

Monetary Policy Report

September 2022



Monetary Policy Report

The Riksbank's Monetary Policy Report is published five times a year. The report describes the deliberations made by the Riksbank when deciding what is an appropriate monetary policy¹. The report includes a description of the future prospects for inflation and economic activity based on the monetary policy that the Riksbank currently considers to be well-balanced.

The purpose of the Monetary Policy Report is to summarise background material for monetary policy decisions, and to spread knowledge about the Riksbank's assessments. By publishing the reports, the Riksbank aims to make it easier for external parties to follow, understand and assess its monetary policy.

The Riksbank must submit a written report on monetary policy to the Riksdag (Swedish Parliament) Committee on Finance at least twice a year (see Chapter 6, Article 4 of the Sveriges Riksbank Act (1988:1385)). During the spring, a special material is submitted as a basis for the evaluation of monetary policy. During the autumn, the Monetary Policy Report is submitted as an account of monetary policy.

The Executive Board made a decision on the Monetary Policy Report on 19 September 2022. The report may be downloaded in PDF format from the Riksbank's website www.riksbank.se, where more information about the Riksbank can also be found.

¹ See "Monetary policy in Sweden" on the next page for a description of the monetary policy strategy and what can be regarded as an appropriate monetary policy.

Monetary policy in Sweden

Monetary policy strategy

- According to the Sveriges Riksbank Act, the objective for monetary policy is to maintain price stability. The Riksbank has defined this as a 2 per cent annual increase in the consumer price index with a fixed interest rate (the CPIF).
- At the same time as monetary policy is aimed at attaining the inflation target, it shall support the objectives of general economic policy for the purpose of attaining sustainable growth and a high level of employment. This is achieved by the Riksbank, in addition to stabilising inflation around the inflation target, endeavouring to stabilise production and employment around paths that are sustainable in the long term. The Riksbank therefore conducts what is generally referred to as flexible inflation targeting. This does not mean that the Riksbank neglects the fact that the inflation target is the overriding objective.
- It takes time before monetary policy has a full impact on inflation and the real economy. Monetary policy is therefore guided by forecasts for economic developments. The Riksbank publishes its own assessment of the future path for the policy rate. This policy-rate path is a forecast, not a promise.
- In connection with every monetary policy decision, the Executive Board makes an assessment of the policy-rate path needed, and any potential supplementary measures necessary, for monetary policy to be well balanced. The trade-off is normally a question of finding an appropriate balance between stabilising inflation around the inflation target and stabilising the real economy.
- There is no general answer to the question of how quickly the Riksbank aims to bring the inflation rate back to 2 per cent if it deviates from the target. A rapid return may in some situations have undesirable effects on production and employment, while a slow return may weaken confidence in the inflation target. The Riksbank's general ambition has been to adjust monetary policy so that inflation is expected to be fairly close to the target in two years' time.
- To illustrate the fact that inflation will not always be exactly 2 per cent each month, a variation band is used that spans between 1 and 3 per cent, which captures around three quarters of the historical monthly outcomes of CPIF inflation. The Riksbank always strives for 2 per cent inflation, regardless of whether inflation is initially inside or outside the variation band.
- According to the Sveriges Riksbank Act, the Riksbank's tasks also include promoting a safe and efficient payment system. Risks linked to developments in the financial markets are taken into account in the monetary policy decisions. With regard to preventing an unbalanced development of asset prices and indebtedness, however, well-functioning regulation and effective supervision play a central role. Monetary policy only acts as a complement to these.
- In some situations, as in the financial crisis 2008–2009, the policy rate and the policy-rate path may need to be supplemented with other measures to promote financial stability and ensure that monetary policy is effective.
- The Riksbank endeavours to ensure that its communication is open, factual, comprehensible and up-to-date. This makes it easier for economic agents to make good economic decisions. It also makes it easier to evaluate monetary policy.

Decision-making process

The Executive Board of the Riksbank usually holds five monetary policy meetings per year at which it decides on monetary policy. A Monetary Policy Report is published in connection with these meetings. Approximately two weeks after each monetary policy meeting, the Riksbank publishes minutes from the meeting, in which it is possible to follow the discussion that led to the current decision and to see the arguments put forward by the different Executive Board members.

Presentation of monetary policy decision

The monetary policy decision is presented in a press release at 09.30 on the day following the monetary policy meeting. The press release also states how the individual members voted and provides the main motivation for any reservations entered. A press conference is held on the day following the monetary policy meeting.

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IN BRIEF – Monetary policy September 2022



Inflation has risen rapidly and is high both in Sweden and abroad. Several factors connected to the pandemic and Russia's war in Ukraine has contributed to this development. Recently, electricity and gas prices in particular have risen to very high levels in Europe. The rapid price increases undermine households' purchasing power and make it difficult for both companies and households to plan their finances. To bring down the high rate of price increases, central banks worldwide have raised their policy rates at a rapid pace.



That consumer prices in Sweden have become so high is due not only to effects from abroad but also to good economic activity in Sweden. The combination of substantial international cost increases, effects of high energy prices on other prices and relatively strong Swedish economic activity has meant that CPI inflation rose to 9.0 per cent in August. This is the highest level since 1991, and higher than in the Riksbanks' assessment in June. The risk is still large that inflation becomes entrenched and it is extremely important that monetary policy acts to ensure that inflation falls back and stabilises around the target of 2 per cent within a reasonable time perspective.



The Executive Board assesses that monetary policy now needs to act more than was anticipated in June to bring inflation back to the target. The Executive Board has therefore decided to raise the Riksbank's policy rate by 1 percentage point to 1.75 per cent. The forecast indicates that the policy rate will be raised further over the coming six months. The development of inflation going forward is still uncertain and the Riksbank will adapt monetary policy as necessary to ensure that inflation is brought back to the target within a reasonable time perspective. Rising prices and higher interest costs are being felt by households and companies. However, it would be even more painful for the Swedish economy if inflation were to remain at the current high levels. By raising the policy rate more now, the risk of high inflation in the longer term is reduced and thereby the need for an even greater monetary tightening further ahead.



1 Higher policy rate for inflation at target

Inflation is too high. The rapid price increases are eroding households' purchasing power and make it difficult for both companies and households to plan their finances. Several of the driving forces that have contributed to the very high inflation are international. During the pandemic, global imbalances arose between supply and demand. Russia's war in Ukraine has pushed up prices even further on several important commodities and created serious disruptions to the energy markets in Europe, which has caused electricity prices to rise to very high levels.

However, the fact that consumer prices in Sweden have become so high is also because economic activity in Sweden has been good. The combination of substantial international cost increases, effects of high energy prices on other prices and a fairly strong demand has meant that CPI inflation has risen to 9.0 per cent in August.

If inflation is allowed to remain high over a long period of time, there is a significant risk that more and more actors will expect higher price and cost increases going forward and will try to compensate themselves for these. Such behaviour can rapidly become self-reinforcing and undermine confidence in the value of money. Ultimately, Swedish households and companies can then suffer even more serious and more lasting problems than those they are currently dealing with. It is therefore extremely important that monetary policy acts to ensure inflation falls back and within a reasonable time frame stabilises around the target of 2 per cent.

The Executive Board assesses that monetary policy now needs to be tightened more to bring inflation back to the target than was anticipated in June. The Executive Board has therefore decided to raise the Riksbank's policy rate by 1 percentage point to 1.75 per cent. The forecast indicates that the policy rate will be raised further during the coming six months. The development of inflation going forward is still uncertain and the Riksbank will adapt monetary policy as necessary to ensure that inflation is brought back to the target.

1.1 High inflation leaving its mark on global monetary policy

Inflation has risen rapidly since last year and is very high, both in Sweden and abroad. The upturn can be explained by different factors that together create a number of

inflationary imbalances. Production did not have time to adapt to the rapidly increasing in demand in the global economy after the pandemic, and prices rose for a number of important commodities and input goods, as well as transport. With high demand, companies have been able to rapidly pass on their rising costs. The imbalances were further reinforced by Russia's invasion of Ukraine, which has primarily led to even higher prices for energy and food. The large disruptions on the European energy market as a result of the increasingly limited natural gas deliveries from Russia have entailed large rises in electricity prices that have hit households and companies hard. But even disregarding the rapidly rising energy prices, inflation has risen to high levels.

The imbalances in supply and demand have entailed cost increases for companies and price increases for consumers, both globally and in Sweden at a pace that has not been experienced for many decades. To bring down the high inflation, central banks around the world have raised their policy rates at a rapid pace and begun to adjust their securities holdings (see Table 1 in Chapter 2). Rising interest rates both in Sweden and abroad have contributed to tighter financial conditions. Actors on the financial markets have gradually adjusted their interest rate expectations upwards and are expecting continued increases in policy rates.

The monetary policy measures have begun to dampen demand in the world economy and some of the pandemic-related supply problems have begun to wane. This indicates that inflation will fall back next year. However, it is still very uncertain how long the price and cost increases will remain at high levels and thus how much monetary policy tightening will be required. The large disruptions to the energy market resulting from the supply limitations is expected to continue holding up energy prices both in Sweden and the euro area during the winter.

1.2 Continued strong labour market and higher inflation in Sweden

Activity in the Swedish economy has been good during the start of 2022. Compared with the Riksbank's forecast in June, GDP increased faster than expected in the second quarter and employment was higher. Resource utilisation is relatively high, with a high employment rate, a general shortage of labour in many sectors and good demand for goods and services. Despite many indications that economic activity is now about to dampen quickly, surveys indicate continued high demand for labour during the autumn.

At the same time, there is a continued broad upturn in the rate of price increase. A large share of the prices of energy, food and other goods, as well as services, have been increasing rapidly for some time.² Many companies have experienced increased costs and needed to raise their prices. But there are also signs that companies over the past year have passed on their increased costs to consumers more quickly than usual.

² See the article "Price rises are spreading in the economy" in Monetary Policy Report, June 2022, Sveriges Riksbank.

CPI inflation amounted to 9.0 per cent in August and adjusted for energy inflation was 6.8 per cent, which in both cases was higher than in the Riksbank's forecast in June. CPI inflation is expected to rise further, to almost 11 per cent at the beginning of next year. The forecast for inflation in the winter is very uncertain, as the electricity price varies substantially as a result of the substantial disruptions to the energy market in Europe (see the articles "What effect can measures to dampen the electricity price have on inflation?" and "What indicates that inflation will fall back next year?"). Even adjusted for energy prices, however, inflation is expected to continue rising from the current already high level, and the Riksbank's forecast is that inflation measured with CPIF excluding energy will amount to almost 8 per cent towards the end of the year.

The high inflation entails a risk that inflation will become entrenched at too a high level. However, it is primarily various measures of short-term inflation expectations that have risen, in line with the Riksbank's forecast. According to market-based measures, long-term expectations have fallen back recently and survey-based expectations have not risen further, but remain at just over 2 per cent (see Figure 1).

Figure 1. Long-term inflation expectations

Per cent



Note. The market-based measure of inflation expectations refers to a 5-year period starting in 5 years' time, calculated on the basis of bond yields. Both the market-based measure and expectations from Prospera refer to the CPI.

Sources: Kantar Prospera and the Riksbank.

1.3 Monetary policy is reacting powerfully to bring inflation to target

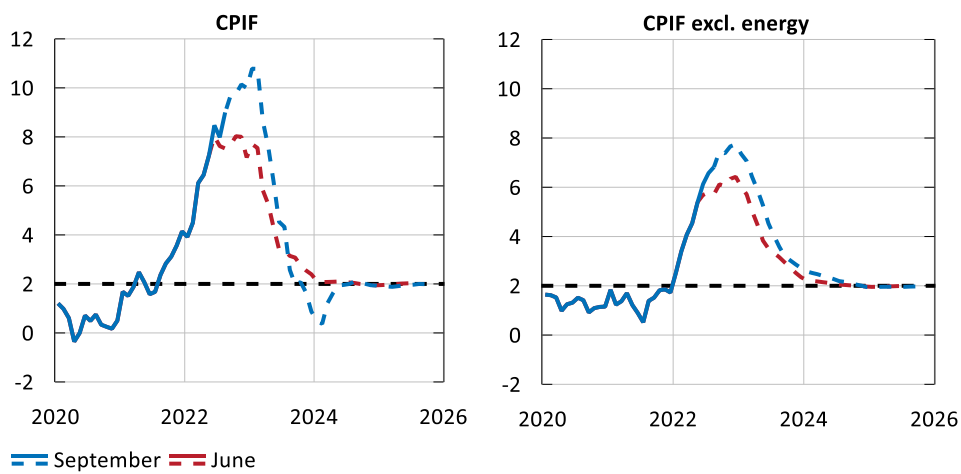
Swedish economy needs to be cooled off more for inflation to fall back

Even though indicators pointing to demand beginning to dampen, activity in the Swedish economy has been at a relatively high level since the start of 2022. At the

same time, inflation has become clearly higher than in the previous forecast (see Figure 2). The Riksbank's inflation forecast has been revised up, both with and without consideration for the development of energy prices. The currently high inflation entails a continued risk that the inflation will become entrenched in price-setting and wage-formation. It is important that Riksbank acts with monetary policy to prevent such a development and to make it clear to price- and wage-setters that the inflation target can continue to be used as a benchmark. The Executive Board assesses that monetary policy now needs to be tightened more than was assessed in June to bring inflation back to the target.

Figure 2. The CPIF and the CPIF excluding energy

Annual percentage change



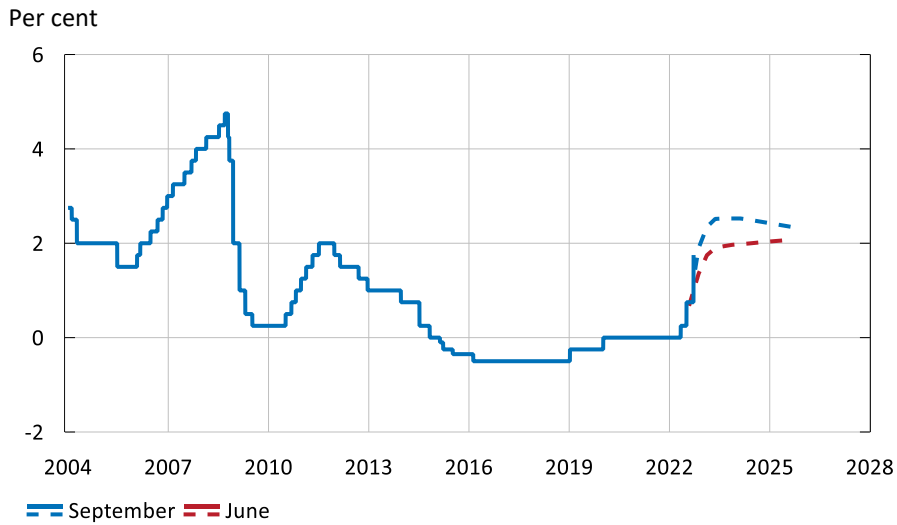
Note. Solid line refers to outcome, broken line represents the Riksbank's forecast.

Sources: Statistics Sweden and the Riksbank.

Policy rate raised by 1 percentage point to 1.75 per cent

The development of rising prices and higher interest payments being felt by households and companies, even if they to some extent will be compensated for the high energy prices. Many households will face a substantially higher cost of living and unemployment is expected to rise. However, it would be even more painful for households and the Swedish economy in general if inflation stayed at the current high levels for a long time. As the Riksbank is raising the policy rate more now, the risk of high inflation in the longer term is reduced and thus also the need for greater monetary tightening further ahead.

To restore price stability and safeguard the inflation target, the Executive Board has therefore decided to raise the Riksbank's policy rate by 1 percentage point to 1.75 per cent. The forecast for the policy rate has been revised up and indicates that the policy rate will be increased further during the coming six months (see Figure 3). However, future economic developments are very uncertain. The need for policy rate increases could therefore be both greater and smaller than indicated in the forecast. The Riksbank is prepared to adjust monetary policy as necessary to ensure that inflation returns to the target in a reasonable time frame.

Figure 3. The Riksbank's policy rate

Note. Solid line refers to outcome, broken line represents the Riksbank's forecast. Outcomes are daily rates and the forecasts refer to quarterly averages.

Source: The Riksbank.

Global real interest rates have been low for a long time. Studies indicate that important driving forces behind this are demographic factors and high global savings, that is, conditions that monetary policy cannot influence. Several of these factors are expected to persist going forward. Given this, the upturn in the real policy rate in the Riksbank's main scenario entails a tightening of monetary policy. The tightening needed is now assessed to be greater than was previously forecast.

The Riksbank's asset holdings have declined over the year and amounted at the end of August to just over SEK 856 billion. As the total maturities are greater than the purchases the Riksbank has decided on for the second half of the year, the holdings will continue to decline. The Executive Board's forecast is that the purchases will cease by the end of the year and that the securities holdings will thereby decline gradually through maturities and be halved during the forecast period. Compared with many other central banks, the Riksbank's securities holdings are smaller and have a much shorter time to maturity, which means that they will mature relatively soon.

Monetary policy considerations

The task of monetary policy is to act to ensure that inflation is close to 2 per cent over time. This does not entail that inflation will always be at exactly 2 per cent, which is not possible either – as changes occur continuously in the economy. This is particularly clear at present, when global events that Swedish monetary policy cannot affect have driven up inflation.

Inflation varies in a way that can neither be predicted with particularly great precision nor counteracted over the short term. But it is important that households and companies have confidence that deviations from the target will not last too long. The primary purpose of an inflation target is for it to act as a benchmark for price setting and wage formation in the economy. When inflation does not vary so much and economic

agents have a common picture of how prices will develop in the future, uncertainty decreases and it becomes easier to plan for the long term. This, in turn, improves the possibility of achieving a favourable economic development with good, stable growth.

Acting powerfully and resolutely with monetary policy now reduces the risk that inflation will become entrenched and weaken confidence in the inflation target. If monetary policy prevent the currently high inflation from affecting actors' expectations about the future in a way that generates a self-reinforcing process with excessively high price and wage increases, as was the case in the 1970s and 1980s, the long-term costs to the Swedish economy will be lower.

The amount of cooling off of the economy that will be needed to prevent the high inflation from becoming entrenched and even more prolonged depends, among other things, on how the real economy and inflation are ultimately affected by higher interest rates. The high interest-rate sensitivity in the Swedish economy caused by extensive indebtedness among households and companies means that a tightening of monetary policy would affect the real economy faster and more substantially than otherwise (see also the article "Higher interest-rate sensitivity in the Swedish economy"). One way of dealing with the uncertainty over the impact of monetary policy on the real economy would be to tighten monetary policy more gradually. But this would increase the risk that the high inflation becomes entrenched and that the interest rate would need to be raised even more going forward. It is important to avoid this development and monetary policy therefore needs to act powerfully now.

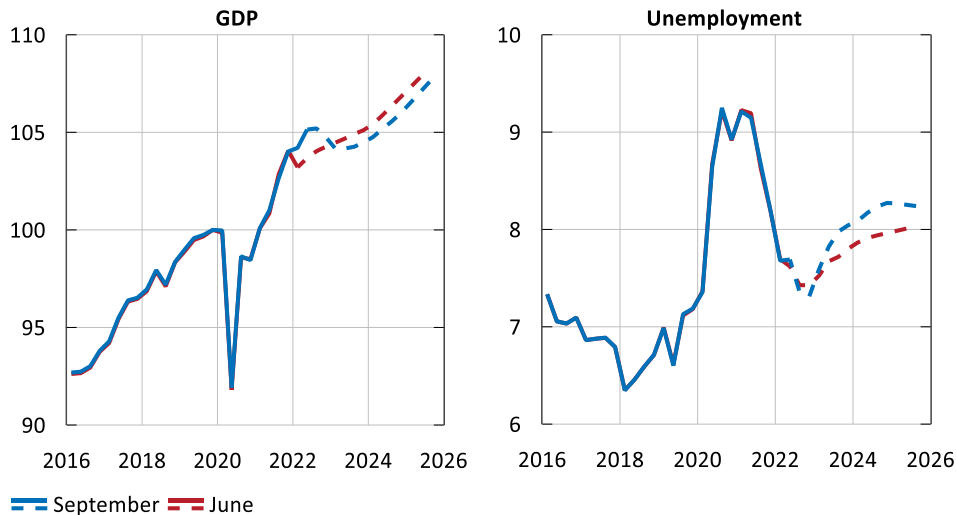
Monetary policy will contribute to inflation close to 2 per cent in 2024

The Swedish economy is now expected to enter a period where demand will slow down. GDP is expected to fall next year. The major disruptions on the European energy market, tighter monetary policy and weaker international demand will cool down the real economy. Exports will be held back, but it is primarily a consumption-driven decline that is expected. Households' real incomes will be dampened by higher inflation and interest rates, although the downturn will be temporarily held back by the electricity price compensation (see the article "What effect can measures to dampen the electricity price have on inflation?"). Households' real disposable incomes have fallen, the pent-up need to consume after the pandemic has waned and consumption is expected to begin falling. The housing market is continuing to slow down, with weaker housing prices and a downturn in housing investment.

Demand for labour will also slow down as economic activity declines. Unemployment will begin rising next year and the forecast has been revised up in relation to the Riksbank's assessment in June (see Figure 4). The employment rate will decline somewhat from this year's record level, and resource utilisation will fall and is expected to be lower than normal from the beginning of next year.

Figure 4. GDP and unemployment in Sweden

Index, 2019 Q4 = 100, seasonally adjusted data (left) and percentage of labour force, 15–74 years, seasonally adjusted data (right)



Note. Solid line refers to outcome, broken line represents the Riksbank's forecast.

Sources: Statistics Sweden and the Riksbank.

Inflation is expected to continue rising and to remain at high levels some time into next year. Electricity prices are expected to be exceptionally high during the winter and higher energy prices are also expected to spill over into price increases on other goods and services when companies' costs increase rapidly. Energy prices are expected to fall next year, which will contribute to CPI inflation falling rapidly and being temporarily low at the beginning of 2024. However, there is considerable uncertainty regarding electricity prices as a result of disruptions on the energy market. It is also difficult to assess how large the indirect effects on other prices may be from very high and varying energy prices. Next year, inflation is expected to fall back, when the unusually high rates of price increase on energy, goods and services gradually decline (see Figure 36 and the article "What indicates that inflation will fall back next year?"). Inflation is expected to stabilise close to 2 per cent during 2024 (see Figure 2).

Important that different policy areas do not pull too much in different directions

During the pandemic, fiscal policy and monetary policy complemented one another, which contributed to good economic development. The prevailing situation entails different conditions, with a greater risk of conflicting objectives. The Riksbank's task is to bring inflation back to the target and to prevent the high inflation being incorporated into the expectations of economic agents. Attaining this requires interest rate increases that will be felt by households and companies. Fiscal policy has other objectives and means than monetary policy, but has to assume that monetary policy will do what is required to safeguard the inflation target.

The effects of higher prices, higher interest rates and weaker economic activity are having an uneven impact. Fiscal policy has the possibility to aim support measures at

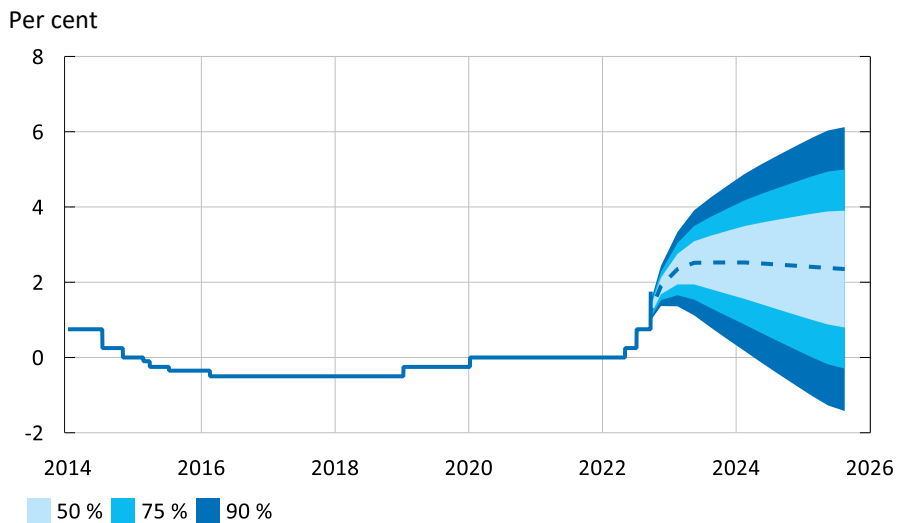
groups that are particularly hard hit, without this entailing a major conflict of objectives with regard to monetary policy. Targeted labour market measures can, for instance, slow down the upturn in unemployment without having any significant effects on wages and prices.

One important question is how households and companies are to be compensated for the temporarily exceptionally high electricity prices. Measures with a direct price impact are well targeted from the individual consumers' perspective but contribute to increasing the demand for electricity. Based on their design, they could also affect the computation of the CPIF (see the article "What effect can measures to dampen the electricity price have on inflation?").

More general income support does not distort electricity consumption in the same way, but is less well targeted as compensation for high electricity prices. If support measures lead to higher demand in the economy, monetary policy may in the short term need to be tightened somewhat more. Such a policy mix can nevertheless be justified, for example redistributing resources between actors who benefit from, and those who are disadvantaged by higher energy prices. Fiscal policy has more objectives than monetary policy. There may be justification for investments that strengthen growth potential and counteract supply problems that push up inflation. One example is investments in transfer capacity in the electricity network that counteract high electricity prices in the future.

1.4 Many uncertainty factors surrounding the economic outlook

There are a number of uncertainty factors surrounding the economic outlook in Sweden and abroad, which may by extension also affect inflation prospects in Sweden and the Riksbank's monetary policy. The uncertainty regarding the path of the policy rate is illustrated in Figure 5.

Figure 5. Policy rate with uncertainty band

Note. The uncertainty bands are based on the Riksbank's historical forecasting errors and on risk premium-adjusted forward rates' forecasting errors for the period 1999 until the Riksbank began publishing forecasts for the policy rate in 2007. The uncertainty bands do not take into account the fact that there may be a lower bound for the policy rate. Outcomes are daily rates and the forecasts refer to quarterly averages.

Source: The Riksbank.

The continued development of the war in Ukraine – and its economic effects – are very uncertain. The severely limited exports of natural gas from Russia have led to major disruptions to the energy market in Europe, for instance with widespread production disruptions and sharply rising electricity prices. Governments in many countries are trying to manage the situation by changing over their energy production and by providing different types of support to households and companies. The EU is also working on producing various support measures. But there is also considerable uncertainty regarding both the capacity to adapt production and regarding the scope and accuracy of the support. There is a risk that the changeover will go slowly and that electricity prices will rise even further than in the Riksbank's forecast. Central banks around the world would face the trade-off of dampening an even higher inflation and at the same time as managing deteriorating growth prospects.

Another uncertainty regarding the economic outlook is how economies are affected when central banks raise their policy rates a lot and quickly. Demand could slow down more than expected, so that growth becomes lower than the Riksbank has forecast. If such a scenario also entails inflation falling back faster than expected, monetary policy would not need to be tightened as much as is now assumed in the forecast.

The disruptions to the energy market in Europe have so far primarily affected the Swedish economy in the form of sharply rising electricity prices, as the Swedish electricity market is linked to those in the rest of Europe. This contributes to considerable uncertainty over future energy prices, which holds back households' willingness to consume and companies' plans to invest. Increased clarity over the design of the support to households and companies can contribute to reducing the uncertainty (see the article "What indicates that inflation will fall back next year?").

Developments on the Swedish housing market comprise a risk for domestic demand in the coming years. After rising substantially during the coronavirus crisis, housing prices have begun to fall. The reason is that several of the factors that have contributed to rising housing costs in recent years have begun to turn around. Mortgage rates are rising, at the same time as preferences to spend more time at home have been reversed. In addition, a large number of new homes have been built in recent years, which has increased the supply. The Riksbank's forecast is that housing prices will continue to slow down during the forecast period, but that in three years' time they will still be at a higher level than prior to the pandemic. However, one risk is that the adjustment process will be more abrupt and that housing prices will fall more than is currently assumed. This could cause both housing investment and household consumption, and thereby also inflation, to develop more weakly than in the forecast.

There are many indications that inflation will relatively soon begin to fall back towards the target. However, there is considerable uncertainty, not least due to the geopolitical developments and the situation on the energy market. Low and stable inflation has been beneficial for the Swedish economy. It is therefore important that the high inflation does not affect economic agents' long-term inflation expectations. If inflation does not develop as the Riksbank has forecast, monetary policy will need to be adjusted further.

2 Tighter financial conditions since the start of the year

The high rate of inflation is continuing to mark developments on the financial markets, with heightened uncertainty and volatility as consequences. Central banks around the world have raised their policy rates rapidly at the same time as they have signaled further raises going forward. The krona has weakened since the start of the year in light of global financial unease. Various measures of long-term inflation expectations in Sweden are around 2 per cent.

Since the increases in the policy rate began in April, money market rates and yields on less risky bonds have risen together with expectations of future policy rates. The yield spread between high-risk and less risky assets has increased, which is not surprising in an environment with great uncertainty over future economic and financial development in which the central banks are winding up their asset purchases. Lending rates to households and non-financial corporations have had a historically normal development given the policy rate rises. All in all, the financial conditions in Sweden have become considerably tighter since the year-end. The transmission of monetary policy via financial markets is functioning well.

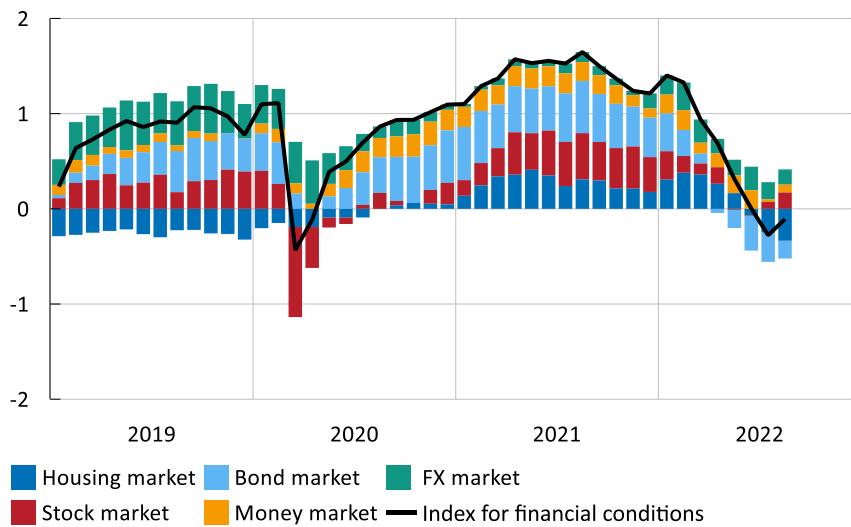
2.1 Contractionary monetary policy in Sweden and abroad

Inflation and short-term inflation expectations have remained high over the summer and central banks around the world are continuing to tighten monetary policy to bring price rises down. Interest rates are now significantly higher than at the start of the year. The war in Ukraine and the rising energy prices have contributed to pushing inflation up globally. Uncertainty over how inflation will develop in the period ahead, how the central banks will react and how the tighter monetary policy will affect economic development has led to greater volatility on the financial markets.

According to forward pricing, market participants expect a slightly higher policy rate in Sweden at the end of 2023 than they did before the monetary policy decision in June but market pricing has varied heavily in recent months. Since the start of the year, the krona has depreciated, Swedish housing prices have fallen and the difference in yield between riskier assets and government bonds has increased. All in all, this development has led the financial conditions in Sweden to continue to tighten. They are now a level similar to the one prevailing just after the outbreak of the coronavirus pandemic (see Figure 6).

Figure 6. Index for financial conditions in Sweden

Standard deviations. A higher value indicates more expansionary financial conditions



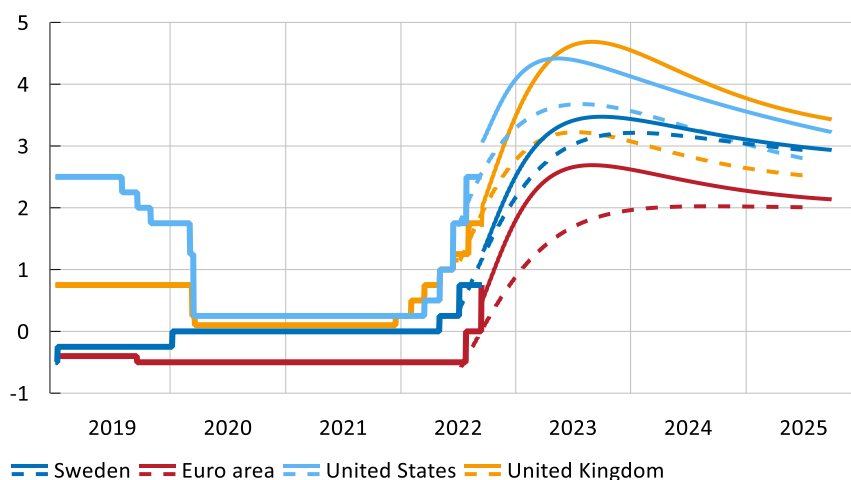
Source: The Riksbank.

The central banks are continuing to raise policy rates

Like the Riksbank, many central banks have raised their policy rates over the year and have signalled further rate hikes going forward. Market participants expect policy rates to continue to be raised until mid-2023 (see Figure 7).

Figure 7. Policy rates and rate expectations according to forward pricing

Per cent



Note. Forward rates describe market-based expectations of the overnight rate, which do not always correspond to the policy rate. Solid lines represent forward rates 15 September 2022. Broken lines represent forward rates immediately prior to the monetary policy meeting in June.

Sources: National central banks.

The US Federal Reserve again raised its interval for the policy rate by 0.75 percentage points at its meeting in July, meaning that it is now 2.25–2.50 per cent. The European

Central Bank (ECB) raised its policy rates by a total of 1.25 percentage points at its meetings in July and September, meaning that the deposit rate is now 0.75 per cent. At its meeting in July, the ECB also presented the new tool Transmission Protection Instrument (TPI), which will be used to ensure that the monetary policy transmission also functions under turbulent market conditions. Both the Federal Reserve and the ECB are signalling continued policy rate rises but emphasise that monetary policy will be adjusted in light of new data in the period ahead. The Bank of England raised its policy rate by 0.50 percentage points to 1.75 per cent in conjunction with its August meeting. Prices for forward contracts have varied greatly over the summer. In mid-September, they indicate that participants in the financial markets expect the US policy rate to be close to 4.1 per cent, the ECB deposit rate to be about 2.6 per cent and the UK bank rate to be close to 4.6 per cent by the end of next year (see Figure 7 and Table 1).

Other central banks have also continued to raise their policy rates (see Table 1). One of the largest single rate hikes was implemented by the Bank of Canada, which raised its policy rate by 1 percentage point in July. In September, the July raise was followed up by a further raise of 0.75 percentage points. Several central banks are also reducing their asset holdings. In accordance with earlier decisions, the Federal Reserve will let reinvestments of principal payments decrease further so that the holding falls by a maximum amount of USD 95 billion per month as of September. The ECB will however continue with full reinvestments to compensate for maturing bonds under both the PEPP pandemic programme and the APP general programme. Starting in September, the Bank of England will start to sell its holdings of both government and corporate bonds.

Table 1. Monetary policy for selected foreign central banks

	Policy rate in January 2022	Current policy rate	Expected policy rate at end of 2022	Status of asset holdings
ECB	-0.50	0.75	1.8	Compensates fully for maturities
Fed	0-0.25	2.25-2.50	4.1	Partly compensating for principal payments
BoE	0.25	1.75	3.5	Initiating sale in September
Norges Bank	0.50	1.75	3.1	-
Bank of Canada	0.25	3.25	4.0	No compensatory purchases
Riksbank	0	1.75	2.5	Partly compensating for principal payments

Note. Expected policy rate according to forward pricing 15 September 2022 for the ECB, Fed, BoE, Bank of Canada and Riksbank, according to pricing in the Norwegian derivatives market for Norges Bank. Norges Bank has not purchased assets for monetary policy purposes.

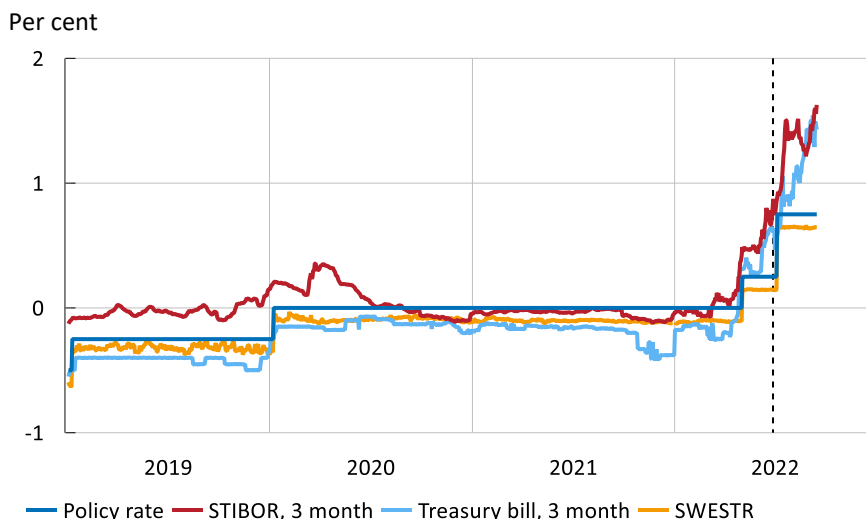
Sources: National central banks.

Higher interest rates on the money market since the spring

Expectations according to forward contracts are now that the Riksbank will raise the policy rate to about 2.5 per cent by the end of the year (see Table 1). In Kantar Sifo's Prospera survey from September, money market participants, on average, expected the Riksbank to raise the policy rate to about 2.4 per cent within the next year and then they expect it to be around 2 per cent over the next few years.

Since the Riksbank started its policy rate rises in April, these raises have had an impact on money market rates in much the same way as during earlier periods of rising policy rates in Sweden. In conjunction with these raises, the SWESTR reference rate has risen and is now on the same level as the Riksbank's deposit rate (see Figure 8).³ The interbank rate with a maturity of three months, STIBOR 3M, and the rate on a three-month treasury bill have risen significantly more than the policy rate, which can be explained by expectations of a rising policy rate in the period ahead.

Figure 8. The Riksbank's policy rate and short-term market rates



Note. SWESTR falls very heavily on the last banking day of each year, quotations that have been omitted from this figure. The broken line marks the time of the monetary policy meeting in June.

Sources: Macrobond, Refinitiv and the Riksbank.

Yields on government bonds have risen over the year

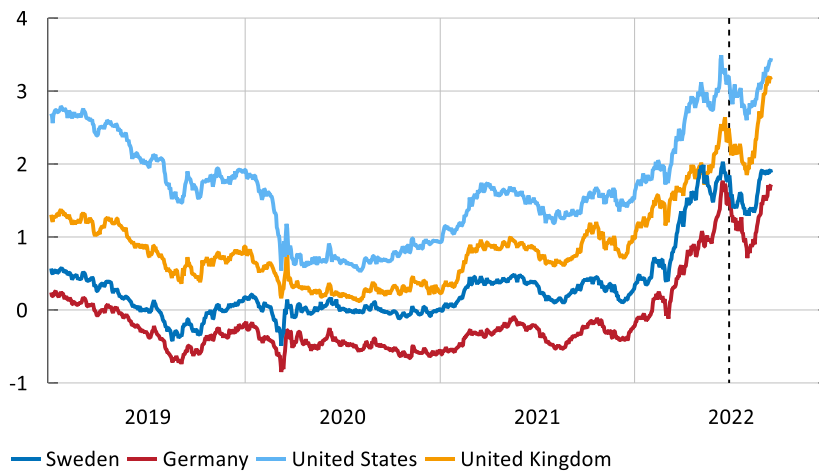
Nominal government bond yields have risen since the start of the year in many countries, including Sweden (Figure 9). Volatility in interest rates has been high over the summer but rates are now on levels close to those prevailing at the monetary policy

³ SWESTR can be used in financial contracts as of 1 September 2021. For further information, see <https://www.riksbank.se/en-gb/statistics/swestr/>. The deposit rate in the Riksbank's standing facility is 0.10 percentage points below the policy rate.

meeting in June. Compared to the swap rate⁴, the yield on government bonds has fallen, while yields for more risky bonds have risen (see Figure 10). This is an expected pattern in times of economic unease, when investors tend to turn to safer assets, contributing to lower yields for these.

Figure 9. Yields on 10-year government bonds

Per cent



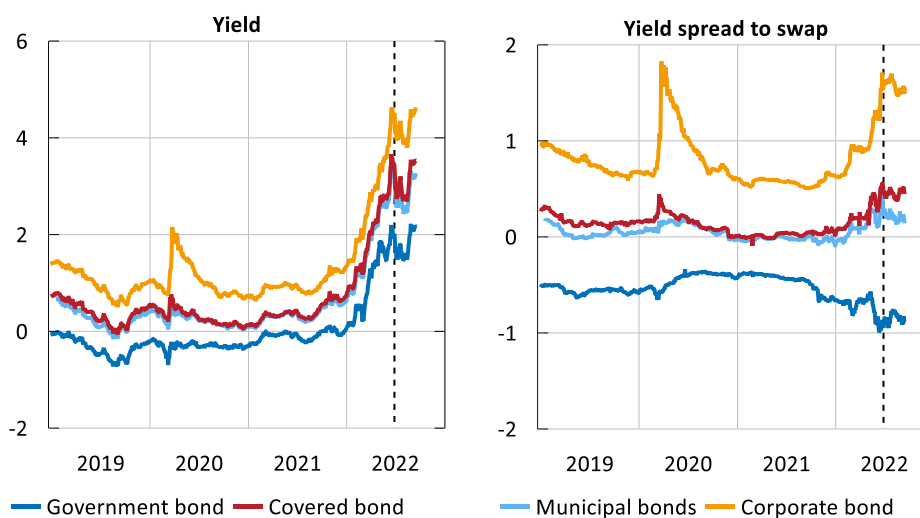
Note. Nominal yields refer to zero coupon rates for Sweden, Germany and the United Kingdom, as well as benchmark rates for the United States. The broken line marks the date of the monetary policy meeting in June.

Sources: Bank of England, Deutsche Bundesbank, Refinitiv, US Treasury and the Riksbank.

⁴ An interest rate swap is a financial instrument that makes it possible for two parties to exchange interest flows for a fixed period without this affecting the companies' balance sheets, underlying loans or deposits. The swap rate is constituted of the expected 3-month STIBOR, which is to say the expected cost of short-term borrowing on the Swedish interbank market. This rate thus only reflects the banking system's credit risk, which is very low in normal times.

Figure 10. Swedish yields for various types of bond, 5-year maturity

Per cent (left) and percentage points (right)



Note. Government bonds, municipal bonds, covered bonds and corporate bonds refer to a zero coupon rate. Corporate bonds refer to bonds/companies with credit ratings corresponding to investment grade. Covered bonds refer to bonds issued by Stadshypotek and municipal bonds to bonds issued by Kommuninvest i Sverige AB. The broken line marks the date of the monetary policy meeting in June.

Sources: Bloomberg, Macrobond, Refinitiv and the Riksbank.

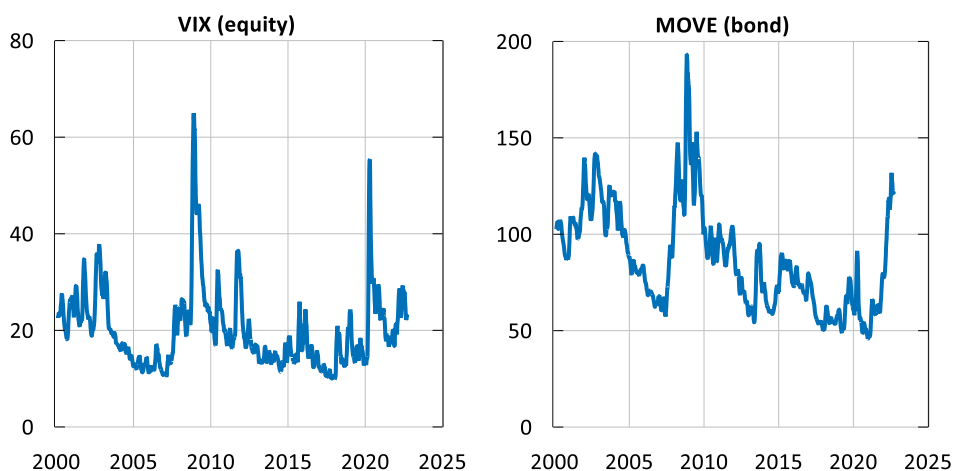
Yields on high-risk assets have risen clearly

As mentioned, uncertainty over the development of the economy has contributed to financial markets currently being marked by increased volatility. This has been noticeable in the pricing of financial contracts, which reflects the expected volatility on the stock and bond markets in the United States (see Figure 11). In the prevailing environment, yields for risky bonds can rise faster than is justified by the development of the real economy and the direction of monetary policy. The spread between yields on covered bonds and the swap rate has risen slightly over the year but remains on normal levels from a historical perspective.

Yields on corporate bonds have risen more than the swap rate and the interest differential is now on approximately the same level as in the initial phase of the pandemic (see Figure 10). One factor contributing to this development is that property companies make up a relatively large share of the Swedish corporate bond market and these companies are particularly sensitive to the rising interest rates and uncertainty over the development of the property market. Very high and volatile yields for risky bonds may result in the functioning of the market for these assets becoming impaired so that the monetary policy transmission mechanism becomes less efficient. It is therefore important to carefully follow developments on these markets. As the Riksbank has earlier pointed out, there are structural deficiencies in the Swedish corporate bond market but, overall, there are no clear signs that the transmission of monetary policy to these market rates is not functioning as efficiently as normal.

Figure 11. Volatility on the stock and bond markets

Index



Note. VIX and MOVE are indices that illustrate the expected volatility on the US equity and bond markets. The indices are calculated using a 30-day moving average.

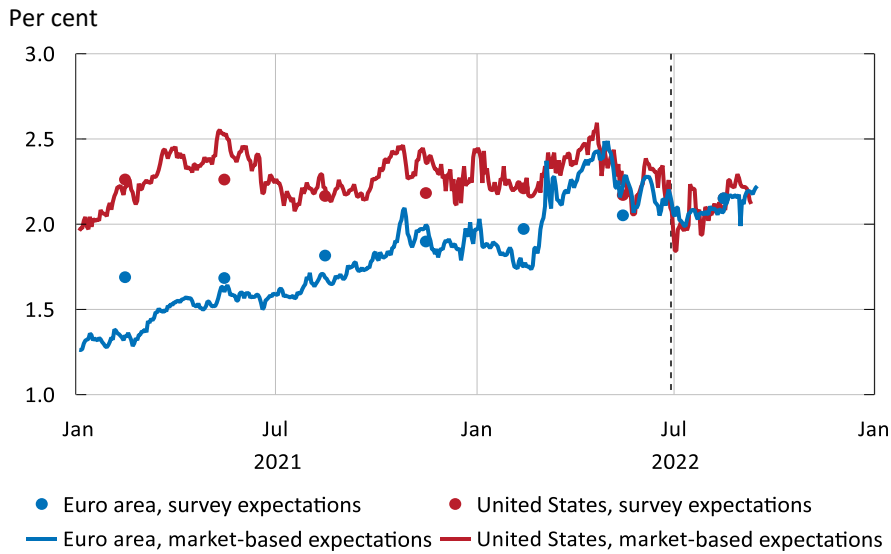
Sources: Chicago Board Options Exchange and Merrill Lynch.

Stable long-term inflation expectations both in Sweden and abroad

Long-term inflation expectations in both Sweden and the rest of the world are on levels similar to those prevailing at the monetary policy decision in June (see Figure 12 and Figure 13). Fluctuations, above all in the Swedish market-based measures, have been unusually large since the start of the year. However, there is reason to interpret these cautiously, as the markets for government bonds, above all the one for real government bonds, have functioned poorly recently due to liquidity shortages.⁵

⁵ The situation on the Swedish government bond market is being investigated under the framework of the stability council by the Riksbank, the Swedish National Debt Office and Finansinspektionen.

Figure 12. Long-term inflation expectations in the euro area and United States

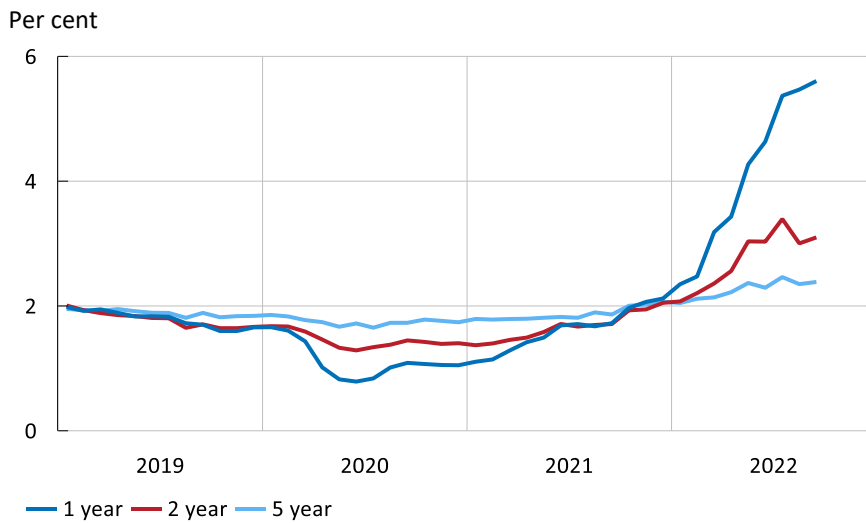


Note. Market-based measures of inflation expectations refer to a 5-year period starting in 5 years' time. For the euro area, they are calculated on the basis of inflation swaps and refer to the HICP excluding tobacco. For the United States and Sweden, they are calculated on the basis of bond yields and refer to the CPI. Survey-based expectations refer to inflation 5 years ahead for the euro area (ECB Survey of Professional Forecasters), and average inflation 5-10 years ahead for the United States (Federal Reserve Bank of Philadelphia). The broken line marks the date of the monetary policy meeting in June.

Sources: Bloomberg, Macrobond and the Riksbank.

According to Kantar Sifo's Prospera survey, short-term Swedish inflation expectations have remained high over the summer (see Figure 13). According to the survey, conducted in the first two weeks of September, money market participants expect, on average, prices measured as the CPI one year ahead to increase by about 5.6 per cent. According to the same survey, inflation is expected to fall back to about 2.4 per cent five years ahead, similar to the survey responses in recent months (see Figure 13). The Riksbank is carefully monitoring the various measures of inflation expectations.

Figure 13. Inflation expectations among money market participants



Note. Inflation expectations refer to the CPI.

Source: Kantar Prospera.

Weaker krona since the start of the year

The summer has been characterised by high volatility on the financial markets and, in such an environment, the krona tends to depreciate. During the spring, one contributing factor to this depreciation may also have been the policy rate rises initiated in certain other countries. In total, the krona has depreciated by about 5 per cent since the start of the year (see Figure 14).

Figure 14. Nominal exchange rate, KIX

Index, 18 November 1992 = 100



Note. The KIX (krona index) is a weighted average of the currencies in 32 countries that are important for Sweden's international trade. Since 28 March 2022, the index has been calculated against 31 countries since the Russian rouble was excluded from it. A higher value indicates a weaker exchange rate. The broken line marks the date of the monetary policy meeting in June.

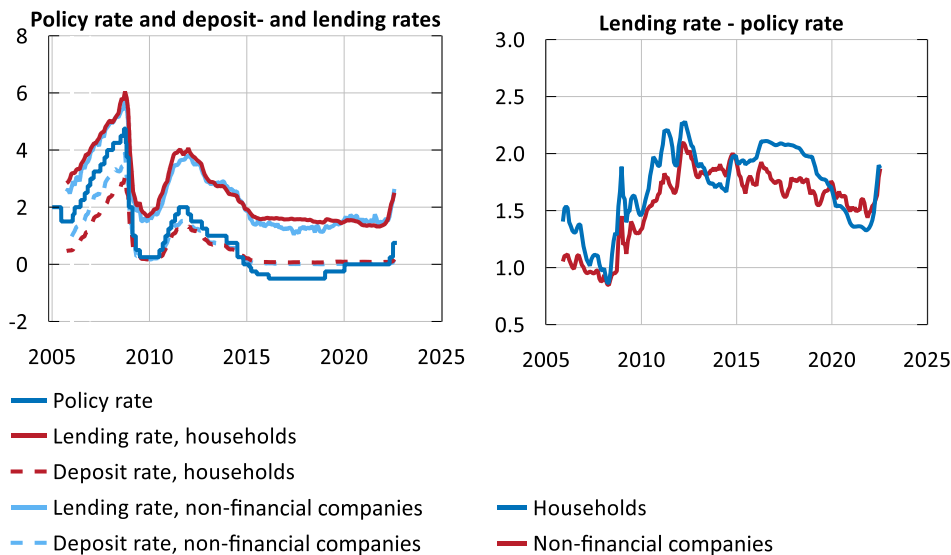
Source: The Riksbank.

2.2 Swedish households and companies are facing rising interest rates

Since the Riksbank started to raise its policy rate in April, both variable and fixed lending rates have risen in line with the policy rate and market expectations of the future policy rate over the loans' fixation period. The rates that the banks pay for their wholesale funding, for example for covered bonds, have also risen substantially (see Figure 10). In July, the banks' deposits from the general public, on the other hand, were still subject to rates close to zero (see Figure 15).

Figure 15. The Riksbank's policy rate, together with average deposit and lending rates and difference between lending rate and policy rate

Per cent (left) and percentage points (right)



Note. Deposit and lending rates are volume-weighted averages of monetary financial institutions' deposits and lending at all maturities for new and renegotiated loans. Household lending rate refers to loans for housing purposes. The right-hand figure shows the 3-month moving average.

Sources: Statistics Sweden and the Riksbank.

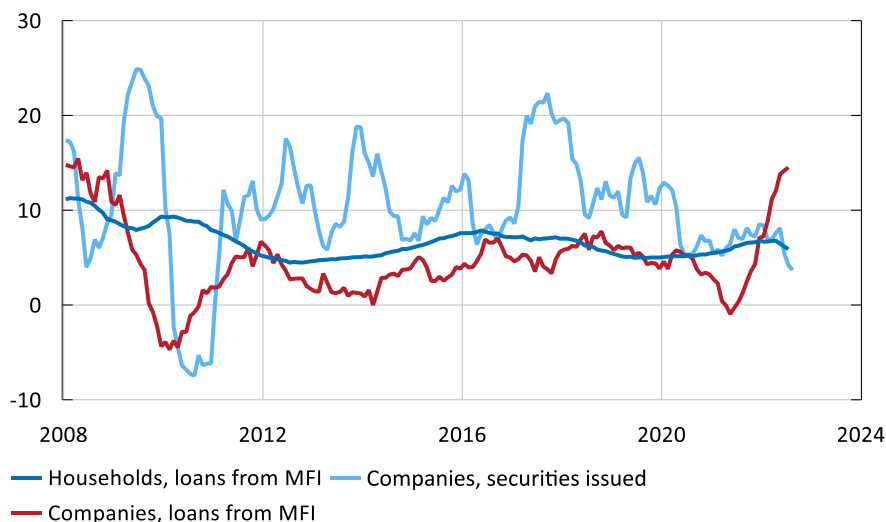
Tighter monetary policy has impact in higher interest rates

Swedish companies primarily obtain funding via bank loans, even if wholesale funding has become increasingly common in recent years as many larger companies, particularly in the property sector, have begun to issue certificates and bonds. In 2022, however, the growth rate of issued securities has fallen, while bank lending has increased strongly (see Figure 16). The aggregate rise in corporate lending can probably be explained by corporate investment having risen rapidly since 2021. The Riksbank's credit database KRITA shows that the increased borrowing requirement is primarily being driven by major companies and corporate acquisitions. Previously, the increase in corporate borrowing was driven by the commercial property market but the greatest increase this year has been driven by the rest of the corporate sector.

Average interest rates for corporate loans increased to over 2 per cent in July (see Figure 15). For longer maturities, lending rates were higher, which reflects market expectations of higher short-term interest rates in the period ahead. This indicates that the monetary policy transmission is functioning as regards interest rates to companies.

Figure 16. Household and corporate borrowing

Annual percentage change



Note. Lending by monetary financial institutions (MFIs) to households and non-financial corporations adjusted for reclassifications and bought and sold loans. Securities issued by non-financial corporations have been adjusted for currency impact. Loans from MFIs constitute about two thirds of total lending to companies, while securities issues constitute around a third.

Source: Statistics Sweden.

On average, Swedish households have large loans in relation to their incomes and about 80 per cent of these debts are made up of mortgages.⁶ Over the last few years, it has become more common for households to take out mortgages with fixed interest rates. However, the percentage of mortgages with variable interest rates remains large in comparison with many other countries and the average fixation period for fixed-rate loans is short. This is contributing to rate rises having a relatively rapid impact on households' economies and scope for consumption. Households also have consumer loans. These are smaller in extent than mortgages but, as the interest rates are higher and amortisation requirements greater, they stand for a significant part of households' loan expenditure. Interest for consumer loans also rises when the policy rate is raised, which also affects households' economies and scope for consumption.⁷

⁶ The household loan-to-income ratio, which is to say debt in relation to disposable income, amounts to about 200 per cent. The debt-to-income ratio has risen by just over 30 percentage points over the last ten years.

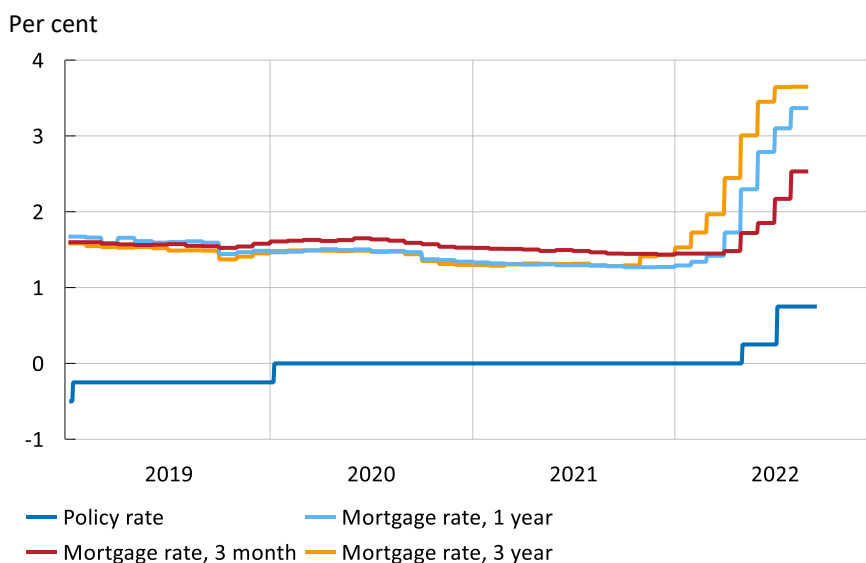
⁷ Consumer loans make up a smaller part of households' total loan stock but, according to a report from Finansinspektionen, these loans are responsible for about half of households' loan payments in interest and amortisations. Statistics Sweden <https://www.scb.se/hitta-statistik/redaktionellt/konsumtionslanen-okar-under-pandemin/>.

For more information on households' interest-rate sensitivity, see the article "Higher interest-rate sensitivity in the Swedish economy".

In July, households' mortgages increased by slightly more than 6 per cent at an annual rate and households' total debt increased by almost the same amount (see Figure 16). Interest rates on mortgages with longer interest-rate fixation period had already started to rise at the start of the year, in step with rising yields on the bond market (see Figure 10 and Figure 17). In August, the average mortgage rate with an interest-rate fixation period of three years was around 3.6 per cent, which is to say a good 2 percentage points higher than in January.

According to an analysis by Finansinspektionen, over the second quarter, variable mortgage rates have not risen at the same rate as the banks' funding costs, meaning that the banks' gross margins on these mortgages have shrunk⁸. At the same time, the banks' deposits from the general public are more profitable as deposit rates have remained low. The difference between mortgage rates and the expected policy rate is also close to the historical average, which suggests a normal monetary policy transmission to Swedish households too (see Figure 17).

Figure 17. The Riksbank's policy rate and mortgage rates with different interest-rate fixation periods



Note. Mortgage rates are an average of actual mortgage rates from Länsförsäkringar Bank, Nordea, SBAB, SEB, SHB and Swedbank.

Sources: The respective mortgage company and the Riksbank.

⁸ See <https://www.fi.se/sv/publicerat/statistik/bankernas-marginal-pa-bolan2/>.

3 Inflation still high

Overall, Swedish GDP developed strongly in 2021 and the start of 2022. However, forward-looking indicators and monthly outcomes for the third quarter indicate a rapid slowdown and a weak development of GDP in the near term. In the Riksbank's forecast, the relatively high resource utilisation is therefore expected to decline clearly: GDP growth will be negative next year at the same time as the employment rate will fall and unemployment will rise.

Inflation has exceeded the assessment made in the June Monetary Policy Report. In Sweden, inflation was 9.0 per cent in August, while price increases excluding energy costs amounted to 6.8 per cent. Inflation is not driven by large price rises for individual products but rather it is a broad upturn.

Inflation is expected to continue rising over the rest of the year, when the rate of increase in both food and electricity prices will increase further. After peaking over the coming winter months, largely driven by high electricity prices, inflation is expected to subside again in 2023. The downturn will be due to the increasingly tight monetary policy in Sweden and large parts of the rest of the world restraining demand and due to pandemic-related supply shocks in the global economy gradually continuing to ease. The rate of increase in the CPIF will also be restrained by electricity prices in the winter of 2023-2024 not being expected to be quite as high as they will be this coming winter. All in all, inflation is expected to be close to the target of 2 per cent in 2024. However, the major disruptions to the energy market in Europe make the assessment of electricity prices, in particular, uncertain.

3.1 Strong demand and supply shocks will lead to continued high inflation in Sweden and abroad in the short term

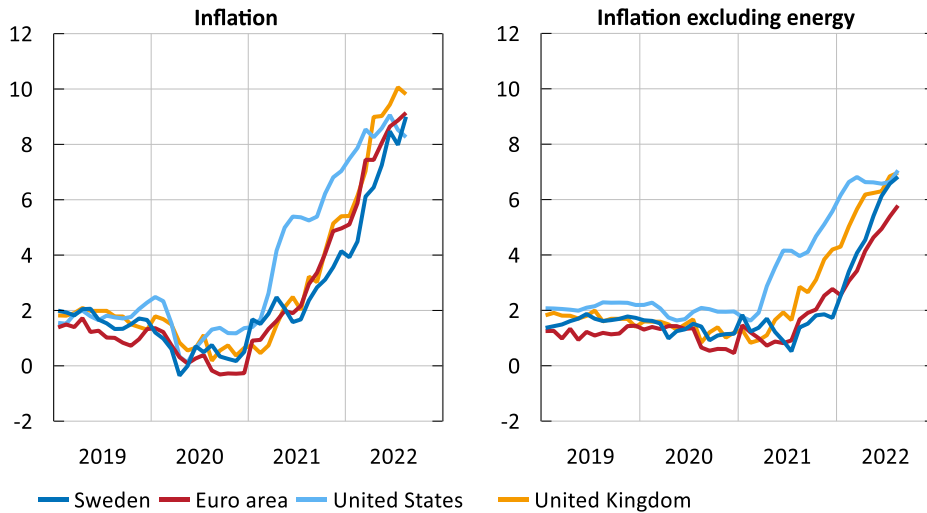
Continued broad upturn in inflation

Inflation is high and has continued to rise rapidly in many countries over the summer. This is due both to the supply shocks that have characterised the world economy after the pandemic and the war in Ukraine and due to resource utilisation being higher than normal in many countries. In August, inflation in both Sweden and the euro area rose, while it was somewhat restrained in the United States and United Kingdom in that the rate of increase in energy prices decreased. Inflation excluding energy prices

rose in all of these areas. In Sweden, the upturn in inflation excluding energy prices has been particularly rapid in recent months (see Figure 18).

Figure 18. Consumer prices

Annual percentage change



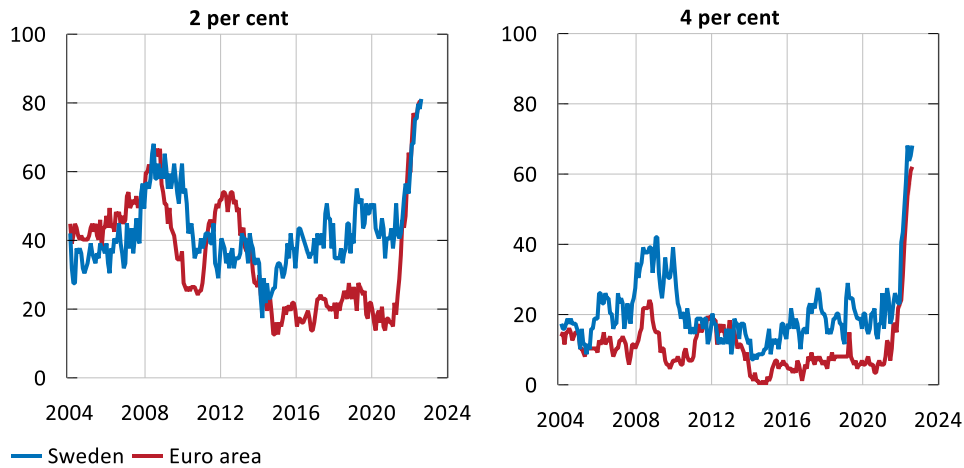
Note. Refers to the CPI for Sweden, the HICP for the euro area and the CPI for the United States and United Kingdom.

Sources: Eurostat, Statistics Sweden, UK Office for National Statistics and US Bureau of Labor Statistics.

In the United States, the rate of increase in prices for goods, which was heavily affected by supply shocks during the pandemic, has been restrained this year, while the price upturn for services has still not eased off. In Sweden and the euro area, on the other hand, the rate of price increase for goods has continued to rise clearly, while the rise in service prices has slowed down somewhat. Inflation in Sweden and the euro area is not being driven by large price rises for individual products; instead the rise is broad. Prices for most goods and services in Sweden and the euro area are rising by more than 2 per cent at an annual rate and the price of more than half of all goods and services is rising faster than by 4 per cent (see Figure 19).

Figure 19. Percentage of consumer prices increasing faster than 2 and 4 per cent respectively

Per cent



Note. Percentage of product groups for the CPIF and HICP respectively, unweighted.

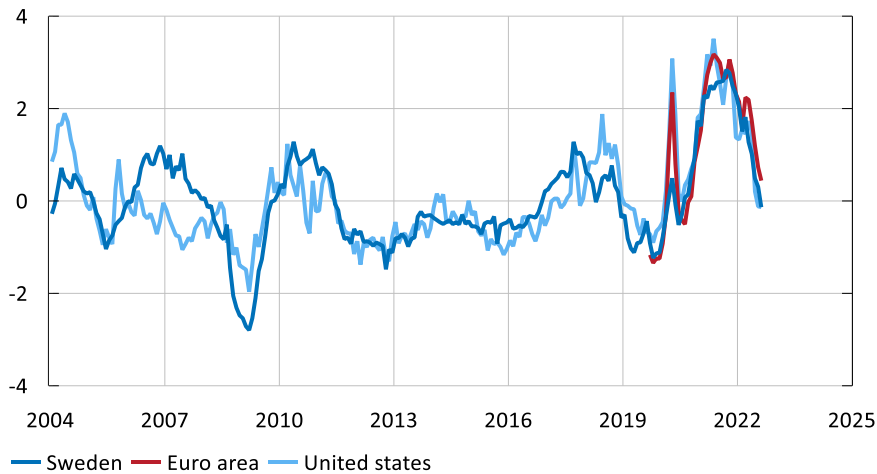
Sources: Eurostat, Statistics Sweden and the Riksbank.

The global pandemic-related supply shocks have decreased...

In the wake of the pandemic, the world economy has struggled with major supply shocks that have contributed to the high inflation. These supply shocks have resulted from the rapid recovery after the pandemic and a rapidly shifting composition of demand, which together created a situation in which companies have found it difficult to produce enough to meet demand. However, there are signs that these shocks are now smaller overall. For example, delivery times seem to have become more normal recently (see Figure 20) and global freight prices have stopped rising or have fallen to more normal levels. However, many companies report in surveys that shortages of material still form an obstacle to production, which suggests that some problems remain. The pandemic-related supply shocks are expected to continue to affect many participants but they decline gradually in the forecast.

Figure 20. Delivery times in the manufacturing sector

Standardised data, mean = 0, standard deviation = 1



Note. Delivery times according to the Purchasing Managers' Index. All series have been standardised from 2004. Due to licensing restrictions, the Purchasing Managers' Index for the euro area is only published from 1 September 2019, with the publication date of 1 September 2022.

Sources: IHS Markit, Institute for Supply Management, Silf/Swedbank and the Riksbank.

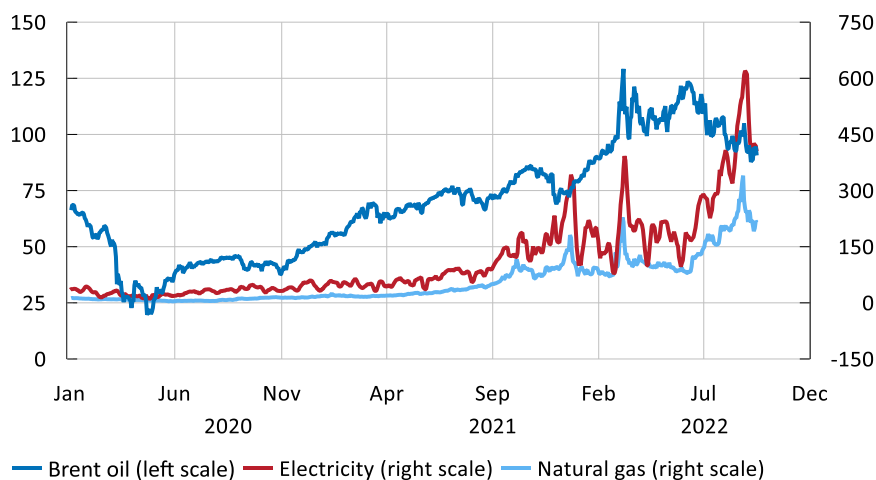
...but Russia's invasion of Ukraine has created new shocks that have heavily increased energy prices

Russia's invasion of Ukraine a little over six months ago has brought further supply shocks. Among other things, the supply of food such as wheat has decreased. Combined with rapidly rising prices for fuel and fertilisers, this has contributed to a rapid rise in food prices over the spring and summer. Climate-related risks such as severe droughts in parts of Europe and the United States, as well as elsewhere, have also affected harvests and prices for food. Food prices in the commodity channel remain elevated but have recently fallen back noticeably (see Figure 45).

At the same time, restrictions in deliveries of natural gas from Russia to Europe have led the price of this type of energy to rise sharply (see Figure 21). As natural gas is used as fuel in the production of electricity in many European countries, the high natural gas prices have also caused electricity prices to rise, and they have also been highly volatile. As the European electricity market is a common one and is interlinked, the electricity price in the southern half of Sweden is also at a record level (see Figure 41). In the wake of this, several countries are trying to limit their gas usage and increase production of other energy, at the same time as various economic support packages have been presented. The European Commission has also recently communicated several proposals for joint measures (see the article "What effect can measures to dampen the electricity price have on inflation?").

Figure 21. Energy prices

USD/barrel and EUR/MWh



Note. Prices of electricity and natural gas for Germany. The electricity price refers to the 5-day moving average spot price. The natural gas price refers to the forward price for the coming month.

Sources: The Iberian Energy Derivatives Exchange and Intercontinental Exchange.

The Riksbank’s forecast is based on the current sanctions against Russia remaining in place during the entire forecast period and on Europe’s usage of Russian oil and gas being limited. The Riksbank’s electricity forecast is largely based on forward pricing, which is very high for the winter.⁹ Overall, even though the oil price has fallen slightly, energy prices can thus be expected to hold inflation up in both Sweden and the euro area over the winter. Pricing on the forward market for winter 2023–2024 is lower and the forecast is therefore that electricity prices in both Sweden and the euro area will not be quite as high next winter. Among other things, this is due to the EU’s on-going efforts to find alternatives to Russian natural gas. However, the major disruptions to the energy market in Europe and a number of other factors make this assessment highly uncertain.

3.2 Low unemployment and rising wages in many countries around the world

International demand slowing down

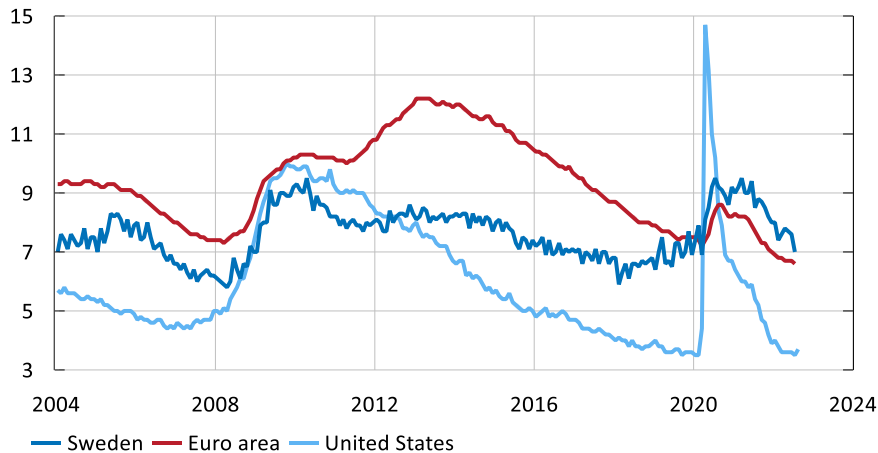
GDP in the euro area rose surprisingly rapidly in the second quarter, while growth in both the United States and China was negative. In the euro area, this development was due to households increasing their consumption at a rapid rate as the spread of infection decreased and restrictions were lifted, in spite of high inflation and reduced purchasing power. Among other things, this led to a rapid growth in the tourism industry in several major European tourist destinations such as Italy and Spain. In

⁹ The forecast for the electricity price index for Sweden is based on a 15 day average of forward pricing on Nordpool. Apart from forward pricing, the forecast for the electricity price index is also affected by the expected development of prices for grid charges and energy taxes.

China, on the other hand, growth in the second quarter was characterised by comprehensive pandemic-related lockdowns that led GDP to fall by 2.6 per cent, seasonally adjusted and compared with the first quarter. In the United States GDP fell, due to decreased investment in inventory and housing, while household consumption also developed weakly.

Figure 22. Unemployment in Sweden, the euro area and the United States

Percentage of the labour force, seasonally-adjusted data



Note. Refers to 15–74 years in Sweden and the euro area and 16 years and older in the United States.

Sources: Eurostat, Statistics Sweden and the US Bureau of Labor Statistics.

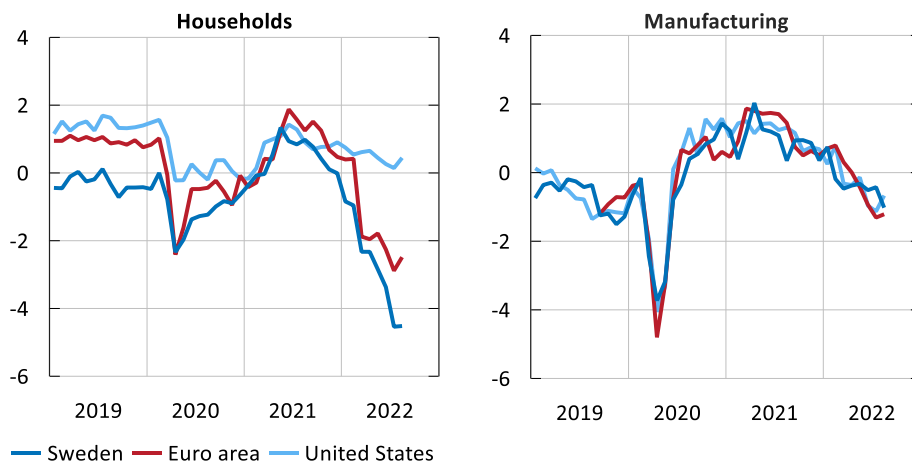
At the same time, the development of the labour market has been strong and unemployment fell to historically low levels in both the euro area and United States (see Figure 22). Simultaneously, the rate of increase in nominal wages has risen, above all in the United States. In the second quarter, the employment cost index in the United States increased by 5 per cent compared with the same quarter in 2021. Wage growth has risen in the euro area too and, in the second quarter, the labour cost index rose by 4 per cent compared with the same quarter in 2021. The upturn was large, for instance labour costs rose by almost 6 per cent in Belgium where wages are indexed to inflation. At the same time, new German wage agreements indicate that German households will now also be compensated to some extent for the high inflation to some extent. For example, parts of the German iron and steel industry in IG-Metall have received a wage agreement of 6.5 per cent across 18 months that also includes a one-off payment of EUR 500 per member. Wages in the euro area are thereby expected to rise faster than previously expected, above all in 2023.

Although there are signs that the supply shocks that have restricted output have decreased, growth is expected to slow down clearly in the period ahead. The high inflation is reducing households' scope for consumption at the same time as increasingly tight monetary policy and credit terms are restraining growth. Forward-looking indicators also suggest that growth is now declining and that resource utilisation is falling. In the wake of the high inflation and expectations of rising interest rates, consumer confidence has fallen to historically low levels in many countries (see Figure

23).¹⁰ In recent months, corporate confidence has also fallen, particularly in the manufacturing industry, where new orders have fallen markedly, among other things.

Figure 23. Confidence among households and new orders in the manufacturing industry

Standardised data, mean = 0, standard deviation = 1



Note. New orders according to the Purchasing Managers' Index.

Sources: Conference Board, European Commission, Institute for Supply Management, IHS Markit, National Institute of Economic Research Silf/Swedbank and the Riksbank.

Overall, growth in both the euro area and the United States is expected to slow down significantly and, next year, the overall increase in production in the euro area will amount to only 0.2 per cent (see Figure 24). This slowdown will also result in a falling demand for labour falling and unemployment starting to rise. However, a certain recovery is expected in both the euro area and the United States in 2024, in that household purchasing power will improve when inflation falls back. In addition, Europe is expected to make itself gradually less dependent on Russian energy. Among other things, Germany is building new terminals, expected to enter into use in 2023, to facilitate receiving liquid natural gas from tankers, which will create the conditions for lower energy prices and higher growth in the period ahead.

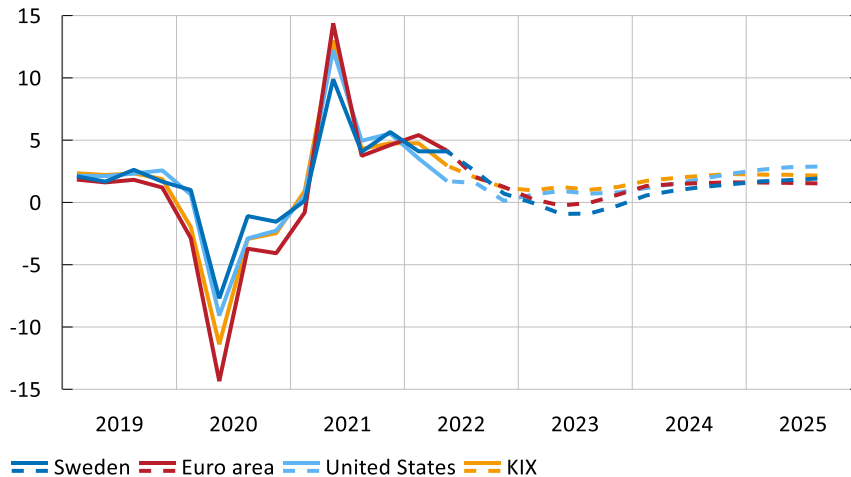
In China, growth in the short term is expected to continue to be impeded by the zero tolerance strategy for COVID-19, at the same time as electricity shortages caused by the heatwave and drought are also restraining growth. In addition, uncertainty remains considerable in the Chinese property sector, where demand has declined and several property companies are suffering major financial problems. To support the economy, the People's Bank of China has cut several reference rates, but GDP growth is nevertheless expected to slow down to just over 4 per cent on average per year in 2022–2024, which is significantly lower than the historical average growth rate. Overall, international GDP growth (KIX weighted) is expected to slow down from 2.7 per

¹⁰ In the United States, the downturn in consumer confidence has been smaller. The explanation for this is that US households remain optimistic about the current situation, among other things due to the strong labour market. However, their expectations for the future have fallen and are significantly more pessimistic.

cent in 2022 to 1.1 per cent in 2023, before then recovering slightly over the following years.

Figure 24. GDP in Sweden and abroad

Annual percentage change, seasonally adjusted data



Note. The KIX is an aggregate of 32 countries that are important for Sweden’s international trade. Solid line refers to outcome, broken line represents the Riksbank’s forecast.

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

Inflation abroad will slow down next year but is still above the central banks’ inflation targets

Inflation in the euro area has continued to rise and has been high over the summer. In the Baltic countries, inflation now exceeds 20 per cent. Inflation is also high in the United States, although it has fallen back slightly in recent months as energy prices have fallen. Inflation is so high largely due to supply shocks but also due to the strong demand that has made it possible for companies to pass their increased production costs along into the consumer channel. In the United States, where the labour market is very strong, the upswing is also due to rapidly rising wages.

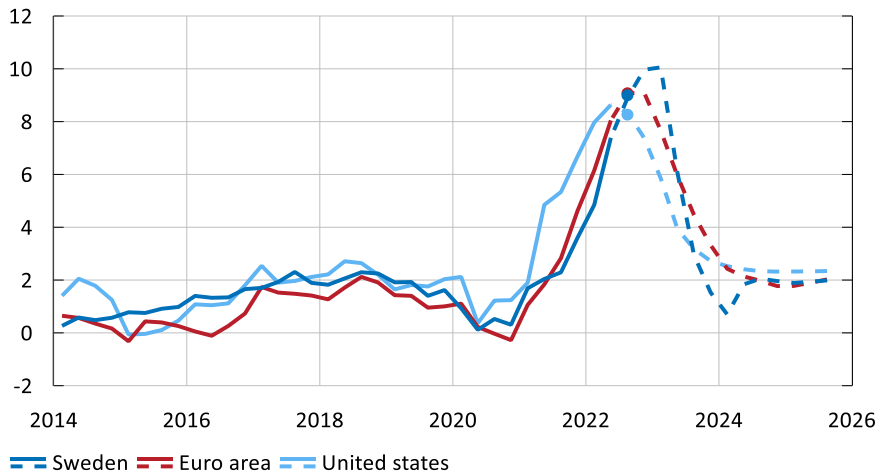
Next year, inflation in both the United States and the euro area is expected to subside (see Figure 25).¹¹ This is because demand is slowing down at the same time as the pandemic-related supply shocks in the global production chains ease off. A reduced global dependence on Russian energy is also expected to lead to energy prices eventually rising at a more normal rate. The strong labour market means that wage growth at present is relatively high in the euro area. In the United States, where the labour market is even stronger, wage growth is very high. In 2023, when demand for labour

¹¹ This winter, inflation in Sweden is expected to be slightly higher than in the euro area. This can be explained by a slightly higher and faster impact from electricity prices on consumer prices in Sweden than in certain other European countries, which is partly due to there being elements of administratively-set prices in these countries. For more information, see the article “What effect can measures to dampen the electricity price have on inflation?”. However, there is great uncertainty over how energy prices in various countries will develop this winter.

decreases and unemployment begins to rise, wage growth in the United States is expected to slow down. In the euro area, new wage agreements mean that wage growth will be held up slightly in 2023 and will not slow down more clearly until 2024. In both the euro area and United States, it will take until 2024 before inflation can be expected to be close to 2 per cent.

Figure 25. Consumer prices in various countries and regions

Annual percentage change



Note. Consumer prices refer to quarterly data in the CPI for Sweden, the CPI for the United States and the HICP for the euro area. Dots refer to monthly outcomes for August. Solid line refers to outcome, broken line represents the Riksbank's forecast.

Sources: Eurostat, US Bureau of Labor Statistics, Statistics Sweden and the Riksbank.

3.3 The high economic activity in Sweden is slowing down

High private consumption entailed strong Swedish growth in the second quarter

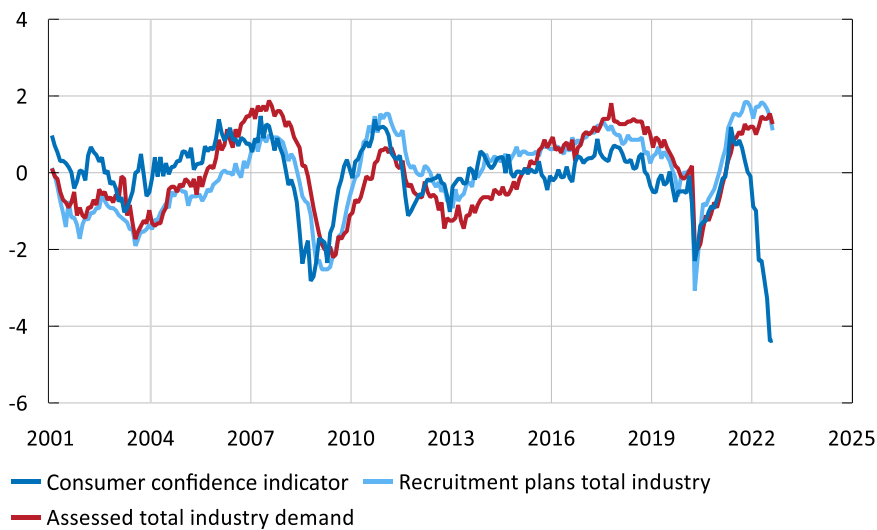
Even though high price rises have meant lower purchasing power, Swedish households, like those in the euro area, have consumed at a rapid pace over the second quarter and growth in employment has been strong. This development is probably due to a pent-up desire to consume and live more like previously after two years of pandemic and restrictions. This is reflected by strong GDP growth, primarily driven by high consumption among households and strong investment in the business sector. On the labour market, this meant that employment rose rapidly in the hotel and restaurant industry and the culture, entertainment and leisure sectors, among others. In particular, many young people found work over the summer.¹²

¹² In July, unemployment according to the LFS fell from 7.6 per cent to 7.0 per cent, seasonally adjusted and compared with June. A large part of this downturn can be explained by young people between the ages of 15 and 19 finding work. In the summer months, recruitment and unemployment vary strongly for seasonal reasons and uncertainty in the LFS is greater. The Riksbank assumes that part of the large downturn in unemployment in July is temporary.

In the second half of the year, households are expected to reduce their consumption as their scope for this continues to shrink due to high inflation and increased interest expenses at the same time as asset prices will develop weakly. The increasingly harsh conditions for households are clearly being reflected in households' consumer confidence, which has fallen to a historically low level (see Figure 26), and many households expect their economies to worsen in the period ahead. However, a closer examination of the data shows that this is primarily a matter of more households expecting their economic situation to become *slightly* worse, rather than *much* worse (see fact box below).

Figure 26. Indicators in the Economic Tendency Survey

Standardised data, mean = 0, standard deviation = 1



Sources: The National Institute of Economic Research and the Riksbank.

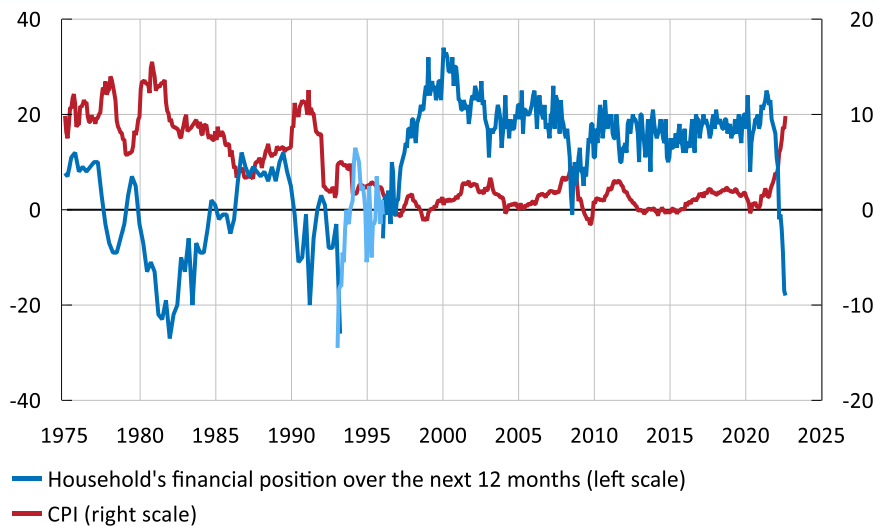
Housing investment, which already started to fall in the second quarter, is also expected to continue to decrease, at the same time as exports will slow down at the same rate as international demand, particularly in Europe, grows more slowly. Overall, Swedish GDP is thereby expected to start to fall over the end of the year. Companies' recruitment plans for the next three months have certainly slowed down slightly but nevertheless remain on a high level. However, as demand decreases, these are expected to decrease more noticeably and employment growth will also be restrained towards the end of the year.

FACT BOX – Perspectives on the low consumer confidence

The household confidence indicator in the Economic Tendency Survey has fallen to a historically low level, indicating that households have a pessimistic view of the future. The confidence indicator consists of a macro- and a microindex that describe households' view of Sweden's economy and their own economies. Both indices are significantly lower than normal but the microindex has fallen by more than twice as much as the macroindex. One of the four questions in the microindex, in which the percentage of positive responses has strongly decreased, concerns households' economic situation in one year (see Figure 27).

Figure 27. Expectations of own economy and CPI inflation

Balance and annual percentage change



Note. There are two time series breaks in the own economy series. Between 1974 and 1993, the series is shown with a quarterly frequency. From 1993, the series is shown with a monthly frequency but there is also a time series break in 1996. During the period between the two time series breaks, the series is light blue in the figure.

Sources: The National Institute of Economic Research and Statistics Sweden

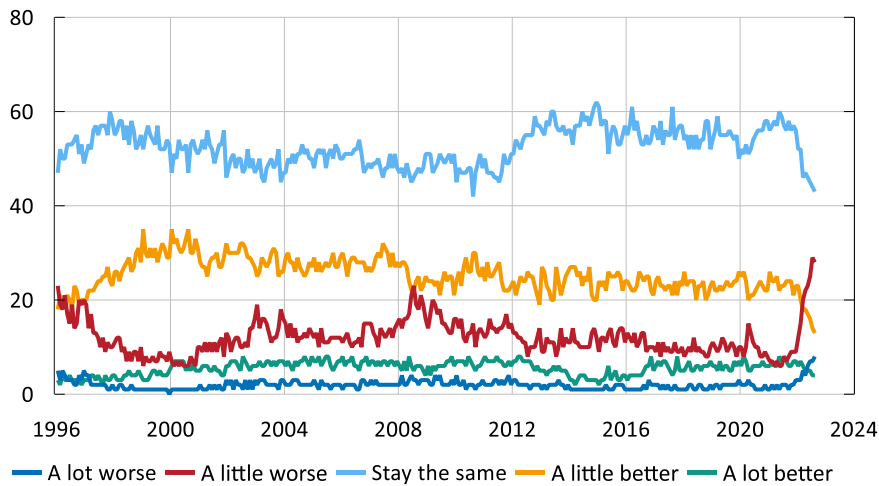
Figure 29 shows that the increased pessimism is primarily due to increasing numbers of households expecting their economies to be “slightly worse” in one year's time. These responses have risen from just under 10 per cent to 30 per cent. At the same time, only 7 per cent respond that their economies will be “much worse”, even though this share has also risen and is historically high. The fact that the low level in the microindex is due to more households expecting things to be “slightly worse” may mean that the slowdown in their consumption will be smaller than if more respondents had expected things to be “much worse”.

In light of the rising interest rates and high inflation, it is not surprising either that households expect their economies to become slightly worse. It has been decades since inflation rose and real wages fell this rapidly. However, during the period before inflation targeting, there were several occasions on which inflation rose rapidly and,

when this happened, households' expectations for their own economies one year ahead fell, like now (see Figure 27).¹³

Figure 28. Responses, households' expectations for their own economies

Per cent



Note. "Don't know" is excluded from the figure; the number responding "don't know" amounted to 4 per cent in August.

Source: National Institute of Economic Research.

Negative GDP growth and rising unemployment next year

The starting point for the Swedish economy is strong but, as inflation continues to be high and monetary policy is to be tightened further, demand will weaken gradually and will develop weakly over large parts of next year (see Figure 29 and Figure 24).¹⁴ All in all, GDP growth will be negative in 2023, meaning that demand for labour will also be weak and the employment rate will fall at the same time as unemployment will start to rise (see Figure 30).

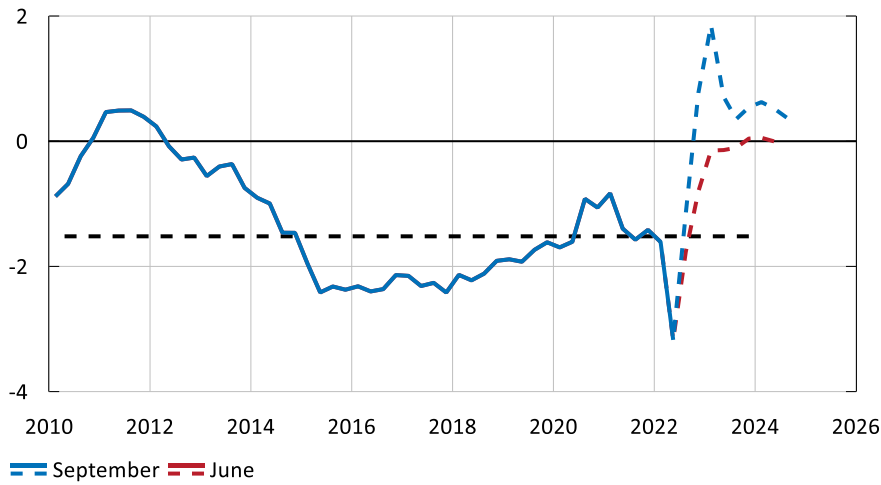
In 2024, when inflation will not rise as steeply, there will be some recovery of household purchasing power and demand will strengthen. GDP growth will therefore increase more rapidly and unemployment will stop rising. At the end of the forecast period, unemployment in Sweden is expected to be just over 8 per cent.

¹³ Due to the time series break, caution should be exercised when comparing levels before and after 1996.

¹⁴ The temporarily high real interest rate at the end of 2023 is a consequence of CPI inflation being expected to be temporarily low as a result of falling energy prices.

Figure 29. Real policy rate

Per cent

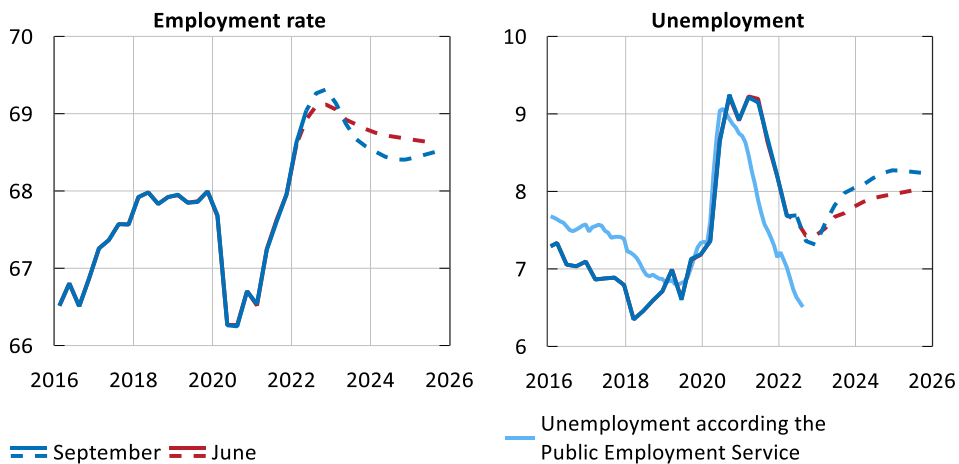


Note. The real policy rate is the Riksbank’s expected real interest rate, calculated as a quarterly mean value of the Riksbank’s policy rate forecast one year ahead minus the inflation forecast (CPIF) for the corresponding period. As the real interest rate is a forward-looking variable, the outcomes are also based on forecasts. The outcomes are calculated on the most recently published forecasts at that point in time. The broken line represents an average for the period 2012-2021.

Source: The Riksbank.

Figure 30. Employment rate and unemployment in Sweden

Percentage of population (left) and percentage of labour force (right)



Note. Employment rate and unemployment according to LFS in dark blue and red line refer to age 15-74 years; unemployment according to Swedish Public Employment Service refers to age 16-64 years. Solid line refers to outcome, broken line represents the Riksbank’s forecast.

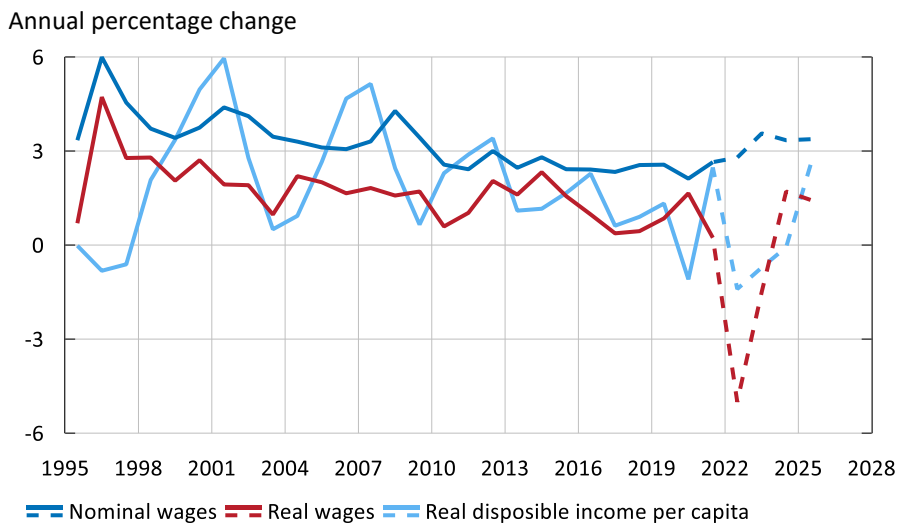
Sources: Swedish Public Employment Service, Statistics Sweden and the Riksbank.

Households are under pressure from falling real wages and rising interest rates

Households’ increased pessimism coincides with high inflation, rising interest rates and falling housing prices. Wage growth has also risen over the first six months of the

year but is still clearly below inflation.¹⁵ Total wage growth is determined both by centrally agreed wages and by local pay reviews, as well as by wage-setting upon recruitment, which is determined by the situation on the labour market, among other things. As there is a labour shortage and inflation is high, which is expected to lead to some demands for compensation, the results of local pay reviews are expected to be higher over the autumn and winter. This is supported by wage statistics for June that show that wages over and above central agreements have started to rise more rapidly. Overall, wage growth is thus expected to be slightly higher than it was last year. However, the upturn in inflation is considerably greater, meaning that real wages, which have risen every year since the mid-1990s, will fall significantly this year (see Figure 31).

Figure 31. Nominal and real wages, and real disposable income per capita



Note. Real wages are calculated as the difference between wage growth and the rate of increase in the CPI. Real disposable income is deflated using the consumption deflator. Unbroken lines refer to outcomes, broken lines to the Riksbank's forecasts. The forecast for 2025 is an average of the year's first three quarters

Sources: National Mediation Office, Statistics Sweden and the Riksbank.

Negotiations on wage agreements for 2023 and beyond in the manufacturing sector will begin in the autumn. Compared with when the current agreements were concluded, in the pandemic year of 2020, unemployment is now lower and inflation significantly higher, at the same time as wages abroad are expected to increase faster than in recent years. This will contribute to wages in Sweden also rising faster in the coming years, especially all in 2023. In combination with falling inflation, this means that real wage development will recover from 2024 on.

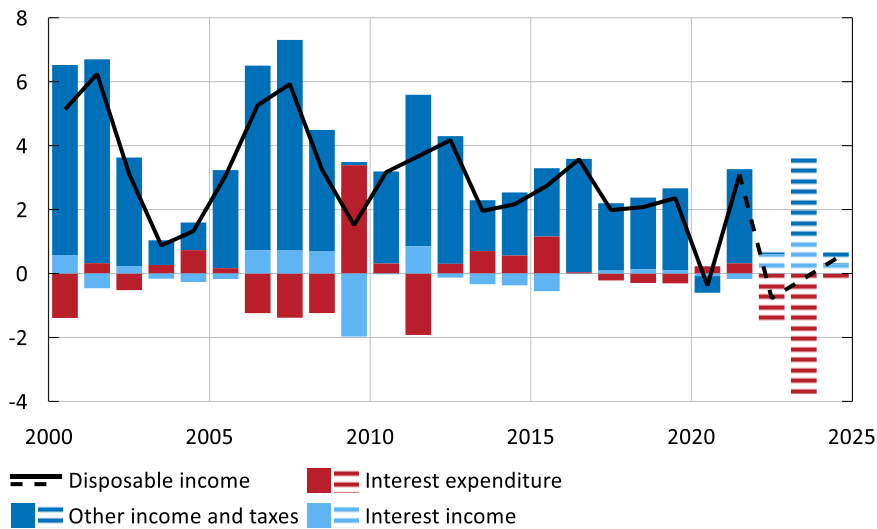
However, there are factors other than wage development that will make a positive contribution to households' real disposable incomes this year and next year. This is

¹⁵ The upswing in the first six months of the year can largely be explained by centrally agreed wages. Starting in May this year, agreed wage growth rose to about 2 per cent after having been at just over 1 per cent at the end of last year and start of 2022. Agreed wage growth is expected to amount to around 2 per cent until the end of the first quarter of 2023, when many of the current collective wage agreements expire.

illustrated by real disposable income per capita this year only being expected to fall by just over 1 per cent at the same time as real wages will fall by 5 per cent (see Figure 31). More people in employment and higher capital incomes are a couple of examples of such factors. The price base amount, that is the amount used in the calculation of compensation levels in social insurance and which also affects the tax system, will be raised sharply in January 2023 because inflation has been high.¹⁶ This means that pensions and student grants, among other things, will be raised and that many people, in practice, will pay less in tax. In addition to this regular inflation adjustment, the state is also expected to compensate households for higher electricity prices, which will also keep up households' purchasing power.¹⁷

Figure 32. Contribution to annual growth in real disposable household income

Annual percentage change and percentage points respectively



Note. Deflated using the consumption deflator. Other income refers to payroll expenses, dividends, transfers etc. The unbroken line and column refer to outcomes, the broken line and column refer to the Riksbank's forecast.

Sources: Statistics Sweden and the Riksbank.

As income development is weak, the households that had previously saved a large share of their incomes are expected to cut back on saving to maintain their consumption. Overall, however, household consumption is nevertheless expected to slow down significantly and to fall slightly in 2023. In 2024, when inflation is lower and household purchasing power has improved, consumption is expected to increase approximately in line with its historical average.

On the other hand, the development of disposable household income will be restrained by households' increasing interest expenditures (see Figure 32). Mortgage rates have risen since the start of the year and are expected to rise further due to the

¹⁶ The price base amount is calculated by Statistics Sweden and takes account of inflation according to the CPI in June each year.

¹⁷ The forecast assumes that the electricity compensation to households and companies for the increased electricity costs will amount to SEK 90 billion, or about 1.5 per cent of GDP, in 2023. It is assumed that the compensation will be funded by the surplus generated by capacity charges to Svenska Kraftnät.

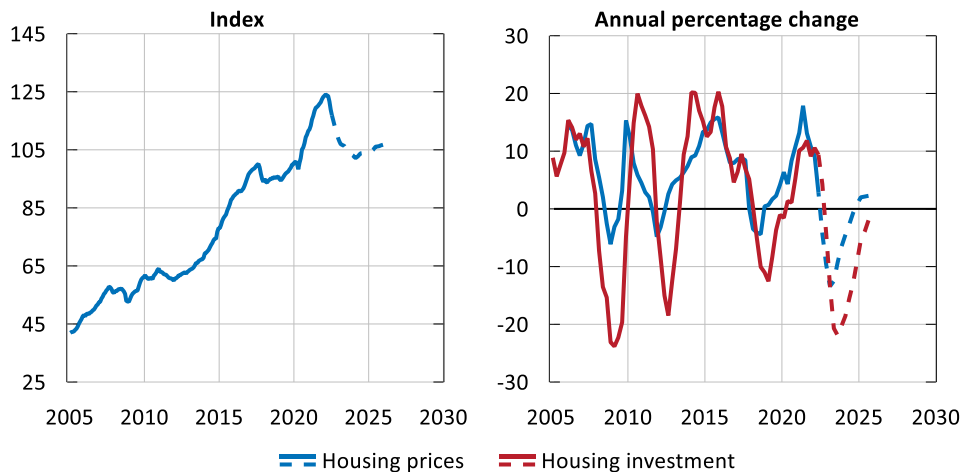
Riksbank's rate rises and rising market rates. As household debt has increased for many years, changes in interest rates have a higher impact now than previously (see the article "Higher interest-rate sensitivity in the Swedish economy"). Household interest expenditure as a percentage of their disposable incomes, the so-called interest-to-income ratio, is expected to increase from about 2.5 per cent this year to 6 per cent by the end of 2025 (see Figure 52). For an average new mortgagor with SEK 2.8 million in loans, this means that interest expenditure after tax deduction will increase by almost SEK 5,000 per month.¹⁸

Falling housing prices and housing investment

Household demand for housing increased in 2020 and 2021 and housing prices rose rapidly. In 2022, the rising mortgage rates and weak income development have restrained demand and housing prices have fallen over the spring and summer. Even though housing prices are expected to fall next year too, the forecast indicates that the price level at the end of 2024 will still be slightly higher than before the pandemic. The falling housing prices, combined with high construction costs and increased funding costs, will also affect housing investment. Construction companies are expected to continue to reduce construction at a rapid rate and housing investment will fall by almost 20 per cent in 2023 and 15 per cent in 2024 (see Figure 33).

Figure 33. Housing prices and housing investment

Index 2019 Q4 = 100, seasonally adjusted data (left), annual percentage change (right)



Note. Housing prices refer to HOX Sweden price index for tenant-owned apartments and houses, the broken line refers to the Riksbank's forecast.

Sources: Valueguard and the Riksbank

Resource utilisation in the Swedish economy is deemed to be high

The amount of spare capacity in the economy affects price pressures and is therefore of considerable interest for monetary policy. However, resource utilisation cannot be

¹⁸ Average loan amount is taken from *The Swedish Mortgage Market 2022*, April 2022, Finansinspektionen.

measured exactly and the Riksbank therefore makes an assessment based on various of data and indicators.

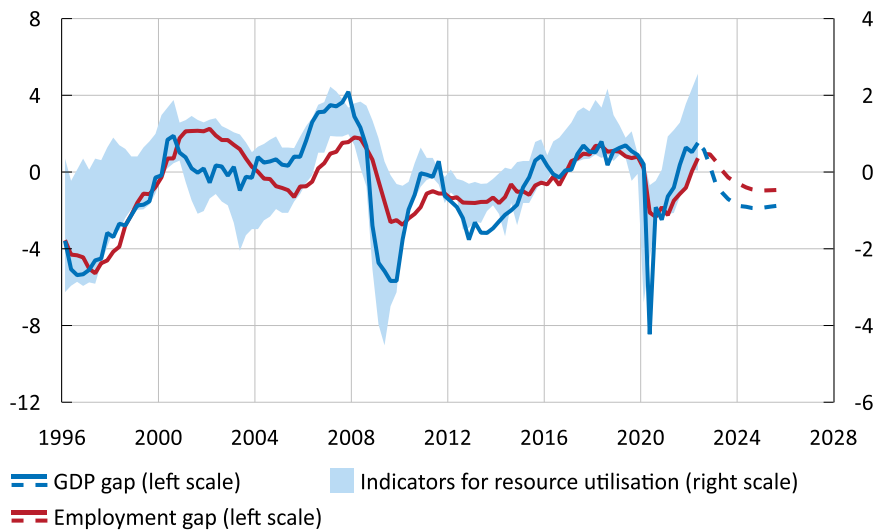
The amount of spare capacity in the labour market is deemed to be small. Among other things, this is supported by the record share of companies reporting labour shortages in the Economic Tendency Survey, at the same time as the number of vacancies in the economy is also at a record level in relation to the number of unemployed. According to Statistics Sweden's short-term employment statistics, mobility in the labour market also appears to be high among those with jobs. Both the percentage of employed who left their jobs (voluntarily and involuntarily) and the percentage of new recruitments were at high levels in the second quarter.

The Riksbank's overall assessment is that resource utilisation in the economy is higher than normal at present. This is illustrated by the Riksbank's GDP and employment gaps in Figure 34 both being positive. This assessment is supported by the indicators and data monitored by the Riksbank.¹⁹ As monetary policy becomes tighter, demand becomes restrained and resource utilisation is expected to be lower than normal from mid-2023.

¹⁹ The Riksbank's various gap measures refer to the deviation in GDP from the Riksbank's assessed long-term trends, and therefore do not capture short-term fluctuations in production capacity, which can for instance be due to a shortage of inputs. This means that the GDP gap becomes lower in connection with disruptions in production, at the same time as these disruptions lead to higher prices.

Figure 34. Measures of resource utilisation

Per cent and standard deviation respectively



Note. The field shows the highest and lowest outcomes for standardised indicators of resource utilisation. Included series are: Inverted unemployment according to LFS, and according to the Swedish Public Employment Service; Capacity utilisation in the industrial/manufacturing sector according to Statistics Sweden/the Economic Tendency Survey; Economic Tendency Survey series for the business sector on shortages, profitability assessment and demand. The gaps refer to the deviation in GDP and employment from the Riksbank's projected trends. Solid line refers to outcome, broken line represents the Riksbank's forecast.

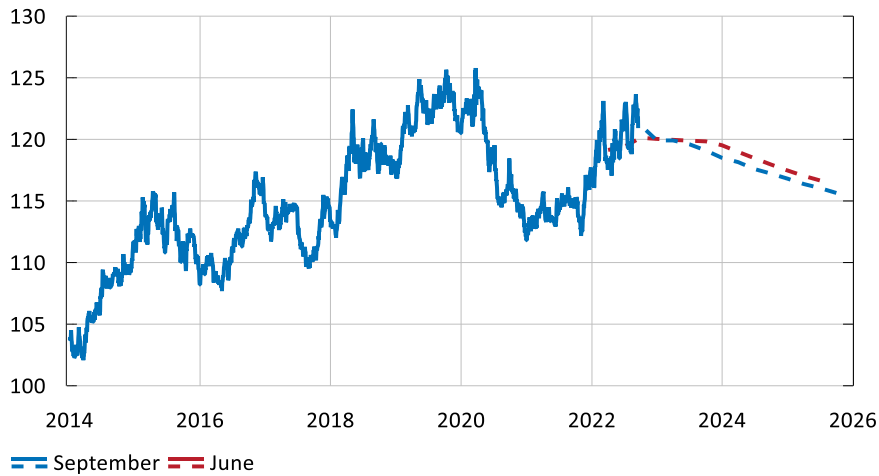
Sources: Swedish Public Employment Service, National Institute of Economic Research, Statistics Sweden and the Riksbank.

The krona is being affected by global uncertainty

The Swedish krona has weakened since the monetary policy meeting in June. The summer has been characterised by high volatility on the financial markets and increasingly tight monetary policy abroad. In such environments, the krona tends to depreciate. The real exchange rate is now assessed to be weaker than might be expected considering, among other things, general economic development in Sweden in relation to other countries. In trade-weighted nominal terms, the krona is expected to appreciate slowly over the coming years (see Figure 35).

Figure 35. Nominal exchange rate, KIX

Index, 18 November 1992 = 100



Note. The KIX (krona index) is a weighted average of the currencies in 32 countries that are important for Sweden's international trade. Since 28 March 2022, the index has been calculated against 31 countries since the Russian rouble has been excluded. A higher value indicates a weaker exchange rate. Outcomes are daily rates and forecasts refer to quarterly averages. Unbroken line refers to outcomes, broken line to the Riksbank's forecast.

Source: The Riksbank.

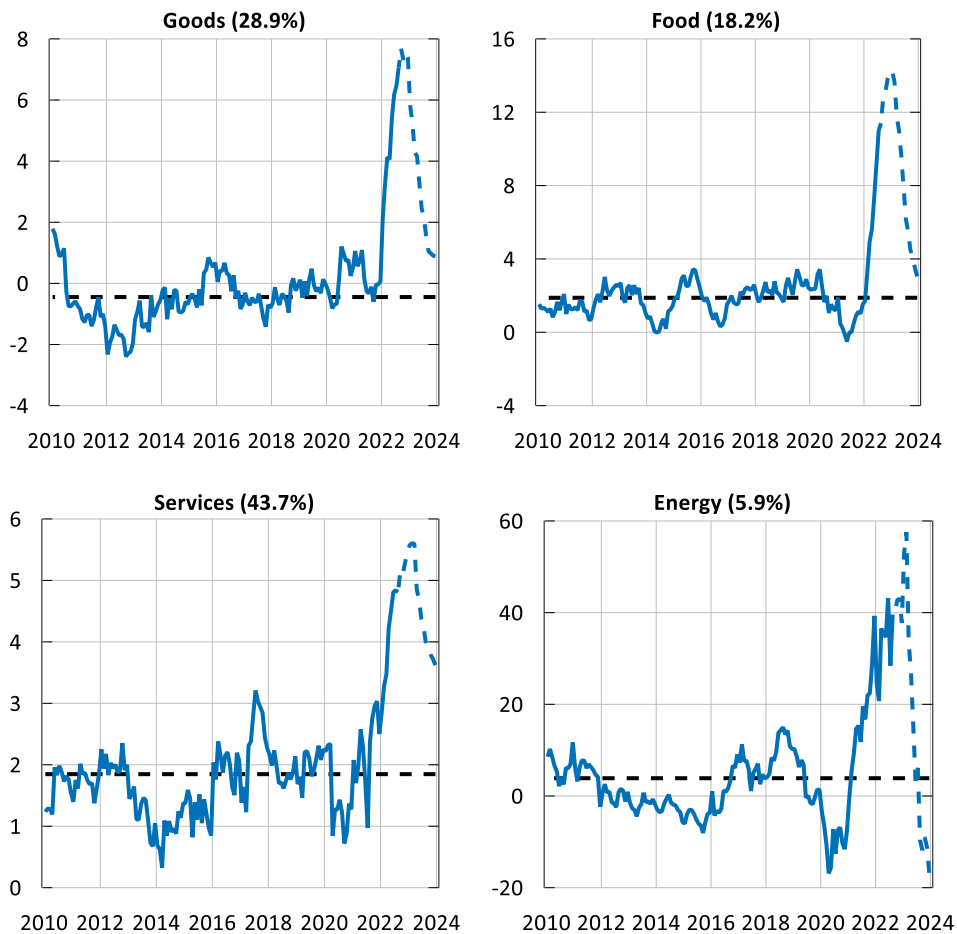
Inflation will rise further in the period ahead

Inflation has continued to rise over the summer and amounted to 9 per cent in August, while the CPIF excluding energy increased by 6.8 per cent. The Riksbank's forecast is that CPIF inflation will rise further and amount to almost 11 per cent at the start of next year. The forecast for inflation this winter is highly uncertain as the price of electricity is varying heavily due to the disruptions on the energy market in Europe. Even measured excluding energy prices, however, inflation is expected to continue rising from the current already high level, and the Riksbank's forecast is that CPIF inflation excluding energy will amount to almost 8 per cent towards the end of the year.

Prices within the sub-aggregates food, other goods and services and, in particular, energy have risen rapidly over the last year and the rates of increase are unusually high in relation to their historical averages (see Figure 36). Food and other goods and services are now contributing about 2 percentage points each to CPIF inflation, while energy is contributing almost 3 percentage points.

Figure 36. Forecasts for various sub-indices in the CPIF 2022 and 2023

Annual percentage change



Note. Goods refers to prices of goods excluding energy and food. The brackets indicate weight in the CPIF according to the Riksbank's classification. The capital stock index, which has a weight of 3.4 per cent, is not shown here. Horizontal broken lines represent mean values for the period 2000–2019. Solid line refers to outcome, broken line represents the Riksbank's forecast.

Sources: Statistics Sweden and the Riksbank.

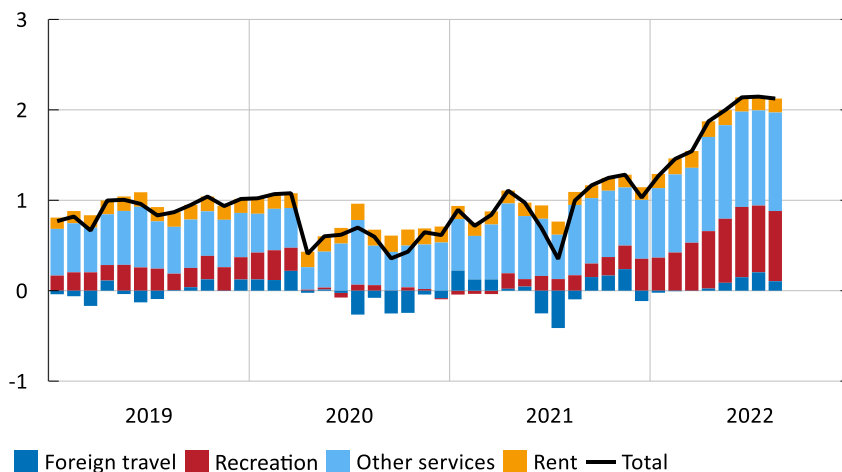
Inflation has become so high partly because the rapid economic recovery after the coronavirus crisis pushed up prices for many commodities, central input goods and transportation on the world market. Another important cause is the war in Ukraine that led to higher world market prices, particularly for cereals and other agricultural products, energy and a number of other goods. In addition, the high energy prices have had indirect effects on inflation via, for instance, rising prices for transport, fertiliser and other input goods for companies.²⁰ Strong demand has also made it possible for companies to pass on their increased production costs to consumer prices. Service prices have risen clearly in sectors such as recreation, where demand has increased very rapidly after the coronavirus crisis (see Figure 37). . Above all, energy and food

²⁰ See the article "High energy prices – how will other consumer prices be affected?" in *Monetary Policy Report*, February 2022, Sveriges Riksbank, and "Many indications that inflation will be high this year and next year" in *Monetary Policy Report*, April 2022, Sveriges Riksbank.

prices are expected to continue to rise in the coming months before the rate of increase slows down more substantially next year.

Figure 37. Contribution of service prices to CPIF inflation

Contributions to the (annual percentage) rate of increase in the CPI in percentage points



Note. The component recreation includes entertainment, accommodation and food and drinks at restaurants. The weight for services in the CPIF is 43.7 per cent.

Sources: Statistics Sweden and the Riksbank.

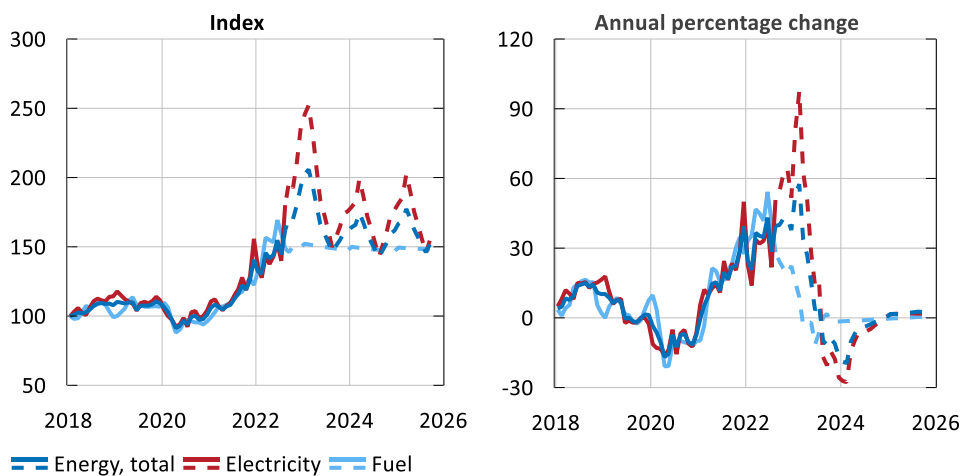
Very high electricity prices expected this winter

As the European electricity market is interconnected and dependent on the price of natural gas, which has increased substantially, the price of electricity in Sweden has risen more than expected recently (see Figure 21 and Figure 38). At the start of 2023, Swedish consumer prices for electricity are expected to be almost twice as high as in the previous year. Electricity prices had already risen to a high level last year and the expected price level this winter is therefore very high (see Figure 38).

The Riksbank bases its electricity price forecast on pricing on the forward market and, according to this, electricity prices for the winter of 2023–2024 are not expected to be quite as high as this coming winter. This is probably based on expectations of both political measures and energy investments in various parts of Europe to increase output without being dependent on Russian gas. At the same time, fuel prices have become slightly lower than expected since the monetary policy decision in June. Even if price levels remain high, the rate of increase in energy prices is expected to slow down at the start of next year. The forecast implies that the contribution from electricity prices to inflation will be restrained, thereby implying that CPIF inflation will fall back next year. However, this forecast is highly uncertain due to the energy situation in Europe.

Figure 38. Energy prices in the CPIF

Index, 1 January 2018 = 100 (left), and annual percentage change (right)



Note. In 2022, the weights are as follows, in per cent: total energy 5.9, electricity 3.2 and fuel 2.2. Solid line refers to outcome, broken line represents the Riksbank's forecast.

Sources: Statistics Sweden and the Riksbank.

Several factors indicate that the greatest price increases may be behind us

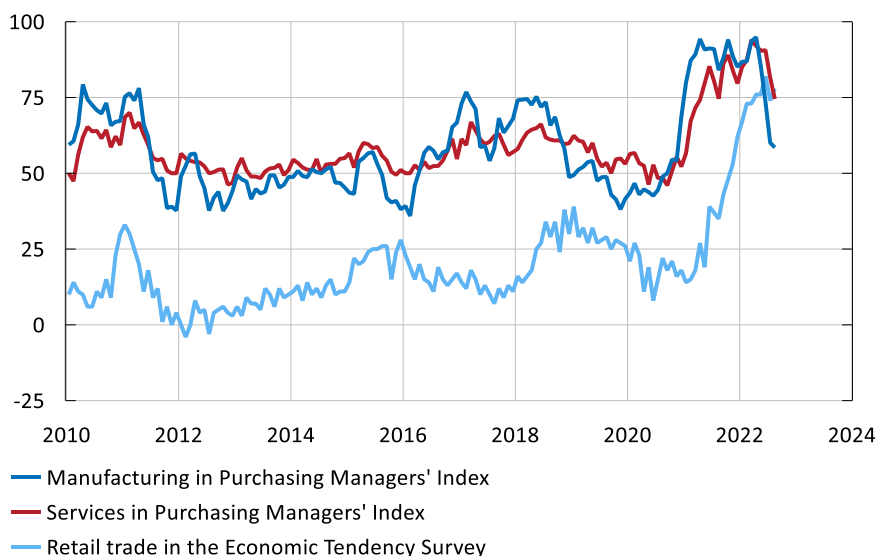
Overall, the Riksbank's forecast means that inflation will remain high over the rest of the year before gradually slowing down over 2023. This does not mean that many prices are expected to fall next year but rather that they will continue to rise at a slower rate.

The monthly rate of price increase in consumer prices has also slowed down recently (see Figure 47 and Figure 48 and the discussion in the article "What indicates that inflation will fall back next year?"). Some other indicators also suggest that the greatest price increases may be behind us. For example, some measures of global freight prices have stopped rising, while others have started falling. Several commodity prices have also gradually fallen back from their earlier extremely high levels, which were noted particularly in 2021 and after the outbreak of the war in the spring of 2022 (see Figure 45). Price plans according to the Purchasing Managers' Index have also slowed down (see Figure 39). However, price plans according to the Economic Tendency Survey remain on high levels.

Taken together, this is expected to help restrain rises in consumer prices and to contribute to the annual rate of increase in food prices, and prices for other goods and services, slowing down and starting to decline in 2023. However, the inflation forecast is very uncertain. The disruptions to the energy market in Europe could lead to a different development and this makes it particularly difficult to assess the indirect effects of high energy prices.

Figure 39. Companies' price plans

Net figures (Economic Tendency Survey) and diffusion index (Purchasing Managers' Index), per cent



Note. The question to the manufacturing industry concerns how they will adjust prices over the next few months. The question to service companies concerns how they perceive intermediate goods prices to have changed in recent months. The question to the retail trade concerns how these companies plan to adjust prices over the next three months.

Sources: National Institute of Economic Research and Silf/Swedbank.

Inflation close to target in 2024

The slowing down of inflation going forward is partly due to monetary policy continuing to be tightened in many parts of the world, which is restraining demand. In addition, supply shocks are continuing to decline gradually, at the same time as the krona exchange rate is strengthening from current levels. All in all, this implies that the price rate increase for companies' input goods will cool down. The increase in service prices, which has also been due to the rapid increase in demand for some contact-intensive services after the pandemic (see Figure 37), is also expected to decline when demand becomes lower. However, housing cooperative fees and rents are expected to increase more rapidly in the next few years, which is expected to contribute to keeping inflation up instead.

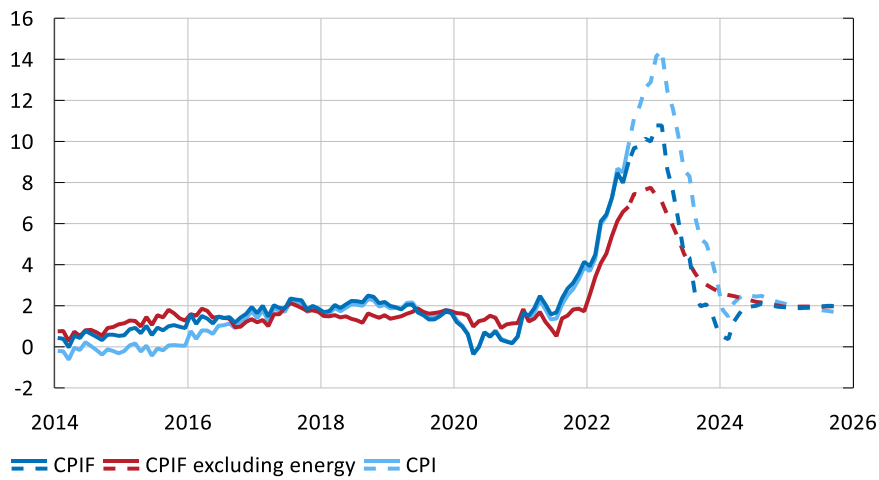
Even if short-term inflation expectations have risen clearly and are high, and wages are now increasing faster than they have done in recent years, long-term inflation expectations and wage formation still seem to be compatible with the inflation target. The Riksbank's forecast assumes that negotiations between employer and employee organisations, together with local wage formation, will result in wages increasing slightly faster in the next few years compared with recent years (see Figure 31). Above all, wage growth in 2023 is expected to be slightly higher, as wages abroad are rising faster at the same time as the high inflation is expected to bring some demands for compensation. However, the Riksbank's tightening of monetary policy and clear communication that the inflation target must be reached within a reasonable time

frame is assumed to imply that the effects of the current high inflation on wage formation will be relatively limited.

When mortgage rates rise, household interest expenditure will also increase, causing CPI inflation to be higher than CPIF inflation. However, the differences in the forecasts are greatest in the near term and, towards the end of the forecast period, CPI inflation will also be close to 2 per cent (see Figure 40).

Figure 40. CPIF, CPIF excluding energy and CPI

Annual percentage change



Note. Solid line refers to outcome, broken line represents the Riksbank's forecast.

Sources: Statistics Sweden and the Riksbank.

ARTICLE – What effect can measures to dampen the electricity price have on inflation?

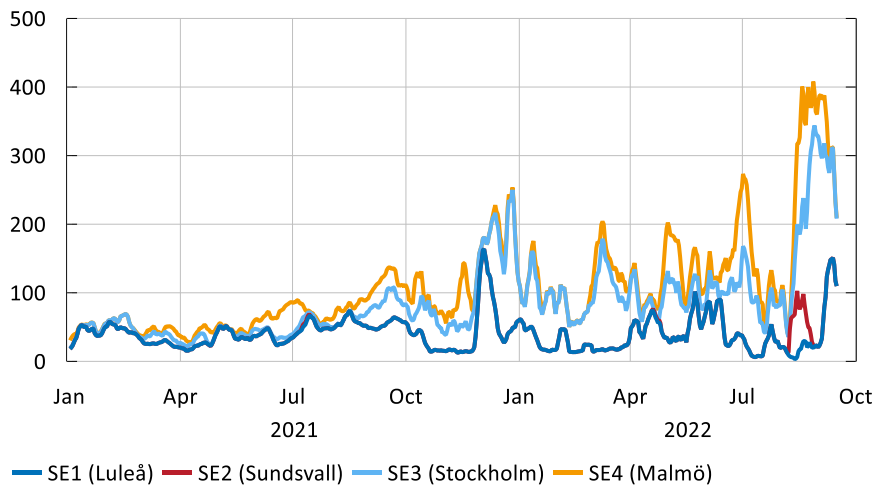
As a result of Russia severely limiting deliveries of natural gas to Europe, the price of natural gas has risen significantly. Because of the way the pricing on the European electricity market functions, this has also pushed up electricity prices to exceptionally high levels in most countries in Europe, including Sweden. Discussions are therefore now underway at EU level on measures to decouple the price of electricity from the price of natural gas to bring down electricity prices. In Sweden and other countries, there are also discussions of various proposals regarding how to protect households and companies from, or compensate for, the high electricity prices. These measures, if they are captured in Statistics Sweden's inflation calculations, can have a significant effect on the CPIF inflation measured.

Why are electricity prices so high?

Electricity prices have risen substantially around Europe in recent months and according to pricing on the electricity forward market, they are expected to continue rising and become exceptionally high during the winter. There are several reasons for this, but the dominant factor is that Russia has severely limited its exports of natural gas to Europe, which has resulted in a substantial rise in the price of natural gas. Natural gas is important for electricity production in many countries in Europe and as the European electricity market is a common one and the countries are interconnected, the high electricity prices is also "imported" to the southern half of Sweden. In the far south, the spot price of electricity was in August almost 4 times as high as it was in August last year, see Figure 41. This is despite electricity production in Sweden in principle not being dependent on natural gas and that electricity is exported from southern Sweden to other countries. However, electricity prices in northern Sweden have so far not been affected in the same way as the southern part of the country.

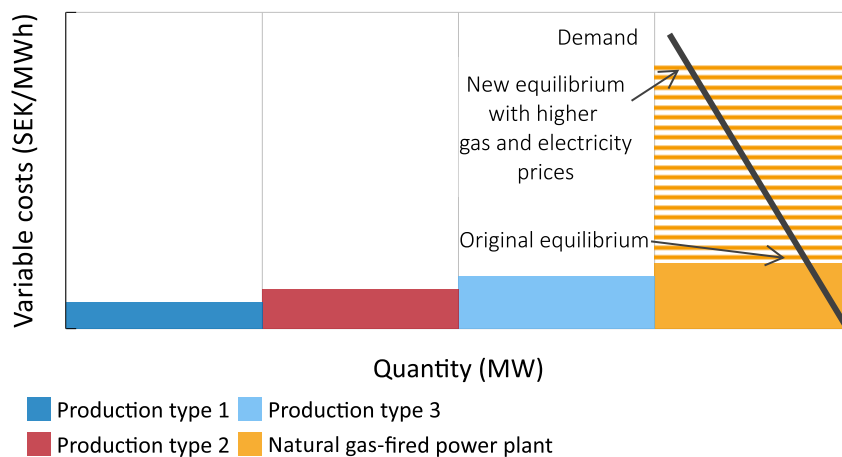
To understand why this is the case we need to understand how the electricity price is determined in the current pricing model. The EU has chosen a system where the marginal cost for the more expensive type of production, which is required to meet the demand for electricity, determines the price. Demand for electricity is not in the short term particularly price sensitive, as it is difficult to radically change one's electricity consumption in the short term. If the price of the most expensive type of production rises substantially, the price of electricity will therefore largely increase to the same extent, even if other types of production have not experienced increased costs, as illustrated in Figure 42.

Figure 41. Spot price of electricity in Sweden’s different electricity areas
EUR/MWh, 7-day moving average



Source: Nordpool.

Figure 42. Illustration of the effect on the electricity price of rising prices for natural gas



Note. The figure illustrates the variable cost of various types of production that together comprise the supply curve for electricity and how it shifts upwards when the gas price rises. Together with a relatively price-insensitive demand curve, this gives a new market equilibrium with somewhat lower electricity use but a much higher price.

Source: The Riksbank.

The European electricity market is divided into different electricity prices areas, which are linked together by electricity cables that can transfer electricity between the areas. If there are no forms of limitations in the transfer capacity between different areas, the electricity price would largely be the same everywhere. As it is often the case that in Europe as a whole the cost of electricity production in natural gas-fired power plants is the most expensive, it is this that would determine the price, disregarding limitations in the transfer capacity. This has become clear now that the price of natural gas has soared. It has led to higher electricity prices not only in areas where natural gas is an important part of electricity production, but also in other

areas, such as southern Sweden, which in principal entirely lack electricity production dependent on natural gas. The reason why northern Sweden has so far not been affected by high electricity prices to the same extent is that these areas have a large surplus of cheap electricity production, in the form of hydroelectric power and wind power, at the same time as the transfer capacity southwards is limited. When it is not possible to transfer more electricity from one area, it becomes in many ways a closed market, and the price is then set on the basis of the production cost on the local market.²¹

Comprehensive measures to reduce electricity prices expected

In many European countries, including Sweden, the electricity price for households and companies is largely following the fluctuations in the wholesale market price for electricity.²² However, in many countries there are also various elements of administratively-set prices. For instance, France has a large element of state-regulated tariffs where the rate of price increase is limited over time. At present, it is set at 4 per cent a year. The United Kingdom also has a system with a ceiling for the average household's annual cost for energy (gas and electricity). This ceiling is revised regularly, but means that rising market prices do not have a direct impact on the prices charged to households.

To alleviate to some extent the effects of the high electricity prices, many countries in Europe, including Sweden, have announced or decided on various types of support to households and companies.²³ For instance, Spain has introduced a ceiling on the price of natural gas, which has brought down electricity prices there, and Germany has launched several support packages aimed at households and companies to a total of EUR 95 billion (corresponding to around 2.5 per cent of GDP).²⁴

At EU level, the Commission is now working on measures to ensure that gas prices have less impact on electricity costs. They have proposed the introduction of a ceiling for surplus income for the companies producing electricity cheaply, rather than with expensive natural gas. This is estimated to enable income of EUR 140 billion for member states that can be used to support households and companies. They are also working on other types of reform that will further reduce the link between the price of electricity and the price of natural gas. The energy ministers from all of the EU member states will discuss the Commission's proposal on 30 September.

²¹ For further information on how the electricity market functions (in Swedish only), see for instance, <https://ei.se/konsument/el/sa-har-fungerar-elmarknaden>.

²² In Sweden, it is possible to fix the price for 1 to 3 years, but then at prices reflected by the wholesale market price.

²³ Many countries, including Sweden, have also launched state loan guarantees aimed at electricity producers that can may experience a shortage of liquid funds as the collateral they need to supply to the central counterparty for trade in electricity derivatives, in Sweden Nasdaq Clearing AB, has increased substantially as a result of the high and volatile electricity prices. These measures are not aimed at affecting the price of electricity, but at guaranteeing stability in the trade in electricity derivatives.

²⁴ For a compilation of measures in different countries, see for instance <https://www.bruegel.org/dataset/national-policies-shield-consumers-rising-energy-prices>.

In Sweden, almost all political parties have provided proposals as to how one can compensate households and companies for the high electricity prices expected this winter. However, many of the details of the proposals are still not clear. Before the election, the then government decided to return SEK 90 billion (around 1.5 per cent of GDP), which was expected to fall due to Svenska kraftnät in the form of capacity charges, to households and companies in 2022 and 2023. The capacity charges arise when there are large bottlenecks in the transfer of electricity and therefore a difference in the price of electricity in different electricity areas. The capacity charge comprises the difference in the price the buyer pays in the electricity area with a high electricity price and the price the producer receives in the electricity area with a lower electricity price. Now that the price difference between in particular southern and northern Sweden is high, at the same time as large amounts of electricity are transferred from north to south, these incomes have become large and are now calculated to total around SEK 90 billion for 2022 and 2023. These incomes are usually small, and intended to be used to strengthen the network and/or reduce network charges, but they are now way in excess of what is needed for these purposes and can therefore be returned to households and companies. It has been decided that Svenska kraftnät will present proposals for a suitable form for this support by 15 November.²⁵ Among other proposals, there is a suggestion for reducing or abolishing energy tax and VAT and introducing a price ceiling for electricity, where the state would stand for a relatively large share of the cost when the price of energy rises above a certain level. Here, too, it can be assumed that a large share of the funding will come from capacity charges from Svenska kraftnät, although other sources of funding have been discussed.

These proposals could, depending on how they are formulated, have a relatively large impact on the price of electricity paid by households and companies. Abolishing VAT, for instance, would reduce the electricity price for households by 20 per cent, all else being equal. However, reducing VAT does not lead to lower costs for companies. The effect of a price ceiling would depend on the price level and how the ceiling was constructed, but can potentially have significantly greater impact on the electricity price than can be attained by solely abolishing VAT. For instance, a proposal that households and companies should only pay 25 per cent of the cost themselves when the spot price of electricity exceeds SEK 1/KWh would reduce the costs by around 25 per cent during the winter, given the current market pricing. The percentage cost reduction will be greater (smaller) if the electricity price rises (falls) and/or the price ceiling is set lower (higher).

What will the effect be on the inflation rate measured?

The electricity price support for winter 2021-2022 was not captured in the inflation statistics, as the support was to a large degree retroactive and not directly linked to

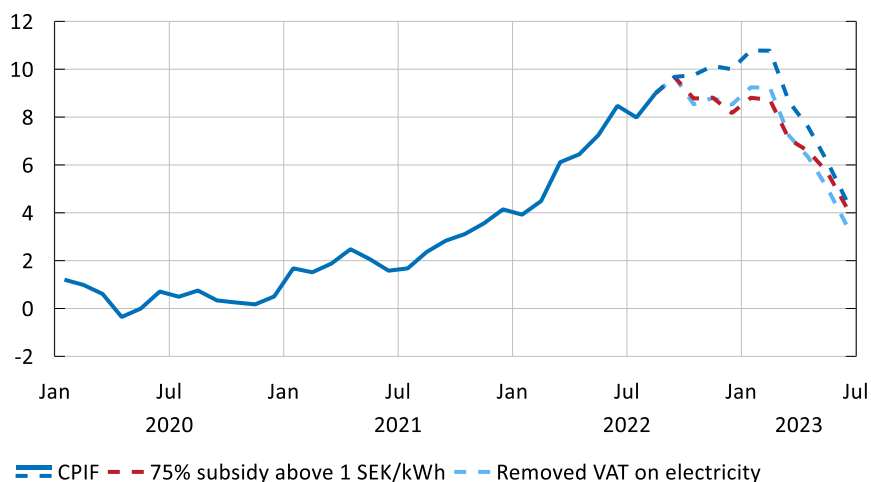
²⁵ More information on the decision can be found here (only in Swedish), <https://www.regeringen.se/regeringsuppdrag/2022/08/uppdrag-att-ansoka-om-att-anvanda-intakter-fran-overbelastning-for-att-finansiera-nodatgarder-for-konsumenter-och-foretag/>.

the price of electricity.²⁶ The way that future support is processed in Statistics Sweden's inflation statistics would depend on when the decision is taken and how the support is designed. If the support is constructed as some form of price-dampening measure, such as lower energy tax, abolished VAT or a price ceiling, it will probably be included in the CPI if the design of the support is known in advance. However, if the support is constructed as an income support, it should not be included. As it is yet unclear how the support will be designed, it has not been taken into account in the Riksbank's forecast.

To illustrate what effect the different proposals could have on inflation, Figure 43 shows two calculations based on VAT being abolished entirely and a price ceiling being introduced where the state stands for 75 per cent of the spot price of electricity above SEK 1/kWh, respectively. These should be regarded as mathematical examples, where the design of the support is not yet known, but they provide an indication of what effects might be expected. The calculations are based on the current forward pricing of electricity, similar to the Riksbank's inflation forecasts, and only capture the direct effect on the CPI from lower electricity prices for households. It is likely that electricity price support can also have indirect effects on inflation, for instance, through companies having lower production costs. But the potential effects are not captured here.

Figure 43. CPIF with various assumptions regarding electricity price support

Annual percentage change



Note. Blue unbroken and broken lines show outcome and forecast for the CPIF. The red broken line shows what the forecast would be if the state, with effect from October, stood for 75 per cent of the cost of a spot price for electricity above SEK 1/kWh. The light blue broken line shows what the forecast would be if VAT on electricity were abolished with effect from October.

Sources: Statistics Sweden and the Riksbank.

²⁶ Read more about the decision in Statistics Sweden's memorandum "Hantering av särskild kompensation för höga elpriser i KPI och relaterade mått" (only in Swedish), which was released in connection with the publication of the CPI figures for January 2022.

Given the current pricing, the example regarding a price ceiling would have the greatest effect on inflation during the winter and reduce CPIF inflation by at most around 2 percentage points. The effect is in both cases dependent on the level of the electricity price and therefore declines during the spring when the electricity price is expected to fall again. If the electricity price were to be higher (lower) than in this scenario, the effect of the electricity price support on measured inflation would be larger (smaller). In this example, the support is implemented as early as October, but regardless of when, the direct effect on the rate of inflation measured for a given month would be the same. For instance, the effect on inflation in January would be independent of whether the support were introduced directly, or whether it was delayed until December.

ARTICLE – The economic-policy framework facilitates a return to the target

Inflation has been unexpectedly high for longer than expected. It is now at levels reminiscent of those during the 1970s and 1980s. The start of the internationally high inflation then, with soaring energy prices resulting from unease and production disruptions in the Middle East, was not unlike the situation today. However, compared with that period, the conditions for returning inflation to low levels are much better today. The Riksbank now has an inflation target and can act to dampen inflation, and the long-term inflation expectations are more firmly anchored. Moreover, central banks have in general reacted earlier and in a more coordinated manner than in the 1970s, when the inflation impulse from high oil prices was allowed to spread throughout economies and affect long-term inflation expectations.

Inflation higher and more protracted than expected

Inflation has recently become much higher and been high during a longer period of time than many, including the Riksbank, had expected. This is largely due to international factors that have been difficult to predict, such as the pandemic and the Russian invasion of Ukraine.

The pandemic has caused sharp fluctuations in economic activity across the world. Demand fell dramatically in spring 2020, but the recovery was also very rapid. In the United States and Europe, major fiscal and monetary policy measures were implemented to support households and companies, which contributed to the rapid upturn in both demand and inflation.

During 2021, the oil price rose gradually as a result of increased demand and production limitations. At the same time, deliveries of natural gas from Russia were unusually small, which had a substantial effect on electricity prices in Sweden and the rest of Europe. The war in Ukraine further worsened the problems. Energy prices have contributed to higher inflation, partly via a direct effect, as prices of fuel and electricity are included in the usual measures of inflation. But there are also delayed, or indirect, effects of the price increases, which are more difficult to measure. An example is when higher fuel costs lead to more expensive transport and thus to higher prices for the products being transported. Companies have also been affected by bottlenecks in transport, higher commodity prices and a shortage of various input goods.

The fact that inflation has increased is thus largely due to supply factors, but the price increases on energy and commodities have also spread to other prices in the economy. The expansionary fiscal and monetary policy conducted in many countries in connection with the pandemic has stimulated demand and contributed to the recovery after the pandemic being unexpectedly strong. In this environment, companies have had the opportunity to a large extent to pass on the large cost increases caused by supply disruptions.²⁷ As the forces that have pushed inflation upwards have been unexpectedly strong and lasting, the forecasting errors have been substantial.²⁸

Inflation is at present at levels reminiscent of those in the 1970s and 1980s, when the average rate of inflation was 8.3 per cent. The purpose of this article is to illustrate how the conditions for once again bringing down inflation to a level in line with the target differ from those during this period.

Similarities to rise in inflation in the 1970s

The start of the internationally high inflation in the 1970s and 1980s was not totally dissimilar to the situation today. One important circumstance was that energy prices increased substantially in the 1970s as a result of geopolitical unease and production disruptions in the Middle East, in around the same way as energy and commodity prices have now been pushed up in the wake of the pandemic and the war in Ukraine.

An important explanation for the lastingly high inflation during that period was the expectations that economic agents had of inflation. If households and companies expect inflation to be high going forward, this will affect price setting and wage formation in the economy. The inflation that is then realised confirms expectations and in its turn affects the updated expectations of future inflation. The high inflation will thus become a self-generating process.

One reason why the high inflation was built into expectations among households and companies was that it was not sufficiently counteracted by the overall economic policy, which became systematically too expansionary.

At that time, Sweden had a fixed exchange rate. The idea was that this would have a disciplining effect on price setting and wage formation, but the domestic inflation trend nevertheless became too strong. If Swedish prices and wages rose faster than those abroad, economic agents expected that the resulting cost crises and unemployment would be solved by writing down the value of the krona, that is, through deval-

²⁷ There was a discussion in the June Monetary Policy Report as to whether inflation had been pushed up as a result of companies having increased their prices over and above the cost increases. Economic activity will weaken going forward, so in the cases where companies have historically increased their margins it will be more difficult going forward. The Government has recently given the National Institute of Economic Research the task of analysing whether prices have changed more than can be motivated by companies' recently increased costs. The National Institute of Economic Research shall report the task by 5 December 2022.

²⁸ For a more detailed analysis of the factors that have affected inflation over the past year and the Riksbank's forecasting errors, see J. Johansson, M. Löf, P. Stockhammar and I. Strid (2022), "Vad förklarar Riksbankens prognosfel för inflationen?" (in Swedish only) *Staff memo*, June, Sveriges Riksbank.

uation. The recurring devaluations then fulfilled the high inflation expectations. Moreover, wage formation did not function well, because of a lack of coordination between the social partners.

As the aim was to hold a fixed exchange rate, there was no real possibility to dampen the inflation trend through interest rate increases. Nor was fiscal policy sufficiently tight. This economic environment was a breeding ground for lastingly high inflation. While the inflation trend in, for instance, the United States was broken in connection with a change in monetary policy at the beginning of the 1980s, it was not broken in Sweden until the crisis in the early 1990s, and the changes in economic policy that this brought about.

Better institutional settings now

The framework introduced after the 1990s crisis has proved to work well with regard to managing crises, such as the global financial crisis just over ten years ago. When it comes to correcting high inflation, however, they are now really being put to the test for the first time. However, the conditions today are different from those in the 1970s and 1980s. Unlike then, we now have a floating exchange rate and an inflation target that the Riksdag has given the Riksbank the task of attaining. This is very important for expectations. It was difficult to predict and to counteract that global inflation would rise so quickly and so much. However, the expectations of inflation a few years ahead appear relatively well in line with the target. Although they do appear to be currently somewhat over 2 per cent, in the light of the very high actual inflation they must be regarded as well anchored. While there was no really credible anchor for inflation during the high inflation of the 1970s and 1980s, we do have one today.

The fiscal policy framework that was launched after the 1990s crisis has meant that Swedish public finances are now in good condition. This has increased the market's confidence in Sweden's ability to keep its accounts in order and fiscal policy is no longer feared, as was the case during the 1970s and 1980s, to be a contributing factor to sustained high inflation.

Wage formation also functions much better now than was previously the case, much as a result of the Industrial Agreement and the inflation target. It functions as a built-in brake in the system and reduces the risk of price-wage spirals, which is important both to stabilise fluctuations in economic activity and to keep inflation expectations close to the target.

To summarise, the conditions are good for avoiding prolonged high inflation and bringing inflation back to the target relatively soon. It is a major advantage that the frameworks are now well-designed, but it also requires that economic policy decision-makers and other agents act within them. The Riksbank's task, like that of other central banks, is to bring inflation back to the target and to prevent the high inflation being incorporated into the expectations of economic agents. The interest rate increases required will be noticeable for households and companies. But if monetary

policy acts in a way that prevents inflation from becoming entrenched in the expectations, as was the case in the 1970s and 1980s, the Swedish economy will benefit in the long term.

The cost of safeguarding the inflation target will also be lower when economic agents interact in a good way. In a situation with declining economic activity, but at the same time too high inflation, fiscal policy measures facilitate for especially hard-hit groups. Although this can mean that the policy rate needs to be raised more to be able to attain the inflation target, this type of policy mix may nevertheless be justified from a socio-economic perspective. The important thing is that fiscal policy does not entail broad demand stimulus, which would clearly make it more difficult to attain the inflation target, would risk contributing to long-term inflation expectations being adjusted upwards and thus mean that the policy rate needed to be raised substantially. Wage formation can facilitate by maintaining a continued long-term perspective based on the high inflation being temporary and on inflation soon returning to the target.

Important to attain the inflation target

Today's high inflation has created challenges for the Riksbank and other central banks that they have not previously faced. At the same time, there are good conditions for managing these challenges. Central banks have since long had the task of keeping inflation low and stable and the long-term inflation expectations are better anchored now than during earlier periods of high inflation. Combined with factors that have temporarily pushed up inflation declining in significance, this indicates that inflation will relatively soon begin to fall towards the target (see the article "What indicates that inflation will fall back next year?").

The long period with low and stable inflation has been beneficial for the Swedish economy. It is therefore important to safeguard confidence in the inflation target by not letting the high inflation affect economic agents' long-term inflation expectations. If inflation does not develop as the Riksbank is now forecasting, but shows signs of remaining high, monetary policy will be further adjusted.

ARTICLE – What indicates that inflation will fall back next year?

Several factors indicate that inflation will fall relatively quickly during the forecast period. One reason is that the central banks now are acting forcefully in many regions to dampen the effects of inflation impulses. Moreover, the factors that have been pushing up the general price level for some time are expected to gradually wane in significance. This applies, for instance, to commodity prices, which have already fallen. It should gradually have an impact on consumer prices, too. However, there is significant uncertainty surrounding energy prices at present, although the forward price market indicates a downturn. If energy prices instead continue to rise, this can dampen the downturn in inflation and at the same time mean that Swedish and international economies develop more weakly.

A simplified intellectual framework

The purpose of this article is to explain why there are now reasons to expect that inflation will not become entrenched at the current high level, but will relatively quickly fall back. Inflation is currently at 9.0 per cent, but according to the Riksbank's forecast is expected to fall back to around 2 per cent in 2024, given that monetary policy is tightened in the way indicated in the forecast. A simplified intellectual framework that makes it easier to reason regarding inflation in the Swedish economy going forward could look like this:

Inflation can be divided up into different parts. One is *international price increases on certain products*, such as energy and some commodities of food. These are often affected by supply factors, such as the war in Ukraine, but also by simultaneous and expected future demand.²⁹ This is actually a question of changes in the price of certain products in relation to the price of others.

Another factor is *international inflation* in the broader sense. In connection with the pandemic, many countries, and not least the United States, launched extensive stimulus programmes. This contributed to demand in the economies increasing and meant that the inflation impulse from the higher prices for energy and other commodities spread more easily to other parts of the economy. High international inflation affects Swedish inflation via, for instance, higher import prices.

A third factor is the inflation that is primarily generated on the *Swedish domestic markets*. One example is price increases in the service sector. It is this part of inflation

²⁹ Expectations of demand can affect the price of oil, for instance.

that the Riksbank's monetary policy is mainly able to affect, partly by affecting demand in the economy and partly through expectations of future inflation. If confidence in the inflation target is maintained, this will also contribute to anchoring expectations of the Swedish labour market and prevent price and wage spirals.

The Riksbank is not able to directly affect the first two parts. On the other hand, the *impact* of international price increases and high inflation abroad on inflation in Sweden is affected by monetary policy via its effects on the exchange rate. And price increases on the world market for certain products as a result of disruptions on the supply side, such as different types of bottleneck, can be dampened and reversed if the bottlenecks are resolved.

International inflation is affected by the central banks' monetary policy response more generally. The world's central banks have reacted forcefully and roughly simultaneously during this upturn in inflation. The fact that policy rates in general are on the way up contributes to keeping inflation down globally.

Energy prices began to rise from low levels as early as the second half of 2020 and over the past one and a half years the rate of price increase has been exceptionally high. During 2021 and especially 2022, many food prices and prices of other goods have also contributed to the rise in inflation. Last year, some service prices also began to be raised more than usual. Inflation has risen much faster than expected and the upturn is broad. So what indicates that these price components will increase more slowly going forward?

Indicators point to the rate of price increase slowing down

For inflation to be as high in 2023 requires prices to increase as quickly in the coming twelve months as they have over the past year. For inflation to become permanently higher thus requires that prices not only become higher, but also follow a steeper trend than before. One can say that price formation in the latter case, with permanently rising inflation, needs to change more fundamentally.³⁰ In the Riksbank's forecast, inflation instead declines relatively rapidly. This is not because prices are expected to cease rising, but because they are not expected to rise as much as they have done over the past year. This in turn is because the effects of certain supply factors will wane and inflation abroad will slow down. Further, it is assumed that monetary policy will be adapted to avoid a domestically-generated price-wage spiral.

The electricity price in Sweden, which began to rise clearly as early as last year, has now attained exceptionally high levels. The development in prices can be explained by a number of different supply factors, but the main explanation is that the European electricity market is tightly interwoven and several countries on the continent are

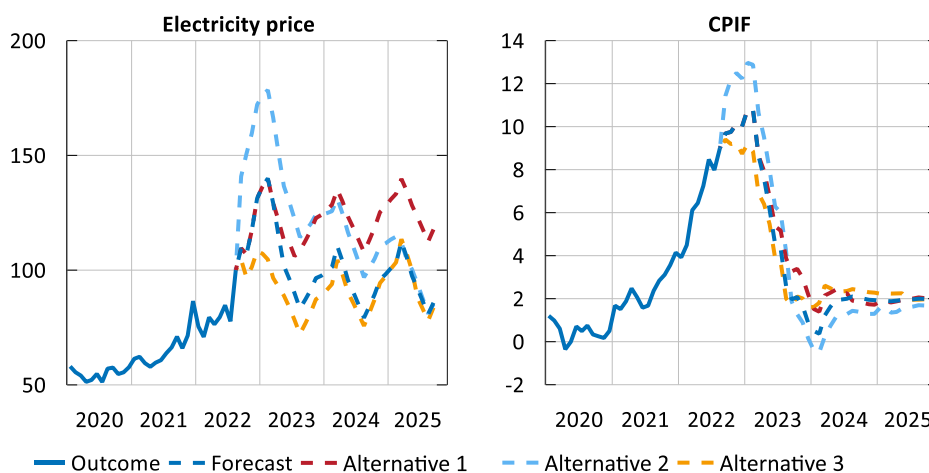
³⁰ For a discussion on this, see the fact box "Link between price level and inflation rate" in *Monetary Policy Report*, September 2021. Sveriges Riksbank.

strongly dependent on natural gas.³¹ At the same time, the oil price has fallen and fuel prices have become somewhat lower than expected, compared with the assessment in the June Monetary Policy Report. This development can also be explained by internationally-determined supply and demand factors. Even if price levels remain high, the rate of increase in energy prices will decline at the beginning of 2023, in line with pricing on the forward market (see Figure 38). This in turn means that energy prices will gradually contribute less to the rate of inflation with effect from spring 2023.

Uncertainty over the development of the electricity price is substantial at present. The current crisis in the energy market is an example that can lead to an entirely different development than is indicated by forward prices at present. Figure 44 below shows the effect on CPIF inflation if the electricity price develops according to three alternative scenarios. In alternative 1, electricity prices are assumed to be in line with the main scenario up to the end of 2023 Q1. After that, the electricity price is expected to remain relatively constant for the remainder of the forecast period, with the exception of seasonal variations. In alternative 2 the price of electricity rises much faster up to the first quarter of 2023, and then attains the same level as in the main scenario towards the end of the forecast period. In alternative 3, the electricity price does not rise as quickly during the coming six months and therefore lies relatively still during the remainder of the forecast period. The figure also shows the Riksbank's forecast. In all cases, apart from alternative 3, CPIF inflation rises further in 2022, but peaks at different levels. Similarly, inflation dampens in 2023, but the lowest level at the start of 2024 differs in the different alternatives.

Figure 44. Effects on CPIF inflation under various assumptions of the electricity price.

Index, 1 August 2022 = 100 (left), and annual percentage change (right)



Note. Blue unbroken line refers to outcome, broken line represents the Riksbank's forecast.

Sources: Statistics Sweden and the Riksbank.

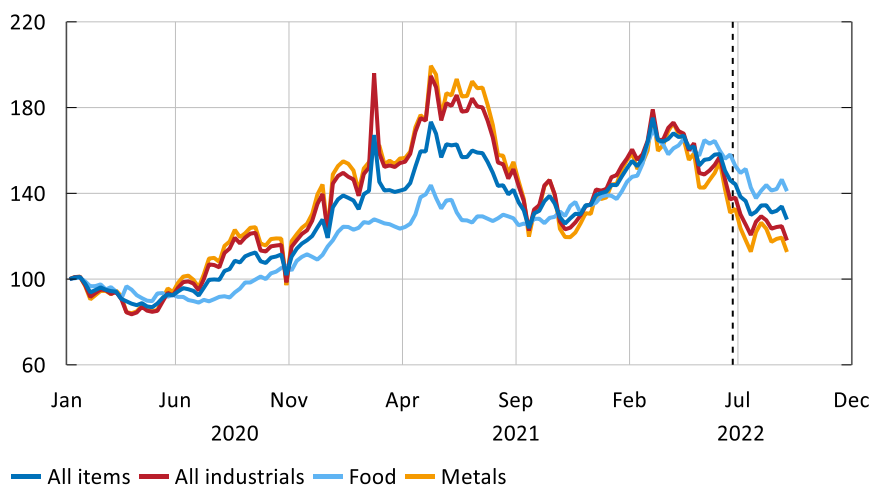
As for energy, prices of food have been affected by more internationally determined supply factors, such as poorer harvests for certain commodities as a result of extreme

³¹ For a discussion of why electricity prices are so high, see the article "What effect can measures to dampen the price of electricity have on inflation?" in this report.

weather, such as droughts in parts of Europe, higher costs for energy, among other things, and Russia's invasion of Ukraine. The rate of increase in food prices is expected to rise further for some months before slowing down at the beginning of 2023 (see Figure 36). The food-related commodity prices, such as prices of cereals, have fallen quite clearly and the percentage monthly changes in producer prices of food have also been somewhat subdued, although they are still larger than normal (see Figure 45 and Figure 46). The fact that commodity prices are falling and producer prices are now increasing at a somewhat slower pace should mean that consumer prices can also be expected to increase more slowly going forward, although this may take some time.³² However, as with the assessment of energy prices, there is greater uncertainty than usual. This especially applies to the scope of the indirect effects if the disruptions to the energy market become more prolonged and more climate-related disruptions occur. Many Swedish farmers and food producers already have squeezed margins. Further increases in electricity and fuel prices will leave a clear mark on operations and pricing.

Figure 45. Commodity prices

Index, 07 January 2020 = 100



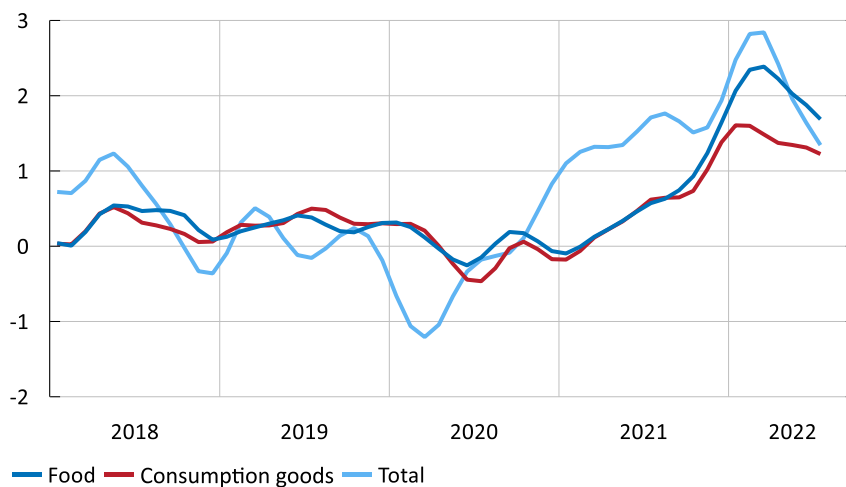
Note. The broken line marks the time of the monetary policy meeting in June.

Source: The Economist.

³² Producer prices can be tied by contracts, which can in turn delay the impact on consumer prices. See, for instance, an article in Dagens Nyheter newspaper on 1 September (only in Swedish), <https://www.dn.se/ekonomi/globala-matpriserna-faller-tillbaka-pa-normala-nivaer/>.

Figure 46. Producer prices

Smoothed percentage monthly changes



Note. This shows monthly percentage changes in the estimated trend cycle for the different series. The trend cycle was produced in the seasonally-adjusted programme X12 and can be regarded as a smoother seasonally-adjusted series, where the time series' random term has been filtered out. All series refer to ITPI (domestic supply price index).

Sources: The Riksbank and Statistics Sweden.

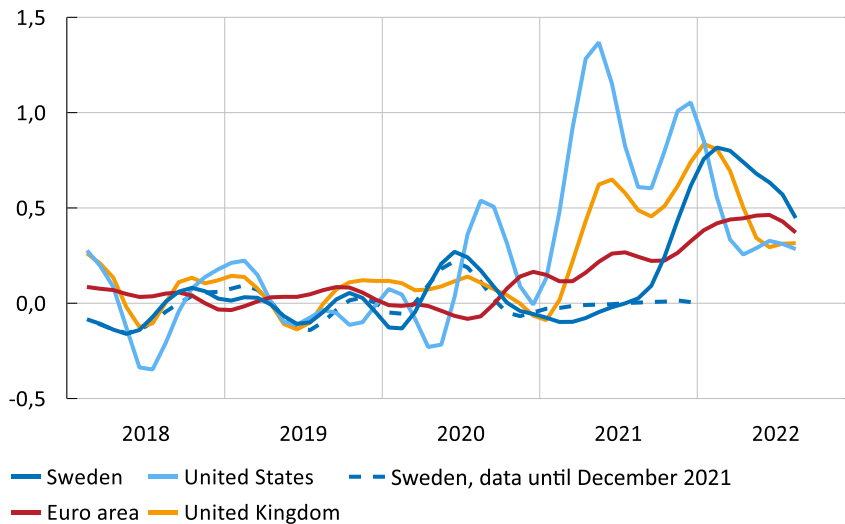
Figure 47 shows smoothed percentage monthly changes for goods prices excluding food in various countries and regions. The results indicate that goods prices began to increase more rapidly, compared with the previous years, in the United States and the United Kingdom as early as 2021. In Sweden, the monthly price changes began to increase at a somewhat later stage and the upturn was from very low levels (see Figure 47). Such turning points are often very difficult to date in real time. The smoothing method itself, which is rough and gives a simplified picture, can also be misleading when trying to interpret the historical development, especially the last observations. For example, prices on goods in Sweden appear to rise relatively quickly as early as the second half of 2021 according to the smoothed series (see unbroken blue line in Figure 47). However, if one only uses the data available when the Monetary Policy Report was published in February, the method does not capture any turning point at all during the past year (see broken blue line in Figure 47).

The upturn in goods prices can probably be explained by certain supply factors, such as higher transport costs and a shortage of input goods, combined with price impulses linked to strong international demand. One can say that it is a mixture of part 1 and 2 of inflation according to the simplified intellectual framework above. Although the results should be interpreted with caution, they indicate that the monthly price increases have slowed down, especially in the United States and United Kingdom, but also in Sweden. If no further supply shocks arise, this should be an indication that the largest price adjustments on goods may already have been made. But the risk of

higher energy prices, and a new wave of cost increases and indirect effects, makes his assessment uncertain.³³

Figure 47. Percentage monthly changes for goods prices

Smoothed percentage monthly changes



Note. This shows monthly percentage changes in the estimated trend cycle for the different series. The trend cycle was produced in the seasonally-adjusted programme X12 and can be regarded as a smoother seasonally-adjusted series, where the time series' random term has been filtered out.

Sources: Statistics Sweden and the Riksbank.

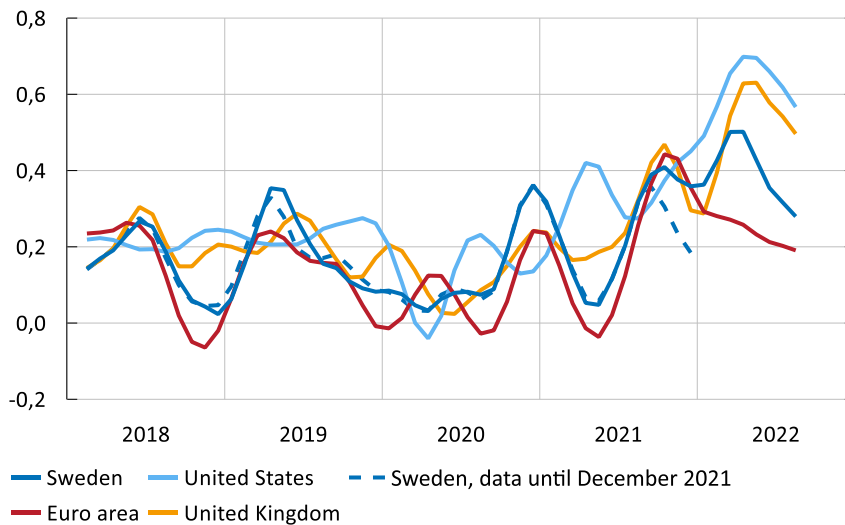
The pandemic has caused service prices to fluctuate more than usual. When the various restrictions were introduced, they held back price developments on services, such as hotels and restaurants. Once the restrictions were eased, it meant that demand for services increased rapidly and prices rose. Several companies have also experienced difficulties in re-recruiting staff or recruiting new staff, as people have changed branch or retrained during the pandemic. The sector has also faced higher costs in general.³⁴ However, service prices are not expected to continue rising as quickly going forward. For one thing, lower demand, together with tighter monetary policy, is expected to contribute to a lower rate of price increase going forward. Costs are not expected to continue rising as quickly going forward, either. As with goods excluding food, the monthly price increases on services in the consumer channel have slowed down somewhat in the United States and the United Kingdom, and this is even more clear in Sweden and the euro area (see Figure 48). All in all, there are indicators pointing to prices not rising as much as they have done recently.

³³ The Riksbank has previously analysed how Swedish consumer prices have developed over time in relation to the corresponding prices abroad. See the article, "Many indications that inflation will be high this year and next year" in *Monetary Policy Report*, April 2022, Sveriges Riksbank.

³⁴ See, for instance, "As soon as you find one component, you realise you're missing another", *Riksbank Business Survey*, September 2021, Sveriges Riksbank.

Figure 48. Percentage monthly changes in service prices

Smoothed percentage monthly changes



Note. This shows monthly percentage changes in the estimated trend cycle for the different series. The trend cycle was produced in the seasonally-adjusted programme X12 and can be regarded as a smoother seasonally-adjusted series, where the time series' random term has been filtered out.

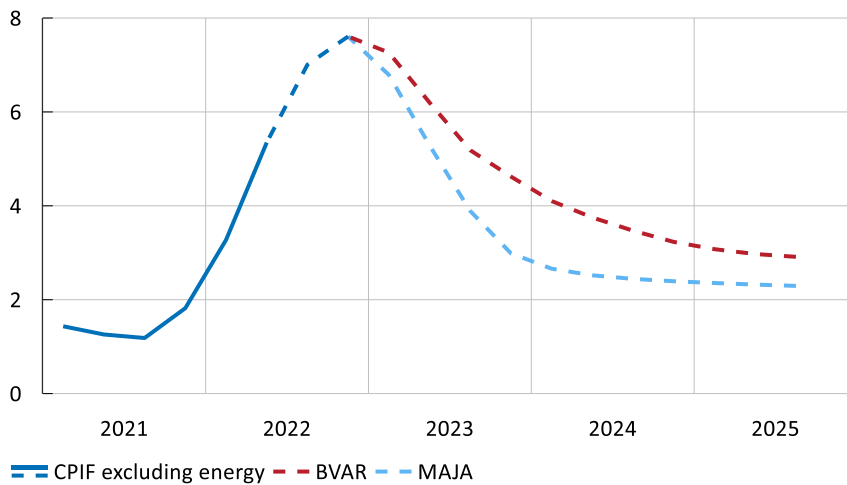
Sources: Statistics Sweden and the Riksbank.

The assessment that inflation will fall next year is supported by projections from various models usually used by the Riksbank in its forecasting work. Figure 49 shows two such model forecasts, which both start out from the Riksbank's assessment of inflation and real economic developments in Sweden and abroad for this year. The model named MAJA indicates that inflation will fall back somewhat faster, while the time series model BVAR generates a forecast that is higher during the forecast period.³⁵ According to MAJA, the downturn in inflation is largely explained by negative supply shocks, which have also contributed to pushing up inflation, gradually waning next year. Long-term inflation expectations that fall back relatively slowly according to the model, together with a weaker exchange rate, will instead contribute to slowing down the downturn in inflation. In the BVAR model it is primarily the gradually lower inflation abroad that is driving the downturn in inflation in Sweden. The fact that the time series model indicates a higher level of inflation than MAJA going forward is because the estimated parameters in BVAR are affected to a greater extent by the recent rapid upturn in inflation.

³⁵ MAJA is a so-called dynamic stochastic general equilibrium model that takes into account Sweden's international dependence, while BVAR is a simpler time series model. BVAR includes 8 domestic variables (unemployment, employment, GDP, wages, the CPIF, the CPIF excluding energy, the real exchange rate and the policy rate) together with 3 international variables (trade-weighted GDP, inflation and the policy rate). The projection in the BVAR model is based on exogenous forecasts for international variables. The forecasts of international developments were thus produced outside of the actual model in this case. For a presentation of MAJA see V. Corbo, and I. Strid, (2020), "MAJA: a two-region DSGE model for Sweden and its main trading partners", *Working Paper* No. 391, Sveriges Riksbank and for BVAR see J. Iversen, S. Laséen, H. Lundvall, and U. Söderström, (2016), "Real-Time Forecasting for Monetary Policy Analysis: The Case of Sveriges Riksbank", *Working Paper* 16/318, Sveriges Riksbank.

Figure 49. Model forecasts for the CPIF excluding energy

Annual percentage change



Note. Blue unbroken and broken lines refer to the Riksbank's forecasts for the CPIF excluding energy. The model forecasts are based on the assessment up to the end of 2022 Q4.

Sources: Statistics Sweden and the Riksbank.

The Riksbank forecasts that inflation will fall relatively rapidly next year

All in all, several factors indicate that inflation will fall relatively rapidly as early as next year. This is not an expression of prices ceasing to rise, but that they are not expected to rise as much as they have done over the past year. This in turn is a combined result of the effects from certain supply factors waning, inflation abroad dampening and of monetary policy being adapted to avoid a domestically generated price-wage spiral.

However, there is considerable uncertainty over the forecasts at present. One example is developments in energy prices, where the forward market indicates a downturn. If energy prices instead continue to rise, this could lead to a new wave of cost increases and indirect effects, which in turn can dampen the fall in inflation.

ARTICLE – Higher interest-rate sensitivity in the Swedish economy

Interest-rate sensitivity in the Swedish economy has shown a trend increase over the past thirty years. Households have borrowed increasing amounts for their housing purchases over time. Moreover, the interest-rate fixation period on mortgages is short. When the policy rate is raised, the cash flow of households with loans is affected, at the same time as lower housing prices limit the borrowing capacity for mortgagors. Among companies, it is primarily those in the commercial property sector that have experienced an increase in indebtedness and sensitivity to interest rates.

The Riksbank's analyses show that the increased indebtedness among households has led to monetary policy now having a greater impact on demand in the economy. The policy rate does not need to be raised as much to have the same tightening effect on the economy as before, which is an important aspect to take into account in the monetary policy decisions.

High indebtedness increases sensitivity to interest rates in the economy

According to traditional economic theory, monetary policy impacts demand in the economy mainly by affecting the real interest rate and the balance between consumption now and in the future. The traditional monetary policy analysis is based on a representative household, but more modern analysis has increasingly emphasised other channels and the fact that households differ. Put simply, one can imagine two types of household, one consisting of borrowers and one of savers. Borrowers can be assumed to have a higher propensity to consume than savers, as a result of credit constraints, which means that their consumption is affected more by changes in income and interest rates. When the interest rate changes, a transfer of income occurs between borrowers and savers – a so-called *cash flow effect*.³⁶ The fact that total consumption is affected is due to the borrowers' propensity to consume being higher. If the borrowers are also highly indebted and have mortgages with short interest-rate fixation periods, the effects will be greater and come sooner. As the

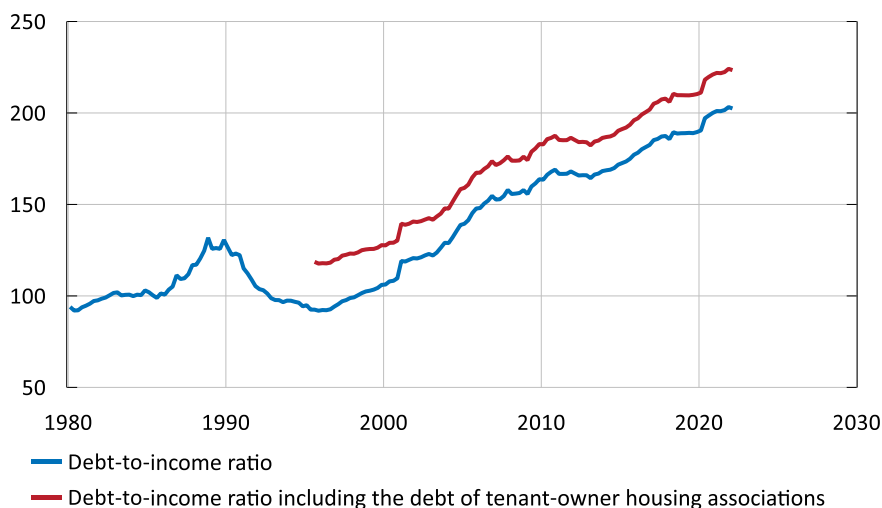
³⁶ For a description and estimate of cash flow effects on Swedish data, see for instance P. Gustafsson, M. Hesselman and B. Lagerwall (2017), "How are household cashflows and consumption affected by rising interest rates?", *Staff memo*, December, Sveriges Riksbank and M. Flodén, M. Kilström, J. Sigurdsson and R. Vestman (2021), "Household Debt and Monetary Policy: Revealing the Cash-Flow Channel", *The Economic Journal*, 131 (636).

interest rate affects housing prices, it can also affect the scope of households to consume by borrowing against their home as collateral – a so-called *loan collateral effect*.³⁷ This effect will be greater if the borrowers have a high level of debt in relation to the value of the home.

The Riksbank has long been analysing the increased risk sensitivity in the Swedish economy, partly because it impacts the effects of monetary policy.³⁸ Debts among Swedish households have shown a trend increase for decades (see Figure 50). Households living in tenant-owned housing also have indirect debts via the loans taken out by their housing cooperatives. The Riksbank has also repeatedly pointed out the risks linked to the increased debts. They are high from both a historical and an international perspective.

Figure 50. Household debt

Percentage of annual disposable income



Note. Households' total debts as a share of their disposable incomes, totalled over the past four quarters. Prior to September 2010, the tenant-owners' associations' debts were calculated on the basis of loans from housing finance institutions.

Sources: Statistics Sweden and the Riksbank.

Compared with many other countries, the interest-rate fixation period is very short in Sweden. The percentage of mortgages with variable interest rates rose from below 10 per cent in 1996 to around 60 per cent in 2015. Even though the percentage of fixed-rate loans among total loans has increased somewhat recently, around 80 per cent of the loans have a remaining interest-rate fixation period of 2 years or

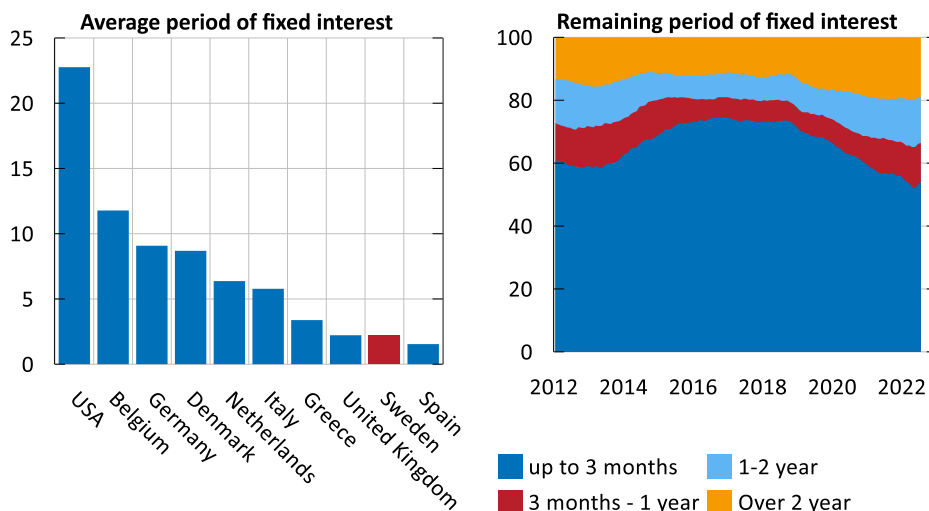
³⁷ See for instance, K. Walentin (2016), "Housing Collateral and the Monetary Transmission Mechanism," *Scandinavian Journal of Economics*, 116 (3).

³⁸ See J. Johansson, B. Lagerwall and H. Lundvall (2011), "Larger share of variable mortgages – how does this affect the impact of monetary policy?", The Riksbank's inquiry into risks on the Swedish housing market, Sveriges Riksbank; the article "Households' sensitivity to interest rates", in *Monetary Policy Report*, October 2014, Sveriges Riksbank; P. Gustafsson, M. Hesselman and B. Lagerwall (2017), "How are household cashflows and consumption affected by higher interest rates?", *Staff Memo*, December, Sveriges Riksbank; the article "How are households affected by rising interest rates?", in *Monetary Policy Report*, December 2017, Sveriges Riksbank and the article "How are household cashflows and consumption affected by rising interest rates?", in *Monetary Policy Report*, December 2018, Sveriges Riksbank.

less (see Figure 51). This means that changes in interest rates have a greater and faster effect on household demand in the economy. And this applies – both compared with most other countries and compared with earlier periods when the Riksbank changed the interest rate.

Figure 51. Average interest-rate fixation period in various countries and remaining interest-rate fixation period for households on total loans from MFIs

Number of years (left) and per cent (right)



Note. The values are calculated as weighted mean values of the interval average, see C. Badarinza, J.Y. Campbell and T. Ramadorai (2018), "What Calls to ARMs? International Evidence on Interest Rates and the Choice of Adjustable-Rate Mortgages", *Management Science* 64. The averages refer to the period 2003-2013 for most countries. The average interest-rate fixation period for Sweden is calculated using the variable interest rate defined as 3 months and two further intervals (3 months to 5 years and more than 5 years) for calculation for Sweden see U. Holmberg, H. Janzén, L. Oscarius, P. van Santen, and E. Spector (2015), "An analysis of the interest-rate fixation period for Swedish mortgages", *Economic Commentaries*, no. 7, Sveriges Riksbank.

Sources: Badarinza et al. (2018), Statistics Sweden and the Riksbank.

Companies' debts have also increased over time. Figure 52 illustrates the effect of higher interest rates on the Swedish household and corporate sectors. With regard to the corporate sector, it is difficult to forecast the interest-to-income ratio, as companies borrow through more sources and use interest rate derivatives. Estimates by the Riksbank last spring indicated that an upturn in general interest rates of 3 percentage points would mean the interest-to-income ratio was back at around the levels prevailing in 2012, when the policy rate was between 1 and 2 per cent. This indicates that companies on the whole are not very sensitive to interest rates.³⁹ One should bear in mind that the denominator in companies' interest-to-income ratio, that is, their earnings, can fall in a deteriorating economic situation and contribute to interest-to-

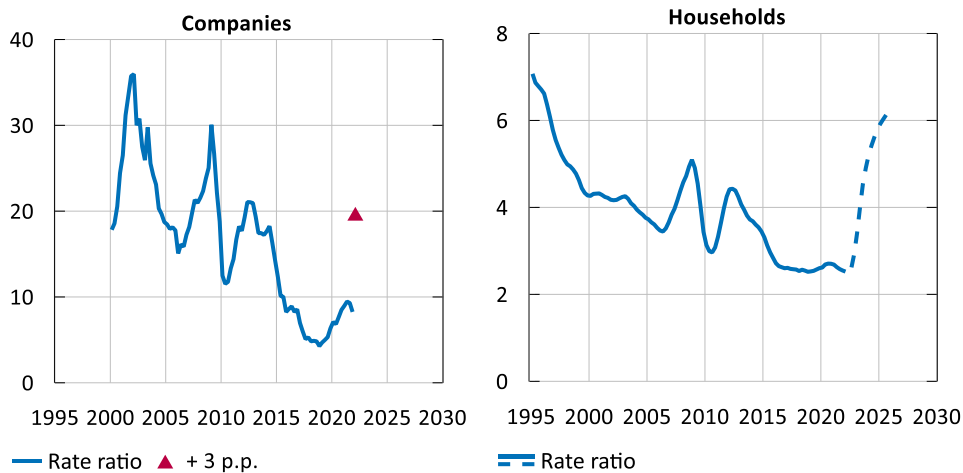
³⁹ See *Financial Stability Report 2, 2022:1*, Sveriges Riksbank.

income ratios rising more than is shown in Figure 52.⁴⁰ There are also major differences between companies and sectors. As we will see further on, commercial property companies are particularly sensitive to interest rates.

The right hand image in Figure 52 shows that when the policy rate rises in accordance with the Riksbank's forecast, households' interest-to-income ratio will in three years' time be on a par with the levels in the mid-1990s, when the policy rate was over 8 per cent. The high sensitivity to interest rates, together with household consumption comprising around half of GDP, are explanations for much of the earlier analysis having focused on the situation of households. This article also puts greatest focus on households, although we also discuss companies' interest-rate sensitivity.

Figure 52. Companies' and households' interest-to-income ratios in Sweden

Per cent



Note. For companies, the interest-to-income ratio is calculated as interest expenditures after interest deduction in relation to operating profits, for all non-financial corporations. In the scenario with the higher interest rate, it is assumed that the earnings remain unchanged. For households, the interest-to-income ratio is calculated as the households' interest expenditure as a percentage of their disposable income and is based on everyone being able to use a 30 per cent interest deduction. Disposable income is expressed as a four-quarter moving total. Broken line represents the Riksbank's forecast.

Sources: Statistics Sweden and the Riksbank.

Consequences for households and companies when the interest rate rises

Highly indebted mortgagors will experience large negative cash flow effects...

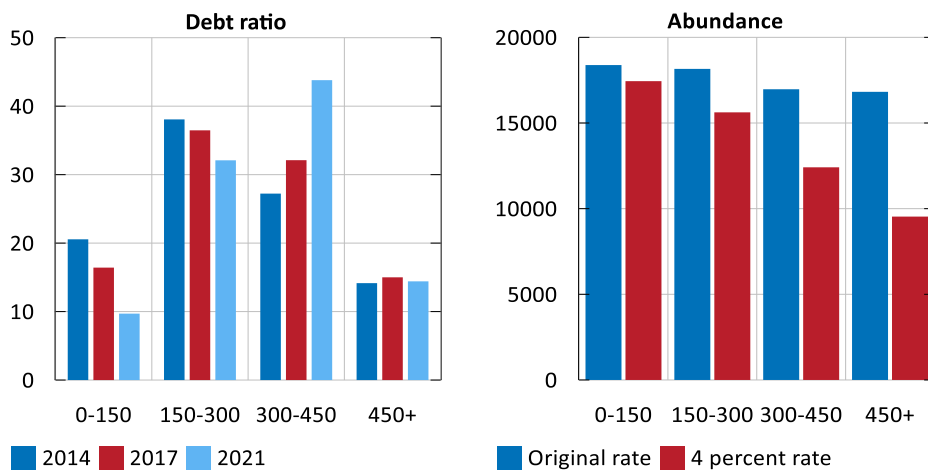
The aggregated debt-to-income ratio of around 200 per cent hides large differences between households, partly dependent on where in Sweden they live and whether

⁴⁰ In the scenario with the rising interest rate, it is assumed that the earnings remain unchanged.

they own their own home.⁴¹ Around half of households in Sweden have a mortgage, and among these the debt-to-income ratio is almost twice as high as for the household sector as a whole. An increasing number of new mortgagors have also taken on more debt in relation to their incomes (see Figure 53).⁴² Almost 60 per cent have mortgaged themselves for more than 300 per cent of their income before tax, corresponding to around 400 per cent of disposable income. The fact that households are more indebted means that the cash flow effect will be greater than on previous occasions when the Riksbank raises the interest rate. For highly indebted mortgagors, the borrowing scope may decline significantly when the interest rate rises in line with the Riksbank's forecast (see Figure 53). As the interest-rate fixation period is so short among Swedish mortgagors, the impact also comes quickly, which is shown in Figure 52.

Figure 53. Percentage of new mortgagors with a certain debt-to-income ratio over time and monthly surplus with original interest rate autumn 2021 and 4 per cent interest rate

Per cent (left) and kronor (right)



Note. The graph on the left refers to debt-to-income ratio calculated on income before tax for new loans (mortgages to buy homes, additional loans and changes of bank). In the graph on the right, the size of the columns shows the median monthly surplus in a discretionary income calculation with the original mortgage rate in autumn 2021, which amounted to 1.38 per cent on average, and an estimate with a 4 per cent mortgage rate, which is roughly equivalent to the Riksbank's forecast for household mortgage rates for the third quarter of 2025. The calculations also include other loans, and the interest rate on these is also expected to increase. The estimate is an interpolation based on the calculations in Finansinspektionen's Mortgage Report 2022.

Sources: Finansinspektionen and the Riksbank.

⁴¹ See S. Laséen (2022), "Hushållens skuldsättning och penningpolitik: ett regionalt perspektiv" (Household indebtedness and monetary policy: a regional perspective), *Staff memo*, September, Sveriges Riksbank and P. van Santen and D. Ölcer (2017), "Household indebtedness: a regional perspective", *Economic Commentaries No. 3*, Sveriges Riksbank.

⁴² See *The Swedish mortgage market, 2022*, Finansinspektionen. New mortgagors refers to households who buy a home, increase their mortgage or change bank.

...and have reduced borrowing scope when housing prices fall

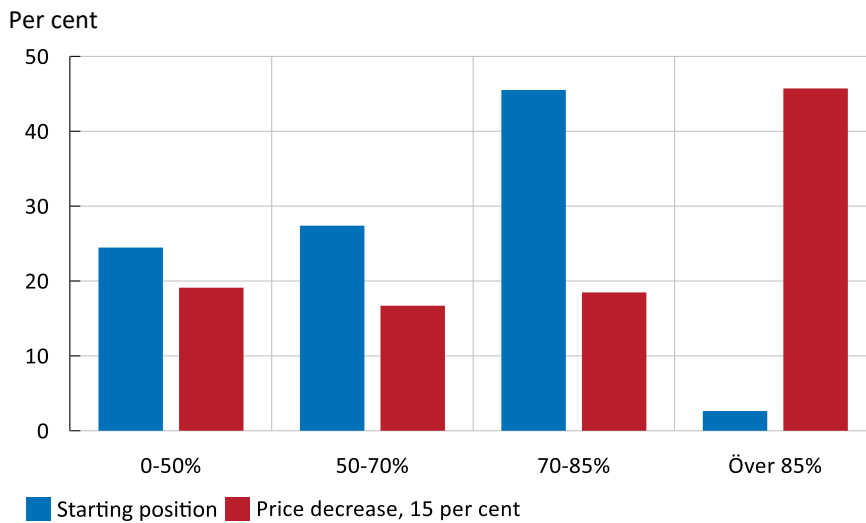
When the Riksbank raises the policy rate, housing prices are also affected. The fact that housing prices have fallen recently, and are expected to continue to fall in the Riksbank's forecast, is linked both to households facing higher mortgage rates in near term and an upward revision in their expectations of interest rates in the long term.⁴³ The falling housing prices in turn have an effect on household consumption via the loan collateral effect.

Many of the new mortgagors are households that are extending the loans on their existing home to finance, for instance, consumption and renovation of their home.⁴⁴ Despite prices having risen substantially over a long period of time, many new mortgagors have a high debt, measured as a share of the home's value, that is, a high loan-to-value ratio (see Figure 54). This means that the scope to take on new loans can be severely limited if housing prices fall. Figure 54 shows that a price fall of 15 per cent, compared with autumn 2021, which is in line with the Riksbank's forecast, means that around 45 per cent of the new mortgagors have a loan-to-value ratio of more than 85 per cent and thereby hit the mortgage cap. The fact that falling housing prices can significantly limit the opportunities to borrow against the home can increase the impact of monetary policy on consumption going forward. At the same time, it is important to point out that the loan-to-value ratio is lower for the stock of all mortgagors than for new ones, as housing prices previously rose over a long period of time.⁴⁵ However, these households will also have a reduced borrowing scope according to the same mechanisms when housing prices fall.

⁴³ For a discussion of the relationship between interest rate expectations and housing prices, see J. Almenberg, M. Ankarhem, K. Blom and T. Jansson (2022), "Housing prices and interest rate expectations", *Economic Commentaries No. 10*, Sveriges Riksbank.

⁴⁴ See *The Swedish Mortgage Market, 2022*, Finansinspektionen; J. Li, P. van Santen and X. Zhang (2020), "Home equity extraction activities in Sweden", Staff Memo, May, Sveriges Riksbank and R. Emmanuelsson, G. Katinic and E. Spector (2018), "Developments on the housing market and their effect on household debt", *Economic Commentaries no. 14*, Sveriges Riksbank.

⁴⁵ According to Finansinspektionen's mortgage survey from 2022, the average loan-to-value ratio in the stock of mortgagors is 53 per cent, which can be compared with 64.5 per cent among new mortgagors in the sample.

Figure 54. Distribution of loan-to-value ratios for new mortgage holders, 2021

Source: Finansinspektionen.

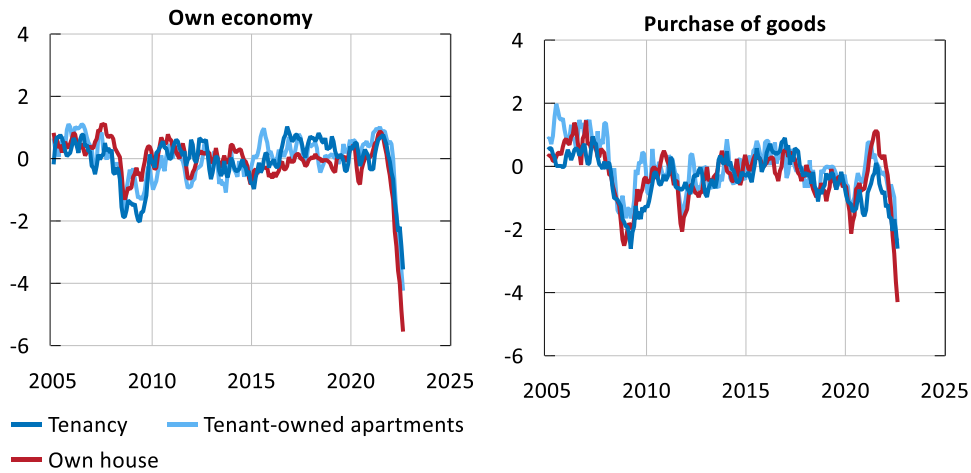
Mortgagors are in general affected more than other households when interest rates rise. The National Institute of Economic Research's Economic Tendency Survey shows that it is owners of single-family dwellings that have become the most pessimistic about their financial situation in the near future and with regard to the purchase of capital goods (see Figure 55).⁴⁶ New analyses from the Riksbank also indicate that the purchases of cars are affected more by higher interest rates in municipalities where household debt is high.⁴⁷

⁴⁶ One possible explanation is that house-owners have previously invested a much larger share of their disposable income in housing expenses than those living in tenant-owned apartments; see *The Swedish Mortgage Market 2022*, April 2022, Finansinspektionen. This reduces the margins for meeting rising interest rates, for instance. A further possible explanation is that house-owners are also affected to a large degree by, for instance, rising energy prices.

⁴⁷ See S. Laséen (2022), "Hushållens skuldsättning och penningpolitik: ett regionalt perspektiv" (Household indebtedness and monetary policy: a regional perspective), Staff memo, September, Sveriges Riksbank.

Figure 55. Households' views of their own finances in 12 months' time and purchases of capital goods, divided according to type of home

Standardised data, mean = 0, standard deviation = 1



Note. The graphs show 3-month moving averages.

Source: National Institute of Economic Research.

The lack of current microdata on household assets and savings makes it difficult to assess how household consumption will react when interest rates rise. One way for households to manage rising interest rates is to use their savings. Even if the household sector as a whole has a substantial holding of liquid assets, the estimates indicate that these are very unevenly distributed.⁴⁸ The Riksbank has for a long time called for up-to-date microdata on households' debts and assets, not least to enable a better understanding of the different channels from monetary policy to households' consumption decisions.

The increasing indebtedness among companies is driven by commercial property companies

As we saw in Figure 52, interest-rate sensitivity does not appear to be especially high in the corporate sector as a whole, when looking at the direct effects of interest rate expenditure. Households' high interest-rate sensitivity, on the other hand, can affect companies indirectly through changes in demand.

In the corporate sector, commercial property companies stand out significantly.⁴⁹ They are more indebted than other companies in general and have driven much of the increase in indebtedness in the corporate sector in recent years (see Figure 56). The increase has been both through bank loans and market funding in the form of debt securities. Commercial property companies are therefore affected substantially by rising interest rates. The Riksbank's analysis from last spring indicates that commercial property companies would see their interest-to-income ratio rise from 25 to

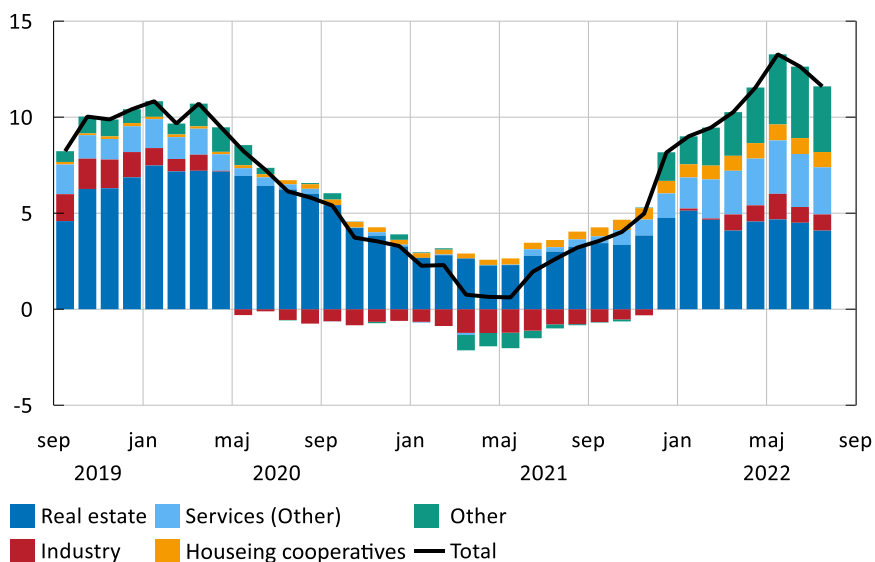
⁴⁸ See, for example, M. Andersson and R. Vestman (2021), "Liquid assets of Swedish households", FI Analysis 28, Finansinspektionen.

⁴⁹ See, for example, *Financial Stability Report 2022:1*, Sveriges Riksbank.

60 per cent if interest rates rise by 3 percentage points. These are much higher levels than for the corporate sector as a whole (see Figure 52).

Figure 56. Growth in corporate debt by sector

Annual percentage change and percentage points respectively



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

Source: Statistics Sweden (KRITA and SVDB).

The commercial property companies may need to adapt their operations as a result of interest rates rising in coming years.⁵⁰ They can do this by reducing investment in existing or new property, particularly rental and office properties. Rising interest rates can also, when combined with tighter credit terms and weaker economic activity, lead to the value of the companies' properties falling and their earnings deteriorating. As the Swedish banks have large exposures to commercial property companies, potential problems in these companies can have a very negative effect on financial stability.⁵¹ Problems in the property companies can lead to increased credit losses in the Swedish banks and reduced capital levels, which in turn can have consequences for the credit supply in the economy. Ultimately, such a development would have great significance for both the macroeconomy and monetary policy.

⁵⁰ See *Financial Stability Report 2,022:1*, Sveriges Riksbank.

⁵¹ This is been pointed out by both the Riksbank and Finansinspektionen. In January 2020, Finansinspektionen decided to raise the capital adequacy requirements for the banks' lending to commercial properties.

Monetary policy conclusions – interest rate raises have a greater impact than before

One conclusion of the interest-rate sensitivity in the economy showing a trend increase over the past thirty years is that monetary policy has had an increasingly large impact and that smaller interest rate adjustments are needed to attain the same stabilisation policy effects as before. But how large is the quantitative significance?

Figure 57 is based on new analysis from the Riksbank and shows the effect on household consumption of an interest rate increase for various sub-periods that are sorted according to the average debt-to-income ratio.⁵² The debt-to-income ratio is currently around 200 per cent, which is higher than the average debt-to-income ratio for the final sub-period in the figure, which is 170 per cent. A rough estimate based on the correlation in the figure indicates that an increase in the policy rate of one percentage point at present means that consumption is slowed down around twice as much as 15 years ago, when the debt-to-income ratio was around 150 per cent. Although these results cannot show that the greater consumption effect is completely due to higher indebtedness among households, there are good arguments in favour of this from other studies.⁵³ Highly indebted households have thus taken on greater significance for the monetary policy transmission.⁵⁴

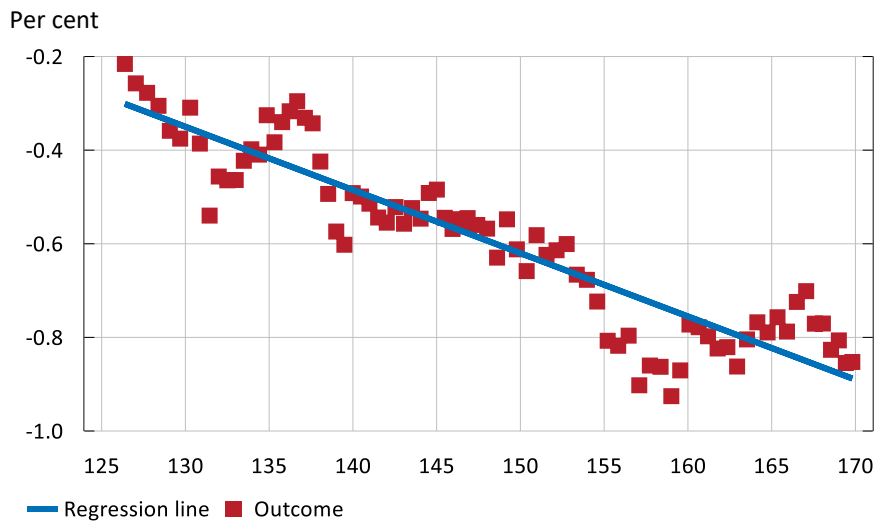
All in all, the Riksbank's analysis indicates that the policy rate does not need to be raised as much as before to obtain the same tightening effect on the economy. Even if the policy rate is expected to rise a lot in the short term, the upturn is nevertheless relatively limited in a historical perspective, with regard to the interest cycle as a whole.

⁵² See P. Stockhammar, I. Strid and T. Tornese (2022), "How has consumption's sensitivity to interest rates changed when the debt-to-income ratio has increased?", *Economic Commentaries* No. 9, Sveriges Riksbank.

⁵³ See, for example, D. Finocchiaro, M. Jonsson, C. Nilsson and I. Strid (2016), "Macroeconomic effects of reducing household debt", *Economic Review*, 2016:2, Sveriges Riksbank and P. Di Casola and J. Iversen (2019), "Monetary policy with high household debt and low interest rates", *Staff Memo*, October, Sveriges Riksbank.

⁵⁴ A new study from the Riksbank also shows that interest rate increases have a greater effect on disposable incomes and the number of newly-registered cars in municipalities with relatively highly indebted households. See S. Laséen (2022), "Hushållens skuldsättning och penningpolitik: ett regionalt perspektiv" (Household indebtedness and monetary policy: a regional perspective), *Staff memo*, September, Sveriges Riksbank.

Figure 57. Estimated effect on household consumption of a policy rate increase of 1 percentage point at different levels of debt-to-income ratio



Note. The Y axis show the maximum effect on consumption after an increase in the policy rate of one percentage point. The model is calculated for 81 sub-periods between 1996 Q1 and 2019 Q4. The X axis shows the average debt-to-income ratio for the sub-period.

Source: P. Stockhammar, I. Strid and T. Tornese (2022), "How has consumption's sensitivity to interest rates changed when the debt-to-income ratio has increased?", Economic Commentaries No. 9, Sveriges Riksbank.

Forecast tables

The forecast in the previous Monetary Policy Report is shown in brackets.

Table 1. Policy rate forecast

Per cent, quarterly averages

	2022Q2	2022Q3	2022Q4	2023Q3	2024Q3	2025Q3
Policy rate	0.16 (0.16)	0.82 (0.76)	1.90 (1.36)	2.53 (1.94)	2.47 (2.01)	2.35

Source: The Riksbank.

Table 2. Inflation

Annual percentage change, annual average

	2020	2021	2022	2023	2024
CPIF	0.5 (0.5)	2.4 (2.4)	7.8 (6.9)	5.1 (4.2)	1.6 (2.0)
CPIF excl. energy	1.3 (1.3)	1.4 (1.4)	5.8 (5.2)	4.6 (3.8)	2.3 (2.1)
CPI	0.5 (0.5)	2.2 (2.2)	8.6 (7.6)	8.5 (7.1)	2.2 (2.7)
HICP	0.7 (0.7)	2.7 (2.7)	8.1 (7.1)	5.3 (4.4)	1.7 (2.1)

Note. The HICP is an EU-harmonised index for consumer prices.

Sources: Statistics Sweden and the Riksbank.

Table 3. GDP and demand

Annual percentage change unless otherwise specified

	2020	2021	2022	2023	2024
Household consumption	-3.2 (-3.2)	6.0 (6.2)	3.8 (2.9)	-0.6 (0.5)	1.8 (1.3)
Public consumption	-1.8 (-1.8)	2.8 (2.9)	-0.2 (0.6)	1.2 (1.5)	1.5 (1.5)
Gross fixed capital formation	1.7 (1.7)	6.3 (6.2)	5.0 (0.4)	-2.8 (0.2)	-1.0 (0.5)
Stock investments*	-0.7 (-0.7)	0.4 (0.4)	1.1 (0.4)	-0.2 (-0.2)	0.0 (0.0)
Exports	-5.5 (-5.5)	7.9 (7.9)	4.8 (4.8)	1.1 (2.7)	2.1 (2.9)
Imports	-6.0 (-6.0)	9.6 (9.6)	8.6 (5.8)	0.9 (2.4)	1.9 (2.8)
GDP	-2.2 (-2.2)	5.1 (5.1)	2.7 (1.8)	-0.7 (0.7)	1.1 (1.3)
GDP, calendar-adjusted	-2.4 (-2.4)	4.9 (5.0)	2.7 (1.8)	-0.5 (1.0)	1.1 (1.3)
Final domestic demand*	-1.5 (-1.5)	5.0 (5.1)	2.9 (1.6)	-0.7 (0.6)	0.9 (1.1)
Net exports*	0.0 (0.0)	-0.3 (-0.3)	-1.3 (-0.2)	0.1 (0.3)	0.1 (0.2)
Current account (NA), percentage of GDP	6.0 (6.0)	5.4 (5.4)	3.3 (4.6)	3.5 (4.6)	4.0 (5.2)

* Contribution to GDP growth, percentage points

Note. The figures show actual growth rates that have not been calendar-adjusted, unless otherwise stated. NA is the National Accounts.

Sources: Statistics Sweden and the Riksbank.

Table 4. Production and employment

Annual percentage change, unless otherwise stated

	2020	2021	2022	2023	2024
Population, aged 15–74	0.4 (0.4)	0.0 (0.0)	0.3 (0.2)	0.3 (0.3)	0.4 (0.4)
Potential hours worked	0.8 (0.8)	-0.1 (-0.2)	0.6 (0.5)	0.6 (0.6)	0.6 (0.6)
Potential GDP	1.8 (1.8)	1.8 (1.7)	1.7 (1.6)	1.7 (1.7)	1.7 (1.7)
GDP, calendar-adjusted	-2.4 (-2.4)	4.9 (5.0)	2.7 (1.8)	-0.5 (1.0)	1.1 (1.3)
Hours worked, calendar-adjusted	-3.8 (-3.8)	2.2 (2.2)	2.3 (2.0)	0.2 (0.6)	-0.2 (0.0)
Employed persons	-1.4 (-1.4)	1.0 (1.0)	2.9 (2.5)	0.0 (0.3)	-0.2 (0.1)
Labour force	0.3 (0.3)	1.2 (1.2)	1.4 (1.1)	0.4 (0.4)	0.2 (0.4)
Unemployment*	8.5 (8.5)	8.8 (8.8)	7.5 (7.5)	7.9 (7.7)	8.2 (7.9)
GDP gap**	-3.0 (-2.9)	-0.1 (0.2)	1.0 (0.4)	-1.2 (-0.3)	-1.8 (-0.8)
Hours gap**	-4.0 (-3.9)	-1.6 (-1.4)	0.1 (0.0)	-0.3 (0.1)	-1.1 (-0.4)

*Per cent of labour force

**Deviation from the Riksbank's assessed potential levels, in per cent

Note. Potential hours worked and potential GDP refer to the long-run sustainable level according to the Riksbank's assessment.

Sources: Statistics Sweden and the Riksbank.

Table 5. Wages and labour costs for the economy as a whole

Annual percentage change, calendar-adjusted data unless otherwise stated

	2020	2021	2022	2023	2024
Hourly wage, NMO	2.1 (2.1)	2.6 (2.6)	2.8 (2.8)	3.6 (3.3)	3.3 (3.1)
Hourly wage, NA	4.6 (4.7)	2.7 (2.7)	4.0 (3.5)	3.5 (3.2)	3.4 (3.1)
Employers' contribution*	-0.6 (-0.6)	0.7 (0.7)	-0.2 (0.0)	0.0 (0.0)	0.0 (0.0)
Hourly labour cost, NA	4.0 (4.0)	3.4 (3.4)	3.8 (3.5)	3.5 (3.2)	3.4 (3.1)
Productivity	1.4 (1.4)	2.6 (2.7)	0.4 (-0.3)	-0.7 (0.3)	1.3 (1.2)
Unit labour cost	2.6 (2.6)	1.6 (1.6)	3.4 (3.8)	4.2 (2.9)	2.1 (1.9)

* Difference in rate of increase between labour cost per hour, NA and hourly wages, NA, percentage points

Note. NMO is the National Mediation Office's short-term wage statistics and NA is the National Accounts. Labour cost per hour is defined as the sum of actual wages, social-security charges and wage taxes (labour cost sum) divided by the number of hours worked by employees. Unit labour cost is defined as labour cost sum divided by GDP in fixed prices.

Sources: National Mediation Office, Statistics Sweden and the Riksbank.

Table 6. International forecasts

Annual percentage change unless otherwise specified

GDP	PPP weights	KIX weights	2020	2021	2022	2023	2024
Euro area	0.12	0.47	-6.2 (-6.5)	5.2 (5.3)	3.2 (2.9)	0.2 (1.7)	1.5 (1.7)
United States	0.16	0.09	-3.4 (-3.4)	5.7 (5.7)	1.7 (2.5)	0.8 (1.6)	1.7 (1.5)
China	0.19	0.09	1.8 (1.7)	8.6 (8.5)	3.3 (4.0)	4.9 (5.2)	5.0 (5.1)
KIX weighted	0.75	1.00	-4.7 (-4.8)	5.6 (5.6)	2.7 (2.7)	1.1 (2.0)	2.0 (2.2)
The World (PPP)	1.00	—	-3.1 (-3.1)	6.1 (6.1)	3.1 (3.3)	2.9 (3.3)	3.4 (3.4)

Note. Calendar-adjusted growth rates. PPP weights refer to purchasing-power adjusted GDP weights in the world for 2022, according to the IMF. KIX weights refer to weights in the Riksbank's krona index (KIX) for 2022. The forecast for GDP in the world is based on the IMF's forecasts for PPP weights. The forecast for KIX-weighted GDP is based on an assumption that the KIX weights will develop in line with the trend during the latest five years.

CPI	2020	2021	2022	2023	2024
Euro area (HICP)	0.3 (0.3)	2.6 (2.6)	8.1 (7.3)	5.3 (3.2)	2.1 (2.0)
United States	1.2 (1.2)	4.7 (4.7)	8.1 (7.8)	3.9 (3.6)	2.4 (2.4)
KIX weighted	1.1 (1.1)	3.1 (3.1)	7.6 (7.0)	4.5 (3.3)	2.3 (2.3)

	2020	2021	2022	2023	2024
International policy rate, per cent	-0.3 (-0.3)	-0.3 (-0.3)	0.5 (0.3)	2.4 (2.0)	2.3 (2.0)
Crude oil price, USD/barrel Brent	43.3 (43.3)	70.7 (70.7)	100.9 (109.2)	88.5 (100.8)	81.4 (89.6)
Swedish export market	-7.9 (-8.0)	9.1 (9.1)	6.3 (6.4)	2.0 (3.4)	3.5 (3.7)

Note. The policy rate abroad is an aggregate of rates in the US, the euro area, Norway and the United Kingdom. In the euro area, the overnight rate ESTR has replaced EONIA as the reference rate since 1 January 2022.

Sources: Eurostat, IMF, Intercontinental Exchange, national sources, OECD and the Riksbank.

Table 7. Summary of financial forecasts

Per cent unless otherwise stated, annual average

	2020	2021	2022	2023	2024
The Riksbank's policy rate	0.0 (0.0)	0.0 (0.0)	0.7 (0.6)	2.5 (1.9)	2.5 (2.0)
10-year rate	0.0 (0.0)	0.3 (0.3)	1.5 (1.5)	2.1 (2.2)	2.4 (2.4)
Exchange rate, KIX, 18 Nov 1992 = 100	118.5 (118.5)	114.3 (114.3)	119.9 (119.7)	119.3 (119.8)	117.4 (118.2)
General government net lending, per cent of GDP	-2.8 (-2.7)	-0.1 (-0.3)	0.7 (-0.1)	0.0 (-0.1)	-0.3 (-0.3)

Sources: Statistics Sweden and the Riksbank.



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