REPORT

Stability in the Financial System

29 November 2022

FI Ref. 22–29349

Contents

Stability assessment

Inflation continued to rise during the year, and in the autumn it was significantly higher than the central banks' inflation targets. The single largest contributor to the change in inflation was high energy costs, and these costs also decrease households' consumption capacity and increase firms' production costs. High inflation forced central banks to act decisively by tightening the expansive monetary policy that had been in place for a long period of time. This led to rapidly rising interest rates. High inflation and rising interest rates slow economic development, and economic forecasts have been deteriorating since the spring. Europe and the USA are expected to enter into a recession in 2023.

The prolonged period of very low interest rates resulted in high risk-taking on a global level, which manifested itself in part through rapidly rising debt and high prices for housing, commercial real estate and financial assets. Since the conditions have changed rapidly, both participants on the financial markets and borrowers need to transition quickly. In the short term, this means elevated risks and greater uncertainty. Lower risk-taking, higher financing costs and increasing uncertainty about the future have already resulted in a material drop in prices for financial assets.

In Sweden, the commercial real estate sector is particularly exposed to rising interest rates and a weaker economy since the sector has high debt. Finansinspektionen (FI) makes the assessment that the already high risks in the sector have continued to increase. Rising interest rates lower commercial real estate firms' profitability and will probably also lead to downward adjustments to real estate values, which will increase loan-to-value ratios. Since investors have also become less willing to take on risk, many commercial real estate firms have found it more difficult to refinance their debt. This applies in particular to market-based financing through bonds, which has become an important source of financing for many commercial real estate firms. Several highly indebted commercial real estate firms are now taking steps to reduce their debt. Such an adjustment is necessary, but it is occurring at a time when the sector is already under pressure.

Households also have large loans. Rising interest rates combined with high energy prices mean that households need to use a significantly larger portion of their disposable income for housing costs. The percentage of households with small financial margins is expected to increase. Banks' mortgage-related credit losses may increase slightly from their current level, which is very low. Primarily, rising interest expenses, high inflation and high energy prices will result in lower household consumption, which will have a negative impact on economic development. FI therefore makes the assessment that the stability risks associated with household debt have increased.

Liquidity continues to be low on the bond markets. This makes the markets vulnerable to stressed market conditions. The bond markets are key for the financing of banks and the state. Volatility and poorly functioning price-setting mechanisms on central bond markets could have an impact on financial stability in the long run. It is also a concern that the liquidity risks in funds targeting corporate and high-yield bonds are as large today as they were before the pandemic.

The volatile price development on the electricity markets in the autumn led to rapidly rising margin calls for participants at the central counterparty. It was not possible to exclude a course of events that could threaten financial stability. To prevent such a development, state credit guarantees were issued for energy producers. One lesson learned from the events that occurred is that both central counterparties themselves and supervisory authorities should pay more attention to the liquidity risks in central counterparties. There may also be a need to review the regulations given the lessons learned from the events of the past year.

Overall, threats to financial stability risks in the immediate future have increased. If the high inflation persists to a point that interest rates remain at higher levels for a long period of time, this will place a clear burden on both households and firms. Such a scenario entails a greater risk of problems arising even in the financial sector. But if inflation can be limited and interest rates stabilised, risk-taking and debt build-up among households and firms and in the financial system might also be dampened. This could lower the vulnerabilities in the financial system compared to during the prolonged period of very low interest rates. How inflation and interest rates develop going forward thus has a major impact on how stability risks will develop.

Risk-taking decreases from a high level

The willingness to take on risk decreased in 2022 after a long period of high risk-taking that ended at the beginning of the year. This is noticeable in part in the sharp increase in risk premiums, primarily during the second half of the year. This has affected the price-setting mechanism on the equity and fixed-income market, resulting in a fall in share prices and significantly higher interest rates on bonds. The fall in risk-taking is particularly evident in sectors with business models that are sensitive to higher interest rates or where the assessed risk is high.

During the prolonged period of low interest rates, both households and investors took increasing risk to gain a return. The current fall in risk-taking will help dampen the vulnerabilities that have been building up over a longer period of time. If the willingness to take risk falls too sharply and too quickly, though, this could lead to a deterioration in the credit supply and large drops in asset prices. Access to financing through the equity and bond market has already declined substantially. The immediate risks to financial stability have therefore increased.

Risks associated with high debt continue to rise

Households and non-financial corporations have high debt that continued to rise in 2022 even if the rate at which household debt is growing slowed. High levels of debt make households sensitive to increases in the interest rate. This interest rate sensitivity is amplified by the large share of loans with variable rates. The main risk associated with high household debt is still that this debt can amplify a macroeconomic downturn rather than the banks reporting large credit losses. Among non-financial corporations, the debt of commercial real estate firms has been increasing sharply for a long time. Therefore, these firms are vulnerable to rising interest rates. Rapidly rising interest rates, high inflation and a slowing economy mean that more households and firms are under pressure and may find it more difficult to carry their debt. FI's stress tests show that an unfavourable economic scenario can lead to significant credit losses in the banks' exposures to the commercial real estate sector.

The banks' credit loss provisions and realised credit losses are still limited. The deterioration in the conditions for firms and households means that the banks' provisions and credit losses probably will increase. The banks have significant buffers, and the stress test FI conducted on the major Swedish banks shows that they are resilient to a sharp downturn in the economy. We make the assessment that the banks can handle significant credit losses and continue to issue loans even if the market conditions were to decline further. To ensure this, it is crucial that the banks hold large capital buffers. Therefore, FI raised the countercyclical buffer rate to a neutral level of 2 per cent in June and intends to leave the buffer rate unchanged in the fourth quarter. Even if an additional increase to the countercyclical buffer would increase resilience, FI makes the assessment that the risk build-up in the financial system is about to slow. As a result, we do not see any need today to raise the buffer more (see also "FI intends to leave the countercyclical buffer rate unchanged in the fourth quarter").

Impaired liquidity on bond markets

During the pandemic, deposits in banks increased sharply and deposit volumes continued to increase in 2022. This has reduced banks' dependence on market funding. The banks' costs for market funding have increased sharply since the end of the year as interest rates increased, but access to funding continues to be good, and FI therefore makes the assessment that the banks' funding situation continues to be stable.

In 2021, liquidity on the markets for government bonds and covered bonds began to decline. This development was further enhanced in 2022. FI makes the assessment that these problems have so far not had any significant impact on the possibilities for the state or the banks to raise funding. However, the situation on these central markets could deteriorate under stressed market conditions. Higher stress would probably lead to poorly functioning price-setting and volatility, which in the long run could have a negative impact on financial stability. Liquidity has also been weak on the market for corporate bonds. Poor liquidity on the secondary market leads to uncertainty in price-setting and also increases liquidity risk in the funds that invest in corporate bonds. FI's stress tests show clear liquidity risks in several funds that own corporate and high-yield bonds. Liquidity risks in the funds are basically just as large as they were before the pandemic, when some corporate bond funds experienced significant problems.

The non-financial corporations' growing debt means there is a greater need over time to refinance outstanding loans that fall due. When risk-taking decreases, it becomes more expensive and more difficult to find refinancing. This has affected the corporate bond market, where issue volumes for new financing fell sharply during the year. This primarily lowers the possibilities for financing for firms with lower creditworthiness and commercial real estate firms, for which the bond market has become an important source of financing in recent years. More restricted access to market-based financing increases the pressure on the banking sector to provide financing. FI makes the assessment that refinancing risks have increased and are now high, first and foremost due to commercial real estate firms' refinancing needs.

Concentration and interconnectivity increase vulnerability in the financial system

The financial system is characterised by not only concentration but also interconnectivity.[1] The banks' large exposures to the commercial real estate sector are one type of such concentration. Other parts of the financial sector also finance the commercial real estate sector through shares and corporate bonds. This has lowered the banks' concentration to the commercial real estate sector but at the same time exposed large parts of the financial system as a whole to this sector. As a result, the risks that are now increasing in the commercial real estate sector may affect many areas of the financial system.

Another concentration is the households' and the insurance undertakings' exposures to the stock market. FI makes the assessment that life insurance undertakings and occupational pension undertakings have satisfactory buffers to continue to handle large falls in share prices, particularly since they are benefiting from rising interest rates. Households have saved a lot in shares during the period

[1] Concentration means that systemically important financial services are provided by a few banks, infrastructure companies, life insurance undertakings and occupational pension undertakings and through large exposures to individual sectors and counterparty risks. Financial firms also share an interconnectivity in, for example, financing, investments, and the exchange of systemically important services.

of low interest rates. Falling share prices in 2022 therefore decreased their liquid buffers.

One way to reduce counterparty risks when trading in financial instruments is to allow trades to go through a central counterparty. Thus, the central counterparties are a very important part of the financial infrastructure. High and volatile prices on the contracts that are cleared can lead to rapidly rising margin calls, which in turn can lead to liquidity problems for participants at the central counterparty. If such problems arise and cannot be managed, there is a risk that they will spread within the financial system. One example of this was evident on the electricity market in Sweden at the end of the summer and on the government bond market in the UK during the autumn. Both events led to different types of state intervention and show that there are stability risks associated with rapidly rising margin calls in central counterparties.

The financial sector's increased digitalisation has resulted in greater risks of cyber-related attacks. These risks were further enhanced by Russia's attack on Ukraine and the subsequent deterioration in the security situation. Financial corporations and markets are closely linked to one another; therefore, any incidents and problems can quickly spread. Cyber security matters are thus very important for financial stability and the entire economy. FI's view of cyber security in the Swedish financial sector is that many firms are working actively to build up resistance. But it is clear that some actors have come further in their work than others and that there is a considerable need for cooperation.

The state of the economy

Inflation continues to be very high, which slows the economy at the same time as it has forced central banks to significantly tighten their monetary policy. This has led to significantly higher interest rates for firms and households, which in turn contributed to the further decline of economic outlooks.

Inflation controls development

Very high inflation is continuing to slow economic development and influence the state of the financial markets (Diagram 1). To combat inflation, monetary policy has been significantly and rapidly tightened in Europe and the USA after a prolonged period of very expansive policy. This turnaround has meant rapidly rising interest rates, which primarily has affected highly indebted households, firms and states. Higher interest rates have contributed to a further slow-down in economic growth since the spring. Europe and the USA will probably enter into a recession in 2023. On the financial markets, higher interest rates have meant lower risk-taking and greater fluctuation in the prices of financial assets. The success of the measures to slow inflation will be crucial for economic development. A drawn-out period of very high inflation would not only harm the economic development but also result in higher risks to financial stability. There is also a concurrent risk that an overly contractionary monetary policy would lead to a strong recession.

The most obvious explanation to the high inflation is energy prices. They rose in Europe in 2022 to levels that are very high historically. The upswing in prices can primarily be explained by a decrease in the supply of available energy, largely due to the sharp drop in Russia's deliveries to Europe in the wake of the invasion in Ukraine. The combination of higher energy demand during the winter and the continuation of smaller deliveries from Russia means that there is cause for concern that high energy prices will persist. This could have an additional impact households and manufacturing industries and contribute to continued high inflation. How energy prices develop is therefore an uncertainty and a risk for economic development.

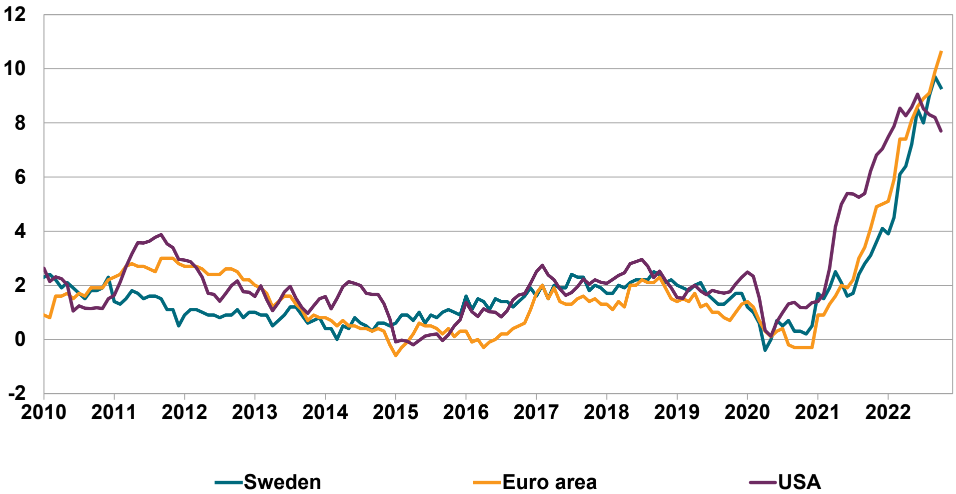
Disruptions in the global logistics chains appear to have declined somewhat in H2 2022, but the pandemic-related lockdowns in China are still contributing to frictions in global trade. There continue to be concerns in China about the significant ongoing adjustment in the real estate sector.

Fact Box – An economic scenario for calculating impact

In the chapters Households, Non-financial Corporations and Stability in the Banking Sector, we assess the impact of possible future developments. In order to do this, we use a macroeconomic scenario developed by the International Monetary Fund (IMF) that has previously been used in the IMF's 2022 FSAP assessment of Sweden.[2] The scenario describes a course of events over a period of three years that reflects a severe but not improbable development where inflation rises at an increasing rate and central banks react by rapidly raising interest rates. In Year 1, inflation rises sharply at the same time as asset prices fall. This leads to a large increase in interest rates in Year 2. Recovery and normalisation starts in Year 3. In the scenario, the total drop in GDP is around 4.5 per cent and unemployment increases to a peak of 13.5 per cent. Key metrics for the scenario are shown in Appendix 2.

1. Very high inflation

Per cent



Source: Refinitiv Datastream.

Note: Refers to CPIF (Sweden), HICP (Euro zone) and CPI (USA), annual change.

Deterioration in economic conditions in Sweden

The current state of the economy – very high inflation and rising interest rates – is slowing economic development in Sweden. Economic growth is expected to be negative in 2023.

Inflation means real income reductions for households in 2022 and 2023, which jeopardises households' buying power. Households that own their home will also have significantly higher housing costs through higher interest rates and sharply rising energy prices. Swedish households' outlook for the future has been

[2] Financial Sector Assessment Program. Under this programme, IMF conducts country-specific assessments every five years that focus on the financial sector, macroeconomic conditions and risks to financial stability.

negatively impacted by this development. Expectations for personal financial circumstances have fallen to record-low levels in H2 2022, significantly lower than during both the financial crisis in 2008 and the outbreak of the pandemic in 2020.[3] The housing market has also been affected. Housing prices have fallen by 10 per cent since the end of 2021 and by more than 14 per cent since March.[4] Given the change in conditions for households, it is not improbable that housing prices will continue to fall.[5]

The commercial sector is more optimistic about the future than the household sector, primarily in the manufacturing industry. However, a sharp slow-down in the global economy could have a negative impact on Swedish exports. Pessimism among households could also lower demand in the domestic commercial sector. High energy prices are also resulting in high costs for many firms.

In-depth analysis – Cyber risks and financial stability

The digitalisation of the financial sector over the past few decades has opened the door not only to new possibilities but also to risks related to information security, and these risks need to be managed. The risks relate to different types of IT incidents. Intentional IT incidents are due to both cyber-related crime and government-sponsored antagonistic attacks. These risks have increased due to the deteriorating security situation in Sweden's immediate surroundings, in particular due to Russia's invasion of Ukraine.

A cyber attack on one or several financial firms could have serious consequences. Depending on the circumstances, the damage might even spread and affect society at large. In the long run it could also undermine public confidence in affected financial firms or the financial system as a whole. This confidence can also be harmed if an incident results in the questioning of the reliability of data related to accounts, debts, fund units, etc. If there is a sufficiently large drop in confidence, this could – regardless of its causes – constitute a threat to financial stability.

The fact that the financial firms and markets are closely linked to one another, and that potential problems could therefore spread quickly, means that there is great need for cooperation in this area. Given the central role of the financial sector in society, cyber security in the financial sector is highly relevant for society as a whole.

The impact on financial stability thus is dependent on the scope, duration and spread of an IT incident and the circumstances surrounding it. Cyber attacks known to be state supported could be particularly serious in a scenario where security is under stress, but other types of incidents can also constitute a greater

[3] According to the Economic Tendency Survey from the National Institute of Economic Research (October 2022).
[4] According to Valueguard's index for the housing market as a whole.
[5] See, for example, *The Swedish Mortgage* Market 2022 (FI) for calculations given changed conditions.

risk than normal. During stressed scenarios, speculations about intentions and perpetrators can have a greater impact on confidence than they would during calmer periods. The conclusion is that financial stability is best protected if financial firms are resilient to all types of serious IT incidents. FI's general view of cyber security in the Swedish financial sector is that many firms are working actively to build resistance, but it is clear that some firms have come further than others.

FI has been working with cyber risks for a long time in its ongoing supervision of individual financial firms and as part of its framework for supervision of operational risks. FI also has several different tools to ensure that financial firms are resilient to IT incidents and other serious operational risks.[6] The EU is expected to adopt a new regulation in the near future on digital operational resilience (the DORA regulation). The regulation places far-reaching requirements on financial firms to have sufficient systems and policy documents in place to manage these risks. The regulation also contains rules that clarify the financial firms' responsibility even for the part of the IT operations that have been delegated to a third party.

Since December 2021, FI also conducts its supervision in accordance with the Security Protection Act (2018:585) for financial firms subject to the act. This means that FI is responsible for the firms having satisfactory protection for the parts of their operations that are significant for Sweden's security (security-sensitive activities). Since October 2022, FI has also been the emergency response authority and the sector responsible authority for the financial services emergency response sector within Sweden's civil defence. Being sector responsible means that FI leads the work to coordinate the sector's measures prior to and in the event of peacetime crisis situations and a heightened state of alert. FI also takes action to ensure that roles and responsibility within the sector are clarified and that cooperation with commercial sector occurs as needed. An important part of this crisis preparedness work is to ensure that financial firms are resilient, for example, to cyber attacks. Starting in March 2023, FI's supervision of cyber risks, it supervision in accordance with the Security Protection Act, and its work related to Sweden's civil defence will be gathered under our new operational section for payments.

---

[6] FI describes its role in cyber security in the Swedish financial sector in the report *Cyberhot och finansiell stabilitet – FI:s roll och uppgifter* (FI Ref. 20–3685). An English translation is available at www.fi.se. FI also has described in a report to the government a number of measures we consider to be suitable to strengthen the digital resilience of the financial sector. See FI, *Förstärkt digital motståndskraft hos företag i den finansiella sektorn* (FI Ref. 22–10015). Only in Swedish.

Households

Households' cash flow is under pressure from inflation, higher interest rates and higher electricity prices. Housing prices are falling, and households' loans are increasing at a slower rate. Most households can handle higher costs, but many households are reducing their consumption, which is slowing the economy.

	Vulnerability	Change
Debt		→
Cash flow		↗
Liquid assets		→

The colors indicate the current level of vulnerability. Green represents low vulnerability. Yellow, orange and red indicate differing degrees of elevated vulnerability. The arrows show the trend for the vulnerability – increasing, decreasing, or unchanged. The level and trend are based on a combination of quantitative measurements and expert assessments

Slower growth rate for household debt

Today's high housing prices and households' high level of debt can be explained in part by a limited supply of housing and low interest rates over a long period of time. Households' interest-to-income ratio in the past few years has been at historically low levels (Diagram 2). The interest rate is now increasing, which is reflected in falling housing prices.

A rapid and sharp fall in housing prices creates problems for the economy in several ways. The risk associated with credit losses increases when the value of the collateral for the mortgages falls. Households that are seeing their housing wealth shrink feel less wealthy and consume less, which can weaken the economy – an economy that is already under a lot of pressure from rapid cost increases. A negative development in housing prices can also have a negative impact on consumption through smaller equity withdrawals.[7] First-time home buyers benefit, though, since they need a smaller mortgage and do not need to have as large of a cash down payment.

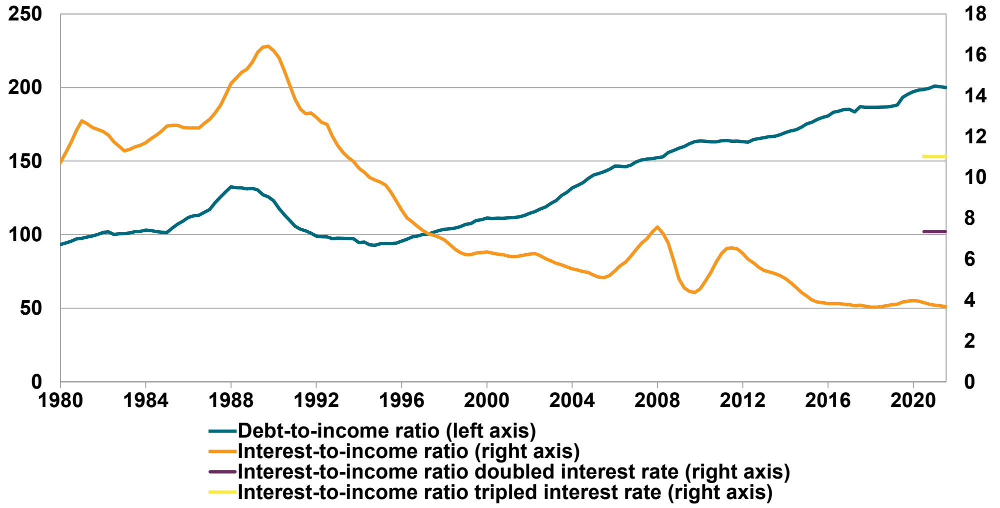
Households' loans are still increasing, but at a slower rate (Diagram A1). In relation to household income, debt did not increase in 2022. Housing prices are falling, and fewer homes are being sold, which should be reflected in continued lower debt growth among households. There is a risk that households' high debt and the stresses that come from rising costs could significantly weaken the

[7] Households use their home as collateral when they withdraw equity. The possibility of withdrawing equity therefore decreases when the value of the home decreases.

economy. At the same time, though, a cooler housing market and slower growth in household debt leads to lower vulnerability in the longer term.

2. Debt-to-income ratio stops rising, but households are sensitive to higher interest rates

Per cent of disposable income



Source: Statistics Sweden.

Note: The diagram shows the ratio debt to disposable income (left axis) and interest payments to disposable income (right axis). The dotted line to the right in the diagram shows how high the interest-to-income ratio would be if the interest rate doubled (around 4 per cent) or tripled (around 6 per cent) while households' debt and income remain the same.

Rising interest rates and prices can significantly weaken the economy

Households' costs are increasing sharply, particularly interest rates, electricity prices and food prices. As a result, the cash flow of households has been placed under considerable pressure. FI conducted a sensitivity analysis of households based on the survey of new mortgagors that we conduct every year (see "A sharp increase in costs leads to shrinking margins for households). The results show, among other things, that households that purchased a detached house in Stockholm in 2021 and have a variable interest rate and a variable electricity price could see an increase in their costs of around SEK 15,000/month. This corresponds to 21 per cent of these households' disposable income per month. The analysis was conducted on new mortgagors who, on average, are highly indebted and thus have relatively high payments on their loans. Nevertheless, the analysis shows that the potential stress for households is significant. Even if the percentage of households experiencing a deficit in their cash flow will be limited, many households will face financial challenges.

A doubling of the household interest rate (to around 4 per cent, which is approximately what the market expects) would mean that the aggregate interest-to-income ratio would increase by around 3.5 percentage points. Households thus would have on average 3.5 percentage points less of their disposable income to use for consumption.[8]

In-depth analysis – A sharp increase in costs leads to smaller margins for households

Here, we conduct a cash flow analysis of how higher electricity costs, interest rates and rising inflation in general have an impact on costs and the margin between income and expenses for households with mortgages. The calculations are at the household level, and the data is from FI's mortgage survey, which describes on an annual basis the situation for households that purchased a home.[9] We start with the economic scenario that was described earlier in the report.[10] This implies a variable mortgage rate of 5.25 per cent and high inflation, including electricity prices at historically high levels.[11] We estimate the actual electricity cost for each household as the sum of consumption, fixed fees and VAT/tax.[12]

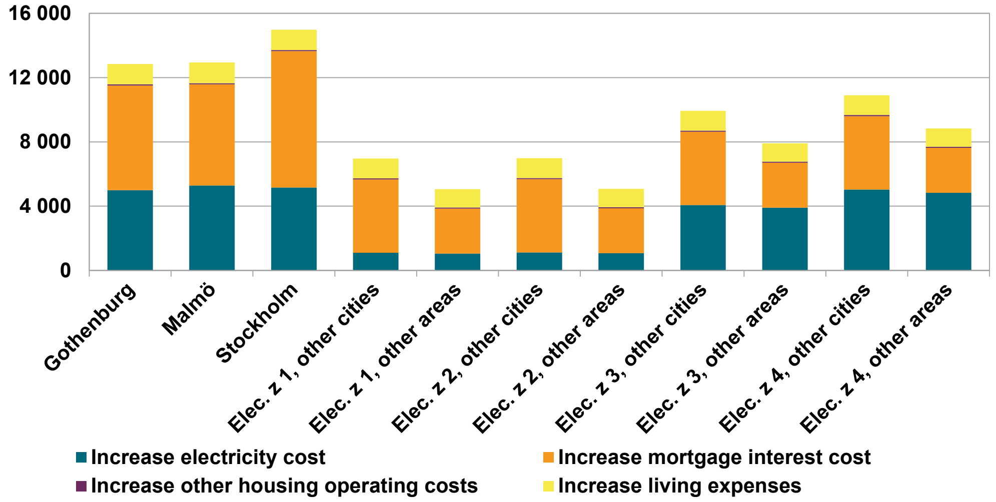
Diagram B1 shows the calculated average monthly cost increase for a household that bought a detached house in 2021. The largest cost increase is in Stockholm (SEK 15,000) followed by Malmö (SEK 13,000). In Malmö, rising electricity prices represent 40 per cent of the cost increase, while the corresponding share in Stockholm is 35 per cent. The cost from higher mortgages is greater in Stockholm due to higher housing prices and thus larger mortgages. The cost increase in Gothenburg is smaller than in Malmö due to the lower increase in electricity prices and smaller than in Stockholm due to lower housing prices and smaller mortgages. In other parts of south- and mid-Sweden (electricity zones 3 and 4), the cost increases are lower on average than in the metropolis areas as a result of lower housing prices and mortgages. Lowest is the cost increase in northern Sweden (electricity zones 1 and 2). This is primarily because the electricity price increases are expected to be significantly lower there. For households in tenant-owned housing, the cost increase is smaller, primarily due to lower consumption of electricity (Diagram A3).

---

[8] We have disregarded the effect from interest rate deductions.
[9] See *The Swedish Mortgage Market*, FI 2022.
[10] See "Fact box – An economic scenario for calculating impact", page 10 and page 62 in Appendix 2.
[11] Calculated by adding a gross margin to the key interest rate. The household's distribution between variable and fixed mortgage rates is set using the actual distribution in the mortgage survey.
[12] We assume average electricity consumption for different types of tenure and calculate consumption for each home based on its area. A detailed description of the calculation is available in *Låntagarbaserade åtgärder vid hög inflation och stigande räntor*, Finansinspektionen 2022. In the scenario, the electricity prices is assumed to be 146, 147, 330, and 350 öre/kWh in electricity zones 1–4, respectively.

B1. Estimated cost increase per month in scenario

SEK



Source: FI.

Note: Refers to households living in a detached house. Mid-size cities are municipalities with more than 75,000 residents, other than the three metropolitan areas. The category Other areas refers to municipalities with less than 75,000 residents.

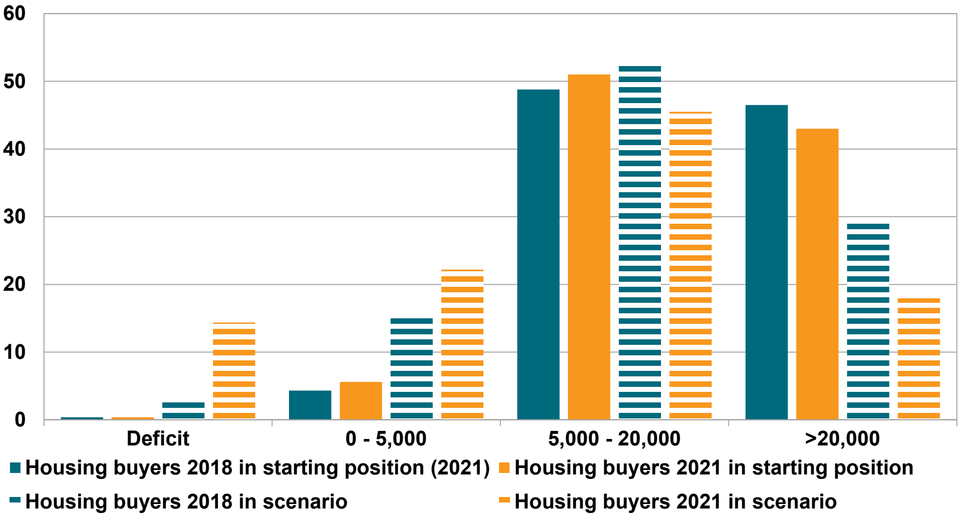
Many households have relatively good margins between income and expenses in 2021. With the interest rate levels we use here, no households will experience a deficit from an isolated increase in interest rates due to the buffer created in the credit assessment through the stressed mortgage rate.[13] However, higher rates make households more vulnerable to other cost increases, and the credit assessment does not have any buffer to speak of for energy price increases. The total cost increase means that the margins will shrink substantially.

In Diagram B2, households in detached houses have been grouped by the size of the margin between income and expenses. First, we calculate the margin at the time of the purchase for households that bought a home in 2018 or 2021. For households that bought in 2018, income and subsistence costs are written up to 2021 levels. The scenario with higher costs is then applied, and a new margin is calculated. Households that purchased a home in 2021 did so at the highest housing prices observed, and they have also not had time to amortise to any significant extent. The calculations for these households therefore constitute an upper limit for the negative effects that can arise for households. Households that bought a home in 2018 did so at prices that were around 25 per cent lower than in 2021, and as a rule they have also amortised several percentage points of their mortgage. Therefore, they have a lower mortgage and less sensitivity to interest rates.

[13] In its credit assessment, the bank tests if the household can pay a hypothetical mortgage rate of 6–7 per cent.

B2. Weaker margins for households after cost increases

SEK and per cent



Source: FI.

Note: Refers to households living in a detached house. Home buyers 2018 refer to households that bought a home in 2018 but where income and expenses have been written up to 2021.

When the higher costs are added, the percentage of households with a deficit or small margin increases significantly. Of the households that bought a home in 2021, 14 per cent experience a deficit between income and expenses and 22 per cent experience a surplus that is smaller than SEK 5,000. Households that bought a home in 2018 have greater resilience to higher costs, and significantly fewer of them experience a deficit or small margins. Just under 3 per cent experience a deficit, and around 15 per cent experience a surplus of less than SEK 5,000. Among households that purchased a tenant-owned unit, the percentage with a deficit is 4 per cent and 3 per cent for the groups of home buyers in 2018 and 2021, respectively (Diagram A4).[14]

The government has decided on a high-cost subsidy for household due to the high energy prices.[15] We have calculated the remuneration for each household, and Table 2 in Appendix 2 shows the average remuneration by geographical region and form of tenure through the measure. The remuneration has then been broken down by month and added to the calculation for households' monthly income and

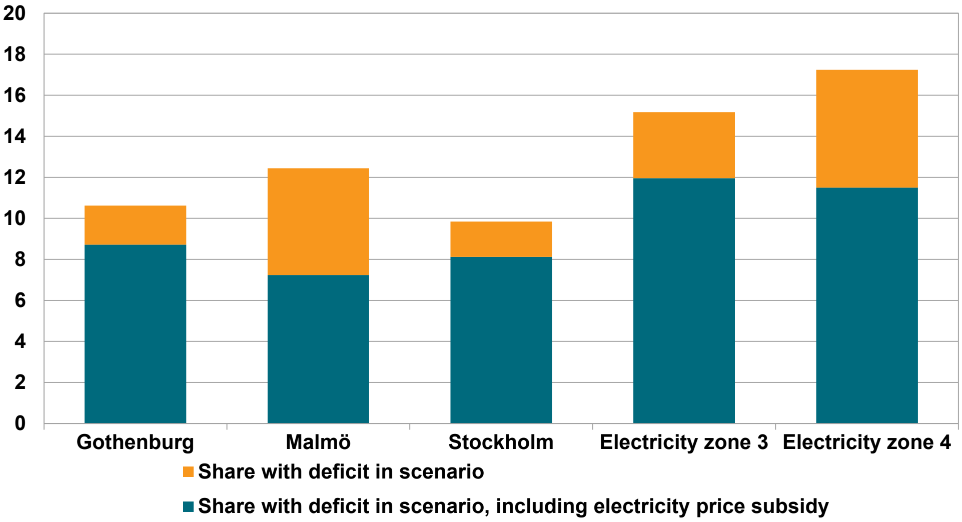
[14] One reason for the small differences in the percentage with a deficit among buyers of a tenant-owned unit in 2018 and 2021 is that around 2 per cent of the group from 2018 had a long-term fixed interest rate of 5 years or more, while this figure was just over 1.45 per cent in 2021. There are therefore small differences in the average interest rate cost between the groups even though those that bought in 2018 have smaller mortgages.

[15] Households in electricity zones 3 and 4 are entitled to the subsidy. The subsidy is based on consumption of electricity during the period October 2021–September 2022. Remuneration is based on the difference between the average electricity price for the period and the calculated reference price. This means remuneration of 50 and 79 öre per consumed kWh, respectively, for households in electricity zones 3 and 4.

expenses as extra income. Diagram B3 illustrates how the high-cost subsidy impacts the percentage of households with a deficit between income and expenses for households that purchased a detached house in 2021. In Malmö, the percentage of households that experience a deficit decreases by around 40 per cent. In other parts of electricity zone 4, the percentage decreases by around 30 per cent. In other parts of the country, the effect on the percentage of households with a deficit is smaller.[16]

B3. High-cost protection reduces the share of households with deficit

Per cent



Source: FI.

Note: Refers to households that bought a detached house in 2021. Electricity zones 3 and 4 refer to households outside of the three metropolitan areas.

Households' wealth is a buffer – but there is limited understanding of how it is distributed

Households' financial savings ratio[17] is falling, but it is still relatively high from a historical perspective (Diagram 3). In 2022, wealth has fallen due to falling asset prices. Households have been allocating more of their savings to secure assets (Diagram A5).

A high level of savings and strong development in the value of financial assets over the past decade mean that households' aggregate liquid financial wealth has

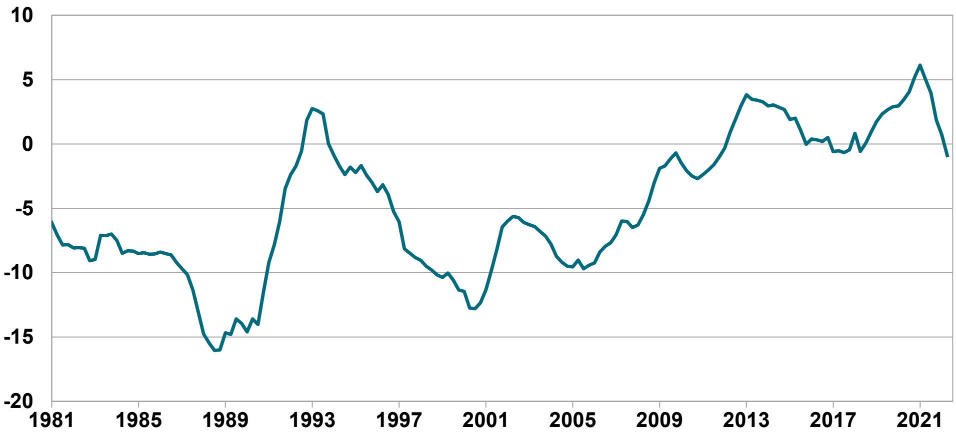
[16] Remuneration currently consists of a one-time sum, and how it is distributed over time matters for the results in this calculation. If the remuneration had been distributed over a shorter period of time, for example during the winter, the positive effect for households' finances for that period would have been larger.

[17] Aggregate savings (flows) in relation to aggregate income.

improved rapidly. Fundamentally, high savings and high financial wealth serve as a buffer for the Swedish economy, even if wealth fell in 2022. However, we have limited knowledge about how wealth is distributed, which means that we do not know how many households actually have savings that they can draw on during more difficult times. It is therefore not certain to what extent savings can offset the shock to the economy from rapidly rising expenses.[18]

3. Households' financial savings ratio decreases

Per cent



Source: Statistics Sweden, National Accounts.

Note: Excluding savings in occupational and premium pensions. Savings in tenant-owner associations are included in this definition.

[18] Previously, households' liquid assets have been unevenly distributed. See Andersson and Vestman (2021) "Svenska hushålls likvida tillgångar", FI Analysis 28, FI. An English translation is available at www.fi.se. There are grounds for assuming that this is still the case; see Stability in the Financial Markets 2021:2.

Non-financial corporations

Prolonged higher interest rates can have a palpable impact on the real estate sector, which is sensitive to interest rates. In the short term, refinancing is a threat to commercial real estate firms if investors make the assessment that interest rates will continue to be high. Inflation and high electricity prices are also putting pressure on other non-financial corporations, particularly in southern Sweden.

	Vulnerability	**Change**
Debt growth		→
Indebtedness		↗
Refinancing		↗

The colors indicate the current level of vulnerability. Green represents low vulnerability. Yellow, orange and red indicate differing degrees of elevated vulnerability. The arrows show the trend for the vulnerability – increasing, decreasing, or unchanged. The level and trend are based on a combination of quantitative measurements and expert assessments.

High costs puts firms under pressure

Sweden's energy-intensive manufacturing industries have lower fossil-dependence than their counterparts in other euro-zone countries. These industries are also partly protected from price increases by the partially isolated electricity markets in northern Sweden. Firms in Sweden's south have experienced a sharp increase in energy costs, but the electricity price subsidy relieves some of this pressure. The direct effects of high electricity prices are thus limited to the aggregate level, but many firms are also impacted indirectly by higher energy prices since this leads to higher prices on input goods in general.

Non-financial corporations are also seeing other cost increases; for example, the construction industry is experiencing high prices on construction material and falling house prices. Housing construction is expected to fall sharply after having reached a historically high level in 2021.[19] Even firms that are less impacted by cost increases can face pressure from a shrinking economy due to falling demand – both domestically and internationally. If the scope of their problems grows, there is a risk that credit losses at the banks will rise significantly.

[19] The Swedish National Board of Housing, Building and Planning forecasts a decrease in housing construction by 40 per cent from its peak in 2021 but does not rule out a significantly larger slow-down (The Swedish National Board of Housing, Building and Planning's forecast update of housing construction, October 2022).

Less market financing for commercial real estate firms

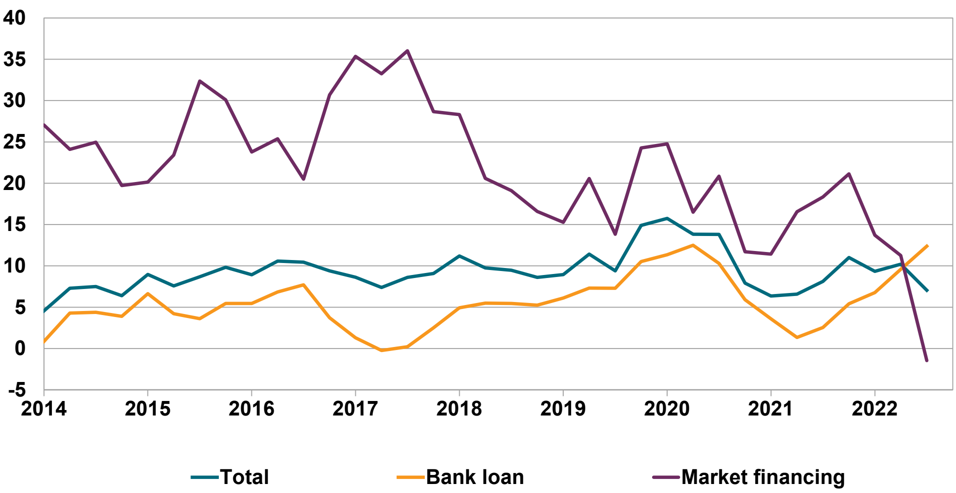
The commercial real estate sector has had very strong debt growth over the past few decades in both nominal terms and in relation to GDP. However, this growth is now showing signs of slowing. In terms of annual growth, debt is still growing, although at slower rate than before (Diagram 4). If we look at debt levels, we also see signs of slowing (Diagram A6).

The market financing of commercial real estate firms is shrinking while bank loans are increasing. Commercial real estate firms are replacing some of their drop in market financing with bank loans. Even if there are short-term risks associated with the commercial real estate firms being pressured to reduce their debt, in the longer term this is a positive development that will lower risks.

Other non-financial corporations' debt is growing at a very high rate, 20 per cent in annual growth in September 2022, but other non-financial corporations are probably in general less sensitive to interest rates than commercial real estate firms.[20] Debt growth is also occurring from low levels, and other non-financial firms' debt – unlike the debt of commercial real estate firms – has not grown during the pandemic. The current increase in debt probably has a number of causes, for example a greater willingness to invest after the pandemic, firms borrowing to bridge short-term problems during the ongoing cost increases, and currency effects. FI is following the developments but currently makes the assessment that the debt growth among non-financial corporations is not a cause for concern.

4. Reduced growth in commercial real estate firms' market financing

Per cent



Source: FI and Statistics Sweden.

[20] See, for example, the stability report from the Riksbank, Spring 2022.

Note: Annual growth rate. “Bank loans” refers to loans to commercial real estate firms according to FLU (KRITA as of September 2019). “Market financing” refers to bonds and commercial paper issued by firms within the commercial real estate sector according to issued securities statistics (Statistics Sweden).

High financing costs threaten commercial real estate firms

Since the start of 2022, interest rates for, for example, firms’ market financing have increased sharply – particularly for some commercial real estate firms. FI has previously indicated that higher interest rates can make it difficult for commercial real estate firms to make their interest rate payments.

Real estate values, and thus loan-to-value ratios, may come under pressure. The yield requirement [21] has increased by 0.35 percentage points to 3.35 per cent for offices in central Stockholm according to some estimates.[22] Under an assumption of a constant net operating income, such a limited upswing in the yield requirement corresponds to a downturn in commercial real estate prices on around 10 per cent (Diagram 5). A stronger upswing of, for example, 1 percentage point, to a yield requirement of 4 per cent, corresponds to a drop of 25 per cent. In comparison, it can be mentioned that the interest rate on 10-year Swedish treasury bonds rose from 0 to 2 per cent since the end of 2020. The yield requirement and interest rates do not mirror one another perfectly – and neither should they be expected to since an investment in commercial real estate normally provides protection against inflation. Nevertheless, an increase in the yield requirement of 1 percentage point or more is fully conceivable in an environment with rapidly rising interest rates in general and where the risk in the commercial real estate sector is judged to be elevated.

If property values fall, commercial real estate firms’ loan-to-value ratios go up. If we assume that the loan-to-value ratio was originally 50 per cent, this means that a drop in value of 25 per cent translates to an increase in the loan-to-value ratio from 50 to 67 per cent. Relatively limited movements in the yield requirement thus can have a large impact on property values and loan-to-value ratios, which in turn affects the risk of credit losses since the value of the collateral falls.

Prolonged high interest rates are the most serious threat to commercial real estate firms, but there are also other risks, such as economic recessions and the risk of lower demand for offices due to more people working from home. FI’s stress test shows that many commercial real estate firms continue to be vulnerable and the

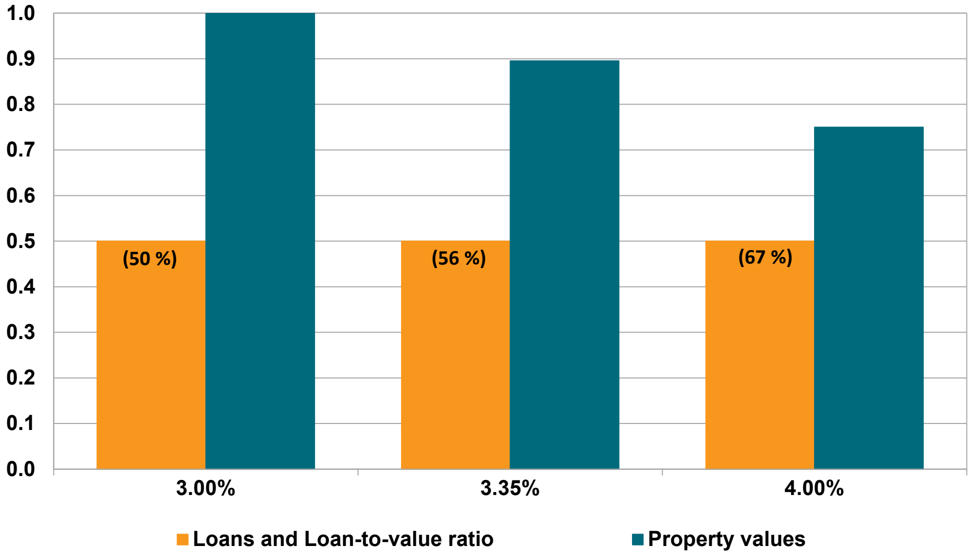
[21] The yield requirement is investors’ demand on net operating income in relation to the real estate’s estimated value. For a given net operating income , a higher yield requirement means a lower price.
[22] For example, JLL

banks may experience tangible losses in a stressed scenario (see “Stress test of commercial real estate firms”).

The interest rate on bank loans with property as collateral has begun to rise first in the past six months. Commercial real estate firms’ bank loans have thus so far only been subject to higher interest rates to a limited extent. As the Riksbank’s policy rate rises, the interest rate for commercial real estate firms will also rise. Given the Riksbank’s interest rate forecast, the interest rates on bank loans for commercial real estate firms may rise from around 1.5 per cent in Q1 2022 to around 4 per cent in 6–12 months.

5. Property values and loan-to-value ratios are sensitive to higher yield requirements

Proportion and per cent



Source: FI.
Note: The figure shows property values and loan-to-value ratios (in parentheses) for different yield requirements.

The pressure on commercial real estate firms is somewhat offset by interest rate hedges. On average, larger commercial real estate firms have a fixed interest rate term of approximately three years, but around 40 per cent of the loans have a short outstanding fixed interest rate term and therefore will be affected within one year. Overall, FI makes the assessment that high financing costs constitute a significant risk for the commercial real estate firms, which can impact stability through, for example, banks’ large exposures to the commercial real estate sector.

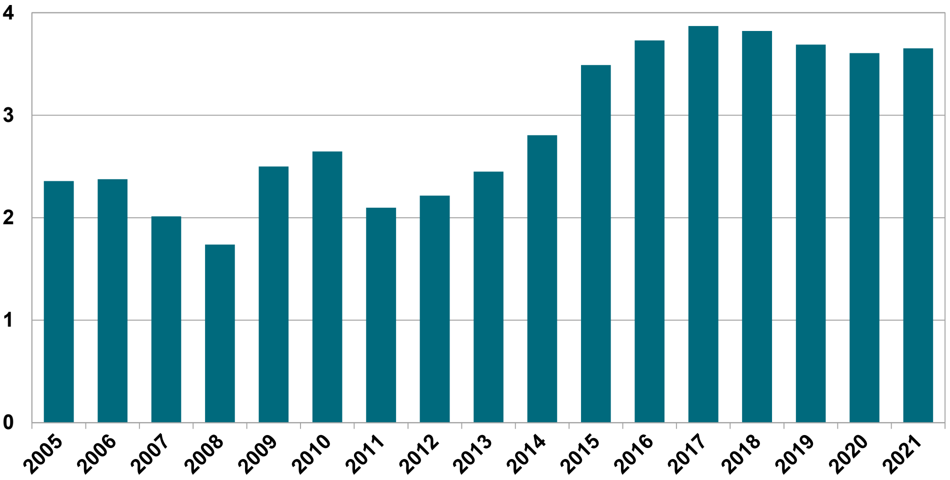
In-depth analysis – Stress test of commercial real estate firms

The risks in the commercial real estate sector have increased over a long period of time and are related to the commercial real estate firms' large, and rising, debt. Over the past few years, FI has highlighted that this development has given rise to elevated interest rate and refinancing risks linked to falling income and primarily rising financing costs.

Rising financing costs and a weaker economy therefore entail new challenges for the commercial real estate sector, but the firms in this sector are starting with strong underlying profits (Diagram B4). The deciding factors in the future will be if they can maintain earnings, that the upswing in interest rates is not too large, and if it is possible to generate sufficient loan-based financing.

B4. Commercial real estate firms have high earning in relation to interest rate expenses

Ratio



Source: Bisnode and FI.

Note: The diagram shows the median of the commercial real estate firms' (only limited liability companies) interest coverage ratio, defined as EBITDA in relation to interest rate expenses. The values are calculated from the firms' annual reports dated 31 December of each respective year.

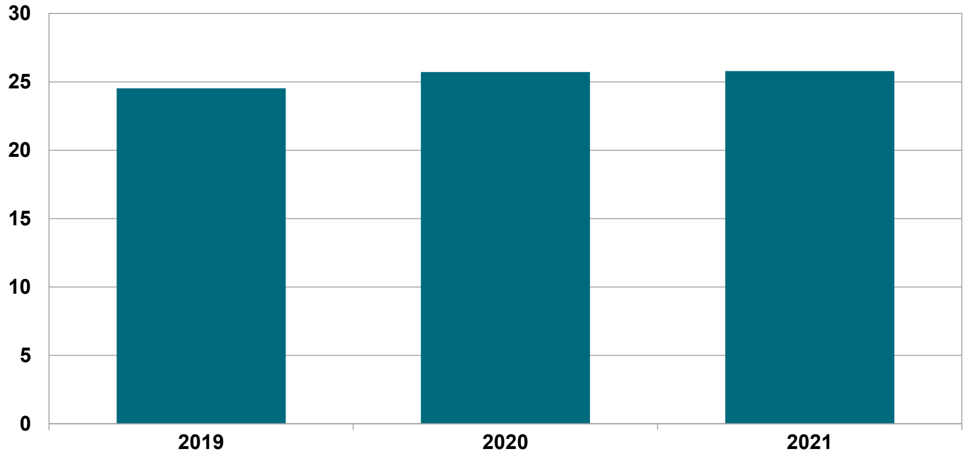
A stress test enables us to assess how vulnerable the commercial real estate firms are to a change in financial circumstances and to investigate how the banks can be impacted by a shock to the commercial real estate market.[23] We start with the economic scenario described earlier in this report, in which commercial real estate firms experience lower earnings and higher financing costs. None of the scenarios consider any measures that the firms or banks may make to mitigate any effects.

---

[23] The method is described in more detail in Aranki, Lönnbark and Thell (2020) "Stresstest av bankernas utlåning till fastighetsföretag", FI Analysis 24, FI. An English translation is available at www.fi.se. A change compared to previous methodology is that we have now changed the method for the build-up of a group structure, where this is relevant.

We have performed the same stress test even backwards in time to analyse how the vulnerabilities have changed. The stress test shows that many commercial real estate firms can experience problems in a stressed scenario (Diagram B5). The firms that demonstrate high risk in the analysis (defined as an interest coverage ratio of less than 1 and a loan-to-value ratio of greater than 70) represents around 25 per cent of the banks' loans to commercial real estate firms.

B5. Share of loans to commercial real estate firms with elevated credit risk
Per cent

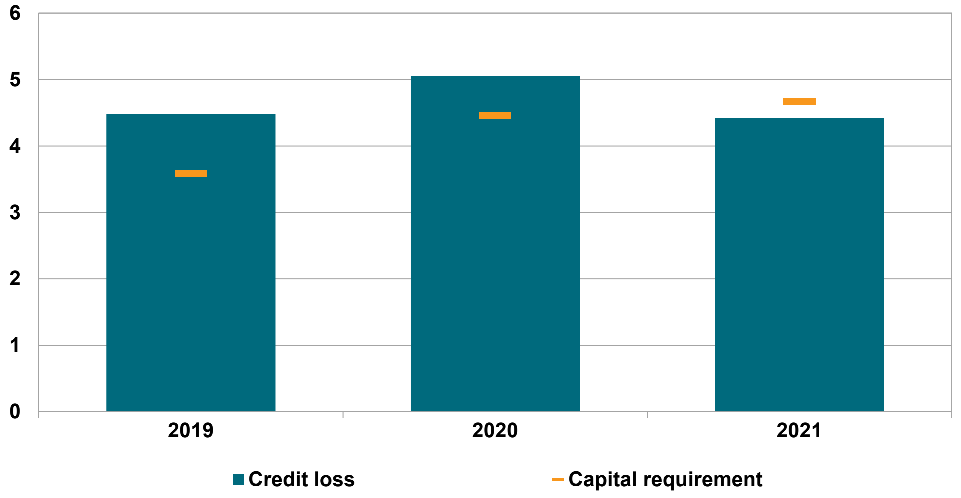


Source: FI.
Note: The diagram shows the share of banks' loans to commercial real estate firms that have elevated credit risk stress according to FI's applied definition.

Multiple commercial real estate firms with elevated credit risk can lead to the banks needing to increase their provisions for credit losses. The calculations indicate that credit losses may amount to around 4.5 per cent of the banks' lending to commercial real estate firms in a stressed scenario (Diagram B6). This corresponds to approximately SEK 45 billion, which is roughly in line with the capital the banks' have specifically set aside for lending to the commercial real estate sector. Credit losses for a given economic scenario have decreased since 2021 and are in line with the results for 2020. At the same time, the probability of the realisation of such a negative economic scenario is currently much higher.

B6. Credit losses in FI's stress test and capital buffers

Per cent of outstanding amounts



Source: FI.

Note: The bars in the diagram show estimated credit losses, and the lines show the level of the banks' capital requirements as per 31 December of each year. The capital requirement is calculated as the sum of the minimum requirements, buffer requirements and Pillar 2 requirements attributable to credit risks in commercial real estate.

Commercial real estate firms can experience serious problems with refinancing

Most commercial real estate firms are considered to have the capacity to manage a higher interest rate for a short period of time since many of them have partly hedged their interest rates through various tools, such as loans at a fixed rate and interest rate derivatives. However, refinancing is a threat to many firms in both the short and long term if investors consider there to be a high risk that interest rates will remain high for a prolonged period of time.

The financing for some of the commercial real estate firms is also currently under pressure (see "Commercial real estate firms' refinancing risk"). Commercial real estate firms with a credit rating of BBB or lower cannot issue bonds, or they can only issue at interest rate levels that are not sustainable in the long run.[24] This pressure has been relieved somewhat since the banks appear to be willing to help commercial real estate firms that are having difficulty refinancing maturing bonds and certificates. Commercial real estate firms have credit facilities of around SEK 180–190 billion, which means that the banks are willing to lend out this amount if the firms were to find it difficult to refinance their market financing. It should be

[24] Interest rate levels are probably higher than what some of the firms can pay if the interest rates had applied to the entire loan portfolio.

noted, however, that the facilities are probably conditional on the property values not falling too much. The banks have also signalled that they are focusing on existing customers. This means that some firms may experience problems even though the credit facilities at the aggregate level appear relatively secure.

Even if the credit facilities that the banks have offered provide a solution to short-term refinancing problems, the banks probably are not willing to take on the risk of replacing all maturing market financing. Neither would it be desirable from a stability perspective for the banks to take over the entire volume of market financing since too much credit risk will then end up in the banking system.

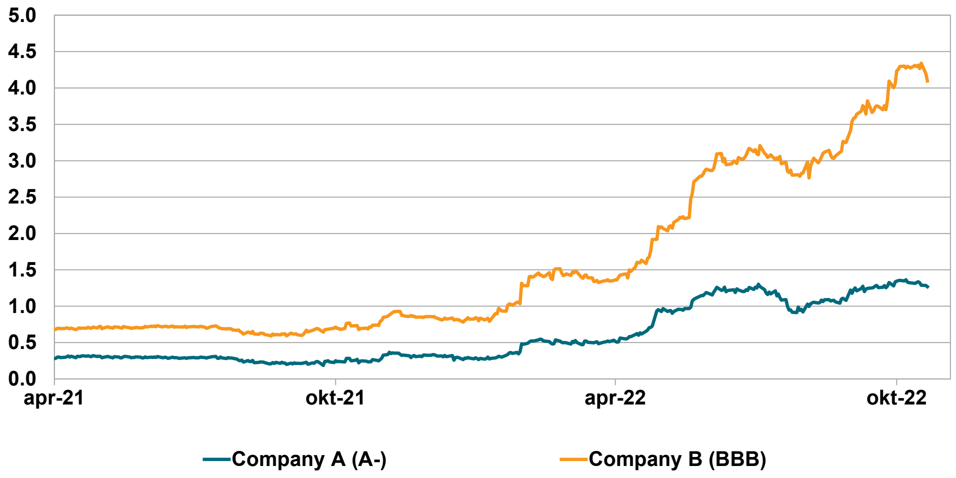
Many commercial real estate firms' debt is adapted to a very low interest rate, which means that they will experience problems when interest rates rise. For some firms, it will therefore be necessary to reduce their total debt. They can do this by using the business's cash flow, selling assets (both properties and shares), cancelling dividends, raising new capital through new share issues targeting existing or new shareholders, or by taking a combination of these measures. We are also seeing tendencies towards this in the market. Some commercial real estate firms have sold holdings of shares, initiated sales of property or split up companies to reduce the debt level. FI welcomes this development.

In-depth analysis – Commercial real estate firms' refinancing risk

Commercial real estate firms' new borrowing on the bond market is currently much lower than it has been in recent years. The cost of issuing bonds has increased sharply, and issue volumes have fallen. The total issue volume for commercial real estate firms in SEK was 35 per cent lower in Q2 2022 than it was for the same period last year. The issue volume in EUR was almost non-existent. Issues that were made in SEK refer primarily to commercial real estate firms with a credit rating of A or higher and strong owners such as pension funds. The borrowing cost has increased for these firms as well but not as much as it has for firms with lower ratings.

The large group of issuers with a credit rating of BBB, on the other hand, has experienced a significant increase in the borrowing cost. The spread to the swap rate is around 4 per cent, and in some cases, it was even higher. It is an increase from the already very high levels that were established before the summer (Diagram B7). The spreads refer to the secondary market and currently express sharply reduced risk appetite among investors. There have basically not been any issues by BBB-rated commercial real estate firms since Q2 2022. This is in part because BBB-companies are often unwilling to issue bonds at the current elevated spreads since the companies likely will not have enough cash flow to meet the spreads in the long run, and in part because low interest from investors. This makes it difficult for the companies to issue the desired volumes.

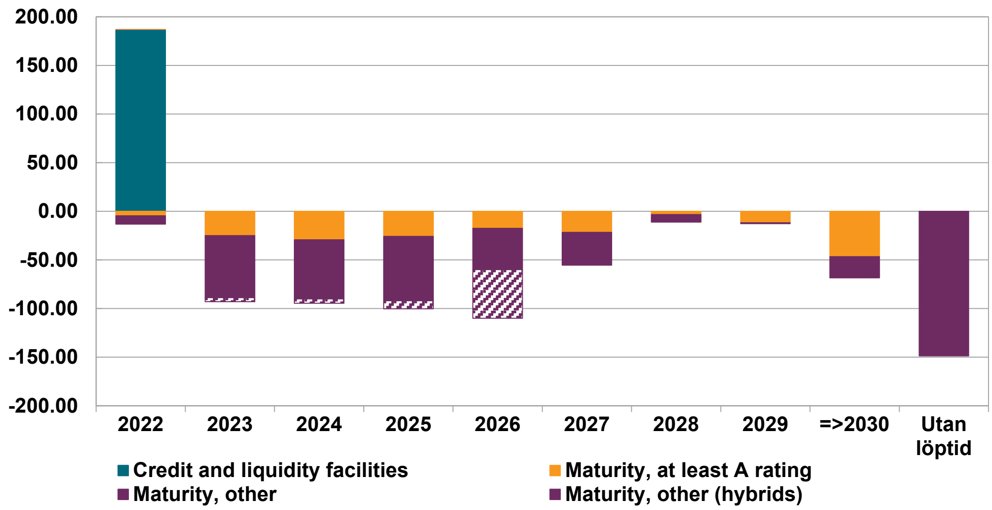
B7. Higher credit spreads
Per cent



Source: Refinitiv Eikon.
Note: Interest rate for three-year corporate bonds set against three-year swap rate (SEK, IRS, 3m, 3y).

Commercial real estate firms have large quantities of bonds that will mature in the next few years and are facing a challenge in terms of how the matured bonds will be refinanced. In 2023, around 15 per cent of the firms' total market financing will mature. Around 70 per cent of these maturities refer to companies with a credit rating lower than A (Diagram B8). The lower the rating a commercial real estate firm, the lower the probability of it being able to replace maturing market financing with bank financing.

B8. Bond maturity broken down by credit rating
SEK billion



Source: Refinitiv Eikon and annual reports.
Note: Other (hybrids) refer to hybrid bonds without a set maturity date. Hybrid bonds are somewhere between equity and debt. These types of bonds have call dates when they are

either repaid or renewed at a higher interest rate. It is market practice for issuers to repay hybrids on the call date by issuing a new bond. On the current market, it may be difficult to issue new hybrid bonds at acceptable terms. Thus, there is a refinancing risk on the next call date. Hybrid bonds have therefore been placed on these dates in the diagram. In the group with credit rating A or higher, there are no hybrid bonds.

The conclusion of an overall assessment of investor demand, higher interest rates, wider credit spreads and lower potential issue volumes is that the refinancing risk is elevated for commercial real estate firms with outstanding bonds. This applies primarily to the large group of firms with a credit rating of BBB or lower.

Commercial real estate firms are now turning to banks to secure alternate financing in the form of credit facilities and loans. The banks so far have supported existing customers with new loans. One condition for this is of course that the firms continue to be creditworthy. At an aggregate level, FI makes the assessment that the bond maturities in 2023 will probably be able to be managed through bank loans, cash from the firms, and capital injections from owners. However, individual companies may experience problems.

What is more uncertain is how much of the maturing market financing between 2024 and 2027, around SEK 450 billion, will be manageable in the long run. It is likely that companies in the commercial real estate sector will need to reduce their total debt.

Stability in the financial markets

High inflation and Russia's war in Ukraine have created turbulent and volatile financial markets. Risk-taking has decreased as investors have withdrawn, and the liquidity on the bond markets has deteriorated significantly. Volatility and extreme price increases on the electricity market have meant very high margin calls on derivative positions and increased risks for the central counterparty.

	Vulnerability	Change
Risk-taking financial markets		↘
Market liquidity		→
Financial infrastructure		↗

The colors indicate the current level of vulnerability. Green represents low vulnerability. Yellow, orange and red indicate differing degrees of elevated vulnerability. The arrows show the trend for the vulnerability – increasing, decreasing, or unchanged. The level and trend are based on a combination of quantitative measurements and expert assessments.

Risk-taking continues to decrease

High inflation has led many central banks to tighten their monetary policy, which has resulted in several sharp interest rate increases alongside reduced quantitative easing. Subsequently, market rates have shot up. There has been high volatility and uncertainty on the financial markets, which contributed to dampening investors' willingness to buy risky assets. Stock valuations in the form of the so-called P/E ratio[25] has continued to fall (Diagram A10). In Sweden, initial public offerings (IPOs) on the stock market dropped sharply in 2022. Over the past year, it has also become more common for new share issues to not be fully subscribed.

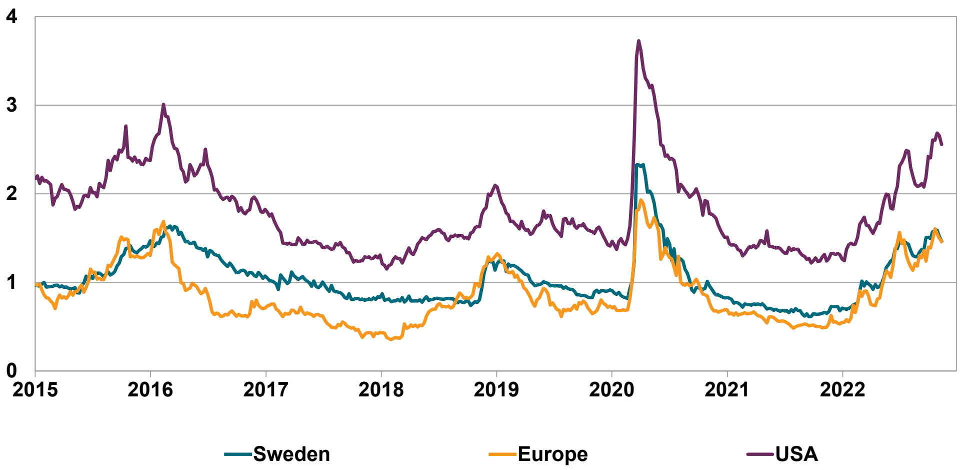
The risk premiums on corporate bonds increased sharply in H1 2022 and appear to have settled at a higher level (Diagram 6). In Sweden, it is primarily risk premiums on bonds issued by commercial real estate companies that increased sharply. In addition to the low risk appetite among investors and a tighter monetary policy, expectations of lower economic activity going forward most likely contributed to the higher risk premiums.

In the short term, additional volatility and rapid tightening of financial conditions may cause more turbulence on the financial markets. In a worst-case scenario, widespread uncertainty and large price fluctuations could trigger problems for both financial and non-financial actors. In the long run, however, the vulnerabilities for financial stability could decrease as asset prices normalise and risk premiums and financing costs rise. If this leads to less indebtedness, households and firms become

[25] Share price/earnings per share.

less vulnerable and face better conditions for managing future shocks. This also means that the risk of steep price drops decreases.

6. Higher risk premiums on corporate bonds
Percentage points



Source: Refinitiv Datastream.
Note: Interest rate differentials for corporate bonds with credit rating BBB in Sweden, the Euro zone and the USA. Calculated as the difference between the corporate benchmark for Sweden, the euro zone and the USA and interest rate swaps in each respective currency. All with a maturity of five years.

Bond markets are functioning poorly

Liquidity on the secondary market for Swedish government bonds and covered bonds has deteriorated over a long period of time (Diagram 7).[26] FI makes the assessment that these problems have not had an impact to any significant extent on the possibilities for the state or the banks to raise funding. However, if market liquidity declines, it can become more difficult to trade bonds without influencing the price. Under stressed market conditions, the risk of fast and large price movements also increases.[27]

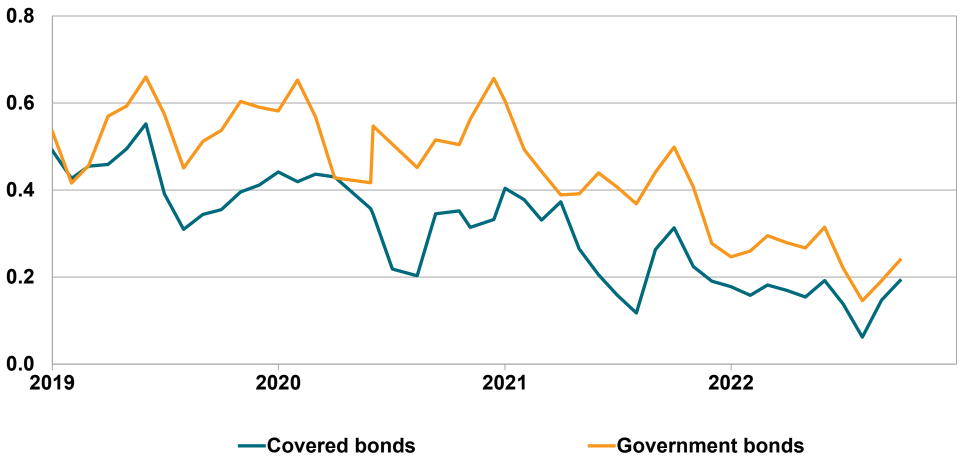
In 2022, market liquidity continued to decline. The tighter monetary policy that was introduced in the spring of 2022 most likely contributed to this. In the autumn, liquidity improved slightly on the Swedish bond markets. This is partly because of seasonal effects since activity normally increases after the summer, but higher interest rates are also attracting more investors. If interest rates stabilise at higher

[26] For more information about how FI measures market liquidity on the markets for government bonds and covered bonds, see Crosta A. and Zhang D. (2020), *Nya likviditetsindikatorer för räntemarknaden*, FI Analysis 21, FI. An English translation is available at www.fi.se.
[27] For more information about the causes driving the decline, see *Stability in the Financial system (2022:1).*

levels, this creates conditions for improved returns, which in the long term could contribute to better market liquidity.

7. Lower market liquidity

Normalised scale



Source: FI's transaction reporting system, Refinitiv Eikon, Swedish National Debt Office and Svenska Handelsbanken Bond Indices.
Note: Liquidity measure as an aggregate of various individual indicators for covered bonds and nominal government bonds with benchmark status. Higher values signify higher liquidity. Two months' moving average.

In recent years, the Swedish corporate bond market has grown, but it is still relatively small, and liquidity on the secondary market is limited. This means that the market is sensitive to shocks.[28] One reason for the limited market liquidity is the homogeneous investor collective. The investors are largely investment funds that offer daily redemption. In order to prevent fund management companies from amplifying the problems that can arise on the corporate bond market, the companies need to manage their liquidity risks better (see "Stress tests of funds").

The sector that represents the largest share of the outstanding value of corporate bonds is commercial real estate firms. Recently, the corporate bond market has been impacted by rising interest rates and higher inflationary pressure, and turnover on the secondary market has decreased. Rising interest rates and risk premiums also made it more expensive for firms to refinance or raise new bond loans, and commercial real estate firms have been hit particularly hard. In order for problems on the corporate bond market to not spread to other parts of the financial system, it is important for the market to function well (see "Non-financial corporations").

[28] For more information, see, for example, the report *Kartläggning av marknadsbaserad finansiering i Sverige*, FI, October 2022. Only in Swedish.

In-depth analysis – Stress tests of funds

Funds that offer daily redemption have an inherent liquidity risk. If their assets have low liquidity, in other words the assets cannot be sold easily, quickly and in large volumes without having a strong influence on the price, funds may find it difficult to meet large outflows. During the outbreak of the coronavirus in the spring of 2020, outflows, particularly from corporate bond funds, increased at the same time as liquidity in the market for corporate bonds was drastically impaired. A number of fund managers then chose to postpone the redemption and purchase of fund units in corporate bond funds since it was not possible to reliably value the assets. Some unit holders thus did not obtain immediate access to their money. If assets are sold at a discounted price, the redemption can be paid out at the cost of the remaining unit holders holding fund units at a lower value. This problem is usually called first-mover advantage. Large sell-offs in markets with low liquidity can also constitute a risk to the financial system. This is because the negative price pressure can affect other market participants. In order to understand and follow these risks, it is an important part of FI's work to monitor liquidity risks in the fund sector.

One way to do this is through stress tests. FI has therefore developed a stress test tool to identify liquidity risks in the Swedish fund sector. The tool is based on the work of the European Securities and Market Authority (ESMA) and the IMF. It is based on calibrations of large redemptions and funds' ability to meet these redemptions by selling off assets. Different fund categories meet differing redemption shocks in our stress test, which is based on data of historical flows.[29] The categories government bond funds and short-term fixed-income funds take on the largest redemption shocks, while equity funds and mixed funds take on smaller redemption shocks. In order be able to easily estimate funds' resilience to large redemption shocks, we use primarily a key ratio that we call the redemption coverage ratio (RCR). If a fund has an RCR greater than 1, this means that the fund has enough liquid assets to withstand the redemption shock. If a fund has an RCR less than 1, this means that the fund does not have enough liquid assets to withstand the redemption shock.

Tabell 1. High-yield bond funds are less resilient

Number

Fund category	Number of funds	RCR (Median)	Number of funds with RCR < 1
Equity funds	364	4.9	0
Mixed funds	104	9.1	0
Corporate bond funds	67	3.1	6

[29] The method is described in more detail in Crosta and Sandström (2022), *Stresstester av fonders likviditetsrisker*, FI Analysis 37, FI. At the time this report is published, a summary is available at www.fi.se.

High-yield bond funds	37	1.3	14
Short-term fixed-income funds	23	3.1	0
Government bond funds	5	5.5	0
Other reserves	29	4.5	0
Fund-of-funds	180	11.4	0

Source: FI's fund holdings data, Morningstar, Refinitiv Eikon.
Note: FI's own calculations. Median RCR (Expected Shortfall) refers to the median redemption coverage ratio (RCR) per fund category. RCR is calculated as the ratio between HQLA and the redemption shock.

The stress test tool helps us see that most Swedish funds can handle relatively large redemptions, but corporate bond funds that typically invest in assets with liquidity are vulnerable and may have difficulty handling redemption. In our stress test, 6 out of 67 corporate bond funds and 14 out of 37 high-yield bond funds have an RCR of less than 1. This means that they would not be able to manage the calibrated shock in the stress test. The reason that these funds experience problems is not that they have larger redemption than other funds, but rather that they primarily invest a large portion of their net asset value in assets with low liquidity.

When we compare the funds' current portfolios with their allocation before the pandemic and the the problems that emerged then, we see that most funds had a liquidity corresponding to what they have now. One exception is high-yield bond funds, which have smaller liquid portfolios now than before the pandemic. This means that the liquidity imbalances are still there, and they appear to have also increased slightly for high-yield bond funds. To decrease the liquidity imbalance, funds can either change the redemption conditions or the composition of their portfolios, but there are also other tools, so-called liquidity tools, that can improve their resilience. One example is swing pricing[30], which can be used to decrease the incentives for unit holders to try to redeem their units before others and thus reduce the risk for fast and large outflows from funds.

Short-term fixed-income funds are resilient in the sense that they have sufficient liquid funds. However, when they experience large outflows, they can impact the financial system by contributing to large price fluctuations on the assets they are selling. If these funds want to keep their initial portfolio allocation, we see risks that prices will be impacted primarily on the corporate bond market.

[30] See the report *Likviditetsverktyg i värdepappersfonder och specialfonder* for a detailed explanation of swing pricing and other liquidity management tools.

Higher risks in the financial infrastructure

Financial infrastructure consists in part of firms that provide systems for payments, settlement of securities transactions, and management of counterparty risks. This infrastructure is key for the functioning of the financial markets and financial stability. Vulnerabilities within financial infrastructure are therefore largely linked to the firms' management of operational risks. For example, cyber attacks on these firms can have a large impact on financial stability. It is therefore important for systemically important firms to have satisfactory protection. Therefore, FI will contribute to strengthening the digital resilience of firms in the financial sector (see "Cyber risks and financial stability").

The central counterparties (CCPs) that offer counterparty clearing of derivatives and other securities are very important actors in the financial infrastructure. Their primary assignment is to take over counterparty risks in financial transactions by acting as a counterparty to both the seller and the buyer. The concentration of counterparty risk that arises places high demands on their operations. A CCP, for example, must gather margin calls from the participants clearing their derivative contracts in order to balance the counterparty risks.

In the stability report FI published in the spring of 2022, FI highlighted the rising risks on the electricity derivative market. At the end of the summer, prices on electricity derivatives continued to rise at the same time as volatility was high. Due to the large price increase, participants of the clearing of electricity derivatives at the central counterparty, Nasdaq Clearing, received significantly larger margin calls (Diagram 8). This is how the system is supposed to work, but the calls were so high that it was unclear if the participants – primarily electricity producers – would be able to produce enough liquidity through banks or in other ways to meet the calls. This created uncertainty on the market.

If a member cannot provide the liquidity required to cover the margin calls on time, the central counterparty may need to declare the member in default and settle its positions. There are rules and procedures for such situations, but it was not possible to assess if they were sufficient for managing the shocks that could occur. In one situation, where Nasdaq Clearing's pre-financed financial resources were completely drawn, additional shocks and problems on the electricity derivative market could also potentially spread to other parts of the financial market that are subject to clearing at Nasdaq Clearing. It was not possible to rule out a course of events that could threaten financial stability (see "Liquidity problems on the electricity derivative market").

To prevent such a development, the Parliament decided on 5 September 2022 to give the government the mandate to issue credit guarantees to energy producers that are judged to potentially experience problems managing margin calls. The government gave the assignment to design a credit guarantee program to the

Swedish National Debt Office. During the autumn, both prices and volatility on the market fell, thus reducing the need for electricity producers to meet margin calls. As a result, the guarantee has not been needed yet.

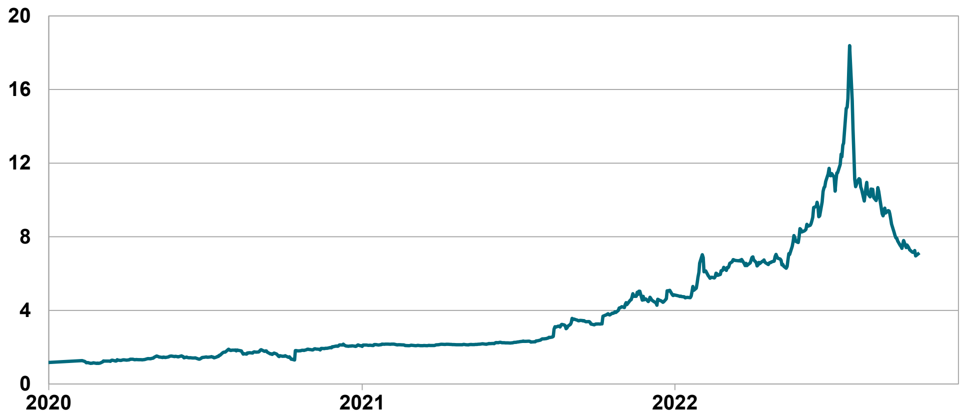
High margin calls in central counterparties are not unique to the Nordic electricity derivative market; for example, a corresponding course of events has been observed on the German market. Similar problems can also arise when clearing financial derivatives. British pension funds had difficulty during the autumn to meet margin calls associated with interest rate derivatives, a course of events that resulted in liquidity assistance from the Bank of England (see “Liquidity risk in British pension funds”).

These events clarify the contradictions linked to financial stability. On the one hand, the margin call makes a CCP more resilient. On the other hand, there is a greater risk that clearing participants will experience liquidity problems and be declared in default. This can damage a CCP through other mechanisms and have a negative impact on the financial system as a whole. This problem becomes particularly evident when the clearing participants are non-financial corporations. They often do not have the liquidity buffers or other access to liquidity that financial counterparties in many cases have.

One lesson learned is that both central counterparties and supervisory authorities should give more attention to liquidity risk in central counterparties. There may also be a need to review the regulations given the lessons learned from the events of the past year. Such discussions are being held at the EU level. It is important work, but FI emphasises that it is also important to ensure that any regulatory changes do not create new risks.

8. Sharp increase in margin calls

EUR billion



Source: Nasdaq Clearing.

Note: The initial margin participants pledged to Nasdaq Clearing to meet margin calls on the commodities derivatives market.

In-depth analysis – Liquidity problems on the electricity derivative market

The derivative instruments that are traded on the electricity derivative market in practice constitute a promise to sell or buy electricity at a certain price in the future. When the price of electricity rises, the value falls on the contract that electricity producers signed to secure the price of electricity in the future. There is thus a counterparty risk with respect to the electricity producer. To protect the central counterparty, the electricity producer must therefore pledge more collateral even though they will be compensated by higher income from the actual future sale of electricity. The margin calls are to be paid on an ongoing basis, generally the next day but also the same day if the price fluctuations are large. Since the price fluctuations on the electricity market were extreme, a situation arose where electricity producers needed to rapidly produce a lot of liquidity.

Even if the firms in question are well-capitalised and will benefit from rising electricity prices, a liquidity shortfall could lead to a failure to meet margin calls and, in turn, the central counterparty declaring members to be in default. A CCP must be able to manage its two largest members being declared in default without threatening the CCP’s survival. When such a default occurs, the margin calls are used first. To limit the credit exposure to its clearing members, a central counterparty must have a default fund that is pre-financed by its members. Next, the members’ contributions to the default fund are used to cover losses. If this is not enough, parts of the central counterparty’s own capital are used. Thereafter, the joint default fund is used in its entirety. If this is not enough, the CCP has the possibility of utilising so-called assessment power to request additional margin calls from members. The default fund must also be filled again after it has been emptied. This means that the loss is distributed among all members on the market. Depending on the size of the loss, a default can also spread to other actors on the market for commodity derivatives (where some are present in several parts of the financial system).

Stability in the insurance sector

Life insurance undertakings and occupational pension undertakings continue to hold a large percentage of risky assets but benefit from higher market rates. A significant share of the investment portfolios is concentrated on the banking sector, but real estate also represents a large portion. Sufficient buffers thus reduce the vulnerabilities.

	Vulnerability	**Change**
Investment risk	Orange	→
Financial position	Green	→
Concentration of assets	Yellow	→

The colors indicate the current level of vulnerability. Green represents low vulnerability. Yellow, orange and red indicate differing degrees of elevated vulnerability. The arrows show the trend for the vulnerability – increasing, decreasing, or unchanged. The level and trend are based on a combination of quantitative measurements and expert assessments.

Share of risky assets is falling, but from a high level

Life insurance undertakings and occupational pension undertakings are large investors in the financial markets Normally, they hold a large portion of interest-bearing securities in their investment portfolios, but due to the low market rates over a period of many years, they have sought higher returns in riskier assets, such as shares (Diagram 9). The development on the financial markets has a strong impact on these holdings. During the large upswing on the stock markets following the pandemic, there were increasing concerns about rapidly falling prices. Markets have now readjusted, and the risk of continued large falls that could have a negative impact on investments has been somewhat reduced. The development on the financial markets is also reflected in the change in value of the investment portfolios of life insurance undertakings and occupational pension undertakings (Diagram A12). Even if the risk of sharp price corrections has decreased, there is still considerable uncertainty about the development of inflation, effects of high energy prices, and the war in Ukraine.

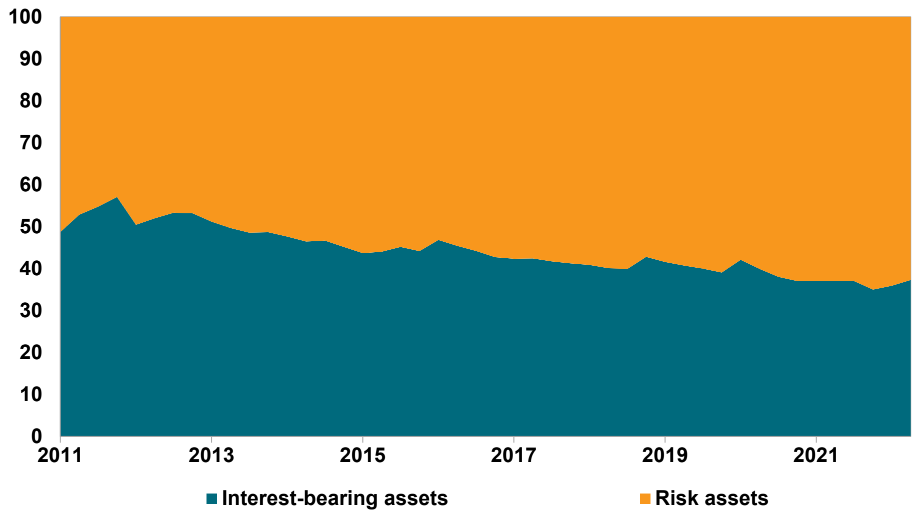
To slow rising inflation, several central banks continue to raise their key rates, which is making market rates rise. Higher market rates are good for life insurance undertakings and occupational pension undertakings in a number of ways – the value of the estimated pension liability falls[31] at the same time as the possibility of getting a higher return on interest-bearing securities in the long run increases.

[31] The insurance chapter of *Stability in the Financial System (2021:2)* has a fact box that describes how the pension liability is calculated.

Higher market rates can thus lead to reduced dependence on riskier assets. One negative aspect of higher interest rates is that the economy is slowing down and demand is falling for goods and services. There is a risk that a weaker economy will lead to reduced risk-taking, which in turn could have a negative impact on payments to unit-linked and deposit insurance but a positive impact on savings in less risky assets, such as savings accounts. A drop in payments to unit-linked and deposit insurance reduces insurance undertakings' earnings and thus could have a negative impact on solvency. However, the effect should not have a major impact on financial stability.

9. Percentage of risky assets is still high

Per cent



Source: Statistics Sweden.

Note: The diagram refers to the distribution of life insurance undertakings and occupational pension undertakings between interest-bearing and riskier assets. "Interest-bearing assets" consists of listed interest-bearing assets, subordinated loans, corporate bonds, and cash and cash equivalents. "Risk assets" here refers to shares, real estate, alternative investments, and unlisted direct loans.

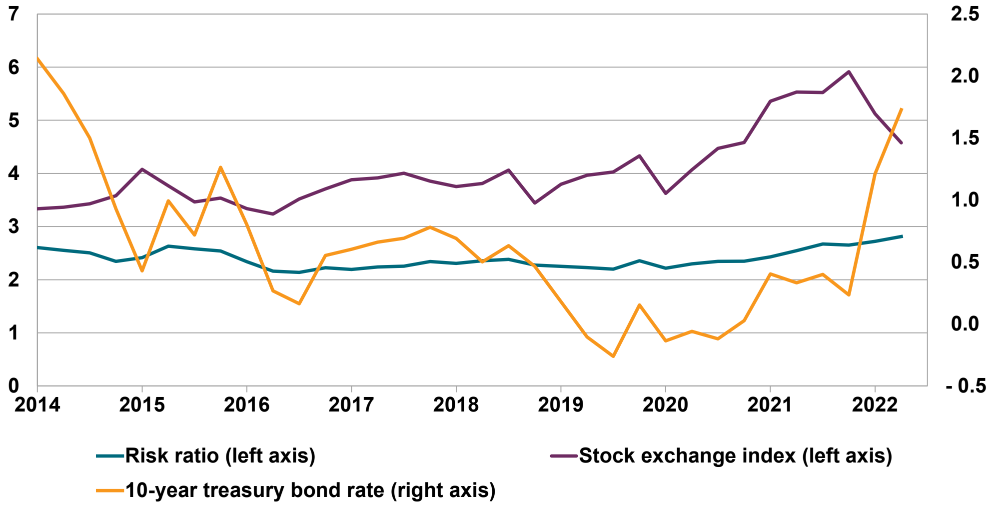
Financial position continues to be stable

Despite the greater uncertainty on the financial markets, in general the financial position of life insurance undertakings and occupational pension undertakings is stable (Diagram 10). The undertakings have buffers that make it possible to withstand sharp downturns and thus avoid making large changes to their investment portfolios that could further amplify price drops. The resilience in the buffers, however, is dependent on how large and how long the downturns on the financial markets are.

Even if the undertakings can withstand sharp downturns in asset prices from a solvency perspective, there is an impact on the beneficiaries' possibilities for return in excess of the guaranteed bonus.[32] In a worst-case scenario, a large and prolonged downturn could lead to mutual undertakings[33] needing to take back distributed surpluses. Distributed surpluses are accrued profits that have been distributed among policyholders. Mutual insurance undertakings do not have the possibility of bringing in capital from owners and instead need to adjust their distribution of surpluses to maintain acceptable solvency.

10. Solvency is still good

Ratio (left axis) and per cent (right axis)



Source: FI, Nasdaq OMX and the Riksbank.
Note: Up through 31 December 2021, the diagram shows the traffic-light ratio for life insurance undertakings that applied the Solvency I regulations before they were converted to occupational pension undertakings. As of 31 March 2022, solvency is shown in accordance with the new Occupational Pension Undertakings Regulation. The series is a mix of two measurements that we have chosen to call a risk ratio.

Concentrations in the insurance sector

A significant portion of the investment assets of Swedish life insurance undertakings and occupational pension undertakings are in securities linked to the banking sector, and primarily the Swedish banking sector (Diagram A14). The holdings constitute a concentration risk, but the vulnerability is offset somewhat by the Swedish banks in general having a strong financial position.

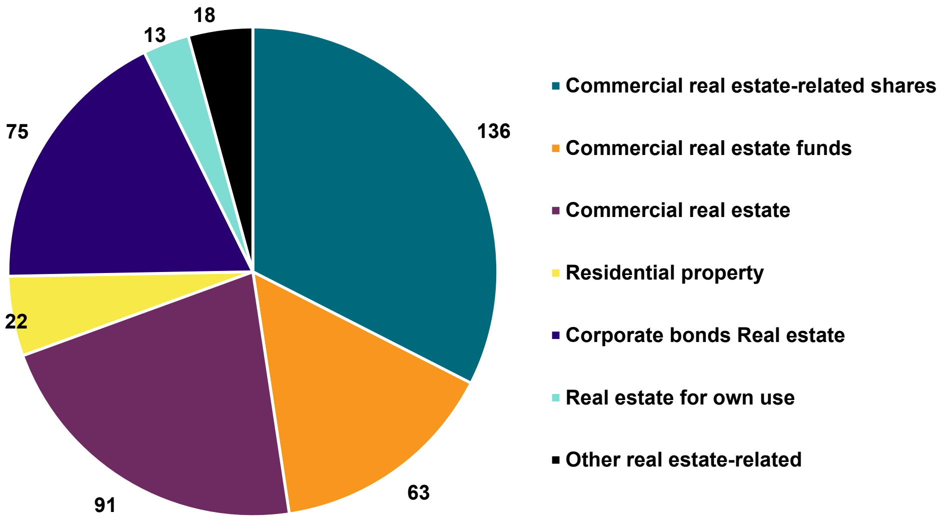
However, if the banks' financial position were to be impacted negatively by, for example, large credit losses, this could in turn have a negative impact on the

[32] In addition to the guaranteed amount, bonuses are paid based on the yield in the investment portfolios.
[33] Mutual insurance undertakings are a special type of company under association law where the policyholders are both owners and customers. All surplus flows to the policyholders in the form of distributed surpluses that are then managed within the company.

investments of life insurance undertakings and occupational pension undertakings. If the undertakings would need to sell these securities at a time when share prices are falling, there is a risk that this would make prices fall even further. But such a course of events would most likely only occur after a sharp and prolonged downturn.

In addition to exposure to the banking sector, life insurance undertakings and pension undertakings invest in property and are thus influenced by the developments on the real estate market. Their holdings consist of direct ownership, indirect ownership via real estate companies and funds, and investments in shares and bonds issued by commercial real estate firms (Diagram 11). Since commercial real estate firms are financed in part by banks, life insurance undertakings and pension undertakings are also exposed indirectly to them via their holdings of securities issued by banks.

11. Exposures to the commercial real estate sector
SEK billion



Source: FI.
Note: Life insurance and occupational pension undertakings' exposures to the commercial real estate sector as of 30 June 2022, excluding unit-linked and deposit insurance.

In-depth analysis – Liquidity risk in British pension funds

Life insurance undertakings and occupational pension undertakings are in general sensitive to falling interest rates and therefore hedge some of their interest rate risk with interest rate swaps. Given the crisis in the British pension funds in the autumn of 2022, there has been a greater focus on the undertakings' use of derivatives and the liquidity that is available if central counterparties require additional margin calls.

On 23 September, the British government presented an unfunded budget proposal that included large tax reductions. The financial markets reacted immediately with rocketing British interest rates, which led to the value of the pound plummeting. The event had a massive impact on the market for interest rate swaps, and central counterparties began to require higher margin calls to cover the considerable depreciation in the value of outstanding derivative contracts. The budget proposal was then withdrawn, but it had identified a weakness in the system that is still there.

Some of the actors that were hit hard were the British pension funds. Pension funds that guarantee fixed and regular pension payments normally match these payments with bonds. When the interest rates were very low, the estimated value of the pension liability was higher, and to cover the difference between the liability and income generated by bonds, the pension funds entered into agreements with external liability-driven investment funds (LDI). These funds then entered into derivative agreements or repo transactions in which bonds were loaned out in exchange for cash that could be invested in additional bonds or riskier assets. The pension funds have historically been underfunded, and through this set-up they were able to free up capital that instead could be invested in riskier assets and thus improve their funding in the longer term.

When interest rates rose sharply after the budget announcement, the value of government debt holdings and the derivative agreements of LDIs fell. The pension funds then needed to transfer extra liquidity to the LDIs who in turn needed to cover increasing margin calls at the central counterparty. The events unfolded rapidly and dramatically, and to free up liquidity the pension funds needed to sell securities quickly, and then primarily British treasury bonds, which further amplified the drop in prices for these bonds. The pension funds' capacity for transferring cash to the LDIs was also limited. The Bank of England was ultimately forced to step in and buy bonds to stop the rapid fall in prices for British treasury bonds and divert the crisis. The situation has improved since then, even if the pension funds have needed to continue their efforts to improve their liquidity.

The British pension funds were previously required to match their assets and liabilities, which limited the investment policy and explains why many funds had been underfunded. In contrast, Swedish life insurance undertakings and occupational pension undertakings have had less restricted investment rules for a long period of time. As a result, they have been able to invest in riskier assets, like shares, and benefited from large upswings in value, which has helped build up buffers. The undertakings are also responsible for all or large parts of the management of both assets and liabilities, which leads to greater control of their funding. They also have good liquidity that can absorb rising margin calls. We therefore do not see the same risk in Sweden of a similar situation occurring as in the UK, even if such a course of events cannot be fully ruled out.

Stability in the banking sector

The outlooks for the economy have declined, and uncertainty surrounding economic development has increased. There have already been significant risks associated with the banks' lending portfolios, for example related to commercial real estate prices. The banks therefore still need to hold significant capital and liquidity buffers that can be drawn upon if the economy dips.

	Vulnerability	Change
Concentration and interconnectivity	Orange	→
Solvency and profitability	Yellow	→
Asset quality and credit risk	Orange	↗
Financing and liquidity	Green	↗

The colors indicate the current level of vulnerability. Green represents low vulnerability. Yellow, orange and red indicate differing degrees of elevated vulnerability. The arrows show the trend for the vulnerability – increasing, decreasing, or unchanged. The level and trend are based on a combination of quantitative measurements and expert assessments.

Banking sector concentrated and interconnected

The Swedish banking sector is largely concentrated to five major banks: Svenska Handelsbanken (SHB), SEB and Swedbank, as well as Nordea's and Danske Bank's Swedish branches and mortgage companies.[34] These major banks are closely interconnected, both to one another and to other parts of the finance sector. This creates structural elevated vulnerabilities in the financial system. Problems arising in any of the major banks could potentially spread quickly to other financial firms. In recent years, competition on the banking market has increased, and the major banks have lost market shares on some submarkets, for example mortgages. The concentration in the banking sector has therefore decreased somewhat over time, but despite this the major banks still play a central role in Sweden.

High profitability contributes to good resilience

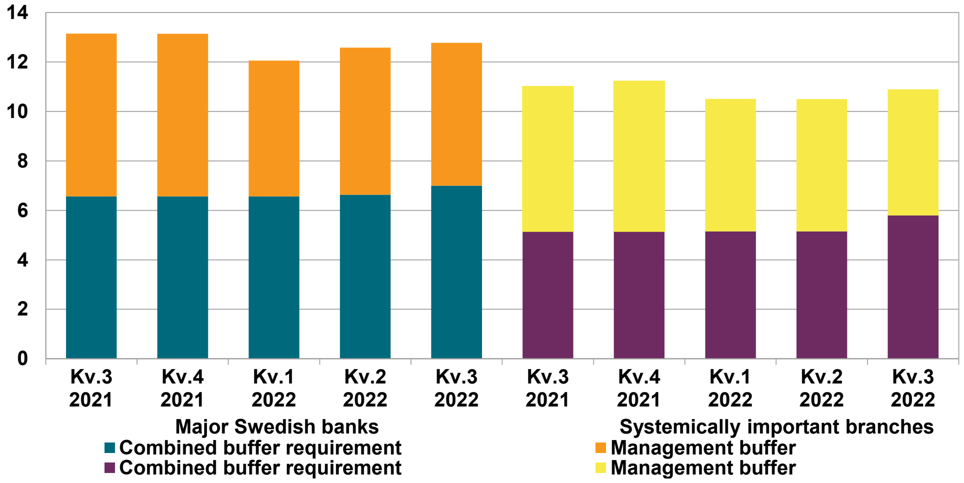
The major banks continue to have significant capital buffers (Diagram 12). The banks' management buffers – the capital they hold in addition to the capital requirements – has been high since 2020. This is in part because FI and other Nordic supervisory authorities lowered the countercyclical buffer rate at the beginning of the pandemic to free up capital in the banks. FI decided in June to

[34] For these five major banks, the figures refer to the consolidated situation unless otherwise specified. Together they represent around [75] per cent of deposits and lending to Swedish households and corporates and just under [70] per cent of the domestic payments. Danske Bank's and Nordea's Swedish branches are referred to going forward as "systemically important branches".

raise the buffer rate to its normal level of 2 per cent, and the decision goes into effect starting in June 2023 (see *Stability in the Financial System*, May 2022).

12. Banks continue to have large management buffers

Per cent



Source: FI and the banks' reporting.

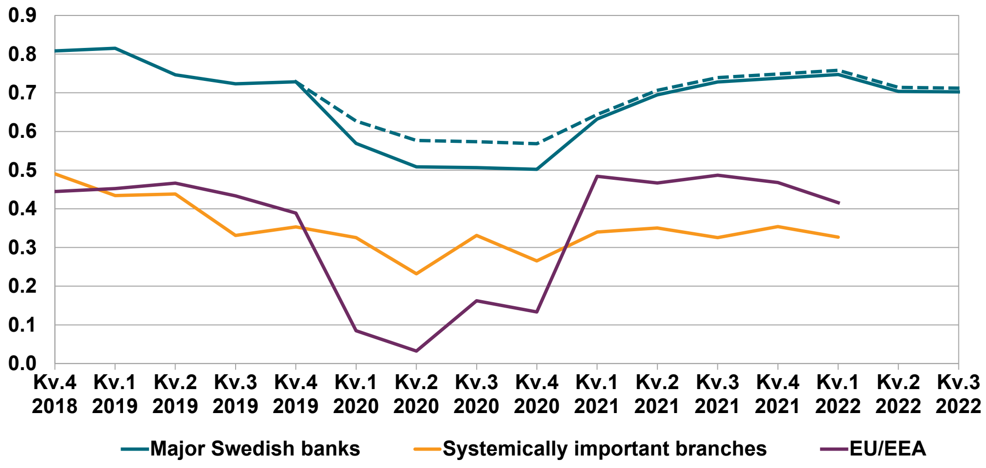
Note: Capital requirements as a share of risk-weighted assets. The management buffer includes the so-called Pillar 2 guidance, which for the Swedish major banks is 1.5 per cent.

The major banks' profitability continues to be high (Diagram 13), primarily as a result of higher interest margins. The earnings of major banks are strong even in comparison with European banks. Their high profitability means that it is easier for them to absorb any credit losses.

The rising market rates benefit the banks, which can increase their interest margins. At the same time, the higher interest rates, combined with inflation and high energy prices, contribute to a decline in the economic outlooks. More difficult financial conditions for the banks' customers – both households and firms – can lead to higher credit losses (see the next section). The growth in volume in the banks' lending could also slow as a result of more expensive bank loans and lower housing prices. Falling asset prices can lead to lower management revenues and stock exchange activity, which in turn leads to lower revenue from brokerage commissions and corporate finance. Credit card purchases can also fall when households are reducing their spending, which leads to lower fee-based revenue for the banks.

13. Banks’ profitability falls somewhat but is still high

Per cent



Source: FI and the EBA Risk Dashboard.

Note: Annualised return on total assets, four-quarter rolling mean. Dashed blue line excludes money laundering-related sanction fees in Swedbank and SEB in 2020.

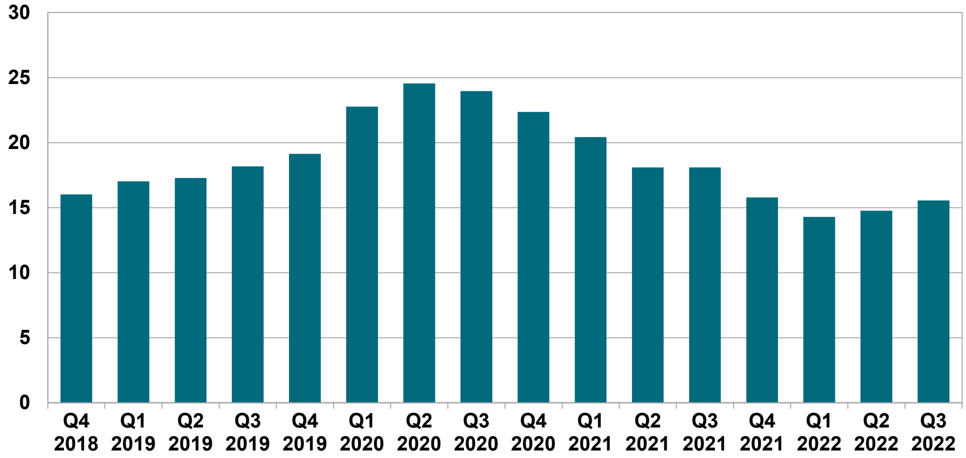
Credit risks in corporate lending increase

Aside from a temporary increase during the pandemic, Swedish banks have had very low credit losses for a long time. In 2022, the state of the economy has deteriorated at the same time as interest rates have gone up. Many firms and households are sensitive to increases in the interest rate (see “Non-financial corporations” and “Households”). If parts of the household or corporate sector experience problems, this could lead to larger credit losses for banks. The banks have therefore started to increase their provisions for expected credit losses in Q2 and Q3 (Diagram 14). However, the provisions are still at lower levels than before the pandemic, but they could increase in the future given the poorer economic conditions and rising credit risks (see also “Manual expert adjustments and provisions for loans with higher credit risk”).

The banks hold large exposures to the commercial real estate sector, which represents between 16 and 36 per cent of each bank’s lending to the general public. The corresponding figure for their corporate lending is between 31 and 77 per cent. FI has already made the assessment that there are elevated risks in the lending to commercial real estate firms since they are sensitive to the interest rate and the state of the economy. FI has therefore decided to apply an additional capital requirement for these exposures. The requirement went into effect at the end of 2020. Since then, commercial real estate firms’ debt has increased, but the growth in debt is showing signs of slowing (see “Non-financial corporations”). At the same time, the commercial real estate companies’ market financing costs increased sharply during the past six months. They are therefore seeking financing from banks more than before, and the banks’ exposure to the sector is increasing (see

"Non-financial corporations"). It is important for the banks to continue to make sound credit assessments in their lending.

14. Credit loss provisions have started to increase again
SEK billion



Source: FI and the banks' reporting.
Note: Refers to the three Swedish major banks' total credit loss provisions for loans and interest-bearing securities that were reported as accrued cost. Provisions for off-balance sheet items and assets held for sale and discontinued operations are not included.

Banks' funding costs are rising

Swedish banks fund themselves largely through market financing via certificates and covered and unsecured bonds. Therefore, changes to the interest rate have a direct impact on the banks' funding costs. These costs have increased sharply in 2022 as inflation and interest rate expectations have increased. For example, market rates for banks' covered bonds are now at historically high levels (Diagram 15).

At the same time, banks are able to a significant extent to pass on on higher interest rates to their customers in their lending. This slows the actual effect of the higher financing costs on the banks' profitability, but it occurs with a slight delay since some of the lending is at a fixed rate.

Deposit volumes decreased at the end of 2021, but they increased again in 2022, both in absolute terms and as a share of lending. The increase comes from both households and corporate clients. Higher deposits decrease the banks' need for market funding and are therefore beneficial for the banks given the current market conditions.

The banks' strengthened their liquidity buffers during the pandemic and have maintained them at a high level. They therefore have good margins that can be used if the situation were to deteriorate.

15. Banks' financing costs have increased sharply
Per cent

Source: Refinitiv Eikon.
Note: Interpolated market yield for Swedish covered bonds with estimated fixed duration of 5 years' effective maturity. Refers to the average for the three major Swedish banks and Nordea.

Under the EU Capital Requirements Regulation, banks must maintain a certain minimum leverage coverage ratio (LCR). The minimum is flexible to some extent since banks must also be able to use their liquid assets during stressed periods to cover net liquidity outflows, even if this means that the minimum level is temporarily breached. During periods of market uncertainty in recent years (for example during the pandemic or at the start of Russia's invasion of Ukraine), the banks have not needed to draw on their buffers to such an extent that they could not meet the minimum requirements. However, FI would like to continue to emphasise that liquidity buffers are there to be used if needed.

In-depth analysis – Manual expert adjustments and provisions for loans with elevated credit risk

Since the introduction in 2018 of the rules on credit loss provisions in IFRS 9, banks must divide their lending into three stages of credit risk. In general, the aim is for the banks to be able to make sufficient provisions in advance for expected credit losses and provide accurate disclosures on the quality of their assets. The calculation of the provision amount must be based on, in part, forward-looking macroeconomic information. In order to capture any economic impact from the pandemic, all three major banks made manual expert adjustments since the models did not cover this risk. This meant that the banks manually adjusted the provision amount that had been calculated using their models for IFRS 9.

Since the economic effects of the pandemic have subsided, and it became evident that the credit losses during the period were small, the banks reversed the majority of the pandemic-related manual expert adjustments in 2022. At the same time, the banks' made new expert adjustments regarding the geopolitical uncertainty. The expert adjustments linked to the geopolitical uncertainty are approximately the same size as the adjustments the banks made during the pandemic.

EBA's guidelines[35] state that manual expert adjustments due to recurring risks should only be used as a solution in the short term. In other words, the models for unexpected credit losses must reflect forward-looking loss risks, and expert adjustments should thus not be needed for a long period of time. Given the poor economic conditions and rising credit risks, the provisions may need to increase in the future, either via models or additional expert adjustments.

In-depth analysis – Stress test of the major Swedish banks

FI follows on an ongoing basis how resilient the banks are. Here, we present the results of a stress test of the five largest Swedish banks based on the assumption of a severe macrofinancial scenario prepared by the IMF (see "Fact box – An economic scenario for calculating impact" under "The state of the economy").

The analysis uses several models for different components of the banks' profit and loss statements and balance sheets as well as several assumptions. The models are based primarily on historical connections between the various components in the profit and loss statement and macroeconomic variables. The method and the assumptions made to perform the analysis are described in more detail in FI's memorandum Macro-based stress tests of Swedish banks: results and method, autumn 2020.

The stress test's results indicate that the banks are very resilient. On average, the common equity Tier 1 capital ratio decreases by just over 2 percentage points. The banks' management buffer – the difference between the actual common equity Tier 1 capital and the common equity Tier 1 capital requirement – decreases on average from 5.6 percentage points to 3.4 (the turquoise X and yellow X, respectively, in the bars in Diagram B9). The smallest management buffer decreases from 4.3 percentage points to 2.6 percentage points. The fact that the management buffer is positive for all banks after the stress means that no bank breaches the capital requirement or its Pillar 2 guidance in the stressed scenario.

The capital ratio decreases primarily due to large credit losses and higher risk-weighted assets while earnings provide a buffer (Diagram B10). Operating income decreases from SEK 155 billion in 2021 to, at its lowest, SEK 116 billion in 2024; in other words, a decrease of around 25 per cent between 2021 and 2024. The drop

[35] EBA/GL/2017/06 Guidelines on credit risk management practices and accounting for expected credit losses

in operating income is primarily due to a drop in net interest income and net commission income.

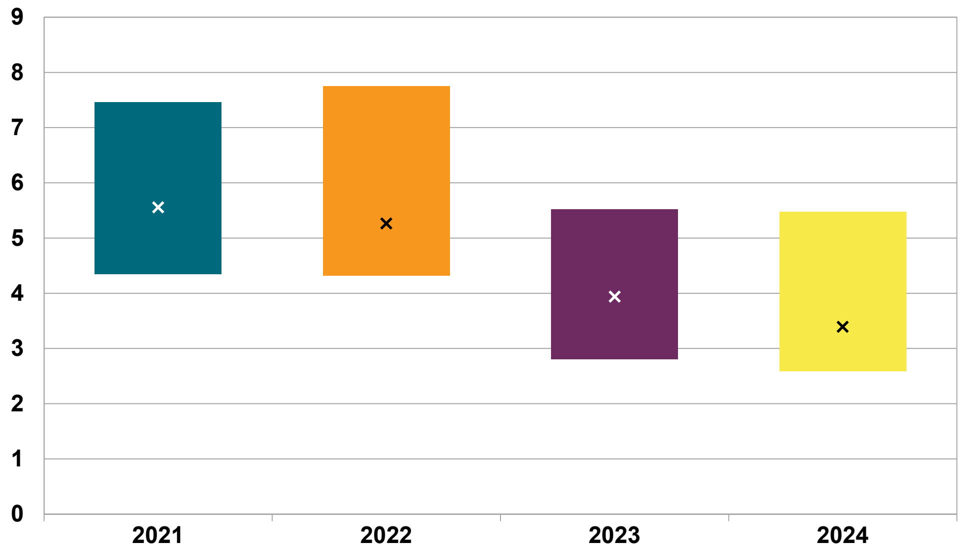
The total risk-weighted assets increase on average by 7.2 per cent during the stress period due to a drop in credit quality. The total credit losses for the banks for the period 2022–2024 are estimated at SEK 133 billion (1.5 per cent of lending) with a times series model and at SEK 138 billion (1.5 per cent of lending) with a time series model supplemented with a micro-based method for lending to the commercial real estate sector. Regardless of the method, the margin to the capital requirements remained positive.

There is considerable uncertainty about how the capital ratios could change over the next few years in the modelled scenario. The models illustrate only one possible course of events.

There is also a risk that the macroeconomy, and in the long run the banks' credit risks and earnings, may follow a more negative trend than what is illustrated. For example, it it still not certain how high central banks around the world will raise their key rates and how long the high inflation will last.

B9. Banks' management buffers shrink under stress

Percentage of risk-weighted assets

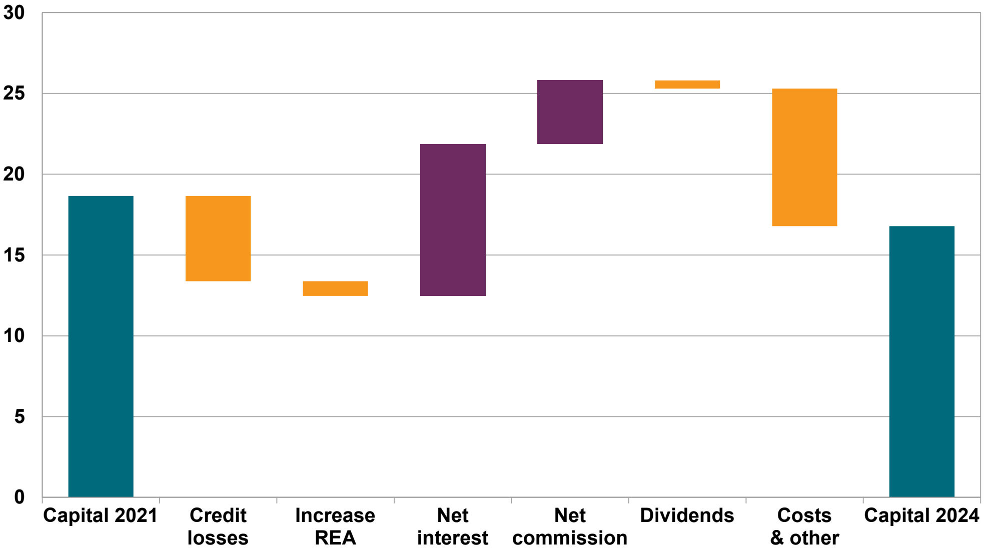


Source: FI.

Note: Refers to distribution of margins in addition to the CET 1 capital requirements in Q4 each year for the five largest banks The X in the squares refers to the average. The top of the squares shows the highest value and the bottom the lowest value.

B10. Driving forces behind the change in the capital ratio during the scenario

Percentage of risk-weighted assets



Source: FI.

Note: Purple bars show components that contribute to an increase, and orange a decrease, in the capital ratio between Q4 2021 and Q4 2024. We assumed that dividends are paid during the years 2022–2024. Costs and other earnings include primarily all other fixed non-interest-rate-related costs such as wages and premises, but also net financial income/expense, income from subsidiaries, joint ventures and associated companies, dividends received, other comprehensive income (OCI) and tax.

In-depth analysis – FI aims to leave the countercyclical buffer rate unchanged in the fourth quarter

In June, FI decided to raise the countercyclical buffer rate to 2 per cent. The new buffer rate enters into force in June 2023. The decision was made based on FI's assessment that the strength of the economic recovery and the banks' strong financial position and good profitability meant that the buffer rate could be raised without having a negative impact on the credit supply. This increase completed the gradual increase of the buffer rate to its neutral level that FI initiated in September 2021. Since March 2021, FI has been striving for a positive neutral level of 2 per cent for the countercyclical buffer rate during normal periods, i.e., even when FI makes the assessment that lending is not associated with elevated systemic risks.

Since the decision in June, inflation has continued to rise, and the tightened monetary policy has resulted in rapidly rising interest rates. Many forecasts of economic growth in Sweden have already been revised downwards, and the expectation is that there will be a deeper recession in 2023 than we previously believed.

The total lending to households and firms is growing at approximately the same annual rate as in June (Diagram B11). However, lending to households is growing at a slower rate. The slow-down in the growth rate is even more evident in the monthly change in lending to households (Diagram A1). The debt of non-financial corporations is continuing to growth at a high annual rate, and this is primarily due to a higher growth rate in bank loans. The growth rate is primarily very high in industries other than the commercial real estate sector, but the growth is based on a low level since other non-financial corporations during the corresponding period last year had very low growth in their bank loans, unlike commercial real estate firms (see “Non-financial corporations”). During the second quarter, GDP grew more than lending to households and firms. Therefore, the credit-to-GDP gap shrunk slightly, and the buffer guide remains at 0 per cent (Diagrams B12 and B13).

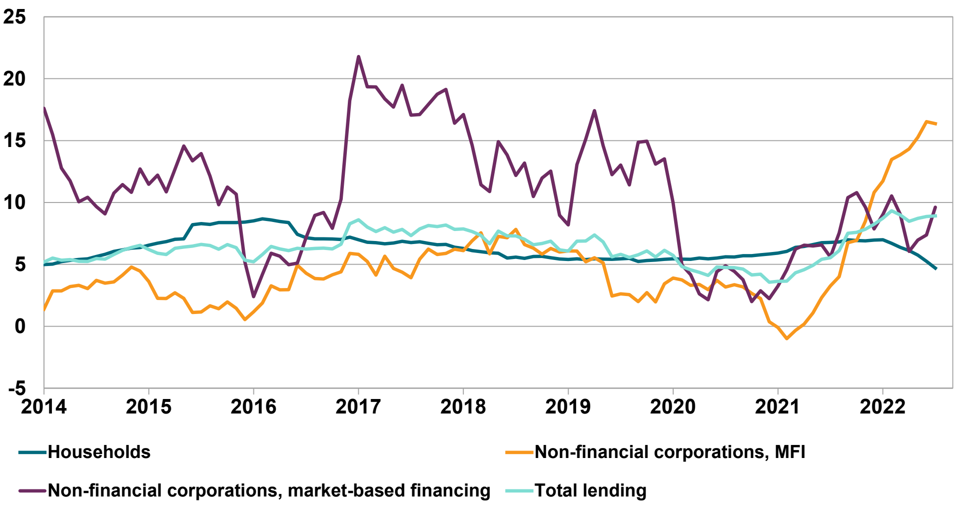
The annual growth rate for total lending to households and firms is relatively still, which indicates an unchanged level of systemic risks in relation to the situation in June when FI announced its decision to raise the countercyclical buffer rate. However, households are now facing a challenging period with falling housing prices and higher costs, which will put pressure on their cash flow (see “Households”). Households’ costs, linked to higher interest rates, electricity prices and the high inflation in general, have increased rapidly, and there has not be a lot of time for households to adapt. Expectations for personal finances in one year have dropped significantly and are at a very low level.[36]

The situation in the business sector has also deteriorated, particularly in the retail trade. Some firms may need to turn to the banks going forward due to a rapid drop in demand. It is therefore important for the banks to be able to meet the demand for loans from viable firms. This would imply a lower buffer rate. On the other hand, the banks continue to have large management buffers, and FI therefore makes the assessment that they are well positioned to maintain the credit supply (Diagram B13). FI also does not see any signs that the banks’ credit supply to firms has been weakened. FI therefore intends to leave the countercyclical buffer rate unchanged in Q4 2022.

[36] According to the Economic Tendency Survey, October 2022, National Institute of Economic Research.

B11. Growth in total lending is relatively still

Annual percentage change

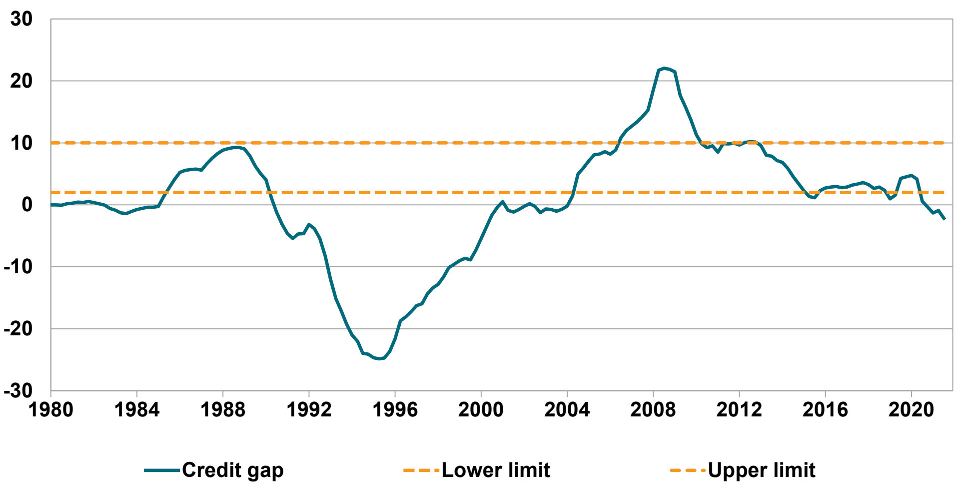


Sources: FI and Statistics Sweden.

Note: Monthly data. “MFI” stands for monetary financial institution.

B12. Credit-to-GDP gap decreased slightly in the second quarter.

Deviation from trend, ppts

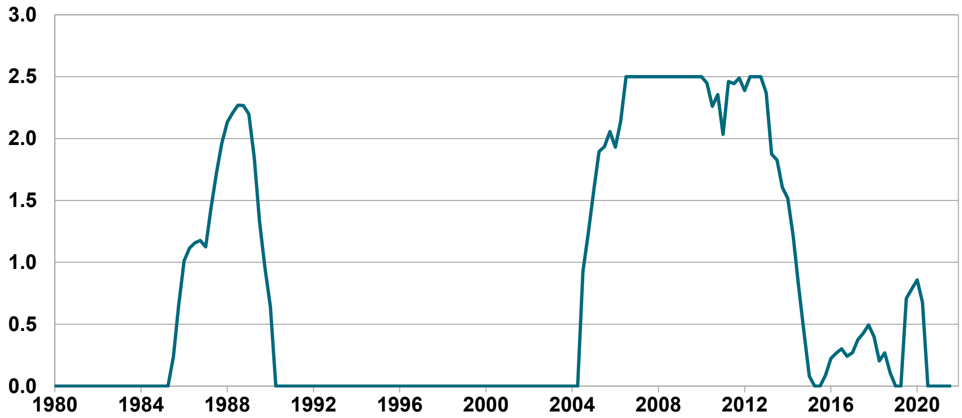


Sources: FI and Statistics Sweden.

Note: Credit-to-GDP gap according to the standardised approach. The dashed lines show the thresholds (2 and 10 per cent, respectively) that according to the standardised approach are to be used to transform the credit-to-GDP gap into a buffer guide.

B13. Buffer guide remains at 0 per cent

Per cent



Sources: FI and Statistics Sweden.

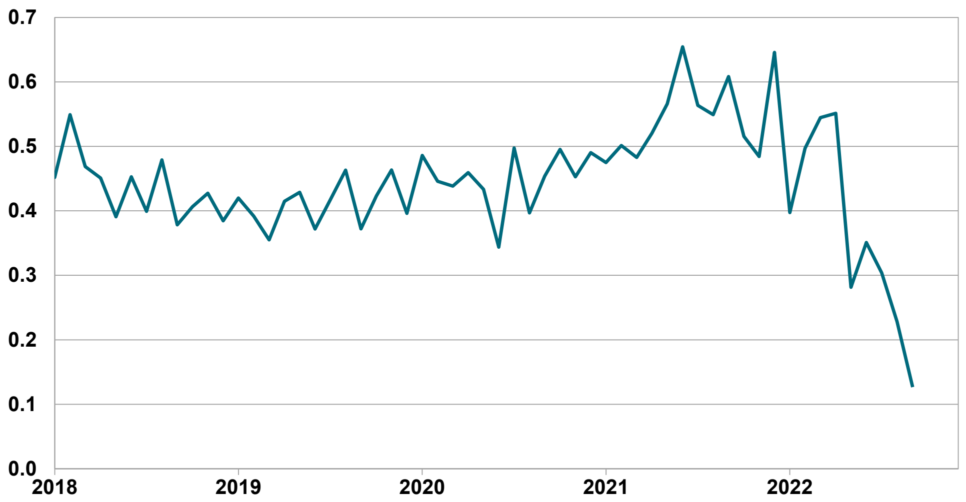
Note: Buffer guide according to the standardised approach.

Appendix 1, Appendix of diagrams

Households

A1. Lower debt growth

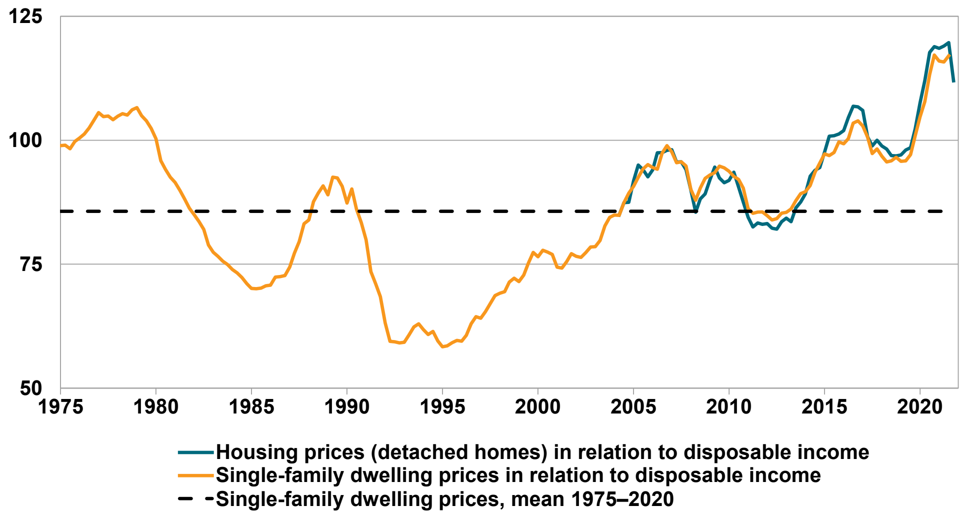
Per cent



Source: Statistics Sweden.
Note: Seasonally adjusted monthly change.

A2. Housing prices high in relation to income but is falling back

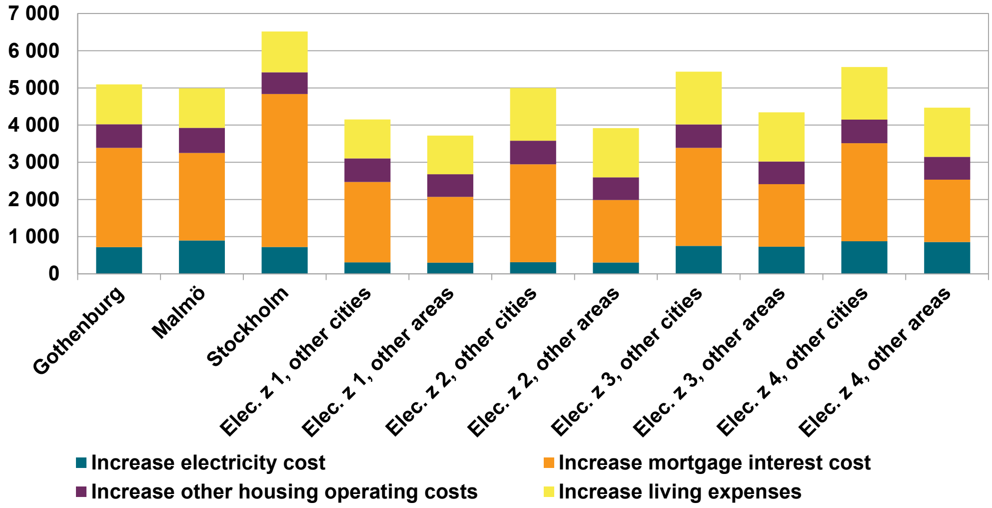
Index 100 = 1980



Sources: Valueguard and Statistics Sweden.
Note: The series Housing Prices (detached homes) refers to Valueguard's index HOX Villor and Single-family Dwellings refers to Statistics Sweden's Real Estate Price Index for one- or two-dwelling buildings (FASTPI).

A3. Diagram A3. Estimated cost increase per month in scenario

SEK

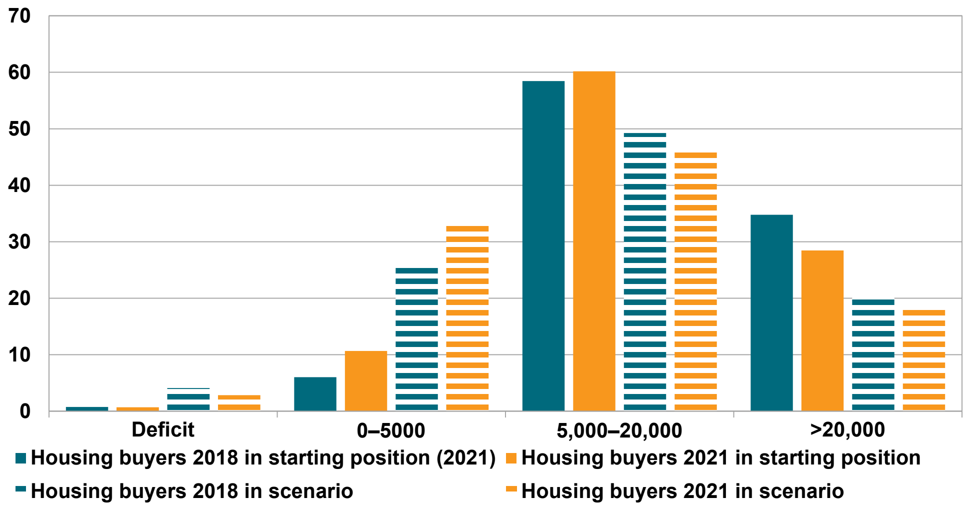


Source: FI.

Note: Refers to households living in a tenant-owned apartment. Mid-size cities are municipalities with more than 75,000 residents, other than the three metropolitan areas. Other areas refer to municipalities with less than 75,000 residents.

A4. Weaker margins for households after cost increases

Per cent

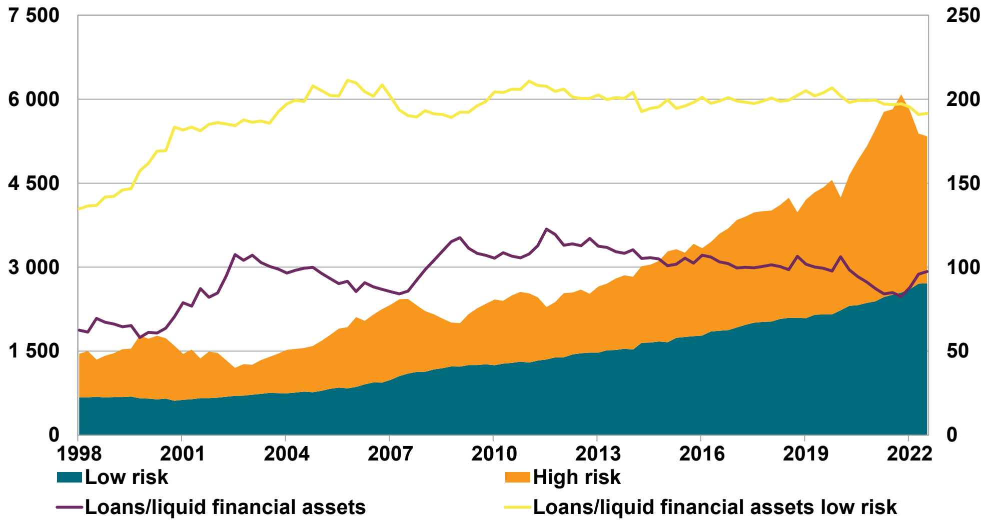


Source: FI.

Note: Refers to households living in a tenant-owned apartment. Home buyers 2018 refers to households that purchased a home in 2018. Income and expenses for these households have been extrapolated up to 2021.

A5. Liquid assets with high risk decrease due to stock market dip

SEK billion and per cent



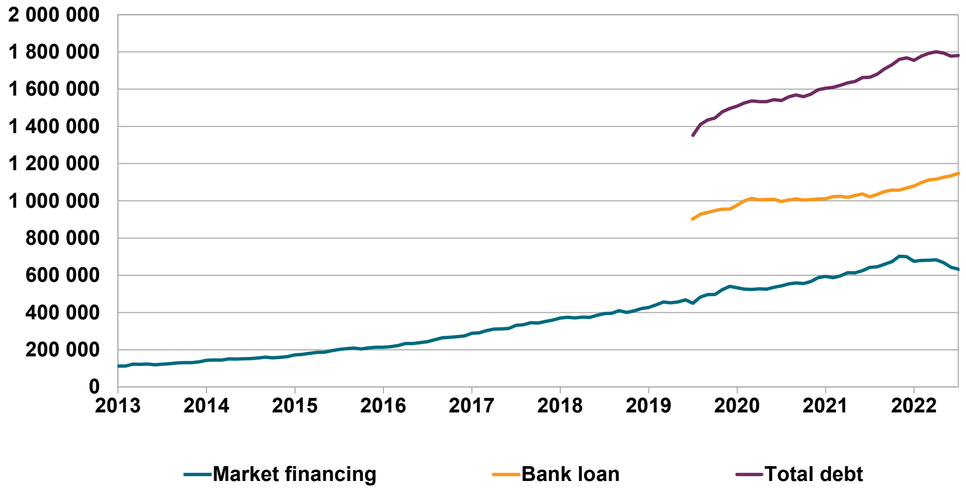
Source: SCB, Savings Barometer

Note: Shares, equity funds and other includes funds registered in Sweden that are classed as neither equity funds nor fixed-income funds and the entire holding of funds registered abroad. Cash, bank savings, and other interest-bearing, including households' bond holdings and fixed-income funds.

Non-financial corporations

A6. Commercial real estate firms' debt shows tendency towards slowing

SEK million

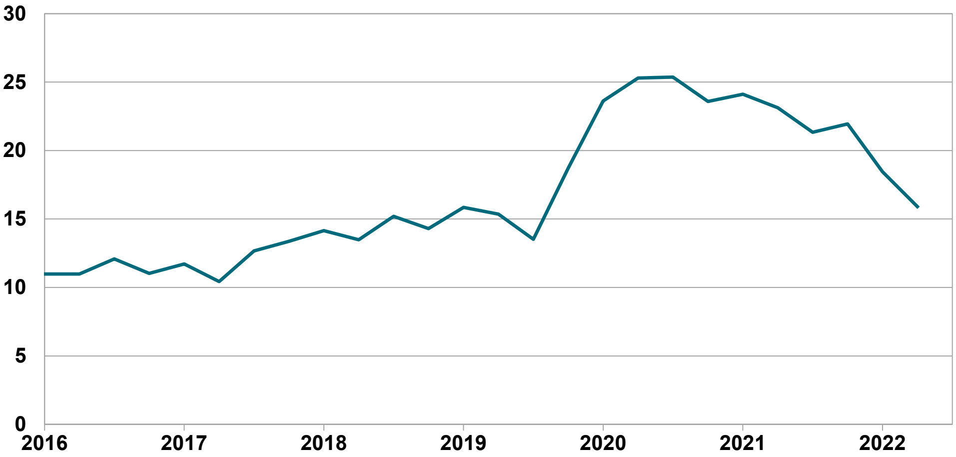


Source: Statistics Sweden.

Note: Refers to commercial real estate firms' debt in level.

A7. Commercial real estate firms debt ratio is increasing sharply

Change in per cent over three-year period.



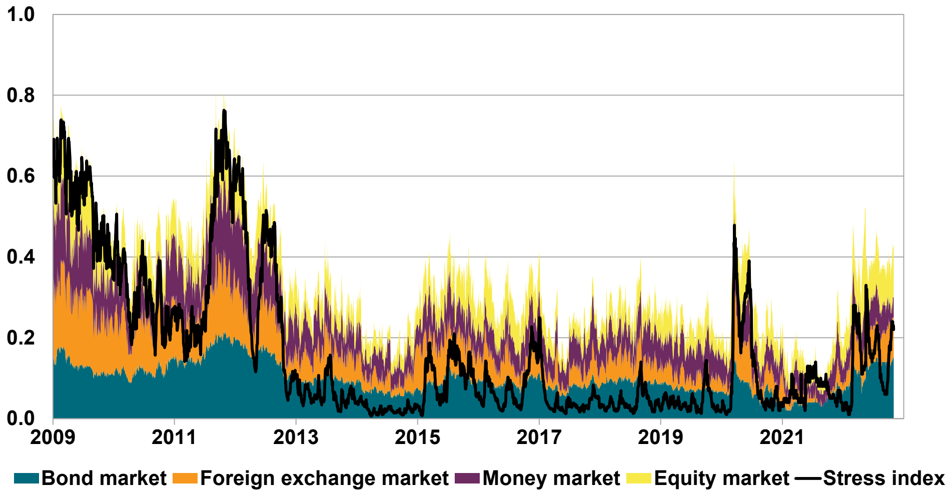
Sources: FI and Statistics Sweden.

Note: Refers to growth over three years in commercial real estate firms' debt divided by GDP (debt ratio).

Stability in the financial markets

A8. Stress on the financial markets is high

Ranking (0=low stress, 1=high stress)

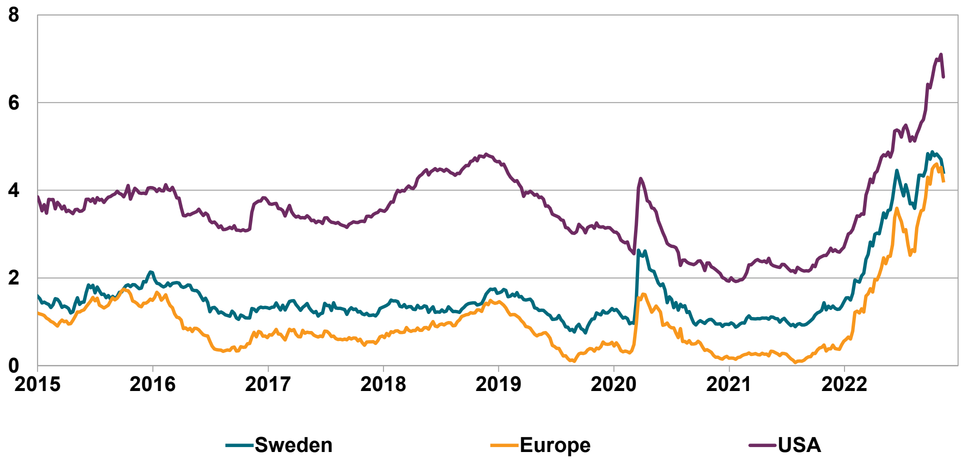


Sources: Bloomberg and Sveriges Riksbank.

Note: The Swedish stress index was created by Sveriges Riksbank using a method similar to that used by the ECB for the European stress index. See Johansson and Bonthron (2013), "Further development of the index for financial stress for Sweden", Economic Review 2013:1. Sveriges Riksbank. Last observation 2022-11-01.

A9. High financing costs

Per cent

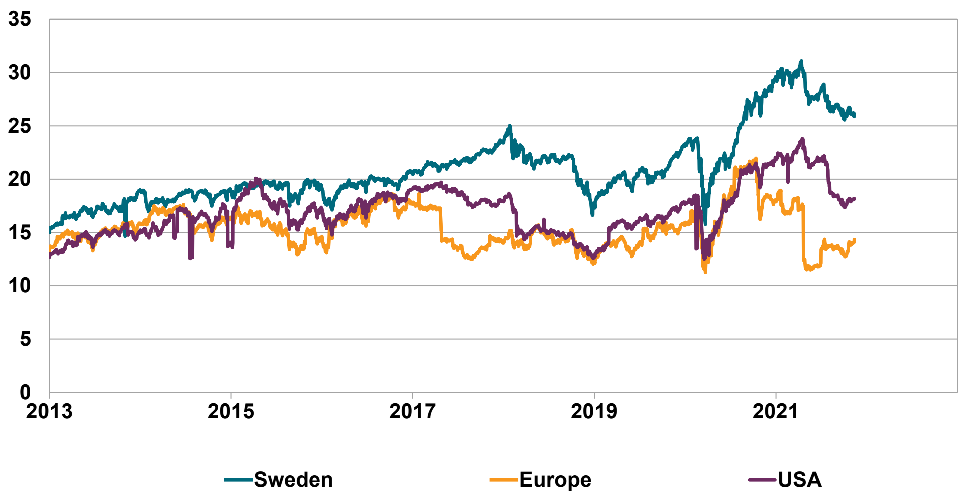


Source: Refinitiv Datastream.

Note: Interest rates on corporate bonds with credit rating BBB in Sweden, the Euro zone and the USA. All with a maturity of five years.

A10. Valuations on the stock market have fallen

P/E ratio

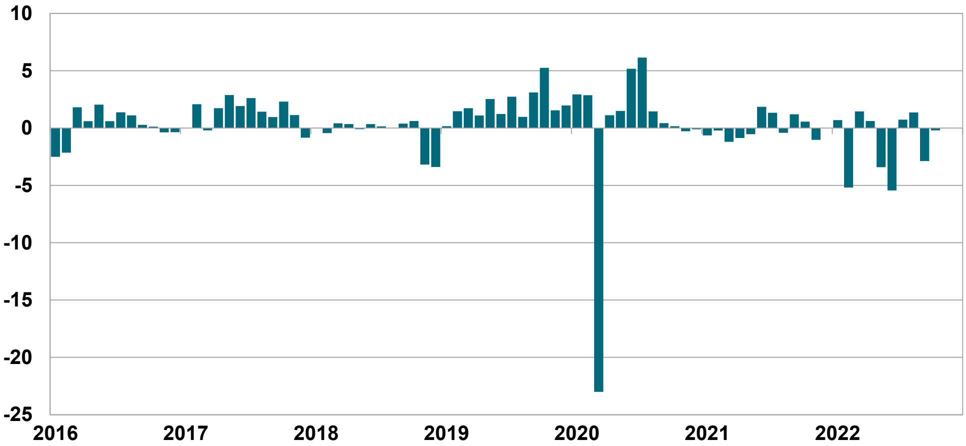


Source: Refinitiv Eikon.

Note: P/E stands for Price/Earnings. and refers to the price per share in relation to earnings per share for companies on the US, European and Swedish markets.

A11. Net outflows from corporate bond funds

SEK billion



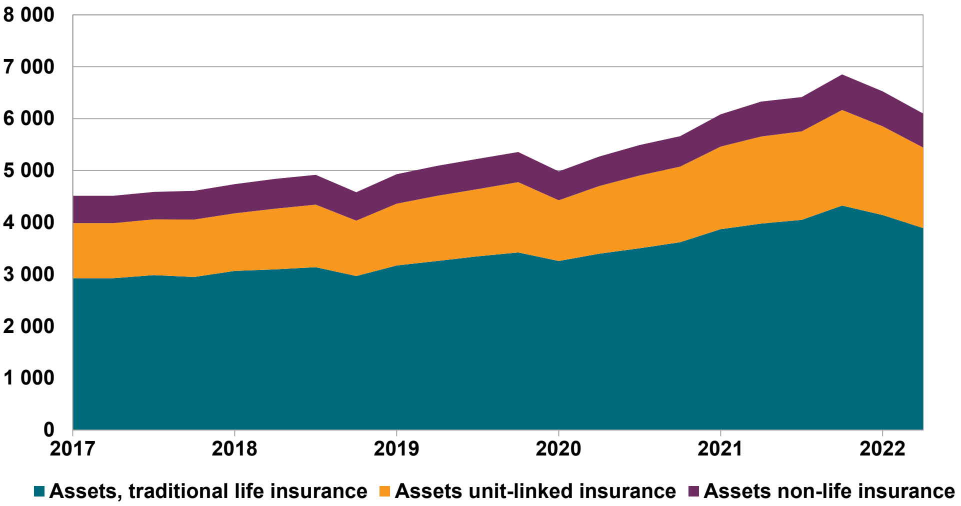
Source: Swedish Investment Fund Association.

Note: “Net flows” refer to the difference between deposits and withdrawals in corporate bond funds.

Stability in the insurance sector

A12. Insurance undertakings manage large amounts

SEK billion

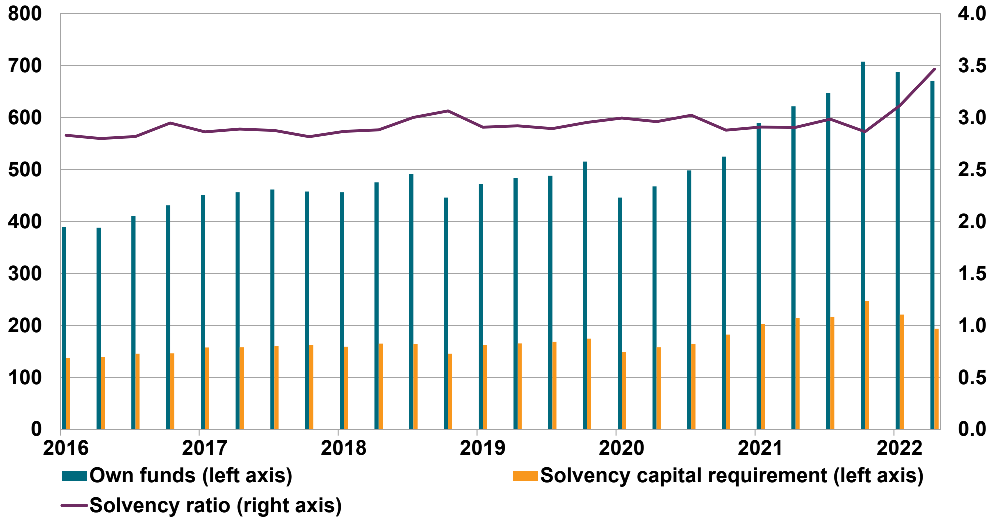


Source: Statistics Sweden.

Note: Insurance undertakings’ investment assets broken down into traditional life insurance, unit-linked insurance and non-life insurance. Values through 30 June 2022.

A13. Solvency ratios rise

SEK billion (left axis) and ratio (right axis)

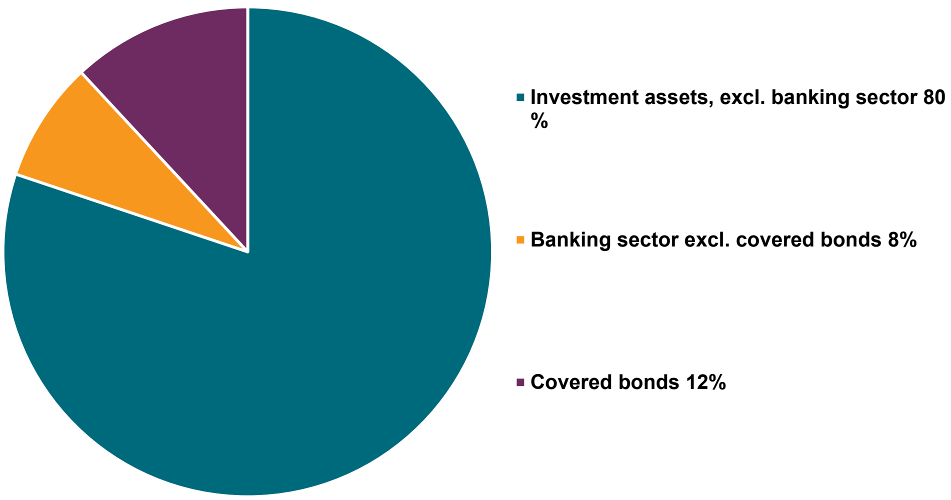


Source: FI.

Note: Life insurance undertakings' own funds, solvency capital requirements, and solvency ratio (own funds divided by solvency capital requirements) according to the Solvency 2 reporting.

A14. Exposure to the banking sector

Per cent



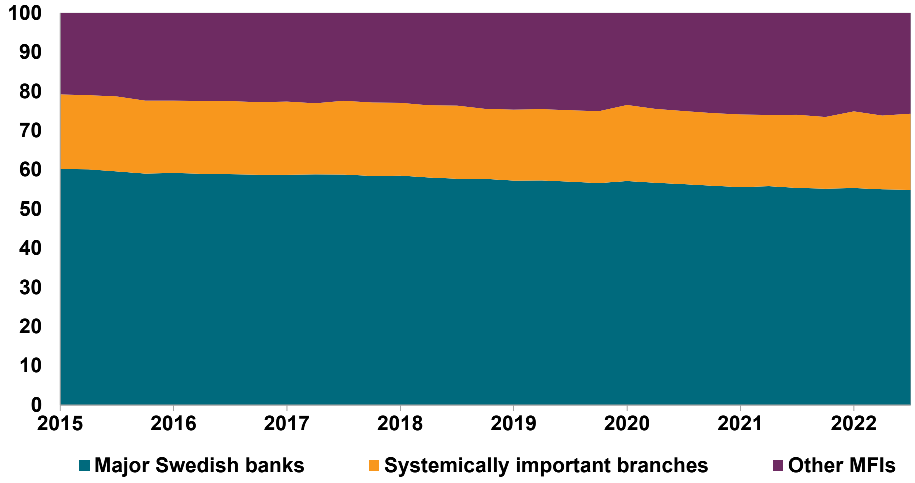
Source: FI.

Note: Exposure to the banking sector. Covered bonds are reported separately since they are subject to their own legislation. The compilation refers to life insurance undertakings and occupational pension undertakings (excl. unit-linked and deposit insurance) as at 30 June 2022.

Stability in the banking sector

B15. Major banks lose market shares but are still dominant.

Per cent



Source: FI.

Note: Refers to lending to Swedish households and corporates. The market shares of the major banks have decreased from 80 to 75 per cent since 2014.

Appendix 2

Tabell 2. Key ratios for economic scenario

Per cent

	Sweden		
	T+1	T+2	T+3
GDP	-1.8	-2.7	0.3
Unemployment	8.8	11.3	13.5
Inflation	6.3	3.8	0.8
House prices	-18.3	-24.0	-16.9
Commercial real estate prices	-18.3	-24.0	-16.9
Share prices	-50.0	10.0	18.2
10-year government bond rates	3.7	3.6	2.2
	GDP rest of world		
	0.4	-4.0	0.7

Source: FI and IMF.

Note: Annual change in per cent.

Tabell 3. Calculated remuneration to households through high-cost protection for electricity prices.

SEK

	Single-family homes	Tenant-owned apartment
Gothenburg	9,288	912
Malmö	15,360	1,548
Stockholm	9,576	900
Electricity zone 3	9,002	921
Electricity zone 4	14,226	1,458

Source: FI.

Note: Electricity zones 3 and 4 refer to households outside of the three metropolitan areas.