

2.2 Vulnerabilities and risks in the corporate sector



High inflation, rising interest rates and weaker growth prospects have worsened the situation for many companies and reduced their ability to pay interest and amortisations. It has also become more difficult, especially for property companies, to finance their activities. Highly indebted property companies are particularly vulnerable to rising interest rates, as they lead to lower property values and poorer cash flow. There is an increased likelihood that some companies in the commercial property sector will be unable to meet their financial commitments.

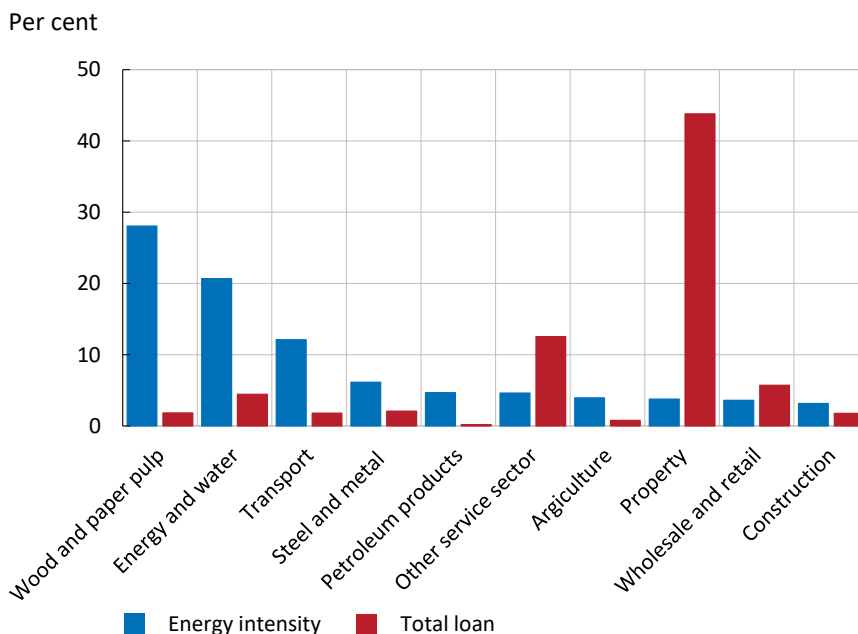
Credit risks increase due to weaker economic activity and high inflation

The Swedish economy developed strongly in the first half of 2022 and the high demand contributed to an increase in corporate profitability. In the third quarter, some companies' profitability has started to decline somewhat due to higher costs. Going forward, corporate profitability is expected to decline to an increasing extent as demand in Sweden and abroad declines. Although previous pandemic-related disruptions to the economy have eased, other factors hampering production have emerged or become more noticeable. For example, prices for certain inputs remain high. In addition, Russia's invasion of Ukraine, among other things, has increased the cost of fuel and other types of energy. On top of this, the financial conditions have become tighter, particularly in the bond market. Overall, developments have led to a fall in business confidence indicators in recent months.

Higher electricity and fuel prices will negatively affect most companies. However, companies in the most energy-intensive sectors, such as manufacturing and transport, will be most affected (see chart 6).³⁷ Other companies in sectors such as retail and services, for example, will face significant challenges from high electricity prices and reduced demand, especially if profitability is already low to begin with. Since manufacturing companies are often specialised and therefore less exposed to competition than companies closely linked to households, they are more easily compensated for higher costs. However, a subdued global demand weakens that opportunity. The construction sector has already been negatively affected by the higher costs, and some construction companies have therefore reduced the number of planned and started construction projects. This is particularly true for housing developers, for whom falling housing prices also make it more difficult to pass on higher costs to the price of new production. This will have a negative impact on the financial situation of housing developers and may in the worst case lead to bankruptcies.

³⁷ Electricity-intensive companies use electricity derivatives, which in the short term can to some extent reduce the effect of higher electricity prices on their cash flows. In addition, several electricity-intensive companies are located in the northern electricity areas, where electricity prices are relatively low. These companies can benefit from the fact that international competitors are even more affected by rising energy prices.

Chart 6. Energy intensity of different industries and share of total loans



Note. Energy intensity is measured as the share of energy and fuel consumption in a selection of industries with non-financial corporations. Loan shares refer to the respective industry's share of total loans from MFIs in Sweden and capital market financing. As they refer to a sample of sectors, the columns do not add up to 100 per cent. "Energy and fuel consumption" refers to 2019. "Other service sector" refers to SNI 69-98 (excl. 84) such as IT and telecommunication companies.

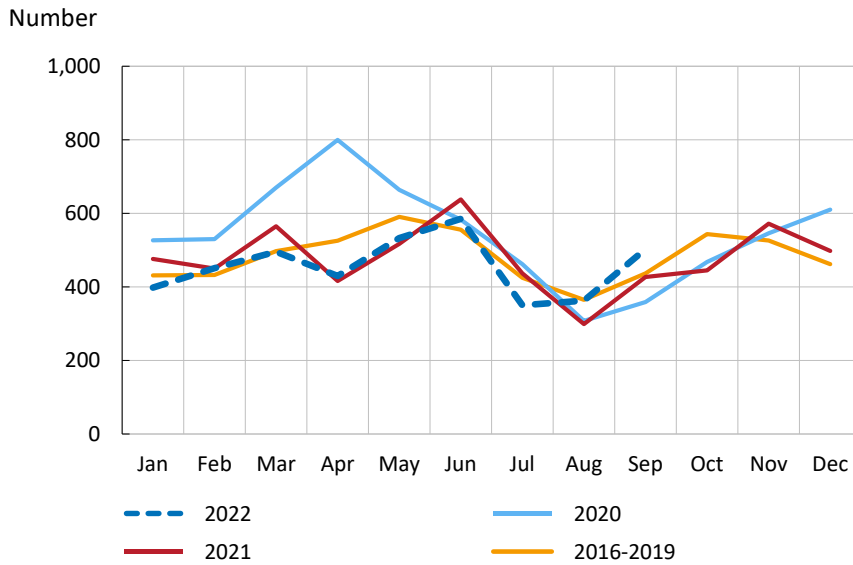
Source: Statistics Sweden.

Company bankruptcies expected to increase

The number of public limited companies that went bankrupt was higher in September this year than in recent years (see chart 7). Statistics from UC, which also cover other types of companies, show that bankruptcies continued to increase during October. However, the higher cost situation and weaker demand will mean that many companies need to make adjustments by, for example, reducing their investments and their demand for labour. In addition, the companies' financial situation will be adversely affected. Some companies will therefore find it difficult to fulfil their obligations to lenders, suppliers and landlords. This will probably lead to the number of bankruptcies continuing to increase going forward.

However, since not all companies have loans, and some companies have relatively small loans, more bankruptcies may not necessarily lead to large loan losses for the banks. Rather, it is primarily if problems arise among larger borrowers, such as property companies, that complications for financial stability may arise. On the other hand, more bankruptcies will lead to increased unemployment and loss of revenue for other companies.

Chart 7. Development of bankruptcies in Sweden



Note. Refers to bankruptcies of limited liability companies. 2016-2019 refers to an average.

Source: Statistics Sweden.

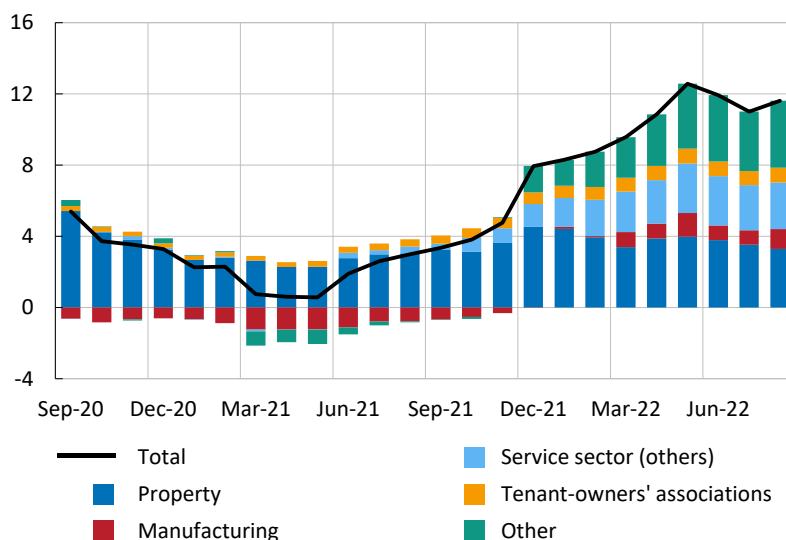
Higher bond yields are leading to increased demand for bank loans

Companies' bank loans and borrowing via the capital market have altogether increased rapidly in the past six months and grew by 11.6 per cent as an annual rate in August. It is primarily bank loans that have increased. In August, they grew at an annual rate of 14.8 per cent, which is the highest growth rate since the start of 2008. Property companies, the service sector and the retail sector account for the largest share of total borrowing (see chart 8).

The fact that companies have increased their bank loans is partly because they have increased their investment and company acquisitions. But it is also because it has become both more difficult and more expensive to obtain funding in the capital market. However, the conditions for issuing new bonds vary from one company to another. This is clearly illustrated by the fact that risk premiums for companies with low credit ratings have increased much more than for companies with high credit ratings. There are also differences between sectors. For example, some companies in the manufacturing industry continue to be able to issue bonds relatively smoothly, while it has become more difficult for property companies.

Chart 8. Growth in corporate loans by sector

Annual percentage change and percentage points



Note. The line refers to the annual percentage change in companies' total loans (loans from Swedish monetary financial institutions and commercial paper and corporate bonds issued). The columns represent each sector's contribution to total debt growth. "Other" refers to the transport, hotel, restaurant, trade, construction and energy sectors. Sector definitions are derived from the KRITA database.

Sources: Statistics Sweden (KRITA and SVDB).

Property companies have increased their bank borrowing by using existing credit facilities and by taking on new bank loans. The interest rates on these loans are lower than current bond rates. This is partly linked to the fact that credit facilities have often been agreed a long time ago when interest rates were lower. In addition, unlike bonds, bank loans are more often shorter in duration and are secured by pledge in one or more properties, which limits the losses that the bank can make on the loan. The fact that more loan maturities are being refinanced using bank loans means that the credit risk is becoming more concentrated with the banks. For property companies, the increased proportion of secured loans means that their credit rating may deteriorate.

In the short term, the property companies with liquidity and credit facilities can continue to refinance commercial paper and bond maturities at the banks. In total, these facilities amounted to about SEK 190 billion at the end of the first quarter of 2022.³⁸ Over the next 12 months, property companies will need to refinance more than 20 per cent of their outstanding commercial paper and bonds, equivalent to more than SEK 140 billion. Unless property companies are able or willing to begin issuing new bonds, there is thus a risk that the banks' concentration risk towards property companies could quickly rise. However, it is uncertain how much of the bond maturity of the property companies the banks want or can take over in addition to already agreed credit facilities. Some bond loans may therefore need to be refinanced in ways other

³⁸ These facilities refer to all property companies in aggregate and therefore not necessarily only to those property companies that have outstanding commercial paper and bonds.

than through bank loans, for example, property companies may need to sell properties or make new issues of shares. Some property companies have already sold individual properties to strengthen their balance sheet.

Most property companies can pay higher interest rates

Higher market rates will not immediately be fully reflected in property companies' cash flows, as they use interest rate derivatives and some of their loans are at fixed rates. The average financing cost for the larger property companies for interest-bearing loans was therefore still low at the end of the third quarter of 2022, around 2 per cent.³⁹ On average, larger property companies have an interest rate fixation period of more than three years, but just over 40 per cent of their loans have a short interest-rate fixation period and will be affected by higher interest rates within one year.⁴⁰

Most property companies can at present manage to pay higher interest rates. With regard to larger property companies, their average funding cost needs to rise to almost 8 per cent before interest costs exceed their current net operating income.⁴¹ But there are differences between companies. Some could only manage a funding cost of 5 per cent, while others could manage up to 18 per cent.

Interest rates on property companies' outstanding bonds have risen during the year and for some the upturn has been particularly rapid (see chart 9). These are interest rates that property companies may have to pay if they issue new bonds. Some property companies may therefore encounter problems if interest rates in the bond market remain at current levels or if the banks' lending rates continue to rise rapidly, and they cannot increase their profitability or adjust their capital structure.

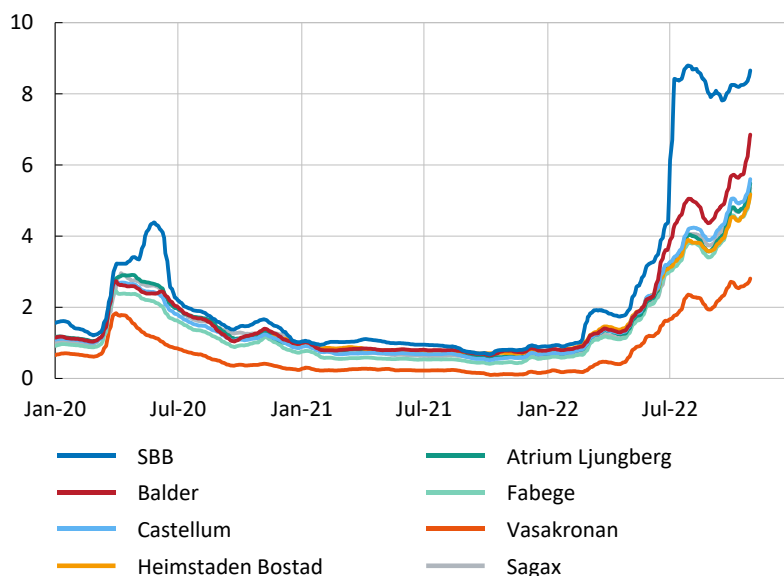
³⁹ Interest-bearing loans refer to, for example, bank loans, commercial paper, bonds and direct loans.

⁴⁰ The information is based on a sample of major property companies' volume-weighted interest and capital fixation periods from their annual reports, which also take into account their interest-rate derivatives and contractual credit facilities.

⁴¹ The calculation refers to net operating income (taking into account central administrative costs and interest deductions) in relation to the net liabilities (interest-bearing loans minus cash and cash equivalents).

Chart 9. Yields on bonds of some property companies

Per cent



Note. Refers to rates (yield to maturity) on some property companies' outstanding bonds at variable rates, 7-days moving average. The duration is five years for all bonds except for Sagax and SBB bonds, which are four and six years respectively.

Sources: Bloomberg and the Riksbank.

Rising interest rates lead to falling property values

Rising interest rates can lead to other difficulties for property companies – and for the financial system – long before interest costs exceed their current net operating income. For example, the value of their properties could fall and their credit ratings could be downgraded, making it more difficult for them to obtain new loans. A situation with higher interest rates means that buyers will demand a higher return for their property investment, which all else being equal entails a lower property value. Since property companies are required to report their properties in their balance sheet at their current market value, the most recent property sales will affect the reported value of all similar properties.

The impact of higher interest rates on yield requirements varies according to property segment and geographical location. However, in general, property companies' own sensitivity analyses indicate that a one percentage point higher yield requirement, all else being equal, would lead to a decrease in the value of their total property portfolio by just over 20 per cent.⁴² The current and future earning capacity of the properties also affects the property value. Higher rental income or reduced operating expenses may thereby mitigate the effect of interest rates on property values. In several property segments, rents are annually adjusted upwards in line with the development

⁴² The sample here consists of 22 large property companies. As these property companies have different properties and thereby different average yield requirements for their property portfolios, the effect of the higher yield requirement differs among them.

of the Consumer Price Index (CPI).⁴³ In addition, rents are also affected by ongoing re-negotiations of rental agreements, which may result in further rent increases. Given the interest rate environment foreseen by market participants, average rents would need to increase relatively significantly in the coming years to compensate for higher yield requirements.⁴⁴

However, the current economic outlook indicates that it may be difficult for property companies to increase their cash flows to the extent necessary to maintain current property valuations. As the profitability of many tenants' business operations is likely to decline in the future, it may be difficult for some to cope with large rent increases. In addition, if unemployment increases and bankruptcies become more frequent, this may lead to a lower demand for premises. Instead, in order to retain their tenants, property companies may have to agree to lower rent increases than they are entitled to under the CPI indexation in lease contracts.

Falling property values can affect financial stability

For a long time, the Riksbank has drawn attention to the fact that the highly indebted property companies may have problems in a situation where interest rates are rising, and that this may ultimately have a negative impact on the financial system. As interest rates are now rising, property companies' costs and opportunities to obtain new loans are affected. Going forward, the value of their properties is also expected to decline. So far, only a few property companies have adjusted down the value of their properties, and these adjustments have been small. This is partly due to the relatively low number of property transactions, which has made it difficult to reassess the properties. However, as more transactions are made, more property companies are expected to adjust their property values down. The biggest fall in value is likely to be in those property segments where yield requirements were lowest at the start of 2022 – such as offices and residential properties. Larger property companies also own properties abroad that are partly financed by foreign loans.⁴⁵ The value of these properties will probably also be affected by the higher interest rates. Falling property values for Swedish property companies can thus affect lenders both in Sweden and abroad.

Simple calculations indicate that, if property values were to fall by 20 per cent while property companies' loans remain the same, their volume-weighted loan-to-value ratio would increase from 54 to 69 per cent.⁴⁶ Such a deterioration of their financial key ratios could lead some companies to breach the financial covenants contained in the

⁴³ In the office, trade and logistics segments, virtually all leases with an original term of more than three years are indexed to the CPI. Rent changes in residential properties are not based on indexation but on negotiations between property owners and the Swedish Union of Tenants. Historically, rents for residential properties have increased by an average of the CPI over several years.

⁴⁴ Simplified calculations indicate that, on average, property companies' net operating income would need to increase by about 25 per cent to maintain current property values if yield requirements were to rise by 1 percentage point.

⁴⁵ For example, Swedish property companies own commercial properties in neighbouring Nordic countries and Germany. They currently make up about 30 per cent of their total property holdings.

⁴⁶ Refers to volume-weighted loan-to-value ratio and is calculated as loans from property companies through aggregate property assets. The starting point may differ from the loan-to-value ratios presented by the property companies, as these are usually based on total assets rather than property assets.

credit agreements.⁴⁷ Lenders would then have the right to renegotiate the terms or demand early repayment. In such a situation, lenders may also request additional collateral. This can quickly create a negative spiral driven by the inability of property companies to refinance their loans. The result could be widespread property sales, even higher risk premiums on loans and higher yield requirements, contributing to a further fall in property values. Such an eventuality could require lenders to make significant loan losses. As the banks have large exposures to the sector and it is closely interconnected with many other financial agents, there is a significant risk that problems could quickly spread within the financial system (see the article “Financial sector linkages with the commercial property sector”). In a worst-case scenario, such developments could threaten financial stability.

⁴⁷ Deteriorating financial key ratios may also lead to lower credit ratings, which could make it significantly more difficult to refinance loans in the bond market.

2.3 Vulnerabilities and risks in the household sector



Sentiment in the household sector is gloomy. Households' purchasing power has decreased, interest expenditure has risen and housing prices have continued to fall. Households are under pressure from prices for electricity, fuel and food, among other things, having risen rapidly over the year. Households therefore need to adjust their consumption in order to take account of the worsened economic situation. This affects both companies and the Swedish economy as a whole. If costs remain high for a prolonged period, household resilience and debt-servicing capacity will deteriorate. As households are highly indebted, financial stability risks are being adversely affected.

Households under pressure from several sources

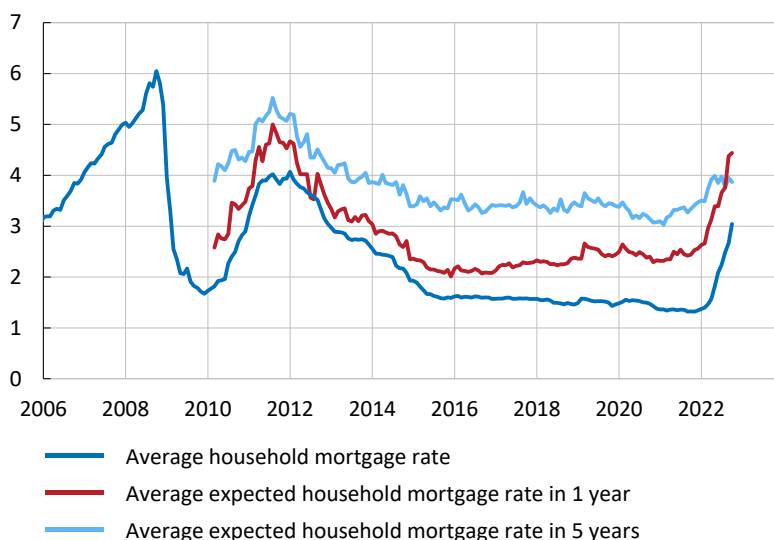
The Swedish economy is now expected to enter a period of subdued demand, with households expected to reduce their consumption in the second half of the year. Although the labour market remains strong, confidence indicators show that households have become increasingly pessimistic about their future financial situation.⁴⁸ A number of factors contribute to this. High inflation is reducing household purchasing power and contributing to the weak development of real disposable incomes. In addition, households are facing higher interest rates on their mortgages. They have also revised their interest rate expectations over the longer term upwards (see chart 10). In addition, the value of household financial and real assets has fallen over the autumn.

The National Institute of Economic Research's Economic Tendency Survey shows that owners of single-family houses have become the most pessimistic about their financial situation. This may be due to the fact that many homeowners now spend a larger share of their income on housing than in the past and they are strongly affected by rising electricity prices. To mitigate the effects of high electricity prices, several fiscal measures have been presented to compensate households in southern Sweden. However, the form and timing of these support payments still remain unclear.

⁴⁸ See *the Economic Tendency Survey*, September 2022, National Institute of Economic Research and the fact box "Perspectives on the low consumer confidence", *Monetary Policy Report*, September 2022, Sveriges Riksbank.

Chart 10. Mortgage rates and mortgage rate expectations

Per cent



Note. Average mortgage rates refer to new and renegotiated contracts. Expected mortgage rate refers to variable rate. The final observation refers to September 2022.

Sources: National Institute of Economic Research and Statistics Sweden.

Housing prices continue to fall

Higher mortgage rates and a higher cost of living have also contributed to dampening household demand for housing. Housing prices have continued to fall over the summer and autumn – in total, they have fallen by almost 10 per cent from the peak in February to September this year.⁴⁹ Price developments have also been weak in other countries (see chart 2).

The falling housing prices, combined with higher construction costs and increased funding costs for construction companies, will also affect housing investments. When housing prices fall, more households may choose to wait before signing pre-sale agreements for newly-produced homes, particularly for tenant-owned apartments where the moving-in date is far ahead in time. This makes it more difficult for housing developers to finance new construction projects. Housing starts have been at high levels in recent years, but construction and housing investments are now expected to decline rapidly in the coming years. This is expected to have a negative impact on the financial situation of housing developers.⁵⁰

Falling housing prices can also affect households that have signed a binding pre-sale agreement for a newly-produced home. It is not certain that the loan commitment made by the bank in connection with the pre-sale agreement will apply once the household comes to sign a contract with the cooperative before moving in. If the conditions have changed by then, it will not be certain that the bank will grant the loan in

⁴⁹ Refers to seasonally adjusted price development according to the Valueguard HOX Sweden price index.

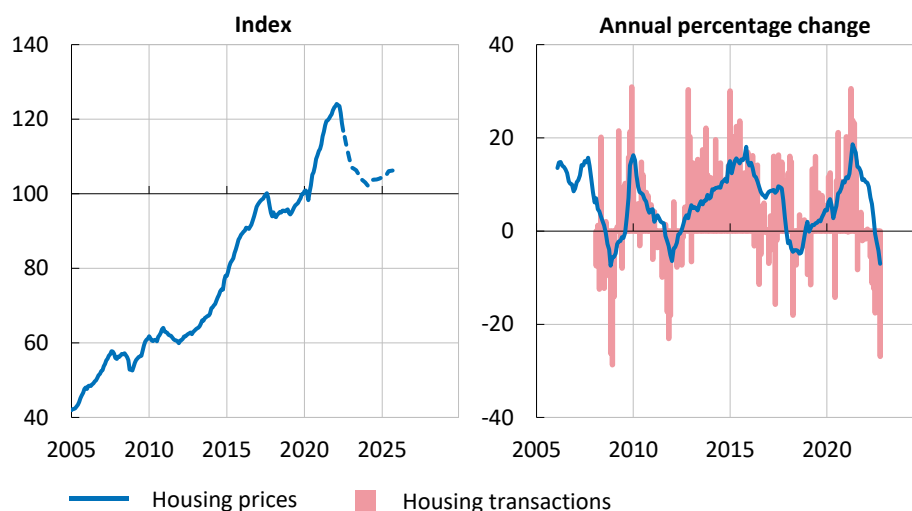
⁵⁰ See “The new production of housing and financial stability”, article in *Financial Stability Report 2018:2*, Sveriges Riksbank.

accordance with the pre-approved mortgage limit. This risk is particularly high for households already owning another mortgaged home while waiting to move into their new home, as the household is exposed to the risk of falling housing prices via both the new and old homes while the new one is under construction. As the possibility for a household to back out of a pre-sale agreement is limited, the household risks being obliged to compensate the housing cooperative or housing developer for the financial injury entailed if the household does not fulfil the agreement.

The Riksbank assesses that housing prices will continue to fall next year (see chart 11). However, it is difficult to say how prices will develop in the future and there is a risk that housing prices will fall both more and faster than expected. This may happen, for example, if households expect even higher interest rates or choose to counter higher costs by demanding smaller and cheaper housing.⁵¹ If housing prices fall sharply, many households may end up with higher loan-to-value ratios and, ultimately, less borrowing capacity. In turn, this may further dampen household consumption and may also lead to households having to pay a residual debt in the event of a sale of the home.

Chart 11. Development of housing prices and sales of homes in Sweden

Index, 2019 Q4 = 100 (left chart) and per cent (right chart)



Note. Seasonally adjusted prices. Housing prices refer to the HOX Sweden price index for tenant-owned apartments and single-family houses. The broken line represents the Riksbank's forecast for housing prices from the Monetary Policy Report in September 2022. Sales are calculated as the percentage difference between the number of transactions per month on an annual basis for homes in Sweden.

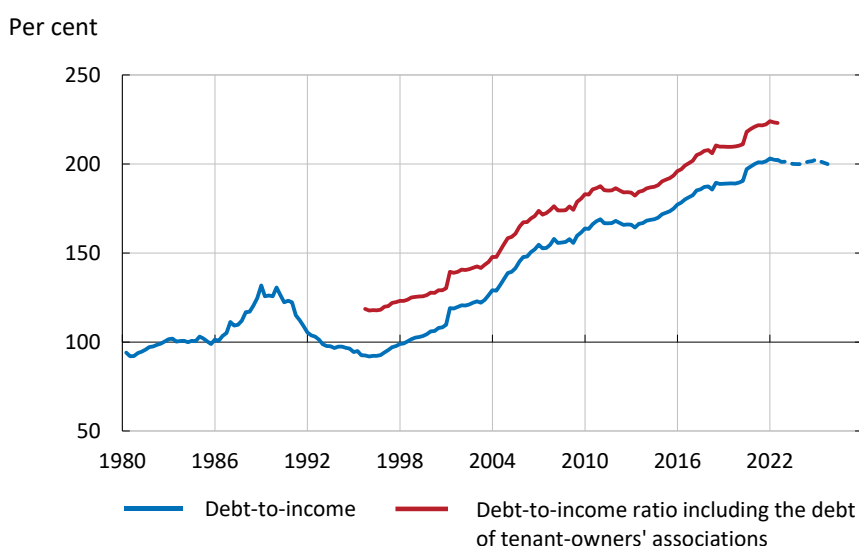
Sources: Svensk Mäklarstatistik, Valueguard and the Riksbank.

⁵¹ For a discussion of the relationship between interest rate expectations and housing prices, see J. Almenberg, M. Ankarhem, K. Blom and T. Jansson (2022), "Housing prices and interest rate expectations", *Economic Commentaries* No 10, Sveriges Riksbank.

Household debt is high, but growing at a slower pace

As mortgage rates have risen and the housing market has become more subdued, household debt has also grown at a slower pace. The growth rate in September was 5.1 per cent, which is around 1.5 percentage points lower than in the same month last year.⁵² However, the ratio of household debt to disposable income (debt-to-income ratio) is high and currently stands at just over 200 per cent, which is also very high by international standards. The overall debt ratio masks large differences between households, for example depending on where they live in the country and whether they own their home. In addition, households who live in tenant-owned apartments often also have indirect debts via their tenant-owners' association. Adding these debts brings the aggregate debt ratio to about 223 per cent (see chart 12).

Chart 12. Household debt in Sweden



Note. Households' total debts as a share of their disposable incomes, totalled over the past 4 quarters. Prior to September 2010, the debts of tenant-owners' associations were estimated solely on the basis of loans from mortgage institutions. The broken line refers to the Riksbank's forecast.

Sources: Statistics Sweden and the Riksbank.

Thus, when interest rates rise rapidly, not only does this increase the interest costs on the tenant-owner's own bank loan, but the tenant-owners' association may also be forced to increase its monthly fees to the tenant-owner. In highly indebted associations that have not taken account of rising interest rates, this can mean significant increases in monthly fees. It is mainly newly formed associations that have high debts per square metre of living space and they may therefore be more sensitive to interest rate changes.⁵³ In addition, tenant-owners' associations may need to increase their

⁵² See Chart A.4 in the Chart Appendix.

⁵³ The average debt for newly produced tenant-owned apartments in newly formed associations is almost SEK 12,000 per square metre, which is about twice as much as the average debt for existing associations. However, newly formed associations typically have a smaller investment requirement, which means that interest costs may represent a larger share of the current expenditure of these associations.

fee for the property's operating costs, for example due to higher electricity prices or because ground rent has been adjusted upwards.

Increased risk of households with consumer loans experiencing payment problems

Around 80 per cent of bank lending to households is in the form of mortgages – the remainder is in the form of so-called consumer loans (loans with other collateral than housing and loans without collateral, known as unsecured loans). Although consumer loans represent a relatively small part of households' total loans, they account for a relatively large proportion of households' total debt payments in terms of interest costs and amortisation.⁵⁴ This is because the amortisation period is short and interest rates are often considerably higher on consumer loans than on mortgages, which reflects the higher credit risk of consumer loans.⁵⁵

The changed economic situation means that there is now a greater risk that households with consumer loans could run into payment problems. Statistics from the Swedish Enforcement Agency also show that the number of claims for unpaid bills, so-called applications for an injunction to pay, has increased slightly in the first half of 2022 compared to the same period last year. These applications are likely to increase as households face a higher cost of living.

Properly conducted credit assessments can prevent individuals from falling into debt traps. It is therefore problematic that there is no system showing all the debts of borrowers, because lenders therefore base the credit rating on insufficient information. Often in the case of many smaller loans, no major credit assessment is carried out.⁵⁶ However, several initiatives have been taken recently to provide creditors with a better basis for credit assessment, and the government has appointed a study to examine, among other things, the issue of a more comprehensive debt register.⁵⁷

Households are sensitive to rising interest rates

Mortgage rates have risen sharply over the year and are expected to rise further. As household debt has been growing faster than income for a long time, households have become increasingly sensitive to rising interest rates. The fact that a large share of the mortgage stock is tied to an interest rate that is renegotiated every three months (variable interest rate) means that rising interest rates have a rapid impact on households' interest expenditure and thus on their consumption scope after mortgage-related expenditure has been addressed.⁵⁸ If the policy rate rises in line with the Riksbank's forecast, the household interest-to-income ratio (interest expenditure in

⁵⁴ See the report *Swedish Consumer Credit*, November 2021, Finansinspektionen.

⁵⁵ See Chart A.5 in the Chart Appendix.

⁵⁶ See, for example, "Request for an investigation into the conditions for a system with data on consumers' total debt situation", 26 October 2021, Finansinspektionen and Swedish Consumer Agency.

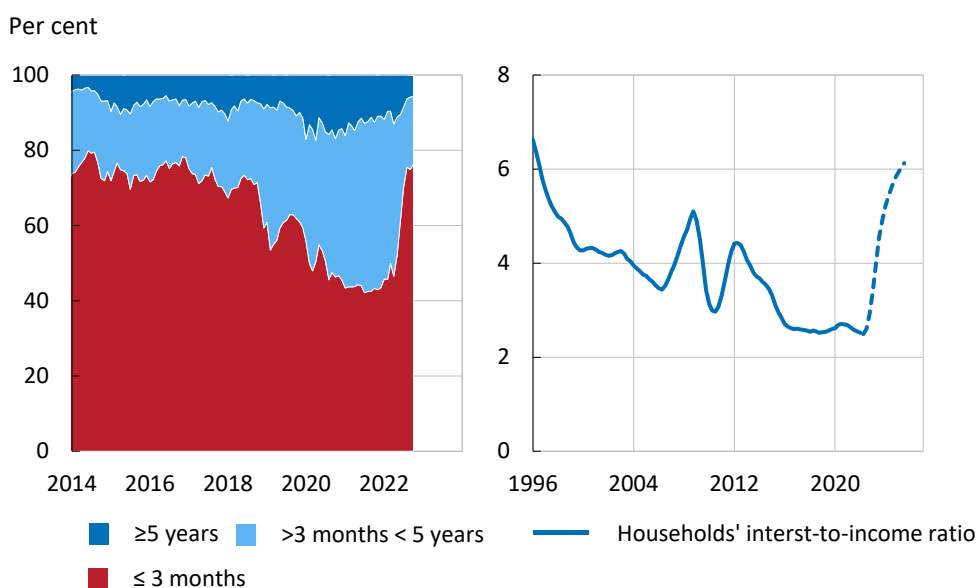
⁵⁷ See SOU Fi 2021:08 "Motverka riskfylld kreditgivning och överskuldssättning" [Counteracting risky lending and over-indebtedness].

⁵⁸ See also "Higher interest rate sensitivity in the Swedish economy", article in the *Monetary Policy Report*, September 2022, Sveriges Riksbank.

relation to disposable income) will rapidly approach the levels in the mid-1990s, when the policy rate was above 8 per cent (see chart 13).

The proportion of variable-rate loans declined during a period when interest rates on longer-term loans were falling sharply. Now, households seem to be increasingly opting for variable rates again. At present, almost 80 per cent of new and renegotiated mortgages are taken out at a variable rate (see chart 13). One reason for this may be that interest rates for longer fixation periods have risen both rapidly and in percentage terms more than the variable rate over the past six months.⁵⁹

Chart 13. Interest rate fixation periods for new and renegotiated mortgages and households' interest-to-income ratio



Note. Volume-weighted shares. Interest-rate fixation periods of up to 3 months are regarded as variable-rate in Sweden. The interest rate ratio is calculated as households' interest expenditure as a proportion of their disposable income and assumes that everyone can take advantage of a 30 per cent interest deduction. Disposable income is expressed as a four-quarter moving total. The broken line represents the Riksbank's forecast in the Monetary Policy Report in September 2022.

Sources: Statistics Sweden and the Riksbank.

Higher interest rates and cost of living lead to reduced margins for many households

The effect on households of rising interest rates and other costs of living varies and depends on several factors. For households with loans, the size of the loan and the interest fixation period have an impact on how much and how quickly higher interest rates affect cash flow. Different households also have different consumption patterns. For example, a family household will have different consumption needs than a single

⁵⁹ For example, the average rate on new and renegotiated mortgages with fixed interest periods of three to five years amounted to around 3.7 per cent in September, while the variable rate amounted to 2.8 per cent (see Chart A.6 in the Chart Appendix). Looking at the corresponding interest rates in the same period last year, the fixed rate was even lower than the variable rate for a long period.

household with regard to items such as food, and they may also be more dependent on having a car. However, a household with two adults usually has a higher disposable income than a single person household. The cost of electricity also differs. Family households generally have larger homes, which increases electricity consumption. The type of housing and the system for supplying heating also play a role in electricity consumption. For example, consumption is higher for a household living in a single-family house with direct electric heating than for a household with geothermal or district heating.⁶⁰ In addition, electricity prices differ in different parts of Sweden, which means that the electricity bill depends not only on how much electricity is consumed but also on the location of the home.⁶¹ In addition, around 50 per cent of households have variable electricity contracts, which means that many households are directly affected by price changes.

To illustrate the impact that the higher cost of living could have on household cash flow, a few simple calculations can be made.⁶² The calculations are based on hypothetical households that do not have any loans and on hypothetical households with loans of different sizes in relation to the value of the housing (see table 1).⁶³

Table 1. Assumptions about hypothetical households in the calculations

Single person household in a tenant-owned apartment	Stockholm		Malmö		Rest of the country	
Loan-to-value ratio (LTV)	50%	85%	50%	85%	50%	85%
Market value (SEK million)	4.35	4.35	2.76	2.76	2.51	2.51
Loan size (SEK million)	2.18	3.70	1.38	2.35	1.26	2.13
Family household in a single-family house	Stockholm		Malmö		Rest of the country	
Loan-to-value ratio (LTV)	50%	85%	50%	85%	50%	85%
Market value (SEK million)	6.85	6.85	4.89	4.89	3.95	3.95
Loan size (SEK million)	3.43	5.82	2.45	4.16	1.98	3.36

Note. Refers to average market values for housing purchased by new mortgagors (sample) in 2021, see Finansinspektionen's mortgage survey (2022), Table 2. The category "Rest of the country" in the table corresponds to the category "Other major cities" in the mortgage survey.

Sources: Finansinspektionen and the Riksbank.

These illustrative calculations show that costs linked to higher prices for fuel, electricity, food and interest rates for a household consisting of two adults and two children, living in an electrically-heated single-family house in Stockholm with a loan-to-value

⁶⁰ Around 30 per cent of single-family houses in Sweden are electrically heated (see table T2.5 in Energy in Sweden 2021, Swedish Energy Agency). Approximately a quarter of these use electricity without a heat pump or wood-burning, the rest in combination with some kind of heat pump (excluding geothermal heat pumps) which makes electricity use more efficient. Annually, on average, such a house uses 117.7 kilowatt hours per square metre of heated area including household electricity (see table T3.7 in Energy in Sweden 2021, Swedish Energy Agency).

⁶¹ See also "What effect can measures to dampen electricity prices have on inflation?", article in *Monetary Policy Report*, September 2022, Sveriges Riksbank.

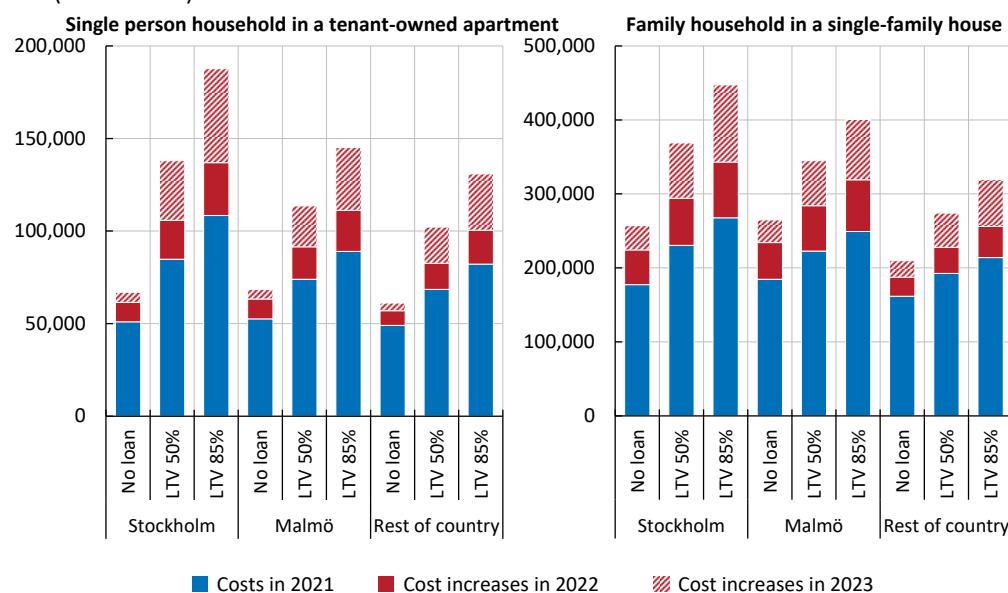
⁶² See note to Chart 14 for assumptions forming the basis of the illustrative calculations.

⁶³ According to Finansinspektionen's mortgage survey (2022), the average volume-weighted loan-to-value ratio was 53 per cent among households with mortgages in 2021. Among new mortgagors, the corresponding loan-to-value ratio was 68 per cent.

ratio of 50 per cent, could increase by almost 60 per cent higher costs in 2023 compared to 2021 (see chart 14). This is mainly due to costs for electricity and interest rates being higher. The effect is almost the same for a household living in Malmö, even though the size of its loan is smaller. This is because the price of electricity has been and is expected to be higher there than in Stockholm. If the household in Malmö is also very highly leveraged with a loan-to-value ratio of 85 per cent, total annual costs may increase by just over SEK 150,000, or approximately 60 per cent, compared with 2021. On the other hand, if the same household had no mortgage, annual costs would instead increase by just over SEK 80,000 or 43 per cent, compared with 2021, of which two-thirds of the cost increase would come from the higher electricity prices.

Chart 14. Estimates of fuel, electricity, food, and interest costs for hypothetical households in different parts of the country with different loan-to-value ratios in 2021-2023

SEK (annual cost)



Note. LTV stands for loan-to-value ratio, which is the loan in relation to the value of the property. Interest expenses are based on the average variable interest rate on mortgage loans and interest deductions are not included. Household consumer loans are not taken into account in the calculations. Amortisations are not included, but correspond to a sum of approximately SEK 100,000 per year for a highly mortgaged family household in Stockholm that amortises 2 per cent per year. Fuel costs are based on the price of petrol where the driving distance is assumed to be 10,000 km/year for a single household and 20,000 km/year for a family household, with a car that consumes 0.07l/km. Electricity costs are estimated on the basis of a consumption of 25,000 kWh/year for an electrically heated single-family house where the months October to March are assumed to have the highest electricity consumption. For a tenant-owned apartment, a consumption of 3,000 kWh/year is used, with the same monthly distribution of consumption as for a single-family house. The electricity cost is made up of the cost of electricity (variable spot price) and the network charge in electricity areas 1-4 plus tax and VAT. The category “Rest of the country” is an average of the costs in electricity areas 1 and 2. Electricity area 3 is represented by Stockholm and electricity area 4 by Malmö. Food costs follow the Swedish Consumer Agency guidelines for food costs. The estimate for the remaining months of 2022 and the full year 2023 is based on the Riksbank’s projections in the Monetary Policy Report, September 2022.

Sources: Swedish Consumer Agency, Macrobond, Statistics Sweden and the Riksbank.

The calculation examples show that there is a need for relatively large adjustments in households' private finances as a result of the higher cost situation, but that different households are affected differently. For example, households with high debts or high electricity consumption may need to reduce their consumption or savings significantly. Highly indebted households' behaviour may also impact price developments in the housing market to a high degree, since they are often the marginal buyer in housing transactions.

How households choose to adjust their consumption and saving behaviour may vary depending on the household's circumstances and capabilities. Households with higher debts typically have higher incomes. However, there is a lack of micro-data on actual household consumption expenditure and on the distribution of assets, savings and liabilities within the household sector. It is therefore difficult to get a complete picture of the resilience of individual households. Although household sector savings are high and assets are large, there are indications that highly indebted households may be short of liquid assets.⁶⁴ These assets can be of great importance as they provide a buffer for households in times of stress.⁶⁵

Previous discretionary income calculations do not reflect the level of costs that households are facing today

In its mortgage survey, Finansinspektionen carries out stress tests similar to the discretionary income calculations that banks carry out as part of their credit assessment. The stress tests provide an indication of the resilience of new mortgagors. These are based on household income, on the agreed interest rate and on standard values for living costs that are intended to represent the necessary expenditure for households in a stressed scenario. Earlier stress tests have indicated that most new mortgagors would be able to meet their debt payments even if interest rates were to rise sharply, but that many highly indebted households would have little of their income left to use for savings and consumption.

However, these stress tests do not take into account the increased cost of living that is now affecting mortgagors. Nor do the standard amounts used by the banks and Finansinspektionen reflect the cost situation that households are now facing. Moreover, it is uncertain how accurate the cost-of-living standard sums are in relation to actual expenditure even under normal circumstances. The margins of many borrowers in a higher interest rate environment are likely to be significantly lower than what is shown, for example, in the latest Finansinspektionen mortgage survey.⁶⁶ There is

⁶⁴ See M. Andersson, and R. Vestman, "Swedish households' liquid assets", *FI Analysis* No. 28, January 2021, Finansinspektionen. See also Chart A.7 in the Chart Appendix.

⁶⁵ See J. Almenberg, M. Kilström, V. Thell and R. Vestman, "Household debt and resilience in crises", *FI Analysis* No. 33, June 2021, Finansinspektionen.

⁶⁶ On behalf of the Government, Finansinspektionen has evaluated the effects of the mortgage cap and the amortisation requirements, focusing on the impact of the measures in the current economic situation. In the report, Finansinspektionen has published calculations on how household margins are affected in a scenario with higher prices and interest rates. The calculations show that households' margins are reduced, and in some cases they are reduced to the extent that the household runs a deficit. Almost 10 per cent of all households that bought a home in 2021 would be in deficit in a scenario with higher prices and interest rates. The corresponding proportion in the last mortgage survey by Finansinspektionen (excluding the stressed scenario) is just under 1 per cent.

therefore a risk that a mortgage will be a greater burden on the household than the discretionary income calculation indicates.

Household resilience is tested

Overall, both the higher cost of living and interest rates contribute to most households being forced to make some kind of adjustment in their personal finances. The vast majority of mortgagors are expected to be able to keep up with their debt payments, but some households may have problems servicing their debts. This is particularly the case for households with consumer loans, as these households generally have a poorer debt-servicing ability than mortgagors. A rapid adjustment in household consumption and savings would create profitability problems in the corporate sector. This could lead to more bankruptcies and increase the banks' loan losses on their corporate lending. If the risks materialise fully, the consequences could be both profound and long-lasting, given that vulnerabilities in the household sector and the Swedish financial system were already at a high level at the outset.⁶⁷

⁶⁷ See Chart A.8 in the Chart Appendix.

2.4 Vulnerabilities and risks in the banking system



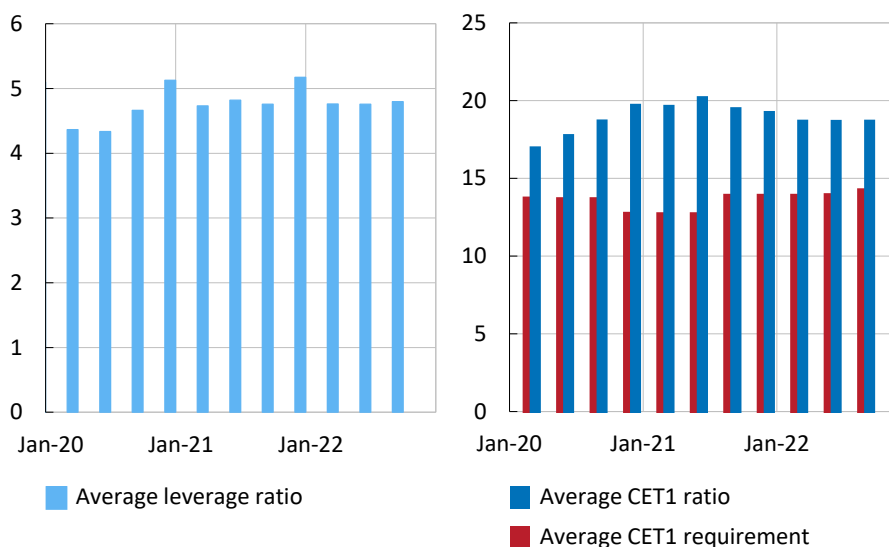
The major Swedish banks have a favourable starting position thanks to good liquidity, relatively large capital buffers and relatively high profitability.⁶⁸ However, risks have increased since the spring with the rapid deterioration in the economic outlook. When interest rates rise, this tends to benefit banks' earnings. However, at the same time, higher interest rates and other costs of living mean that borrowers will find it harder to service their loans, which may have consequences in the form of rising loan losses.

The major Swedish banks have a favourable starting position

The major Swedish banks continue to have a good margin to the capital requirements as well as to the requirements for liquidity buffers (LCR) and net stable funding (NSFR) (see chart 15).⁶⁹ Their leverage ratio has also been stable, although it is lower than the average for European banks.

Chart 15. The major Swedish banks' average leverage ratio and CET1 ratio

Per cent



Note. Average (unweighted) for the major Swedish banks. Capital requirement does not include the banks' internal buffers.

Source: The banks' interim reports.

The banks are also showing good profitability. During the first nine months of the year, the major Swedish banks achieved a return on equity of just under 13 per cent, which is high by European standards, although slightly lower than for the same period

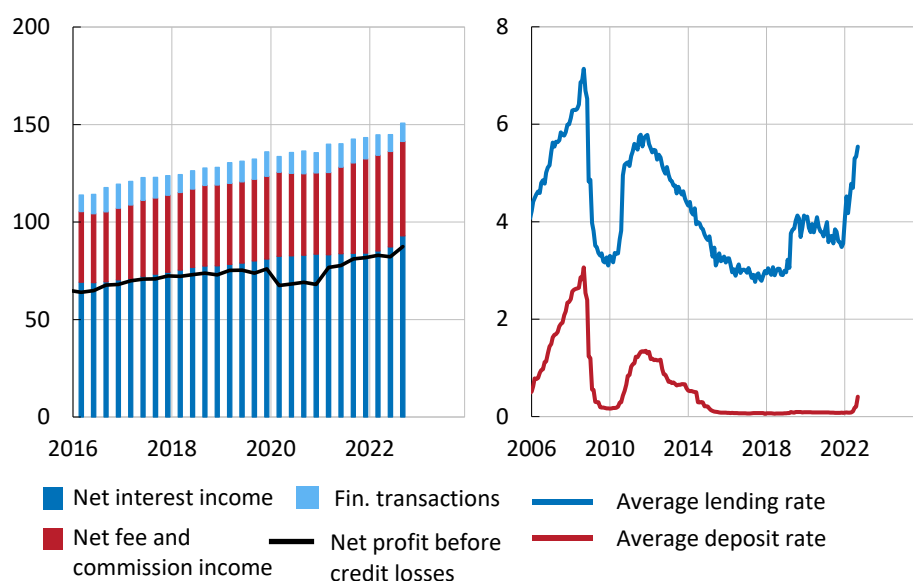
⁶⁸ The "major Swedish banks" are Handelsbanken, SEB and Swedbank.

⁶⁹ These measures illustrate banks' ability to cover their stressed net outflows for 30 days and to maintain a certain level of stable funding relative to their illiquid assets over one year.

in 2021.⁷⁰ The good profitability was mainly due to the increase in net interest income and the low level of loan losses (see chart 16 and chart 18). Net interest income benefited from growth in bank lending and higher margins on deposits. The fact that the margins on deposits have increased reflects that the banks have not raised the interest rate on deposits to any significant extent, despite the fact that interest rates have generally risen (see chart 16). The low loan losses are mainly due to the favourable economic situation.

Chart 16. Development of the major Swedish banks' main sources of revenue and development of average lending and deposit rates

SEK billion (left), per cent (right)



Note. The left-hand side figure refers to Handelsbanken, SEB and Swedbank, rolling four quarters. The right-hand side figure refers to the average lending rates of Swedish banks for new and renegotiated agreements for all loans to households. Deposit rates refer to all types of household deposit accounts.

Sources: The banks' interim reports and Statistics Sweden.

But there is considerable uncertainty about the way forward

The deteriorating economic outlook negatively affects the banks in several ways. Above all, the debt-servicing ability of their borrowers is deteriorating and loan losses are at risk of increasing. On the revenue side, the banks' net interest income looks set to benefit from rising interest rates, while commission and investment incomes look set to decrease, partly because of stock market developments and partly because of reduced consumer spending, which is affecting income from payment services such as credit cards. In addition to this, inflation entails cost pressures.

⁷⁰ The banks' interim reports and *EBA Risk Dashboard*, Q2 2022, European Banking Authority.

The risks associated with bank funding have also increased, which has pushed up the banks' CDS premiums. Confidence in banks could be negatively affected if there is increased uncertainty about borrowers' debt-servicing ability, which, in turn, could make it more difficult for the banks to obtain funding.

More expensive market financing means higher interest rates for borrowers

The major Swedish banks finance their lending with roughly equal parts of deposits from households and companies and issues of securities in the capital markets. About two-thirds of the latter are denominated in foreign currency. This means that the banks are dependent on both confidence from depositors and investors, as well as well-functioning domestic and international capital markets.

The banks continue to have good access to funding. Although the costs of wholesale funding have increased significantly, the banks have been able to increase lending rates to meet this.⁷¹ The rising costs for wholesale funding affect the major Swedish banks to a greater extent than other major European banks, as they are more dependent on wholesale funding. The cost increase is due to interest rates in general having risen, but to some extent also to investors perceiving the credit risks linked to the banks' borrowers as higher than before. Moreover, the main source of wholesale funding for the major Swedish banks, covered bonds, has a direct link to the housing market. As a result, confidence in the banks could decline if housing prices fall sharply, or if mortgagors have difficulty servicing their loans, which could ultimately lead to higher costs for covered bond financing.

⁷¹ See Chart A.9 in the Chart Appendix.

FACT BOX - How does a fall in housing prices affect the banks' covered bond funding?⁷²

The banks issue so-called covered bonds to finance their lending, mainly for housing purposes. Under the Covered Bonds (Issuance) Act, investors in covered bonds not only have a claim on the bank that issued the bond and a right to certain earmarked assets, known as the collateral pool, in the event of the bank's failure.⁷³ The collateral pool consists mainly of loans for which the home has been pledged as collateral. The law requires the collateral pool to be of good quality. For example, only the portion of a mortgage that is less than 80 per cent of the market value of the home may be included.⁷⁴ Thus, there is a link between the development of the housing market and the covered bond.

If housing prices fall in general, the loan-to-value ratio for mortgages increases. To the extent that the loan-to-value ratio for individual loans would thereby exceed 80 per cent, the value of the collateral pool decreases. To cope with fluctuations in the value of housing, issuers have a certain degree of so-called over-collateralisation in the collateral pool. This is made up of the difference in value between the collateral pool and the sum of the covered bonds issued. According to the regulatory framework, the collateral pool must comprise at least 102 per cent of the volume of covered bonds. At present, issuers satisfy this requirement by a margin.⁷⁵ However, in a situation in which housing prices fall and over-collateralisation decreases, the investor's risk increases.

The credit rating agencies regularly evaluate Swedish issuers' covered bond programmes. In their scenarios, which include price falls of 40 to 50 per cent, that is, more than the price fall during the 1990s crisis, the rating of Swedish issuers' covered bond programmes would not be affected.⁷⁶ All else being equal, they would still have the highest possible rating. However, such a scenario would likely have large negative effects on both the banks and the economy as a whole. Mortgagors' finances would likely be severely affected and so would their debt-servicing ability. Consequently, in the event of a price fall, investor confidence in the issuers could be undermined. This would probably affect pricing of and access to bank funding via covered bonds and other sources of funding.

⁷² For the 12 issuers of covered bonds in Sweden, commercial property accounts for around one per cent of the collateral pool. The focus of the analysis is therefore on the residential market.

⁷³ Covered Bonds (Issuance) Act (2003:1223) until SFS 2022:803.

⁷⁴ The quality of the collateral pool is regularly checked by an independent auditor appointed by Finansinspektionen.

⁷⁵ At the end of Q3 2022, the largest Swedish issuers had levels of over-collateralisation of between 11 and 183 per cent. The large variation is due to issuers applying different strategies regarding the amount of over-collateralisation they wish to hold, with some preferring to hold large amounts, while others prefer smaller but more dynamic amounts.

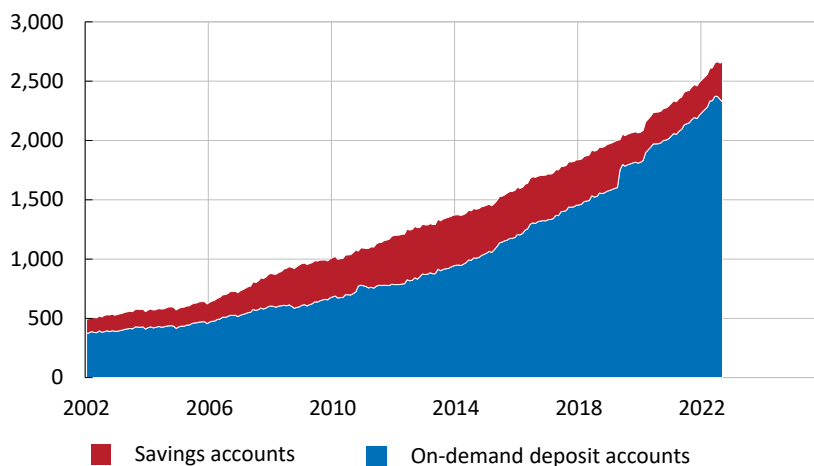
⁷⁶ See, for example, *Swedish Covered Bond Market Insights 2022*, September 2022, S&P Global Ratings.

Deposit growth has started to slow down somewhat in recent years, although it remains at a relatively high level. This development is partly due to central banks reducing their bond holdings.⁷⁷ In addition, the scope for savings by households and companies is shrinking as their financial situation becomes increasingly strained. For example, households saved around 18 per cent less in the second quarter of this year compared to the same quarter last year.⁷⁸

Smaller banks are more dependent on deposits for their funding than the major banks are, and are therefore more affected by a decline in deposit growth. As a consequence, they are more willing than the major banks to raise deposit rates, and have raised their deposit rates both faster and more so far this year. The major banks have recently started to raise their deposit rates, but these increases are not in line with either the deposit rate increases of the smaller banks or the major banks' own increases in lending rates. At present, only a smaller part of the Swedish banking system's total deposits are in savings accounts with a fixed interest rate or with limited withdrawals. Instead, the bulk of deposits are in on-demand deposit accounts, which typically earn less interest (see chart 17). Deposits in these accounts are not covered by withdrawal restrictions and can therefore easily be transferred to another bank. It is thus not unlikely that the deposit volumes of the major Swedish banks will be affected in the future.

Chart 17. Deposits in savings accounts and on-demand deposit accounts

SEK billion



Note. Savings accounts refer to deposits that are associated with certain term and/or withdrawal restrictions. On-demand deposit accounts refer to deposits without agreed maturity, notice period or significant restrictions in withdrawal conditions. This includes, for example, salary accounts and saving accounts with free withdrawals. Data up to the end of September 2022.

Source: Statistics Sweden.

⁷⁷ See H. Armelius, C. Claussen and D. Vestin (2020), "Money and monetary policy in times of crisis", *Economic Commentaries* No 4, Sveriges Riksbank.

⁷⁸ See *Statistics Sweden's Savings Barometer*, August 2022, Statistics Sweden. Includes deposits, premium pensions, occupational pensions, private insurance savings, fund shares, directly owned shares and bonds.

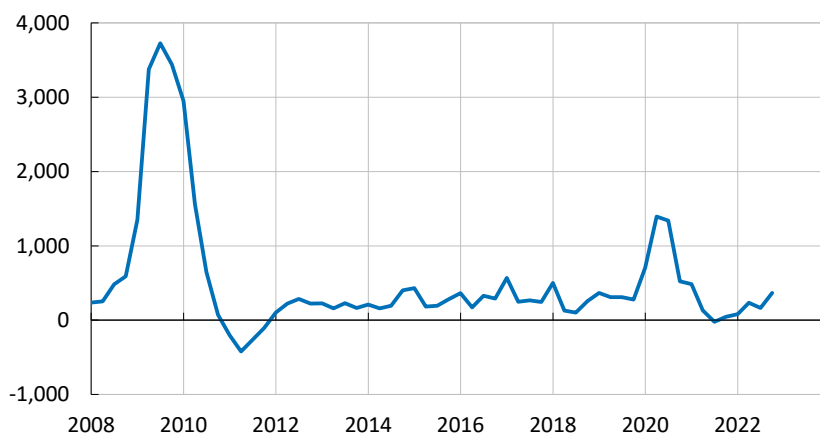
Loan losses are low

Higher inflation and interest rates combined with a worsening economic outlook increase the risk of customers defaulting on their loan payments. Developments in the property sector are of particular significance since the banks have large exposures to this sector. The banks also have large exposures to the service and retail sectors.⁷⁹

The major Swedish banks' loan losses are currently low (see chart 18). However, the process from risk of bankruptcy to actual bankruptcy takes time, and the banks need to make provisions for future losses as soon as the risks among customers start to increase. So far this year, banks have started to account for a deteriorating macroeconomic outlook by increasing their loan loss provisions. However, this is not reflected in the overall provisions as they have simultaneously made reversals from pandemic-related provisions that have not materialised. During the first nine months of the year, the banks increased their provisions for sectors such as construction, agriculture and forestry, and manufacturing, compared to the same period in 2021.

Chart 18. Development of the major Swedish banks' loan losses

SEK million



Note. Unweighted average for Handelsbanken, SEB and Swedbank.

Source: The banks' interim reports.

The Riksbank's new stress test indicates larger losses on corporate lending in a stressed scenario

To estimate the loan losses that could occur in the Swedish banking system in a stressed scenario, the Riksbank has developed a new stress test based on microdata for Swedish non-financial corporations (see box "Stress test of bank lending to non-financial corporations based on microdata"). Lending to this group only accounts for one part of the banks' total lending. However, it is a group of borrowers that is particularly interesting because it has historically accounted for the majority of the major

⁷⁹ See section 2.2 "Vulnerabilities and risks in the corporate sector".

Swedish banks' loan losses, along with losses from foreign non-financial corporations⁸⁰ The advantage of using a model based on microdata, compared to an aggregate model as previously used by the Riksbank to estimate the banks' loan losses, is that it allows the company-specific credit risk in the banks' lending to be taken into account, and better captures how exposures change over time. At the same time, however, the lack of other microdata means that the new stress test only captures the loan losses that may arise in one part of the banks' lending.

In the stressed scenario, the methodology reports aggregate loan losses of SEK 50 billion for the Swedish banking system over a time horizon of three years.⁸¹ This corresponds to an average of around SEK 16 billion per year for the banks in the stress test, which can be compared to an actual average of around SEK 5.5 billion per year for the banking sector as a whole for the years 1996-2020.⁸² Expressed as a percentage of total lending to Swedish non-financial corporations, the loan losses in the stress test correspond to just under three per cent. The estimated loan losses can also be compared with the overall operating profit, which, for the banking sector as a whole, amounted to around SEK 255 billion in the period 2019-2021.⁸³

The major Swedish banks have internal targets specifying that their capital levels shall exceed the formal capital requirements from Finansinspektionen by one to three percentage points. At present, the banks' capital levels exceed their internal target ranges. Eventually, however, capital levels look set to fall to the banks' target ranges as the countercyclical buffer rate is raised to two per cent next year. Even then, the major Swedish banks could manage higher loan losses without breaching capital requirements.⁸⁴ Given their relatively large capital buffers, the Riksbank's assessment is that they would be able to cope with the loan losses from the stress test.

However, the stress test results are not forecasts and should be interpreted with caution. The stress test does not cover the banks' entire loan portfolios and the model is based on several assumptions. If certain assumptions in the model are adjusted, losses will increase significantly, from SEK 50 billion to SEK 80-130 billion. There is thus a large margin of error depending on how well the assumptions capture what would actually happen in a stressed scenario.

As a consequence of the scenario used, the banks could also raise lending rates to compensate for the increase in credit risk, which would have a negative impact on credit supply. There is also a risk that they will not want to extend new loans, especially to sectors where they have already realised or expect to realise large loan losses. Moreover, the banks' access to wholesale funding would likely be affected if loan losses were to rise sharply. In addition, the stressed scenario implies a situation of weak growth, increased unemployment and higher inflation, which in itself would affect the banks' earnings negatively.

⁸⁰ Moreover, only microdata on lending to this sector are currently available.

⁸¹ The banks and institutions included in the stress test account for around 95 per cent of Swedish monetary financial institutions' non-household lending.

⁸² The historical average is based on Statistics Sweden's data on the banks' total net loan losses.

⁸³ Based on Statistics Sweden's data on the banks' operating profit.

⁸⁴ In a situation where the banks' loan losses increased sharply, it is also likely that Finansinspektionen would relax the countercyclical buffer, which could contribute to a further increase in the margin down to the capital requirements.

FACT BOX - Stress test of the banks' lending to non-financial corporations based on microdata

For many years, the Riksbank has carried out various types of stress tests as part of the analysis of financial stability, and it is continuously working to develop the stress tests further. The stress test in this Financial Stability Report is based on a methodology using microdata on bank lending to Swedish non-financial corporations.⁸⁵

The method estimates the probability of bankruptcy

The first step in this approach is to estimate, at corporate level, the relationship between corporate bankruptcies and a set of macroeconomic and company-specific variables. The risk of bankruptcy for each company is then calculated in a given hypothetical macro scenario. The estimate can be likened to a probability of default (PD) and, together with data on the size of the loans and an assumed loss given default (LGD), an expected loss for each of the loans can be calculated.

The macroeconomic variables used to estimate the probability of bankruptcy are the change in unemployment, the interest rate on a six-month government bond, the spread between the lending rate for companies and the rate of the government bond, and the change in housing prices. The model also includes company-specific variables, such as indicators of the age and indebtedness of the company and its size. Historically, young companies are more likely to go bankrupt than older ones, and small companies are also more likely to go bankrupt than large ones. In addition, each of the macro variables is multiplied by the indicator for high indebtedness. The reason for this is that macroeconomic changes can be expected to affect the company's probability of bankruptcy in different ways depending on its level of indebtedness.

The microdata used in this method are data describing the financial situation of non-financial corporations and data describing the loan-by-loan corporate lending of the banking sector. The corporate data covers all limited liability companies (aktiebolag) in Sweden from the early 1990s to the present, while the banking data covers about 95 per cent of the banking sector's lending to non-financial corporations. In total, these data cover about 20 per cent of the Swedish banking sector's total lending.⁸⁶ It is thus not a stress test of the banks' total exposures and loan losses may thus be much larger than the method indicates.

The stressed scenario shows a situation with falling GDP and rising interest rates

A stress test is often based on a scenario of hypothetical future economic developments describing a financial crisis or a severe recession, or both. The scenario in this stress test covers three years and describes a situation where there is stagflation,

⁸⁵ See N. Amberg, J. Li, and J. Winstrand, (2022). "A microdata-based approach to stress testing banks' loan losses from corporate lending", *Staff memo*, Sveriges Riksbank.

⁸⁶ The total lending of the three major Swedish banks to non-financial corporations abroad amounts to approximately the same proportion of total lending as lending to Swedish non-financial corporations.

meaning a combination of weak growth, rising unemployment, rising inflation and higher interest rates (see table 2).

Table 2. The annual economic developments in the scenario

Per cent/percentage points

	Year 1	Year 2	Year 3
GDP	-2.8	-4.4	1.8
Housing prices	-19.1	-16.3	8.2
Unemployment	9.3	12.5	12.6
Treasury bill 6 M	2.5	3.7	3.1
Company spread	2.0	2.9	2.6

Note. GDP and housing prices are reported as annual percentage change, unemployment is expressed as a percentage, Treasury bill 6 M is expressed in per cent and company spread is expressed as percentage points.

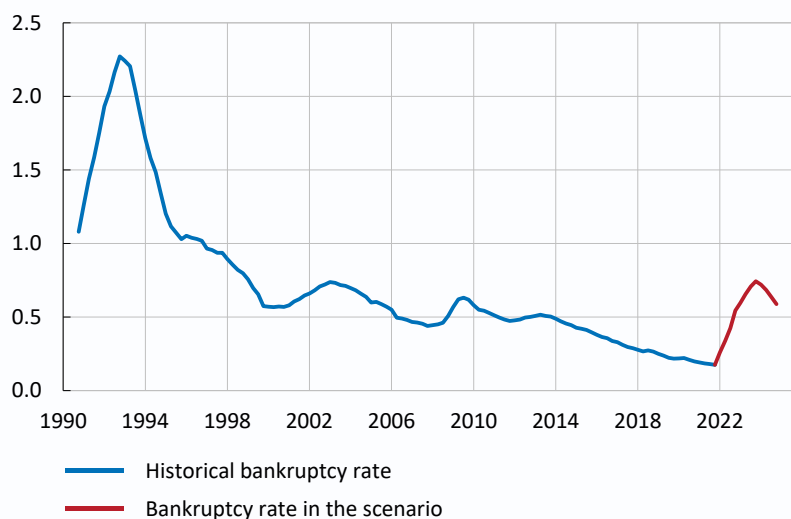
Source: The Riksbank.

Significant losses in the stressed scenario

In the stressed scenario, the probability of bankruptcy increases and the estimated expected loan losses in the scenario amount to SEK 50 billion over the three years (see chart 19). This corresponds to almost three percent of the lending to non-financial corporations.

Chart 19. The frequency of bankruptcy increases in the scenario

Percentage per quarter



Note. Rolling average of four quarters.

Source: The Riksbank.

As always with stress tests, the results are uncertain. On the one hand, there is a so-called statistical uncertainty, that is an uncertainty in the parameters estimated in the model for the probability of bankruptcy and, on the other hand, there is an uncertainty in the various assumptions made in the calculation of expected loan losses.

One way of describing the statistical uncertainty is to calculate a confidence interval for the result. In this case, a 90 per cent confidence interval yields losses of SEK 23 to 78 billion, which roughly means that, nine times out of ten, the result will fall within this interval, if a similar scenario were to be used.

To describe the sensitivity of the results to the different assumptions made, the calculations can be re-done with different assumptions. For example, the original estimate assumed a loss given default (LGD) of 45 per cent. Depending on the type of company and the type of loan, this may be an optimistic assumption. For example, in an unfavourable scenario, the collateral for defaulted loans may be difficult to sell and the value may fall sharply. If the LGD is instead assumed to be 70 per cent, the expected losses rise from SEK 50 billion to just over SEK 78 billion.

The model's results also depend on how indebted companies are at the start of the scenario. Indebtedness is defined here as liabilities over assets, and is assumed to remain unchanged over the course of the scenario. However, it is not unreasonable to imagine that the value of companies' assets falls in our scenario and that indebtedness rises as a result. If we assume that corporate indebtedness increases by 50 per cent, the expected losses rise to SEK 85 billion. If we also assume that the LGD is 70 per cent, the expected losses increase to SEK 132 billion.

The Riksbank also has methods for a stress test based on aggregate data, that generally produce much larger losses than the method used here. This is largely due to the fact that the aggregated method includes all exposures.⁸⁷ The stress test used here is based on microdata for Swedish non-financial corporations. This sector represents about 20 per cent of the banks' total lending and microdata covering the remaining 80 per cent are not currently available. Taking account of the banks' lending in other countries and other sectors, their total expected loan losses could thus be significantly greater in a situation similar to that in the scenario.

Losses may arise in other parts of the banking system

As mentioned above, the Riksbank considers that the major Swedish banks seem to be able to handle the loan losses from the stress test. At the same time, it does not include lending to households or foreign companies, and banks could also face increased loan losses in these borrower groups. In addition, there are large differences between banks' exposures to different risk segments, such as consumer loans. These differences exist both between the banks included in the stress test, and between the banks in the stress test and the other banks in the Swedish market. For example, while the major Swedish banks have a relatively diversified lending, some smaller banks' lending is highly concentrated to specific segments. They would therefore be more affected if problems were to arise with loans in those particular segments.

⁸⁷ Se D. Buncic, J. Li, P. van Santen, P. Wallin and J. Winstrand (2019). "The Riksbank's approach to stress testing bank capital", *Staff memo*, May, Sveriges Riksbank.

Consumer loans have grown relatively strongly in recent years, although they still account for a comparatively small share of total household loans at 18 per cent in August 2022.⁸⁸ At the same time, the credit check for consumer loans is not as extensive as when banks grant mortgages. Moreover, consumer loans represent a larger share of non-performing loans than their share of total lending.⁸⁹ For example, for the major Swedish banks, consumer loans represent around 2 per cent of their total lending, but around 13 per cent of their non-performing loans.⁹⁰

Smaller banks account for the largest risks from consumer loans. This is partly because they have taken market shares from the major banks over the past 10 years and, at the end of June, accounted for 42 per cent of this type of lending, and partly because some of them are highly concentrated to consumer lending.⁹¹ For so-called consumer credit companies, more than 70 per cent of their lending often goes to consumer loans.⁹² This means that they are particularly vulnerable now that there is a greater risk that households with consumer loans will experience problems paying their loans.

Heightened risks in the near term while structural vulnerabilities persist

The Riksbank considers that the major Swedish banks have a favourable starting position. However, there is a significant risk that the banks will need to make larger provisions in the future, which could affect both their market funding costs and their ability to maintain the supply of credit to the economy. In addition, structural vulnerabilities in the Swedish banking system persist. The Swedish banking system is large, interconnected and more dependent than those in other countries on both Swedish and foreign investor confidence and well-functioning capital markets.

⁸⁸ Statistics Sweden's Financial Market Statistics. Consumer loans as a share of total Monetary Financial Institutions' lending to households.

⁸⁹ Defined as the proportion of loans in stage 3, i.e. loans where there is a significant increase in the credit risk and there has been a credit event.

⁹⁰ Figures based on the banks' quarterly reports for Q3 2022.

⁹¹ See *Swedish Economy - Statistical Perspective* no 7, article "High interest payments for consumer loans", Statistics Sweden. The figure refers to what Statistics Sweden calls 'niche banks', which they define as banks that are often specialised in one or a few areas, such as car loans or similar types of consumer loans.

⁹² Defined by Finansinspektionen as a company whose core business is unsecured lending and various payment services. See FI's Banking Barometer for further details.

2.5 Vulnerabilities and risks among other financial agents



Financial agents other than banks can also have an impact on financial stability through their actions in the financial markets, as some of them manage large assets. Swedish investment funds account for a large proportion of the companies' market-based funding. At the same time, Swedish corporate bond funds are sensitive to large redemptions from unitholders and can pass on stress to companies. Swedish insurance companies also manage large assets. Their large exposures to high-risk assets make them vulnerable to large price falls.

Corporate bond funds are vulnerable in the current market environment

Weaker growth prospects and higher interest rates affect demand for riskier assets. This affects, for example, corporate bonds and also the funds that invest in them. As the Riksbank has previously highlighted, Swedish corporate bond funds are sensitive to large outflows as they offer unitholders daily redemption opportunities while investing in less liquid assets. This is a form of liquidity transformation.⁹³ As large redemptions may require funds to reduce their holdings of corporate bonds, this may ultimately affect the ability of companies to obtain funding.⁹⁴

In recent months, slightly larger than normal outflows have alternated with small net inflows for Swedish corporate bond funds, as chart 20 illustrates. These funds are sensitive to large outflows. In addition to continued market uncertainty, the corporate bond funds' cash levels remain at relatively low levels since the last Financial Stability Report.⁹⁵ The funds also have large holdings of the property companies' corporate bonds. Property companies are one sector that is particularly vulnerable to shocks such as changing funding conditions or a downturn in the economy.⁹⁶ A deteriorating outlook for property companies may therefore lead to greater redemptions from the funds by unitholders, which could exacerbate market turbulence and impair the ability of property companies and other companies to obtain funding.

⁹³ Liquidity risks resulting from liquidity transformation are not unique to the Swedish fund market. For example, they are also highlighted by the European Systemic Risk Board (ESRB) for certain European fixed-income funds. See ESRB, *EU Non-bank Financial Intermediation Risk Monitor 2022*, no.7, July 2022. Other risks mentioned for funds include increased credit risk and increased risk of market corrections due to changes in risk appetite. The International Monetary Fund (IMF) also highlights the liquidity transformation among funds as a major risk in its *Global Stability Report 2022 – Navigating the High-inflation Environment*, October 2022.

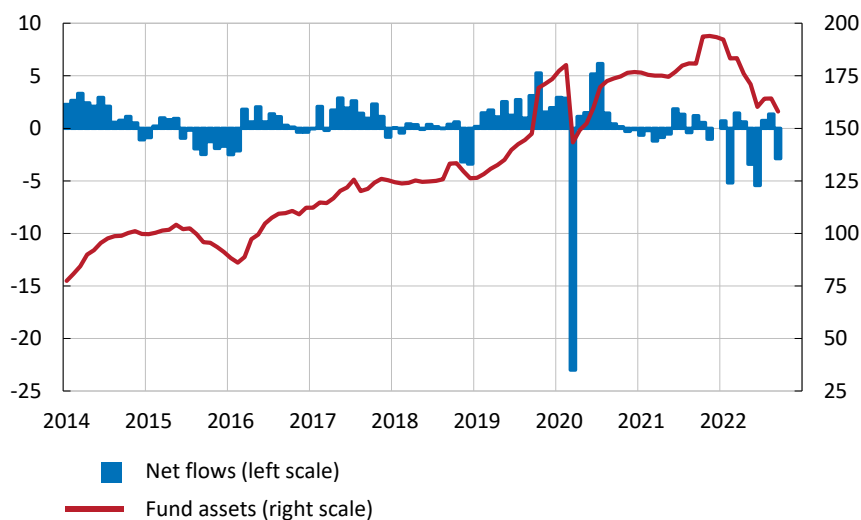
⁹⁴ See *Financial Stability Report*, 2022:1, Sveriges Riksbank, for a more detailed discussion of this.

⁹⁵ Keeping a sufficient amount of cash is one way for funds to increase their resilience to large redemptions. For the SEK Corporate bond fund category, for example, the proportion of cash in the portfolios remains just over six per cent. Source: Morningstar.

⁹⁶ See the article "Financial sector linkages with the commercial property sector".

Chart 20. Net flows and fund assets for Swedish corporate bond funds

SEK billion



Note. Net flows are the difference between deposits and redemptions from funds.

Source: Macrobond.

The interest rate risk in Swedish bond funds is assessed to be limited

As interest rates rise, bond funds will lose value. How much the value falls depends on the interest rate risk of the fund, that is, how sensitive the value of the fund is to changes in interest rates. Funds with high interest rate risk may be more exposed to the risk of unitholders making larger redemptions from the funds. The interest rate risk for funds can be measured by calculating the so-called modified duration. Modified duration refers to the percentage change in the value of the fund in the event of a one percentage point increase in government bond yields at all maturities.

For a sample of Swedish bond funds, the average modified duration was 2.3 per cent in September 2022.⁹⁷ By comparison, the European Systemic Risk Board (ESRB) estimates an average loss in value of four per cent for a sample of European bond funds for the same shift in government bond yields.⁹⁸ This indicates that the interest rate risk for Swedish bond funds is lower than for the European ones, which is an effect of maturities in the Swedish funds' holdings being shorter.

⁹⁷ The sample includes those Swedish bond funds where data on modified duration are included in the Morningstar database. These are more than 50 funds, but the exact number varies slightly from month to month.

⁹⁸ See *EU Non-bank Financial Intermediation Risk Monitor 2022*, no.7, July 2022, ESRB. The ESRB report does not directly assess whether it considers four per cent to be high or low, but historically it is not uncommon for fixed income funds to lose four per cent of their value due to outflows and/or unfavourable market conditions. This has also happened on an aggregate basis for Swedish long-term fixed income funds at certain times over the past decades.

Insurance companies remain vulnerable to asset price falls

The market value of the insurance companies' assets has fallen since the start of the year as a result of broad stock market declines and rising interest rates. However, equities and investment funds still account for a large share of their total investment assets (see chart 21), both historically and internationally.⁹⁹ For life insurance and occupational pension companies that invest with a long time horizon and have guaranteed financial commitments to their policyholders, the trade-off between risk and return is particularly important. The low interest rates have meant that the companies have had to increase their proportion of risky assets, such as equities and investment funds, in order to meet these commitments, as interest-bearing assets have generated too low a return.

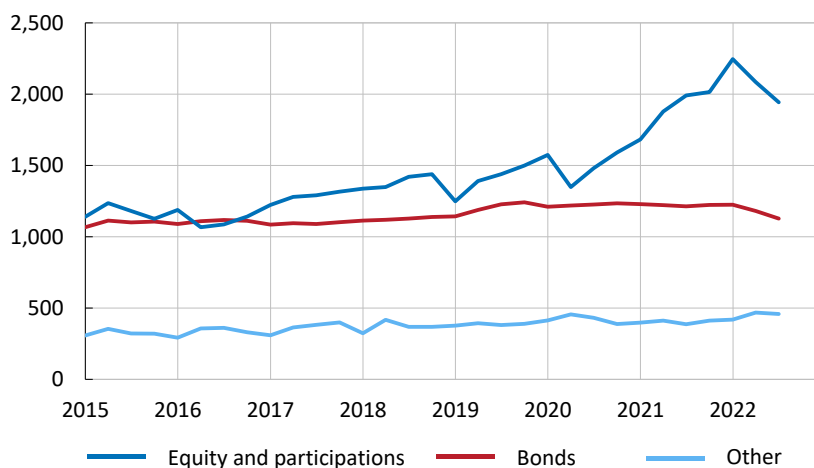
A fall in the prices of high-risk assets could therefore mean significant losses for the insurance companies and a deterioration in their financial positions (solvency). However, their solvency is better than the European average and is still considered good overall.¹⁰⁰ On the other hand, if prices fall, policyholders' returns in excess of those guaranteed could decrease.

⁹⁹ See *Financial Stability Report*, June 2022, European Insurance and Occupational Pensions Authority, for an overview of European insurance companies' allocations.

¹⁰⁰ The Solvency Capital Requirement (SCR), which is one of two capital requirements under the European Solvency II Directive, was slightly higher in the first quarter this year for Swedish insurance companies compared to their European counterparts (see European Insurance and Occupational Pensions Authority insurance statistics [Insurance statistics | Eiopa \(europa.eu\)](#)). See also *Stability in the Financial System, 2022:1*, Finansinspektionen, for an assessment of the solvency situation of Swedish life insurance and occupational pension companies.

Chart 21. Life insurance companies' asset allocation over time

SEK billion



Note. Unit-linked insurance plans where the policyholder bears the risk are excluded. Equity and participations refer to listed and unlisted shares, investment funds, warrants and other equity. Other refers, for instance, to cash and bank balances, money market instruments, loans, buildings and land.

Source: Statistics Sweden.

Insurance companies currency hedge a large part of their investments in foreign assets, particularly foreign bonds, by entering into currency swaps to match assets and liabilities to their respective currencies.¹⁰¹ In addition, they usually enter into short-term currency swaps, which gives them less respite in a period of financial stress, since they have to renew their currency hedges frequently. Insurance companies are therefore dependent on the market functioning so that they can renew their currency swaps. For example, dollar hedges worth around SEK 450 billion would expire if the market were to stop functioning for a month.¹⁰² If these assets are subject to large price falls, the original currency hedge may become too large, resulting in a substantial need for foreign currency for the companies.¹⁰³ Additionally, falling prices on higher-risk assets may mean increased margin requirements for existing investments, such as derivative contracts, which are often paid in foreign currency.¹⁰⁴ The result of sharp price falls and a poorly functioning currency swap market could thus be that insurance companies develop a need for foreign currency that is large relative to the volumes normally traded on the spot market.¹⁰⁵

¹⁰¹ They typically hedge only a small proportion of their foreign shareholding. This is because the share price risk is generally considered to be higher than the exchange rate risk.

¹⁰² See Chart A.10 in the Chart Appendix. Also includes the National Pension Insurance Funds.

¹⁰³ See *Financial Stability Report*, 2022:1, Sveriges Riksbank, for a more detailed discussion of this.

¹⁰⁴ For example, it is common for insurance companies to adjust their foreign equity exposure by buying or selling futures that follow a foreign stock market index. When the price of these futures falls in line with the index, they may have to provide additional margins.

¹⁰⁵ In addition to exchanging SEK for foreign currency on the spot market, insurance companies can also dispose of foreign investments but this could involve significant realised losses in times of financial unease. See the article "The interconnectedness of insurance firms, National Pension Insurance Funds and banks via the foreign exchange market", in *Financial Stability Report*, 2020:1, Sveriges Riksbank.

Negative effects of price falls will be cushioned over time as interest rates rise

On the one hand, rising interest rates affect insurance companies by reducing the present value of their investment assets, which in itself is negative. On the other, the same happens to the present value of their financial commitments to policyholders, which is positive for the insurance companies. The net effect on the companies is determined by the duration gap, which is to say the difference in interest rate sensitivity of the assets and commitments of insurance companies. Swedish life insurance and occupational pension companies tend to have a negative duration gap, which means that their commitments are more sensitive to interest rates than their assets – so when interest rates rise, commitments fall more than assets. Swedish life insurance companies thus generally benefit from rising interest rates, in comparison to some European counterparts that do this to a lesser extent as they have smaller duration gaps.¹⁰⁶

Higher interest rates may eventually lead to a reduction in risk-taking by insurance companies, as they do not need to hold as much risky assets to meet their commitments. On the other hand, risks arise if interest rates rise very quickly. For example, even if insurance companies can reinvest coupon payments from their interest-bearing assets at a higher interest rate, the market value of their investment assets may initially fall sharply in the event of a rapid rise in interest rates, with a negative impact on their solvency.

Rapidly rising interest rates may increase margin calls in the interest-rate swap market

In order to prevent falling interest rates from causing life insurance and occupational companies' commitments to grow significantly larger than their assets, many choose to increase interest-rate sensitivity on the asset side by entering into interest-rate swaps. They then receive fixed interest from a counterparty and pay variable interest back. If interest rates rise, the market value of their interest-rate swap contracts decreases because they receive the same fixed interest but have to pay higher interest. They may then have to deposit margins for the contracts cleared by a central clearing counterparty (see fact box "What does it entail to be a participant in a CCP?").

In September 2022, UK government bond yields rose so rapidly that several UK defined-benefit occupational pension companies struggled to meet margin calls that arose on their CCP-cleared interest-rate swaps.¹⁰⁷ In addition, the UK companies leverage a large proportion of their government bond holdings by entering into repo transactions with banks.¹⁰⁸ The aim is to gain greater exposure to government bonds

¹⁰⁶ Swedish non-life insurance companies have, if anything, a slightly positive duration gap, meaning that assets are slightly more sensitive to interest rates than liabilities. Consequently, they are slightly disadvantaged when interest rates rise.

¹⁰⁷ Defined-benefit means that the size of the pension is determined in advance, for example as a percentage of final salary.

¹⁰⁸ They pledge their existing government bonds through repo transactions and receive liquidity from the bank to buy additional government bonds.

and thus increase interest rate sensitivity on the asset side.¹⁰⁹ As interest rates rose, the value of government bonds fell and they were forced to sell part of their holdings to reduce their leverage. This led to a self-reinforcing negative spiral as interest rates rose further due to these sales. This led the Bank of England to start buying government bonds in order to restore the functioning of the market.

However, the Swedish defined-benefit occupational pension companies have more assets in relation to guaranteed commitments than their British and European counterparts.¹¹⁰ They are therefore better capitalised to cope with periods when low interest rates cause commitments to grow relative to assets. However, vulnerability to rapidly rising interest rates remains and the liquidity risk associated with CCP-cleared interest-rate swap contracts may increase in the future. This can occur if insurance companies choose to close more of their negative reduction gap by entering into more interest-rate swaps or if the share of interest-rate swaps cleared by a CCP increases in the future.

¹⁰⁹ In Sweden, the loan-to-value ratio for insurance companies is limited by the Insurance Business Act (2010: 2043) and for occupational pension companies by the act on occupational pension companies (2019:742) to being of little significance with regard to the size of their capital base. Further, derivatives may be used to reduce the financial risk in the company or to improve the efficiency of management.

¹¹⁰ In Sweden, half of the occupational pension companies' commitments are related to defined benefit pension schemes (see *Financial Stability Report*, June 2022, European Insurance and Occupational Pensions Authority). See Chart A.11 in the Chart Appendix. Swedish defined benefit pension companies have the largest amount of assets in relation to guaranteed commitments within the EEA.

2.6 Vulnerabilities and risks in the financial infrastructure



The availability of financial infrastructure systems has been good so far during the year. However, major changes are still under way in the payments and securities area. In order to ensure that financial stability is not affected, participants need to implement the changes in such a way that availability and efficiency are maintained during the work. Volatility in the electricity market and the high price of electricity have affected many of Nasdaq Clearing's participants holding electricity derivatives contracts. This has led some participants to run the risk of liquidity problems. If electricity prices were to increase again, the risk of default could also increase again.

Major changes in the payments and securities market are increasing operational risks

Availability in the Swedish financial infrastructures has been good over the first three quarters of this year.¹¹¹ Some of the infrastructure systems have experienced disruptions. Nevertheless, payments and securities transactions have generally been carried out safely and efficiently.

The payments and securities area in Sweden and in the rest of Europe is undergoing major changes. This includes the harmonisation of processes, the emergence of new participants and introduction of new technology, the development of new services and the further development of technical systems. Among other things, these changes are necessary to retain the efficiency of the financial infrastructure systems in the long term. In some cases, they are also necessary because some of the further development of systems has been delayed.

The changes affect both the infrastructure companies themselves and their participants. The process of change can be challenging because it involves renewing operations while maintaining existing operations without disruptions. Among other things, this requires access to staff capable of managing both new and existing systems and procedures. As the Swedish financial market is relatively small, it may be a challenge to find such staff. Disruptions to the process of change or ongoing operations could affect other participants and ultimately have negative consequences for financial stability. The infrastructure companies and their participants must therefore ensure that they plan carefully and realistically so that the functions and availability of the existing systems is maintained during the process of change.

¹¹¹ See Chart A.12 in the Chart Appendix.

FACT BOX - What does it entail to be a participant in a CCP?

A CCP acts as an intermediary between buyer and seller in a securities transaction. The original contract between the buyer and seller is replaced by two contracts in which the CCP is the counterparty to both. In other words, the CCP becomes the buyer to each seller and the seller to each buyer. The buyers and sellers will then become the CCP's participants. Participants in a CCP therefore have no counterparty risk towards each other; instead the risk is concentrated in the CCP. This means that the CCP is subject to credit and liquidity risks towards its participants.

CCPs require their participants to post margins to reduce their risk exposures should somebody default. Margin requirements are divided into what are known as initial margin (IM) and variation margin (VM). IM is the collateral that a participant posts to the CCP when a contract is entered into, to cover the losses that may arise during the time it takes the CCP to close a participant's positions in the event of default. It thus aims to cover the risk the CCP is exposed to when a contract is cleared. IM requirements are also adjusted continuously over the life of the contract. For example, the IM requirement increases if the expected losses in the event of a default increase, which may be due, among other things, to increased market volatility. The CCP keeps the collateral posted by participants until the position is closed. At that point, the participant gets its collateral back.

VM is normally settled on a daily basis and is continually adjusted according to the market value of a position. For example, if the market value of a participant's position has declined, the participant must pay an amount equal to the loss to the CCP. Unlike IM, the CCP transfers the collateral in the form of VM to the other party in the transaction who has thus made a profit in relation to the market value of its position. VM requirements must be met using cash. In addition to cash, IM requirements can be met using various types of assets such as government bonds or covered bonds. However, these assets must be highly liquid to be accepted as collateral.

Market volatility and rapidly changing prices can lead to a sharp increase in margin requirements, both IM and VM, as illustrated by recent events in the electricity derivatives market. In the event of major market volatility, the risk of participant default may also increase if a participant does not have sufficient collateral and liquid resources to meet margin requirements.

To reduce the risk to the CCP further in the event of a participant default, participants are required to pledge resources to a default fund.¹¹² The purpose of this fund is to cover the losses that may arise when a participant defaults if the IM collateral is not sufficient. If the participant's financial resources are not sufficient to cover the costs of the default, the collateral contributed by the participant to the default fund is used. After this, the CCP's own resources and the resources contributed to the default fund by the remaining participants are used.

¹¹² For more information on a CCP's default fund, see *Financial Infrastructure*, 2016, Sveriges Riksbank.

Increased risks for participants in the electricity derivatives market

Since autumn 2021, the European electricity and energy markets have been characterised by high and volatile prices.¹¹³ This has also been reflected in electricity and energy prices in the Nordic market, as the electricity grids in the Nordic countries are interconnected with the European ones. This has increased the risk exposures for the Swedish CCP, Nasdaq Clearing, which, among other things, clears electricity derivative contracts as part of its commodities clearing.

The electricity derivative contracts primarily cleared by Nasdaq Clearing are a form of standardised future contracts. Future contracts entail an agreement to purchase or sell an asset at a specific date in the future at a predetermined price. In simplified terms, participants in the electricity market use financial future contracts to hedge the price of their future production (electricity producers) or future consumption (buyers).

From the moment the derivative contract is entered until its maturity, the CCP has a risk exposure to the participants clearing these contracts. During this period, the participants must therefore collateralise the risks to which they expose the CCP. For the electricity derivatives contracts in the form of futures cleared with Nasdaq Clearing, a daily settlement of gains and losses is made in the future contract, which gives rise to margin requirements in the form of variation margins (see fact box "What does it entail to be a participant in a CCP?"). The future contracts also give rise to initial margin requirements for counterparties at the time the contract is entered. These are then regularly adjusted, among other things on the basis of the market's price level and volatility.

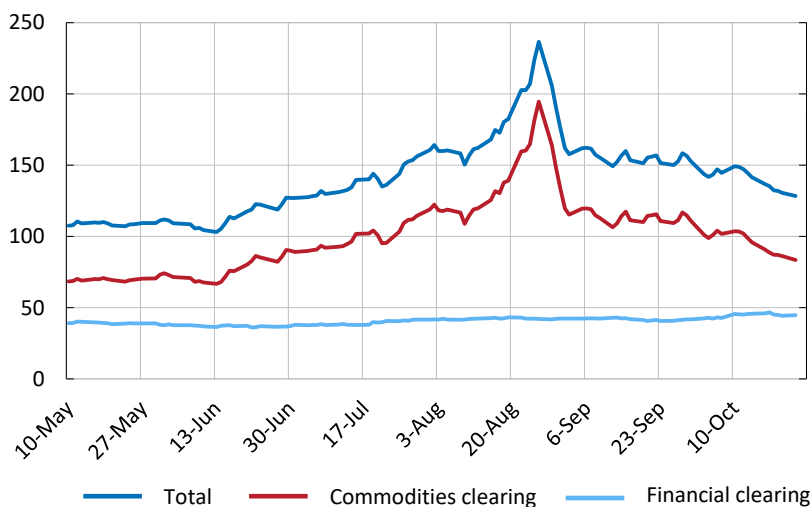
The effect of high and volatile electricity prices on margin requirements became increasingly evident during the summer (see chart 22). As margin requirements increased so rapidly and sharply, there was a risk that participants would not have had sufficient liquid assets to meet the requirements, not least because many of the participants in the commodities clearing are non-financial corporations, which may have less liquid assets than financial corporations. If this development had continued, it could have led to one or more participants defaulting as a result of their liquidity problems, even if they did not necessarily have underlying solvency problems. Consequently, in early September, the Riksdag decided to provide support in the form of a state credit guarantee to electricity producers to prevent them from experiencing liquidity problems.¹¹⁴ However, prices on the electricity derivatives market fell soon after this support was announced, which reduced the margin requirements and the need for the support. The state credit guarantee has not yet been used.

¹¹³ See Chart A.13 in the Chart Appendix.

¹¹⁴ See the government assignment "Uppdrag om statliga kreditgarantier för elproducenter" [Assignment on government credit guarantees for electricity producers], September 2022, Ministry of Finance. Published 6 September 2022. Accessed 7 November 2022, [Uppdrag om statliga kreditgarantier för elproducenter - Regeringen.se](https://www.regeringen.se/uppdrag/2022/09/uppdrag-om-statliga-kreditgarantier-for-elproducenter).

Chart 22. Aggregate initial margin requirements for Nasdaq Clearing’s participants

SEK billion



Note. The collateral a participant has posted to the CCP to cover its initial margins is intended to cover potential losses if the participant should default. The chart shows Nasdaq Clearing’s participants’ initial margin requirements for financial clearing and commodity clearing (including seafood clearing), as well as the sum of these two clearing services.

Source: Nasdaq Clearing.

If the participants had not had sufficient collateral and had thus defaulted, the CCP would have had to take over the defaulting participant’s outstanding contracts and close out its positions. However, the CCP-cleared part of the electricity market has become less liquid. Consequently, it could have been difficult for the CCP to close the defaulting participant’s positions at market price. In the worst case, this could have created significant losses for the CCP and other participants in Nasdaq Clearing’s commodities clearing that had not defaulted. This is because all participants participate in the management of losses after a default. Large losses could have created financial problems both for the participants and for Nasdaq Clearing.

Prices on the electricity derivatives market have fallen recently and volatility has also decreased. However, if they were to increase again, particularly if they were to increase to higher levels than before, the risk of defaults could increase again. It is therefore important that Nasdaq Clearing’s participants continue to have access to sufficient liquid assets that can be used quickly to meet margin requirements. The state credit guarantee could be a helpful factor in this context.

ARTICLE - Financial sector linkages with the commercial property sector

Property companies are the banks' largest group of borrowers among non-financial corporations. They have also increased their borrowing the most of all companies in Sweden in recent years. Much of this borrowing comes from the Swedish banking system but, in recent years, it is borrowing via the capital markets that has grown the fastest. This has led to asset managers, such as funds in Sweden and abroad, as well as insurance and pension companies, becoming more exposed to the property sector. This development means that property companies are now more interconnected with the entire financial sector than before.

The large loans make property companies vulnerable to shocks such as changing financing conditions or a downturn in the economy. Now that property companies have to cope with higher interest rates and lower economic growth, the risks that have built up in the property sector are more likely to materialise.

As the property sector has historically created or strengthened financial crises both in Sweden and in other countries, it is important to understand how problems in the property sector can spread. The focus of this article is on how problems can spread to the financial sector.

Risks in the property sector have been increasing for a long time

To finance their operations, property companies use equity and loans. The strong economic growth of the last ten years, combined with low and falling interest rates, has meant that Swedish property companies have increased their borrowing rapidly. Between 2012 and 2021, their borrowing has grown from just over SEK 1,300 billion to SEK 2,300 billion, which today corresponds to 42 per cent of Sweden's GDP.¹¹⁵ Property companies are the largest borrowers among all non-financial corporations. Among the banks, property companies account for 43 per cent and, on the capital market, for 42 per cent of the volume of loans to companies.¹¹⁶

¹¹⁵ This article refers throughout to property companies operating in the commercial property sector. This means companies owning property with the primary purpose of letting it. Properties owned by enterprises whose main purpose is manufacturing, for example, are therefore not included. The commercial property sector includes offices, retail properties, rented residential units, hotels, logistics and industrial properties.

¹¹⁶ The capital market refers to commercial paper and bonds issued by Swedish companies in all currencies.

Despite the increase in debts among property companies, the average loan-to-value ratio has decreased slightly and is now around 50 per cent. This is due to the fact that property values have also risen rapidly over this period.¹¹⁷ On the other hand, property companies have increased their loans relative to their operating profits.

The risks associated with the property sector's large loans are something that Swedish authorities such as the Riksbank and Finansinspektionen, as well as international organisations such as the IMF, OECD and ESRB, have drawn attention to on several occasions.¹¹⁸ In particular, the large loans have made property companies increasingly sensitive to changing economic conditions, such as limited access to loans, less favourable financing conditions or weaker economic activity.

The high level of borrowing in the property sector may have consequences for financial stability and the real economy. If property companies find it more difficult to borrow, they may be forced to make adjustments, such as reducing their investments in existing or new properties. This could lead to a reduction in construction activity and thus to lower demand for labour, which could exacerbate a downturn in the economy.¹¹⁹ At the same time, reduced access to credit combined with poorer financing conditions, such as higher borrowing costs, may force property companies to make large write-downs on property values and conduct fire sales of properties. This could have an impact on the financial system, for example through large loan loss provisions by the banks and large negative value changes for bondholders. In the worst case, higher borrowing costs could lead to property companies defaulting on their payments. This would result in even higher loan loss provisions and value changes.

Property companies have been borrowing more and more outside the banking system

In the past, property companies have mainly obtained funding by taking loans from major Swedish banks, although foreign banks have also acted as lenders. The global financial crisis of 2008-2009 meant that foreign banks in particular, but to some extent also the major Swedish banks, became more cautious in their lending to property companies, among others.

The generally low level of interest rates helped to increase demand for riskier assets such as corporate bonds, as investors sought to maintain the yield on their fixed income assets. In addition, the financial crisis led to a gradual increase in capital requirements for the banks, which contributed to their lending rates not falling as much as other interest rates. All in all, this contributed to capital market financing becoming

¹¹⁷ The value of the properties is based on market valuations, while the liabilities are nominal and thus, aside from amortisation, will stay the same regardless of what happens to market valuations.

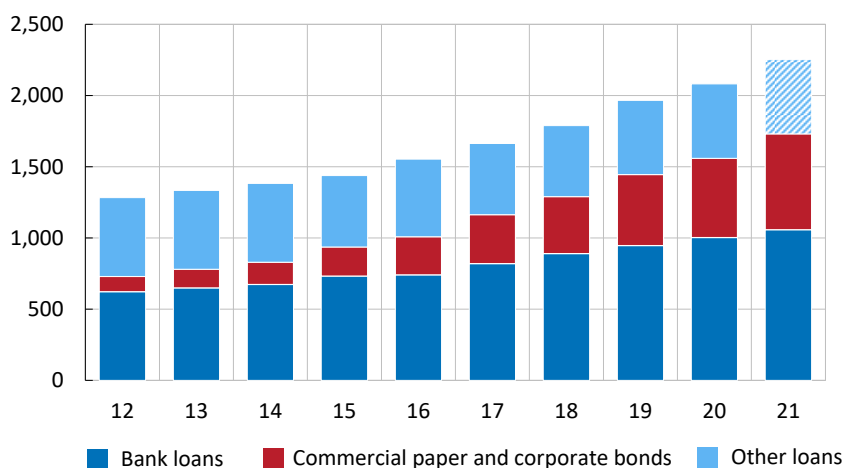
¹¹⁸ See, for example, the article "Commercial property and financial stability" in *Financial Stability Report*, 2017:2, Sveriges Riksbank, "The Commercial Real Estate Market and Financial Stability", 2019, Finansinspektionen, "Sweden: Article IV Consultation – Staff Report", 2021, IMF, "Report on vulnerabilities in the EU commercial real estate sector", 2018, ESRB, and "The Swedish Corporate Bond Market and Bondholder Rights", 2022, OECD.

¹¹⁹ Moreover, during financial crises, highly indebted companies tend to be more inclined to reduce their investment and labour demand than less indebted companies. See, for example, Myers (1977), Kiyotaki and Moore (1997) and Brunnermeier and Krishnamurthy (2020).

relatively more advantageous and to property companies increasingly choosing to finance their operations via the capital market. Before the financial crisis, capital market financing represented less than one per cent of total loans of listed property companies. Between 2012 and 2021, this type of financing increased from 10 per cent to 30 per cent of property companies' loans. This corresponds to an increase from just under SEK 100 billion to almost SEK 700 billion (see red area in chart 23).

Chart 23. Loan financing of property companies

SEK billion



Note. Includes loans from Swedish MFIs, outstanding corporate paper and bonds in all currencies, nominal amounts and other loans. Other loans includes loans on the balance sheets of property companies that cannot be attributed to Swedish bank loans, commercial paper or bonds. That is, for example, direct loans, owner loans and loans from foreign banks. Other loans are calculated on the basis of Statistics Sweden's Structural Business Statistics as total short- and long-term liabilities minus Swedish bank loans, commercial paper, bonds, intra-group loans, tax liabilities and trade credits. Other loans 2021 (the striped part of the bar), is an estimate as data for that year was not available when this report was published.

Sources: Statistics Sweden (SVDB) and the Riksbank (KRITA).

Increased financing of property companies through the capital market can help to promote growth in the wider economy.¹²⁰ It has also helped to extend the loan-to-maturity of some property companies.¹²¹ More sources of funding also means that credit risk is spread across more lenders, both Swedish and foreign, who together may be better able to manage loan losses than if all loans were held by the banks.

¹²⁰ See L. Gambacorta, J. Yang, and K. Tsatsaronis, *Financial structure and growth*, BIS Quarterly Review, March 2014, pp. 21-35; S. Langfield and M. Pagano, *Bank bias in Europe: Effects on systemic risk and growth*, Economic Policy, Vol. 31, No 85, January 2016, pp. 51-106.

¹²¹ Longer loan-to-maturities reduce refinancing risk, provided that maturities are also spread over time. The average (volume-weighted) original maturity of bank loans is just over 4 years. For bonds issued in SEK and foreign currencies, the average loan-to-maturity is 5 and 9 years respectively (bonds with 'perpetual' maturity are excluded). Overall, the average loan-to-maturity among European property companies is longer than that of Swedish property companies, for both bank loans and bond loans.

Increased funding via the capital market means greater interconnections

As a result of the increasing borrowing by property companies through Swedish banks, but especially through the capital market, new and stronger links have emerged between property companies and the financial sector. This means that shocks can spread more easily to and within the financial system.¹²²

Banks increasingly exposed to property companies

The major property companies have accounted for the largest increase in capital market borrowing. Despite the fact that these larger players have chosen to increase their lending mainly through the capital market, the banks' concentration risk towards the property sector has continued to increase. Between 2012 and 2022, the banks' exposures to property companies have grown from just over 30 to 44 per cent of their total exposures to non-financial corporations.¹²³ Swedish banks have a significantly higher concentration risk towards property companies compared to banks in other countries. On average, commercial property exposures account for 25 per cent of total corporate exposures among banks in the EU.¹²⁴ However, it is not only the increased concentration risk towards larger property companies that is creating greater risks for the banks. Smaller property companies have been increasingly able to borrow from the banks, as the major property companies have increasingly been able to meet their borrowing needs via the capital market.

Smaller property companies may be associated, to a greater degree than larger ones, with a credit risk that is higher and more difficult to assess. For example, this may be because they could be more vulnerable to shocks, as they often do not have the same ability to adjust their operations or funding situation in a deteriorating economic or financial situation. However, it is also because smaller property companies are often not as transparent, for example because larger property companies are more likely to be listed on the stock exchange and therefore regularly publish quarterly reports. In addition, the higher credit risk for the banks may be due to the fact that smaller property companies generally have higher loan-to-value ratios.¹²⁵ Consequently, the banks' more extensive lending to smaller property companies may have increased their credit risk a bit more in recent years.

If, in a situation of financial turmoil, capital market participants reduce their investments in the bonds of property companies, some companies will find it difficult to re-finance themselves through the capital market. In such a situation, they will most

¹²² Swedish banks refers to Swedish monetary financial institutions.

¹²³ However, the banks' off-balance sheet exposures to major property companies have increased mainly as a result of credit facilities granted to these companies to manage their refinancing risk in the capital market.

¹²⁴ See Risk Dashboard Quarter 1 2022, European Banking Authority (EBA).

¹²⁵ The median loan-to-value ratio of small and medium-sized property companies is just over 60 per cent, while the corresponding figure for major property companies is 50 per cent. However, one explanation for the difference may be that small and medium-sized property companies are more likely to include properties on their balance sheet at book value rather than market value, as they do not generally follow the IFRS 13 accounting standard, unlike major property companies.

likely have to refinance themselves through the banking system instead – primarily by drawing on their agreed liquidity and credit facilities. Such tendencies have been observed since the spring of 2022 until now, but this also happened at the start of the pandemic.¹²⁶ The credit risk associated with these loans is then shifted from capital market participants to banks. At the end of the first quarter of 2022, property companies had about SEK 190 billion in outstanding credit facilities with the banks. This meant that such facilities could cover the maturities of the outstanding volume of commercial paper and bonds that are expected to take place by March 2024.¹²⁷

If the banks have the scope and willingness to grant loans equivalent to the outstanding commercial paper and bonds of the property companies, their exposures to major property companies would increase rapidly. The banks may have an incentive to grant additional loans to avoid major problems for the property companies. Failure to grant additional loans could lead to higher loan losses on existing bank loans. If capital market participants, including the property companies themselves, assume that the banks will always be willing and able to take over these exposures, the concentration risks of the banks towards the commercial property sector will, so far, have been underestimated.

Funds have become more dependent on developments in the property sector

Property companies' funding via the capital market has mainly increased as regards corporate bonds, although the volume of commercial paper has also increased. This is partly because many investors have increased their exposure to these investments. But it is also because entirely new investors are now exposed to property companies.

In 2022, foreign investors owned 53 per cent of property companies' bonds (see chart 24). Foreign investors own 95 per cent of the bonds issued by property companies in foreign currencies and the majority of these are bonds issued in euros.¹²⁸ Foreign investors include, for example, funds registered in countries other than Sweden. In addition, Swedish funds, whose holdings in the bonds of property companies have grown rapidly, are now the second largest investor group with 21 per cent of these bonds. Swedish insurance and pension companies account for 12 per cent. Swedish monetary financial institutions, which hold and quote prices for corporate bonds to facilitate trading in those instruments, have gradually reduced their holdings since 2009. They now own just under 3 per cent of property company bonds. This is probably because the capital requirements introduced after the financial crisis have made it more expensive to hold such assets on the balance sheet. The Riksbank owns 1 per cent of the bonds, which is a consequence of the purchases initiated in connection

¹²⁶ If this were to continue for a longer period, it would not be possible to rule out the possibility that the banks might have difficulty in providing loans in sufficient volumes, for example because of restrictions related to individual companies or an unwillingness to increase exposure to the property sector.

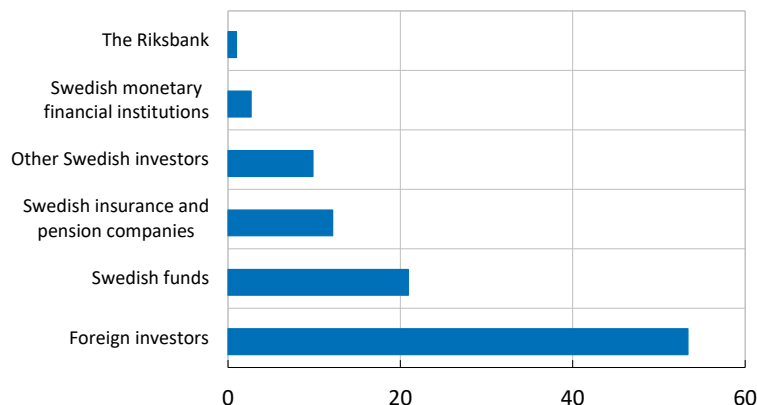
¹²⁷ These facilities include all commercial property companies with which the banks have agreements. This may include companies that have facilities but do not have outstanding commercial paper or bonds.

¹²⁸ Of their foreign currency capital market funding, 73 per cent is issued in euros, 14 per cent in Norwegian kroner, 5 per cent in US dollars, 4 per cent in Swiss francs and 5 per cent in other currencies such as British pounds, Japanese yen, Hong Kong dollars and Australian dollars.

with the pandemic to mitigate the effects of the pandemic on the Swedish economy and thus contribute to a functioning credit supply.

Chart 24. Owners of corporate bonds of property companies

Per cent



Note. Refers to outstanding corporate bonds in all currencies issued by Swedish commercial property companies. Swedish MFIs refers to Swedish monetary financial institutions, which include the major banks in Sweden. Other Swedish investors refers to central government, regions and municipalities, social security funds (National Pension Insurance Funds), non-financial corporations (including other property companies), households, non-profit institutions serving households, and other financial intermediaries that are not monetary financial institutions. Data refer to the first quarter of 2022.

Source: The Riksbank.

The large exposure of funds and insurance and pension companies in particular to property companies means that they can be affected by problems arising in the property sector. For example, they may have to downgrade their holdings when the price of bonds falls as the market prices the deteriorating financial situation of property companies. It may also force these participants to sell bonds to avoid larger losses.¹²⁹ In addition, if credit ratings are downgraded so that companies or their bonds are no longer classed as investment grade, some investors may be forced to sell their bonds.¹³⁰

Fire sales leading to sharply falling property values could contribute to lower bond values and thus large losses for bondholders. Taken together, this could lead to a sharp increase in the cost of issuing bonds, making it more difficult for companies to obtain funding in the bond market. This may be perceived by companies as a credit crunch.

¹²⁹ In addition, funds may also need to sell bonds to meet large redemptions by unitholders. This could put downward pressure on the price of property companies' bonds.

¹³⁰ Many investors want to limit their credit risk and are therefore only allowed to buy investment grade assets.

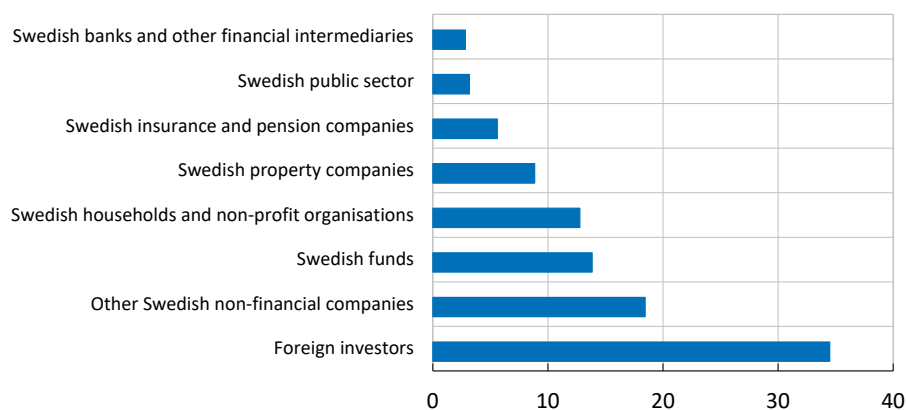
Insurance and pension companies have additional property exposures

Insurance and pension companies, as well as fund investors, are exposed to the property sector in other ways as well. For example, they own physical properties and shares in listed property companies.

The total exposure of Swedish and foreign funds to physical property in 2021 is estimated to be more than SEK 200 billion. The corresponding amount for insurance and pension companies is almost SEK 650 billion.¹³¹ Swedish funds and insurance and pension companies together accounted for 20 per cent of ownership in listed property companies, corresponding to a holding of around SEK 450 billion in the first quarter of 2022. However, foreign owners, such as funds, constitute the largest category with 35 per cent of ownership in listed property companies (see chart 25). In addition, many insurance and pension companies own shares in non-listed property companies. For example, insurance companies had shareholdings in wholly-owned property companies worth SEK 100 billion at the end of the second quarter of 2022.¹³² Overall, insurance companies' exposure to commercial property represents nine per cent of their total assets.¹³³

Chart 25. Shareholders in listed property companies

Per cent



Note. Refers to listed ordinary and preferential shares in Swedish property companies as of the first quarter of 2022. The public sector includes social security funds (National Pension Insurance Funds).

Source: The Riksbank.

¹³¹ Estimated by Pangea Research in January 2021.

¹³² The data are not sufficiently detailed to show the holdings of insurance and pension companies in un-listed property companies that are not wholly owned. It is likely that their equity exposures to the property sector are larger than is reported here.

¹³³ EIOPA Insurance Statistics - Exposure data (2021 Q2). The corresponding figure for pension companies is missing.

The property companies own shares in each other

As shown in chart 25, property companies own just under ten per cent of the shares in listed property companies. This corresponds to shares worth approximately SEK 70 billion. In addition, it is common for property companies to jointly own shares in an unlisted joint venture where the joint venture itself owns property.

Cross-ownership among property companies can help an owner to obtain cash flows from other property companies that are not exposed to the same risks. However, cross-ownership also entails increased risks of conflicts of interest, reduced competition and reduced transparency in the property market, which the Riksbank has highlighted in the past.¹³⁴ Moreover, in the event of a crisis, cross-ownership may make it more difficult for property companies to secure financing through their shareholders. This is because the owner may have to prioritise when providing support to the different property companies. This may lead to higher demands on other existing shareholders or to the arrival of new shareholders who are better placed to meet the financial needs of the company.¹³⁵ A lack of capital injections from shareholders may result in lenders having to provide additional financing.

Property companies' market funding highlights the importance of good capital market resilience

The changing macroeconomic environment is increasing the likelihood of risks in the property sector materialising. If this were to happen, the problems could spread to a larger part of the financial system. This could have more far-reaching consequences than in the past, as the banks' exposure to the sector has increased at the same time as more participants outside the banking system, including through the capital markets, have increased their exposure to the property sector. This would be particularly true if the loss-bearing capacity of the participants in the capital market were too low.

However, there are also other vulnerabilities linked to the funding of property companies that could contribute to increased instability. These include the lack of transparency and insufficient liquidity in the corporate bond market, as the Riksbank has previously pointed out.¹³⁶ The vulnerabilities in the corporate bond market became evident during the onset of the pandemic when the corporate bond market stopped functioning for a while. This created considerable uncertainty and made it difficult to value such assets. In turn, this led to difficulties in selling the assets and to the temporary closure of several funds investing in corporate bonds.

Foreign investors have been shown to act relatively quickly in past crises and periods of high uncertainty. For example, this happened during the 2008-2009 financial crisis and during the onset of the pandemic when they wanted to reduce their exposure to

¹³⁴ See *Financial Stability Report 2021:2*, Sveriges Riksbank.

¹³⁵ Property companies can also suspend dividend payments to avoid a reduction in equity.

¹³⁶ See "Towards a better functioning corporate bond market", *Riksbank Studies*, December 2021, Sveriges Riksbank.

Swedish companies and therefore sold corporate bonds.¹³⁷ This may be due, for example, to the fact that they feel they have less knowledge of the Swedish market and the true creditworthiness of companies.¹³⁸ However, it could also be because they do not want to be exposed to the Swedish krona in a crisis situation.¹³⁹ The fact that a larger proportion of bond investors are now made up of foreign players increases the need to safeguard the stability of the financial system. Doing this makes it possible to prevent periods of high uncertainty from adversely affecting the bond market.

As property companies have increasingly chosen to fund their operations in the corporate bond market, a well-functioning corporate bond market has become increasingly important for their credit supply. If disruptions occur which, in turn, lead to a more permanent restriction of credit availability, property companies may be unable to refinance existing loans or to take out new ones. Consequently, they may have to reduce their investments or sell assets. This, in turn, may lead to loan losses for more creditors, thereby contributing to a general credit crunch and, by extension, to financial stability concerns.

Greater interconnectedness increases risks to financial stability

Overall, the large loans of property companies are creating risks to financial stability. Now that property companies have to cope with higher interest rates and lower economic growth, the risks that have built up in the property sector are more likely to materialise (see section “Vulnerabilities and risks in the corporate sector”).

As a result of the increasing borrowing by property companies through Swedish banks, but especially through the capital market, new and stronger links have emerged between property companies and the financial sector. This means that any shocks can more easily spread to and within the financial system. It is therefore important that banks and other agents in the financial sector have good resilience to deal with, rather than strengthen, such shocks.¹⁴⁰ It also makes it important for authorities to address shortcomings and vulnerabilities in the various funding markets for property companies, in particular the corporate bond market (see section “Summary of the stability assessment”). This should be done in a way that creates the right incentives for lenders and investors to price and share risk efficiently.

¹³⁷ When one or more participants are forced into these types of fire sale, it can put other participants in financial difficulty. In the worst case, they too will be forced to make sales, further depressing asset values. If many players have the same types of exposure, for example securities linked to commercial property, problems for one player can quickly spread to others.

¹³⁸ See Becker et al. (2020) “Kan obligationsmarknaden dämpa kreditykeln? [Can the bond market slow down the credit cycle?]”, *FI Analysis* 23, October 2020, Finansinspektionen.

¹³⁹ The reduced exposures can also be explained by investors acting to reduce the risk of losses rapidly as a precaution or to meet their investment mandates.

¹⁴⁰ The need for good resilience among capital market participants has been highlighted by the ESRB and the FSB, among others. See *ESRB Report on Vulnerabilities in Commercial Real Estate Sector in EU*, November 2018, ESRB, and *Enhancing the Resilience of Non-Bank Financial Intermediation Progress report*, November 2021, FSB.

Glossary

Basel III: A regulatory framework that applies to banks and that regulates capital requirements and liquidity requirements, among other things.

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

Capital structure: The mix of equity and borrowed funds.

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 in the credit market aimed at transferring the credit risk in an underlying asset from one participant to another.

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

Commercial property: Commercial property is real estate owned in order to generate income via letting.

Common Equity Tier 1: 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.

Core Tier 1 capital ratio: Common Equity Tier 1 in relation to risk-weighted assets.

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

Countercyclical capital buffer: A time-varied capital requirement aimed at providing sufficient capital in the banking sector for banks to use in a severe economic downturn. The countercyclical buffer rate refers to the level of the capital buffer.

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 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.

Disposable income: A person 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.

Ground rent: A fee that the holder of a site leasehold is expected to pay to the property owner. The fee is usually determined as interest on a debt basis according to the value of the land.

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

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.

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.

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

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

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

Loan-to-income ratio: Total household loans in relation to disposable income.

Loan-to-value ratio: A borrower's debt in relation to the market value of the collateral for the loan. For a household with a loan where the home is pledged as collateral, the loan-to-value ratio corresponds to the debt divided by the market value of the home.

Macroprudential measure: A measure aimed at increasing the resilience of the financial system and mitigating the risks associated with households' high and growing debts. This includes capital requirements for banks, mortgage caps and amortisation requirements.

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.

Microdata: Information that refers to individual objects, for example, individuals or companies.

Non-performing exposure: The European Banking Authority (EBA) has developed a definition of non-performing exposures to increase the comparability of non-performing exposures in different banks. Briefly, according to the EBA, a loan can be classified as a non-performing exposure if payment is either 90 days past due or if there is a risk of non-payment. A loan that has been written down in the accounts or that has been classified as a default in the capital adequacy must always be classified as a non-performing exposure in accordance with the EBA definition.

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

Required rate of return: The return that owners require on an investment, which reflects market rates, risk and expectations of future value.

Return on investment: Synonymous with return and shows how a company generates capital gains. In other words, return on investment describes how profitable a company is.

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

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

Securitisation: A method of converting illiquid loans into bonds.

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 its debts, which mainly consist of their total commitments.

Stablecoin: A cryptoasset that generally has underlying collateral and a central issuer. It is intended to maintain a stable asset value, often by following the price of an ordinary currency, such as the US dollar.

Stagflation: An economic situation characterised by low growth, high inflation and high unemployment.

Substitute assets: Collateral that may be added to the collateral pool of covered bonds. The substitute assets must consist of safe assets, such as cash or claims on the Swedish state.

SWESTR: A fully transaction-based reference rate calculated and published by the Riksbank.

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 capital may also include some types of subordinated loan.



SVERIGES RIKSBANK

Tel +46 8 - 787 00 00

registratorn@riksbank.se

www.riksbank.se

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