

# Account of monetary policy

2022



# Account of monetary policy in 2022

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The Riksbank is an authority under the Riksdag, the Swedish Parliament, with responsibility for monetary policy in Sweden. Since 1999, the Riksbank has had an independent position with regard to the Riksdag and the Government. This means that the members of the Riksbank's Executive Board decide on monetary policy issues without seeking or taking instructions. Nor may any other authority determine how the Riksbank should decide on issues concerning monetary policy.

The way in which the Riksbank carries out the delegated task is followed up in various ways by the Riksdag. For instance, every year the Riksdag Committee on Finance examines whether the General Council of the Riksbank and the Executive Board can be discharged from liability for their administration during the past year. Every year, the Riksdag Committee on Finance also examines and assesses the monetary policy conducted by the Riksbank during the preceding years. The Riksbank compiles and publishes material for this assessment.

The material compiled by the Riksbank is thus a basis for assessment - not an assessment in itself. On the other hand, this does not mean that it is a pure compilation of figures. The account also includes analyses of outcomes, forecasts and events as the Riksbank believes that those who evaluate monetary policy should have access to the Riksbank's interpretation of the material. It is then up to the Committee on Finance, and others who wish to assess the material, to concur with the Riksbank's conclusions or to make another interpretation.

Chapter 1 investigates target fulfilment in 2022, while Chapter 2 gives an account of the monetary policy conducted over the year. Chapter 3 analyses the accuracy of the forecasts made in 2020–2021, while Chapter 4 reviews important monetary policy issues. The report also contains an article on the effects of the asset purchases on the Riksbank's financial result and an article on the Riksbank's monetary policy development work.

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The Executive Board made a decision on the Account of Monetary Policy on 29 March 2023. The report can be downloaded in pdf format from the Riksbank's website, [www.riksbank.se](http://www.riksbank.se), where there is also more information about the Riksbank.

## Monetary policy – the Riksbank’s strategy<sup>1</sup>

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- According to the Sveriges Riksbank Act, the overriding objective of monetary policy is to maintain permanently low and stable inflation. The Riksbank has defined the objective as a target of 2 per cent for the annual change in the consumer price index with a fixed interest rate (the CPIF). The inflation target should function as a benchmark for price- and wage-setting in the economy.
- Without neglecting the inflation target, the Riksbank shall moreover contribute to a balanced development of production and employment. The Riksbank thus conducts a policy of flexible inflation targeting. In connection with each monetary policy decision, the Executive Board assesses which monetary policy is well-balanced. If inflation deviates from the inflation target, it is normally a question of finding a balance between how rapidly it shall be brought back to target and the effects on real economic developments.
- It is neither possible nor desirable to conduct a monetary policy that always keeps inflation at exactly 2 per cent. Changes occur constantly in the economy that make inflation vary in a way that cannot be predicted with sufficient precision, or counteracted in the short term. The important thing is that households and companies have confidence in the target. Prolonged deviations from the target risk affecting expectations of the normal level of inflation in the economy.
- As it takes time for monetary policy to impact fully on inflation and the real economy, monetary policy is guided by economic forecasts. There is no general answer to the question of how quickly the Riksbank aims to bring inflation back to 2 per cent if it deviates from the target. Too rapid a return may in some situations have very negative effects on production and employment, while too slow a return may weaken the credibility of the inflation target.
- The Riksbank can weigh risks linked to developments in the financial markets into its monetary policy decisions as long as confidence in the inflation target is clearly anchored, and expected and overall target achievement regarding inflation, production and employment is improving when viewed over a longer horizon. With regard to preventing an unbalanced development of asset prices and indebtedness, however, it is of prime importance that there is an efficient financial regulatory framework and effective supervision.
- The Riksbank’s main monetary policy tool is the policy rate. When necessary, this can be supplemented with other measures, including purchases or sales of government securities, for example to ensure that monetary policy impacts effectively on the interest rates faced by households and companies. The Riksbank may buy and sell assets other than government securities if there are exceptional grounds. Such exceptional grounds may arise during times of financial turmoil or crisis, for example.
- The Riksbank strives for open and clear communication. This makes it easier for economic agents to make sound economic decisions and monetary policy will also be easier to evaluate. The Riksdag’s Committee on Finance, the National Audit Office and the General Council of the Riksbank monitor and evaluate the conducted monetary policy in different ways within their respective remits.
- The Executive Board normally holds five monetary policy meetings a year. The monetary policy decision and Monetary Policy Report are presented together with a press release at 9.30 am on the day following the monetary policy meeting. The Monetary Policy Report describes economic developments and motivates the monetary policy decision. The decision and press release make it clear how the individual Executive Board members voted and provide the main justification for any reservations entered. A press conference is held later the same day. Just under two weeks after each monetary policy meeting, minutes from the meeting are published, which set forth the reasoning of the different Executive Board members.

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<sup>1</sup> This strategy was updated in 2023, in conjunction with the new Sveriges Riksbank Act (SFS 2022:1568) coming into force.

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# 1 Target fulfilment

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In 2022, inflation reached the highest level since the inflation target was introduced, and was far above the target at the end of the year. As in the rest of the world, the price increases were to a large degree caused by various imbalances and disturbances resulting from the pandemic and Russia's invasion of Ukraine. The large and broad-based rise in inflation was also due to good demand, which enabled companies to pass on their rising costs to consumers. In this situation, it is important to maintain confidence in the inflation target by conducting a monetary policy that brings inflation back to the target and prevents it from becoming entrenched at a high level. Despite inflation being above the target in 2022, monetary policy helped to keep long-term inflation expectations stable close to the target. Economic activity was good during the year and labour market developments were strong.

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## 1.1 Inflation 2022

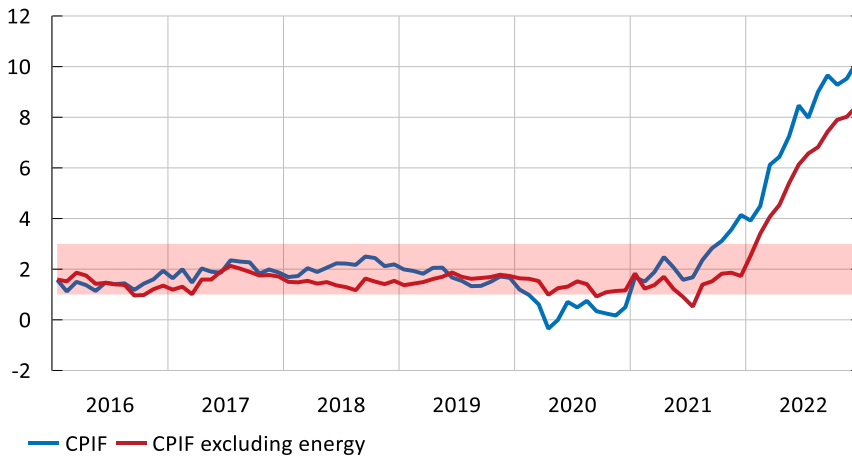
### **Global disruptions and high inflation**

Inflation in Sweden, as measured by the CPIF, was high throughout 2022 (see Figure 1) and far exceeded the Riksbank's inflation target. In December 2022, it amounted to 10.2 per cent, the highest level since the inflation target was introduced. The high inflation rate means that the inflation target is being tested for the first time on the upside.

In 2021, inflation began to rise rapidly, mainly in the United States where fiscal policy had been very expansionary (see Figure 2). High demand, combined with various supply disruptions in the wake of the pandemic, continued to push up world market prices for several inputs, transport and commodities. In addition, the high demand increased companies' ability to pass on their production and transport costs to consumer prices. In the latter part of 2021, inflation also picked up in Europe, largely as a result of the rapidly rising energy prices. In Sweden, underlying inflation, measured as the CPIF excluding energy, was still below 2 per cent at the end of 2021 (see Figure 3).

**Figure 1. CPIF, CPIF excluding energy and variation band**

Annual percentage change

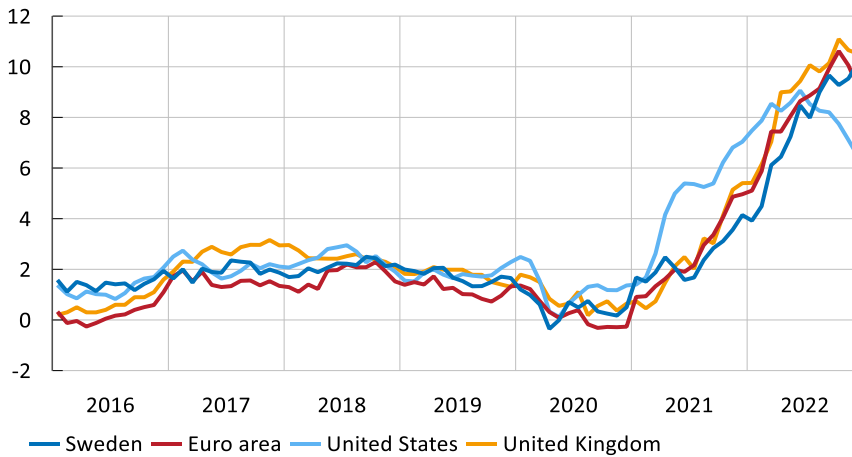


Note. The pink area shows the Riksbank's variation band and covers about three-quarters of the CPIF outcomes since January 1995. The variation band is a means of showing whether the deviation from the inflation target is unusually large.

Sources: Statistics Sweden and the Riksbank.

**Figure 2. Consumer prices in various countries and regions**

Annual percentage change

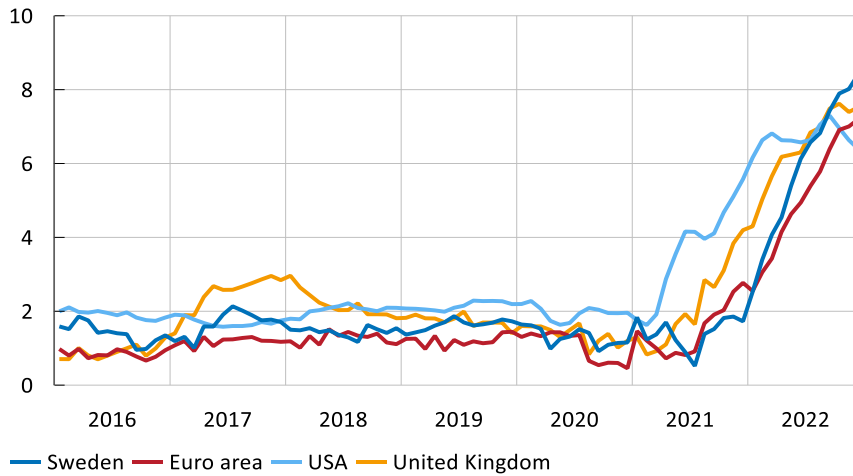


Note. Consumer prices refer to the CPIF for Sweden, the CPI for the United States and the United Kingdom and the HICP for the euro area.

Sources: Eurostat, Statistics Sweden, U.K. Office for National Statistics and U.S. Bureau of Labor Statistics.

**Figure 3. Consumer prices excluding energy in various countries and regions**

Annual percentage change



Note. Underlying inflation refers to the CPIF excluding energy for Sweden, the HICP excluding energy for the euro area and the CPI excluding energy for the United States and United Kingdom.

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

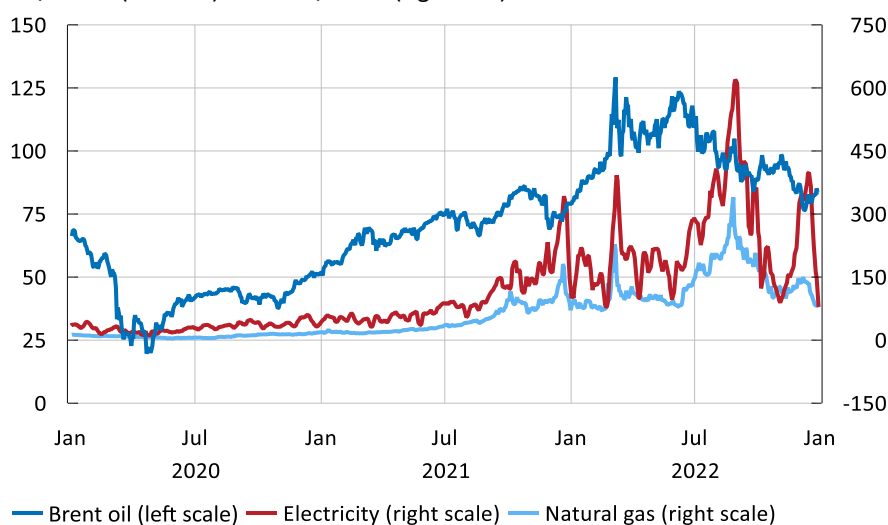
However, at the beginning of 2022, the high energy and commodity prices also began to have an impact on underlying inflation in Sweden. Inflation increased even more in connection with Russia’s invasion of Ukraine in February 2022. The imbalances were exacerbated by the war and also by new pandemic-related restrictions in China. Prices of several commodities, food and inputs were driven up further. There were serious disruptions in European energy markets, including a sharp rise in electricity prices (see Figure 4). Price increases spread rapidly and wages also rose faster in several countries, due to strong economic activity. As a result, inflation rose to its highest levels for several decades in many parts of the world. Rising prices and higher interest rates put increasing strain on the finances of some households and businesses. In several countries, including Sweden, governments took various measures to mitigate the effects of high energy costs.

At the end of the year, there were signs that some of the price rises abroad had slowed down, although underlying inflation remained high (see Figure 2 and Figure 3). Tightening monetary policy helped to reduce demand and pandemic-related supply problems gradually eased. Falling global energy prices after the summer also helped to dampen price increases.<sup>2</sup>

<sup>2</sup> This is due to several factors, such as reduced global energy demand from industry, measures to reduce electricity consumption in Europe and unusually warm weather in autumn and winter. Another important explanation was that many European countries were able to quickly replace natural gas from Russia with liquid gas from other countries. In addition, policy measures and investments to enable liquefied natural gas reception and renewable energy contributed to decreasing the uncertainty over energy supply in Europe.

**Figure 4. Energy prices**

USD/barrel (left axis) and EUR/MWh (right axis)



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

Sources: The Iberian Energy Derivatives Exchange and Intercontinental Exchange.

### Inflation target put to the test

At the beginning of the year, the high inflation in Sweden, like that abroad, was partly explained by higher energy prices (see Figure 1). Energy prices, i.e. both fuel and electricity prices, which were already exceptionally high at the beginning of 2022, doubled following Russia's invasion of Ukraine (see Figure 27 in Chapter 3). Food prices also rose sharply as a result of the war. However, inflation in 2022 was unusually high, even disregarding food and energy. Goods prices that had been declining slightly on average for a number of years, rose sharply. Business costs increased due to higher prices for energy, transport, fertilisers, cereals and inputs. The weakness of the krona also contributed to higher purchase prices from abroad.<sup>3</sup> Cost increases were quickly passed on to consumers against a background of high demand in Sweden.<sup>4</sup> The rate of increase in service prices, which more closely reflects domestic economic activity, rose sharply in sectors such as entertainment, accommodation and food and beverages in restaurants, where demand surged after the pandemic. In general, all of the

<sup>3</sup> The krona weakened by more than 7 per cent, as measured by the KIX, in 2022. According to the Riksbank's previous estimates, a 10 per cent weakening of the krona leads to a CPI inflation rate around 0.5 percentage points higher. The large rise in inflation was therefore mainly driven by factors other than the exchange rate. The impact on inflation may, however, have been greater recently, as the krona has weakened significantly at the same time as many producer prices have increased. At this point, companies have probably transferred increased import prices to consumer prices, regardless of whether the increase in costs is due to the weak exchange rate or high freight and raw material prices in foreign currency. See also the article "Why has the krona weakened this year?" in Monetary Policy Report, November 2022 and P. Bacchetta and P. Chikhani (2021), "On the weakness of the Swedish krona", *Economic Review*, 2021:1, Sveriges Riksbank.

<sup>4</sup> In the Riksbank's business surveys, several companies testified favourable demand conditions and greater acceptance of price increases. The proportion of companies that were satisfied with their profitability according to the National Institute of Economic Research's Economic Tendency Survey was also high in the first half of the year.



major sub-indices (energy, food, goods and services) rose rapidly and contributed, on average, nearly 2 percentage points each to CPIF inflation (see Table 1 and Figure 5).

The Riksbank analyses several measures of inflation to form an idea of how persistent inflation is. One important indicator of long-term inflation is the median of several measures of underlying inflation. The annual average of the median tripled to 6.1 per cent in 2022, from around 2 per cent in the previous year (see Table 2 and Figure 6).

**Table 1. Development of the CPIF and its components**

Annual percentage change, annual average

	Weight (per cent)	2000-2021	2021	2022
Services	44	1.8	2.2	4.4
Goods excluding foods	29	-0.4	0.2	6.0
Food	18	1.8	0.6	9.3
Energy	6	3.9	17.1	32.9
Capital stock	3	5.3	5.9	6.9
CPIF	100	1.6	2.4	7.7

Note: The weights are those applying for 2022.

Source: Statistics Sweden.

**Table 2. Inflation according to different measures**

Annual percentage change, annual average

	2020	2021	2022
CPIF	0.5	2.4	7.7
CPIF excluding energy	1.3	1.4	5.9
Core inflation (median)	1.4	1.8	6.1

Note: Core inflation refers to the median of a number of measures of core inflation. The measures included are the CPIF excluding energy, UND24, Trim85, the CPIF excluding energy and perishables, persistence-weighted inflation (CPIFPV), factors from principal component analysis (CPIFPC) and weighted mean inflation (Trim1). See <https://www.riksbank.se/en-gb/statistics/macroeconomic-indicators/underlying-inflation/> for further information.

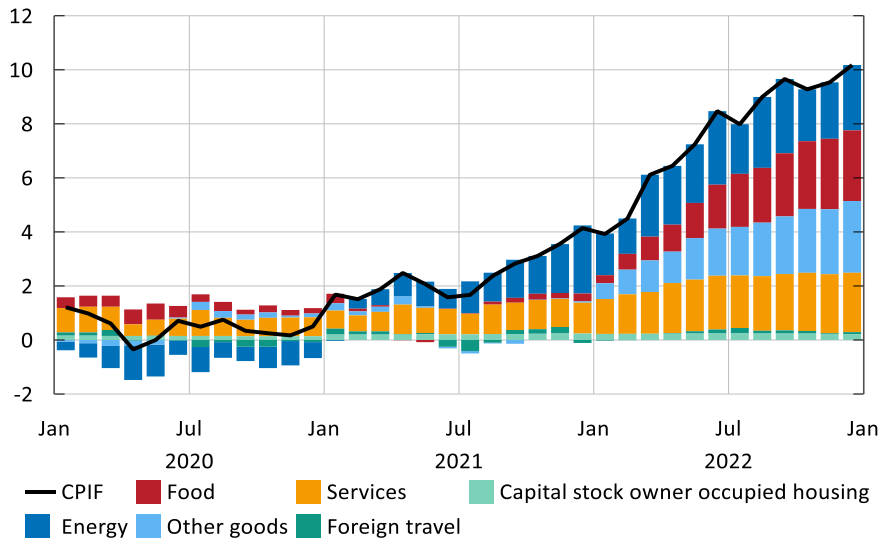
Sources: Statistics Sweden and the Riksbank.

In conclusion, inflation was and is far too high and broad in Sweden. The target deviation was exceptionally high throughout 2022. Many of the driving forces behind high inflation are international and have arisen due to serious and unforeseen disturbances, such as the pandemic and the war in Ukraine. However, the price rises in 2022 were also assignable to good economic activity in Sweden and a broad transmission of the international disturbances into Swedish consumer prices. It is this part of inflation 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.

The high inflation means that the inflation target is being seriously tested on the upside for the first time since its introduction. Monetary policy during the year has been geared towards bringing inflation down and safeguarding the inflation target. Monetary policy affects inflation and the real economy with some time lag and the full effects of the policy stance are not yet clear.

**Figure 5. Contributions to CPIF inflation**

Annual percentage change and percentage points respectively

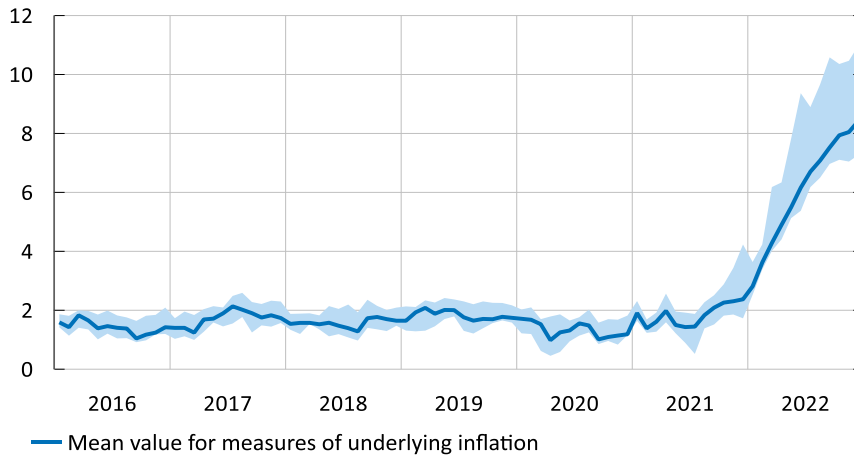


Note. The bars illustrate each price group’s contribution to the rate of increase in the CPIF over the past twelve months. The contributions can be interpreted as the annual rate of increase in each group multiplied by the group’s weight in the CPIF. See Table 2 for the weights of each group in 2022.

Sources: Statistics Sweden and the Riksbank.

**Figure 6. Different measures of underlying inflation**

Annual percentage change



Note. The field shows the highest and lowest outcome among 7 different measures of underlying inflation: CPIF excluding energy, UND24, Trim85, CPIF excluding energy and perishables, persistence-weighted inflation (CPIFPV), factors from principal component analysis (CPIFPC) and weighted mean inflation (Trim1).

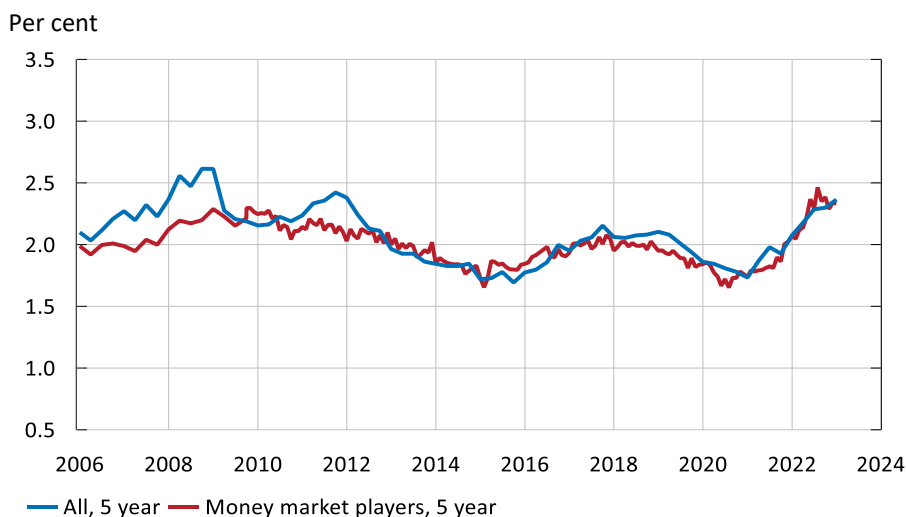
Sources: Statistics Sweden and the Riksbank.

### Stable long-term expectations of future inflation

Monetary policy aims to stabilise inflation around the inflation target. The primary purpose of an inflation target is for it to act as a long-term benchmark for price setting and wage formation in the economy. It is important that economic agents have confidence that the Riksbank will eventually bring inflation back to the target with the help of monetary policy when disturbances have caused it to deviate. A common view of future price developments that is close to the inflation target contributes to a more favourable long-term development in the Swedish economy with good and stable growth.

Although inflation in Sweden has risen rapidly and is as high as in the 1970s and 1980s, long-term inflation expectations in 2022 remained relatively well anchored to the inflation target (see Figure 7). According to surveys, long-term inflation expectations of economic agents rose at the beginning of the year but then remained stable just above 2 per cent. The overall assessment is that economic agents expect inflation in the slightly longer term to be close to the inflation target.

**Figure 7. Long-term inflation expectations**



Note. Expectations refer to the CPI.

Source: Kantar Prospera.

## 1.2 The development of the economy in 2022

### Growth slowed down but labour market performance was strong

Economic activity was high at the beginning of the year, both in Sweden and abroad. Most economies had recovered from the pandemic-related sharp falls in GDP (see Figure 8). The new pandemic wave that broke out in late 2021 had a limited impact on the economy thanks to widespread vaccination. Restrictions were short-lived in many parts of the world, with the exception of China, which pursued a zero-tolerance policy on Covid-19 until the end of 2022.

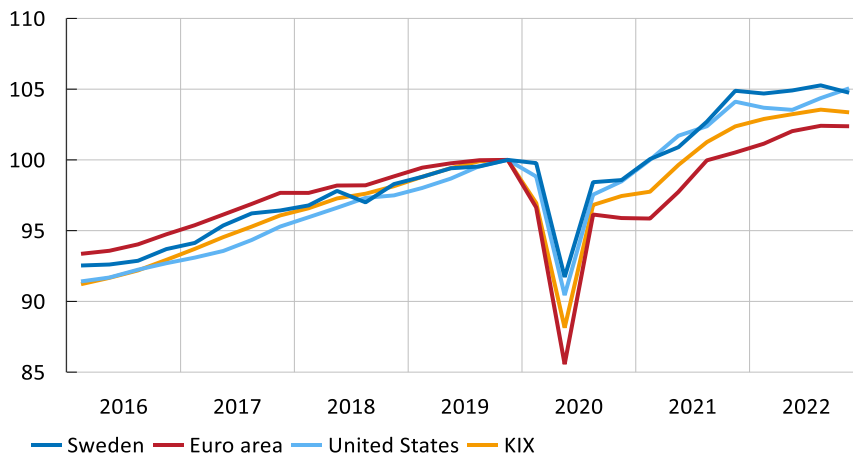
In the latter part of the year, global growth was dampened due to tighter monetary policy, the economic impact of the war and the pandemic-related slowdown in China. High inflation, lower asset prices and higher interest rates combined to weaken demand. Economic activity in Europe was particularly affected by disruptions in energy markets. However, labour markets remained strong throughout the year. This applies not least to the United States and the euro area, where unemployment was very low. Overall, economic activity in the rest of the world was strong in 2022.

The Swedish economy remained buoyant for most of the year. However, GDP growth, which was strong at the beginning of the year, returned to normal levels in the autumn. By the end of the year, GDP fell slightly, largely because price rises and rising interest costs slowed household demand. Housing prices, which had risen to very high levels during the pandemic, fell in 2022.

The employment rate rose to a historically high level and unemployment fell for most of the year (see Figure 9).<sup>5</sup> The share of firms reporting labour shortages declined but remained at a high level at the end of the year. The strong labour market and high inflation led to slightly faster nominal wage increases also in Sweden, in relation to 2021. Real wages, on the other hand, fell markedly due to the historically high inflation.

**Figure 8. GDP in Sweden and abroad**

Index, 2019 Q4 = 100, seasonally adjusted data



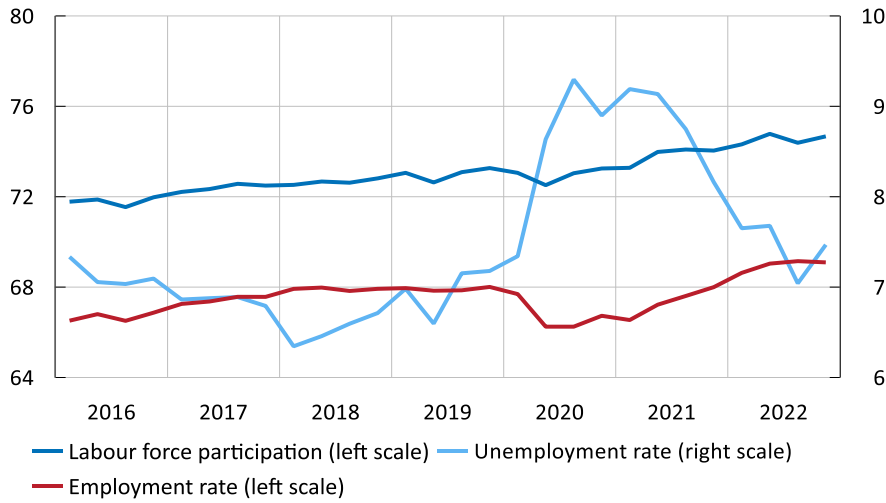
Note. KIX is an aggregate of countries that are important for Sweden's international trade.

Sources: National sources and the Riksbank.

<sup>5</sup> The reason why unemployment in Sweden was not so low despite the record high employment rate was that the labour force developed strongly during and after the pandemic. In the United States and the euro area, however, labour force participation developed relatively weakly following the pandemic-related sharp decline. This means that the Swedish labour market was even stronger than in the United States and the euro area, despite higher unemployment.

**Figure 9. Labour force, employment and unemployment**

Per cent of population and labour force respectively, 15-74 years



Note. Series are linked to adjust for the time series break in the LFS January 2021.

Source: Statistics Sweden.

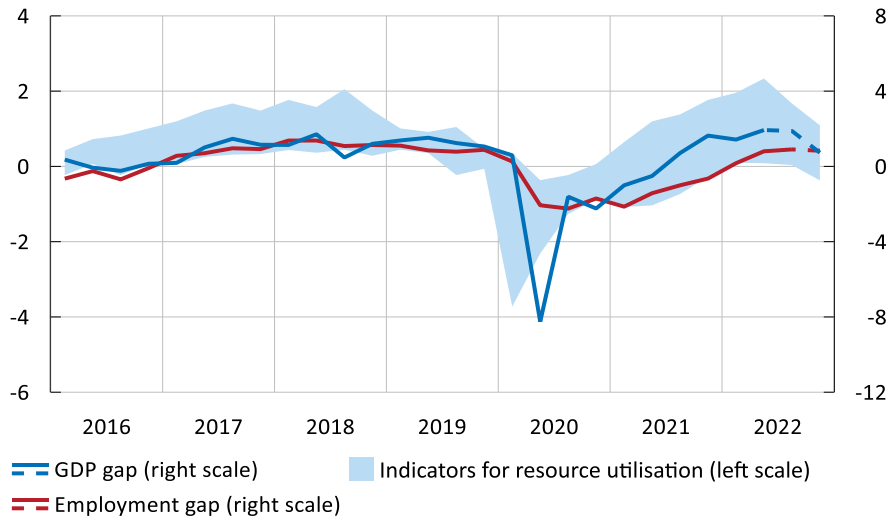
### High resource utilisation

The level of resource utilisation, that is, the amount of spare capacity in the economy, affects the development of wages and prices. It is therefore important for the Riksbank to make an assessment of this. However, resource utilisation cannot be measured exactly and the Riksbank therefore makes an assessment based on a number of different indicators. Examples of these are measures of unemployment, capacity utilisation and shortages.

The indicators show that resource utilisation was high in 2022 (see Figure 10). All indicators were positive for most of the year, although there were large differences between them. At the bottom of the range was the profitability assessment in the business sector and at the top was the shortages in the business sector according to the Business Tendency Survey. The Riksbank’s overall assessment was that resource utilisation was higher than normal in 2022. The employment rate was at a record high, there were labour shortages in many sectors, unemployment had fallen to relatively low levels and demand for goods and services was generally high.

**Figure 10. Measures of resource utilisation**

Per cent and standard deviation respectively



Note. The gap relates to the deviation of GDP and employment from the Riksbank's estimated trends in the Monetary Policy Report, November 2022. The field shows the highest and lowest outcomes for standardised indicators of resource utilisation. Included series are: Inverted unemployment according to LFS, Inverted unemployment 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.

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

## 2 Monetary policy 2022

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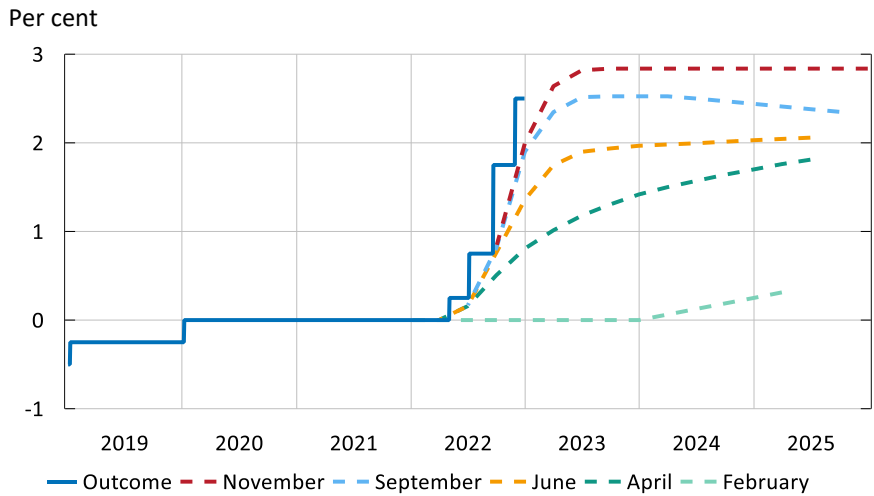
After many years of low and stable inflation, consumer prices rose rapidly in 2022 and inflation reached the highest levels in over 30 years. During the year, price increases on energy and other inputs gradually spread to many different categories of goods and services and inflation rose rapidly. The inflation target was challenged from the upside to an extent that has not occurred since its introduction. Monetary policy changed direction completely in the spring to prevent inflation from becoming entrenched in price setting and wage formation. During the year, the policy rate was raised by a total of 2.5 percentage points. The Riksbank's asset holdings decreased during the year and the purchases were concluded in December. The rapid rise in inflation was difficult to predict, and in addition, both Sweden's economy and other countries' economies proved more resilient than expected to the disruptions in energy supply and the increased interest rates. Both the inflation forecasts and the forecast for the policy rate were therefore continuously revised up during the year. There are several lessons to be learned from developments during 2022, including an understanding of companies' pricing behaviour and the Riksbank's forecasting methods.

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### 2.1 The Riksbank's forecasts and monetary policy considerations

Over the year, monetary policy was dominated by the question of how to contain the high inflation and return it to 2 per cent within a reasonable period of time. Among the issues specifically discussed were the economic consequences of the war in Ukraine, the extent of, and driving forces behind, the upturn in inflation, and the risk that the inflation target would lose its position as a nominal anchor in the economy. A further issue that has been important in the monetary policy deliberations is how the monetary policy transmission works in an environment where households are highly indebted. During 2022, the policy rate was raised from zero to 2.50 per cent (see Figure 11). At the same time, the asset purchases were reduced so that the holding started to decrease (see Figure 12).

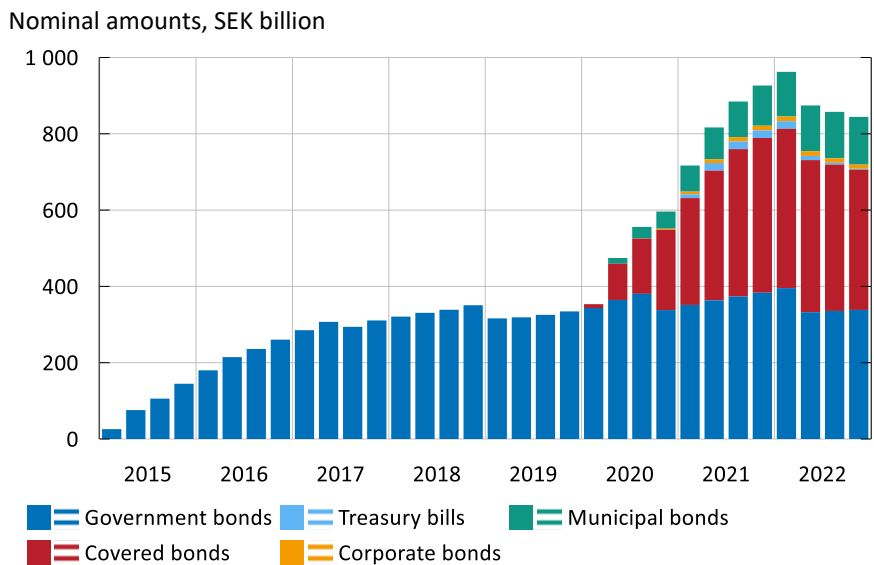
**Figure 11. Policy rate, forecasts 2022**



Note. Outcomes are daily rates and forecasts refer to quarterly averages.

Source: The Riksbank.

**Figure 12. The Riksbank's asset holdings**



Source: The Riksbank.

### Inflation rose to the highest levels in over 30 years

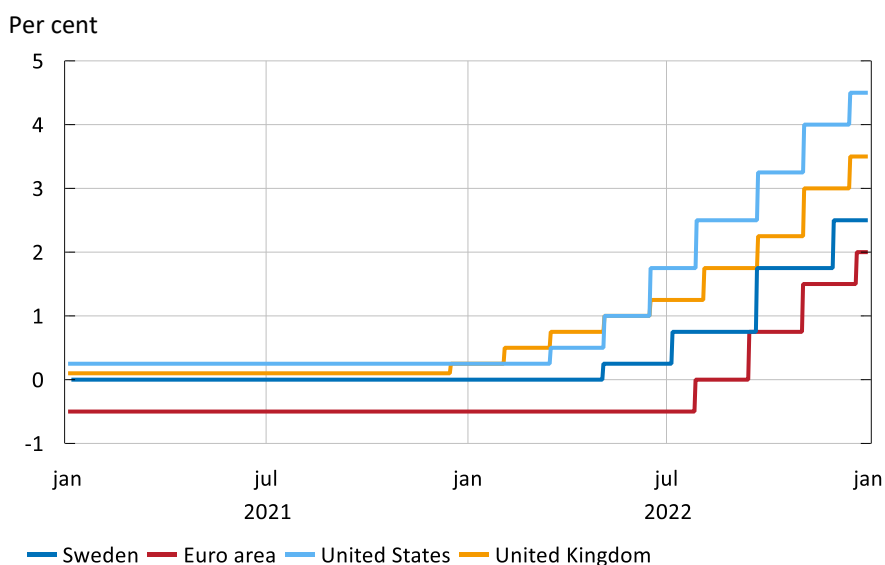
The beginning of 2022 was marked by the strong recovery from the pandemic. Growth prospects were good both in Sweden and abroad, at the same time as demand for labour was high and unemployment fell. Although inflation had risen in most parts of the world, much of the increase could be explained by rapidly rising energy prices and by prices of important input goods and transportation remaining high due to disruptions in global production and supply chains. There were, however, differences between countries. For example, in the United States and United Kingdom



underlying inflation had also risen to relatively high levels, while it was still close to 2 per cent in Sweden and the euro area (see Figure 3 in Chapter 1).

It was difficult to determine whether or not post-pandemic inflation would require a monetary policy reaction. Many analysts considered that this was a temporary, albeit large, increase in inflation. Despite the fact that underlying inflation in the United States was high and rising, in January the Federal Reserve retained its policy rate at a record low of 0–0.25 per cent and continued to expand its asset holdings. However, it signalled that the policy rate would be raised in March and that the asset holdings would cease to grow at that time – a plan that was also followed. In the United Kingdom, on the other hand, the Bank of England began its monetary policy tightening as early as December 2021 and raised the policy rate once again in February to 0.5 per cent (see Figure 13). In addition, they initiated a reduction in the asset holding, in accordance with their previously presented monetary policy plan.<sup>6</sup> Compared to Sweden, the signs of rising underlying inflation were more evident in the euro area, but the ECB chose to hold its policy rate at –0.5 per cent and to continue to increase its asset holdings. There were no signals yet from the ECB that monetary policy would be made less expansionary in the near future.

**Figure 13. International policy rates**



Sources: The respective central banks and the Riksbank.

### Difficult to assess the situation in February

The February Monetary Policy Report noted that the world economy had largely recovered from the large fall in GDP at the start of the coronavirus pandemic and that global growth prospects were good. The Riksbank assessed that activity in the Swedish economy would continue to increase, albeit at a slower pace, and the labour

<sup>6</sup> The plan meant that the asset holding would begin to decrease when the key interest rate reached 0.5 per cent. See “Foreign central banks’ plans for a gradually less expansionary monetary policy” article in the *Monetary Policy Report*, September 2021, Sveriges Riksbank.

market was judged to continue to strengthen as the pandemic subsided (see Figure 14 and Figure 15).

Swedish inflation had risen to 4.1 per cent in December 2021 measured as the CKPIF (see Figure 16), but the increase was explained by the rapid rises in electricity and fuel prices. Measured by the CPIF excluding energy, inflation in December 2021 was 1.7 per cent (see Figure 17). Energy prices were not expected to continue to increase at the same pace and no clear indication of a broad price increase was yet apparent in the inflation outcome. Although service prices had risen, given their weak development during the pandemic, this was not worrying.

The situation was difficult to assess.<sup>7</sup> An article in the Monetary Policy Report discussed how high energy prices could affect other prices. The article also included a scenario where inflation became higher and more persistent and where the policy rate would need to be raised much earlier.<sup>8</sup> In the main scenario it was assumed that CPIF inflation would fall back during the course of 2022 (see Figure 16), partly because energy and food prices were estimated to increase at a slower pace and because long-term inflation expectations remained close to the 2 per cent target (see Figure 7 in Chapter 1).

The Monetary Policy Report noted that there was a risk in the form of the deteriorating security situation in Europe. Among other effects, an intensification of Russia's aggression could lead to rising energy prices and increased unease on the financial markets. However, the consequences were very difficult to assess and were judged to a large extent to depend on how Russia would act in different scenarios.

Demand in Sweden was assessed to be temporarily dampened as a result of the spread of the omicron variant of the corona virus, and as inflation was expected to be close to the target in the slightly longer run, it was assessed that monetary policy needed to remain expansionary and support the economy. At the monetary policy meeting in February, the Executive Board therefore decided to hold the policy rate unchanged at zero per cent. According to the forecast, the policy rate would be raised in the second half of 2024 (see Figure 11), which indicated a somewhat earlier raise than the Riksbank had assumed in November 2021.

The Executive Board also decided to purchase SEK 37 billion of bonds in the second quarter of 2022 to compensate for maturities in the asset holdings, which was the same amount as in the first quarter.<sup>9</sup> As the purchases were made at an even pace, the holding increased in the first quarter, because maturities occurred later in the year (see Figure 12). As before, the forecast was for the holdings to remain roughly unchanged in 2022 and gradually decrease thereafter through maturities. Deputy Governors Anna Breman, Martin Flodén and Henry Ohlsson entered reservations against the decision and the forecast for asset purchases and instead advocated a reduction in the level of reinvestments and a forecast where these were reduced

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<sup>7</sup> See also further discussion in section 4.2 of this account.

<sup>8</sup> See the article "High energy prices – how will other consumer prices be affected?" in *Monetary Policy Report*, February 2022, Sveriges Riksbank.

<sup>9</sup> The Riksbank ceased net purchases of securities at the turn of the year 2021/2022.

more quickly and that purchases of treasury bills would cease completely after the first quarter of 2022.

Economic sentiment showed a downturn when Russia launched its invasion of Ukraine at the end of February, and growth prospects deteriorated. Not long after the February meeting, it became evident that a major shift in monetary policy would be needed in April, overturning the February forecasts. The change was tangible and was therefore communicated in various speeches by Executive Board members.<sup>10</sup> During the spring, electricity and energy prices rose further as a result of disruptions to Russian gas exports to the EU. At the same time, Ukraine's exports of several commodities, such as maize and wheat, fell, pushing up prices for many foodstuffs.

### **Monetary policy was changed in April**

In the April Monetary Policy Report, the Riksbank noted that the economic consequences of Russia's invasion of Ukraine had caused new disruptions to global value chains, exacerbated supply problems and increased uncertainty about the availability of several important commodities. Higher energy and food prices pushed up inflation further at a time when the rate of price increases in several countries was already high, and in March CPIF inflation amounted to 6.1 per cent (see Figure 16).

Since the monetary policy decision in February, inflation, even excluding energy prices, had become significantly higher than expected and outcomes suggested that the upturn was now broad (see Figure 17). At the same time, the Swedish economy remained strong. Both labour force participation and the employment rate had risen to historically high levels and there was a large labour shortage. In the first quarter, unemployment had fallen to 7.7 per cent and was estimated to fall further during the forecast period (see Figure 15).

At the April monetary policy meeting, the Executive Board considered it necessary to shift monetary policy in a significantly less expansionary direction to prevent inflation from becoming entrenched in price setting and wage formation. The Executive Board decided to raise the policy rate from zero to 0.25 per cent. The forecast was for a further 0.5–0.75 percentage point increase in 2022 and further gradual increases thereafter to just below 2 per cent in early 2025 (see Figure 11) This represented a very large change from the February assessment. The Executive Board also decided to reduce the pace of the Riksbank's asset purchases in the second half of 2022 to reduce holdings and that the Riksbank would stop buying Treasury bills as of 28 April 2022 (see Figure 12).

### **The rise in inflation broadened during the spring**

During the spring, the upturn in underlying inflation continued, and there were clear indications that the price increases were spreading through the economy. In the June Monetary Policy Report, the Riksbank noted that price increases in Sweden, as in the

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<sup>10</sup> See for example Anna Breman and Stefan Ingves, [open hearing on monetary policy](#) in the Committee on Finance 3 March 2022, speech by Anna Breman (2022), "Inflation and monetary policy in the shadow of a war", 23 March 2022, Sveriges Riksbank and speech by Martin Flodén (2022), "Monetary policy for on-target inflation", 6 April 2022, Sveriges Riksbank.

rest of the world, had now become more widespread. Goods and food and also service prices had risen considerably more than expected since the April monetary policy meeting and CPIF inflation stood at 7.2 per cent in May (see Figure 16) CPIF inflation excluding energy is therefore lower and amounted to 5.4 per cent in (see Figure 17) May.

In addition, the Swedish krona had weakened. It is not unusual for the krona to weaken when financial market uncertainty increases, but the Riksbank assessed that it was weaker than might be expected on the basis of general economic developments in Sweden compared with the rest of the world. The krona was therefore expected to strengthen slightly in the forecast (see Figure 18).

Several factors thus contributed to the rapid increase in companies' costs and the strong demand made it possible to pass on cost increases to consumer prices.<sup>11</sup> Even though growth prospects deteriorated and uncertainty increased, economic activity and labour markets were remarkably strong in many countries, including Sweden. In some countries, notably the United States and United Kingdom, there were signs that wage expectations and actual wage increases had begun to rise.<sup>12</sup>

In the Riksbank's Business Survey, companies testified to a strong economic situation.<sup>13</sup> Indicators, such as the National Institute of Economic Research's Economic Tendency Survey, also pointed to continued high labour demand. In Sweden, employment grew rapidly in the first quarter and unemployment fell markedly (see Figure 15). However, GDP growth was expected to slow down, mainly due to lower growth rates in household consumption and declining residential investment. As GDP growth slowed down, demand for labour was also expected to slow and unemployment was therefore estimated to rise slightly from 2023 onwards (see Figure 15).

At the June Monetary Policy Meeting, the Executive Board noted that inflation had continued to rise rapidly and that price increases were becoming more widespread in the economy. The rapid rise in inflation has increased the risk of weakened confidence in the inflation target. Inflation expectations had risen, particularly over the one and two-year horizon, but also over the longer term (see Figure 7 in Chapter 1). The Executive Board therefore decided to raise the policy rate from 0.25 to 0.75 per cent, to ensure that inflation would return to target and to prevent the high inflation from taking hold in price and wage formation. The forecast for the policy rate was also revised upwards (see Figure 11). The Executive Board also decided that the Riksbank's asset purchases during the second half of the year would be halved compared with the decision in April. Reinvestment would thus be lower and the asset holding would decrease at a faster rate.

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<sup>11</sup> A study by the National Institute of Economic Research (NIER) from December 2022 indicates that consumer prices increased approximately as much as production costs between the second quarter of 2021 and the second quarter of 2022, see National Institute of Economic Research (NIER) (2022), "[Pricing in Swedish companies in 2022](#)", *Special Studies*, December 2022.

<sup>12</sup> See the article "Labour shortages and higher wage pressures abroad" in *Monetary Policy Report*, June 2022, Sveriges Riksbank.

<sup>13</sup> See "Everyone is talking about the problems, no one about how well things are going", Riksbank's Business Survey, May 2022, Sveriges Riksbank.

## Policy rate raised by 1 percentage point in September

Inflation continued to rise in the summer and autumn of 2022. In Sweden, CPIF inflation was 9.0 per cent in August (see Figure 16), while price increases excluding energy costs amounted to 6.8 per cent (see Figure 17). Inflation was not driven by large increases in individual product prices, but was broad-based – goods and food prices as well as service prices had risen considerably more than expected.

In the September Monetary Policy Report, the Riksbank noted that inflation had risen rapidly and was high both in Sweden and abroad, and that several factors linked to the pandemic and Russia's war in Ukraine contributed to this development. Not least electricity and gas prices rose to very high levels in Europe.

Although the large price increases had eroded household purchasing power, Swedish households consumed at a rapid pace during the second quarter. This was probably due to pent-up demand and the desire to resume a normal way of life after two years of pandemic and restrictions. This was reflected in strong GDP growth, which was thus mainly driven by household consumption, although also by business investment. Employment growth was also strong, but labour demand was expected to subside as economic activity declined (see Figure 15).

Since the monetary policy meeting in June, the Swedish krona had continued to weaken and since the beginning of the year the krona had weakened by around 5 per cent overall (see Figure 18). This was judged partly to be due to the high volatility of the financial markets during the summer, but also to the policy rate increases initiated in some other countries during the spring.

At the September Monetary Policy Meeting, the Executive Board assessed that monetary policy needed to be tightened further to bring inflation back to the target. As the rate of increase in both food and electricity prices had risen further, CPIF inflation was expected to continue rising for the rest of the year. The Executive Board therefore decided to raise the policy rate by 1 percentage point to 1.75 per cent (see Figure 11). The forecast for the policy rate suggested that it would continue to be raised over the next six months to around 2.5 per cent. This tightening of monetary policy was assessed as necessary to bring inflation back to the target within a reasonable time perspective.

The Executive Board noted that inflation developments ahead remained difficult to assess and that monetary policy would be adjusted as necessary to ensure that inflation returned to target within a reasonable period of time.

There were discussions in the monetary policy assessment of the increased indebtedness among households having led to monetary policy now having a greater impact on demand in the economy. The policy rate therefore does not need to be raised as much to have the same tightening effect on the economy as before, which was an important aspect to take into account in the monetary policy decisions.<sup>14</sup>

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<sup>14</sup> See the article "Higher sensitivity to interest rates in the Swedish economy" in *Monetary Policy Report*, September 2022, Sveriges Riksbank.

The Executive Board noted that rising prices and higher interest expenditure were having an impact on households and companies, but that it would be even more painful for the Swedish economy if inflation were to remain at high levels. A larger rate increase was assessed to reduce the risk of high inflation in the longer term and thereby also the need for greater monetary tightening further ahead.

### **Inflation continued to rise – policy rate raised to 2.5 per cent in November**

During the autumn, economic activity remained strong both in Sweden and in large parts of the rest of the world. However, forward-looking indicators suggested that economic activity was slowing down and that GDP would perform weakly in the near term. The November Monetary Policy Report noted that inflation was still high, despite the fact that electricity prices had fallen, thanks to mild weather, among other things.

CPIF inflation had continued to rise and stood at 9.3 per cent in October (see Figure 16). For Sweden, it was worrying that underlying inflation, as measured by the CPIF excluding energy, had continued to rise to 7.9 per cent in October, half a percentage point higher than the Riksbank had estimated in September (see Figure 17).

In addition, the krona had weakened further (see Figure 18). Over the year, the turbulence on the financial markets and tightening monetary policy abroad, especially in the United States, contributed to an overall weakening of the krona by around 7 per cent in KIX-weighted terms.

However, the Swedish economy remained strong. GDP grew by 0.7 per cent in the third quarter and the employment rate had continued to rise to a historically high level. In the Riksbank's Business Survey from September, many companies stated that the economic situation was good and that the rates of production and sales were high. However, an increasing number of companies were preparing for a downturn and the economic situation was expected to worsen considerably in the period ahead.<sup>15</sup>

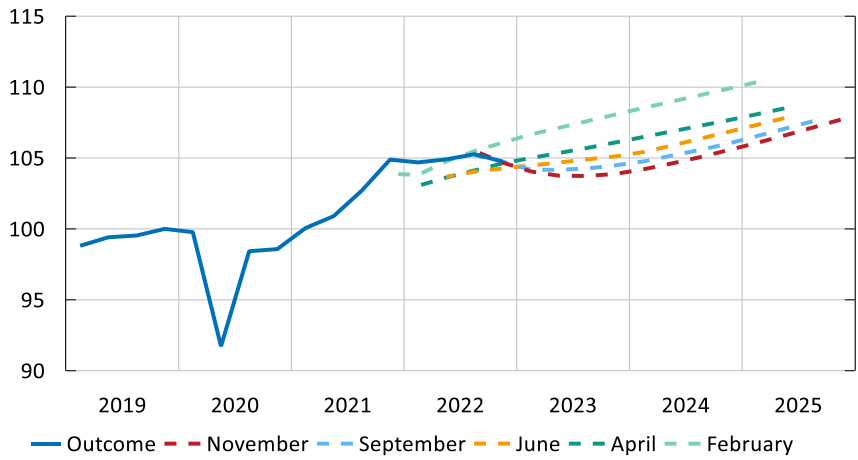
At the year's last monetary policy meeting in November, the Executive Board assessed that monetary policy needed to be tightened further to bring inflation back to target, compared with the assessment in September. The Executive Board therefore decided to raise the policy rate by 0.75 percentage points to 2.5 per cent. The forecast was that the policy rate would subsequently be raised further at the beginning of 2023 to just under 3 per cent (see Figure 11). At the monetary policy meeting, the Executive Board did not take any decision on asset purchases in 2023, which in practice meant that purchases would be completed at the end of the year and that holdings would then decline in line with maturities.

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<sup>15</sup> See "Costs accelerating, economy slowing down", *Riksbank's Business Survey*, September 2022, Sveriges Riksbank.

**Figure 14. GDP, 2022 forecasts**

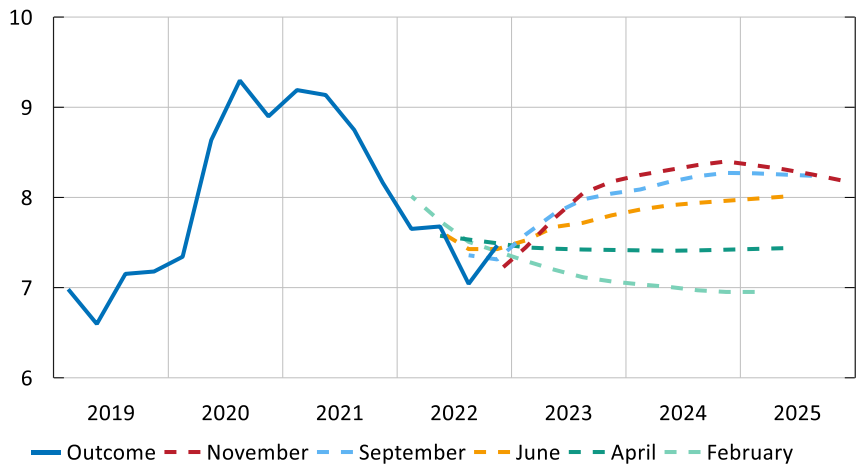
Index, 2019 Q4=100, seasonally adjusted data



Sources: Statistics Sweden and the Riksbank.

**Figure 15. Unemployment, 2022 forecasts**

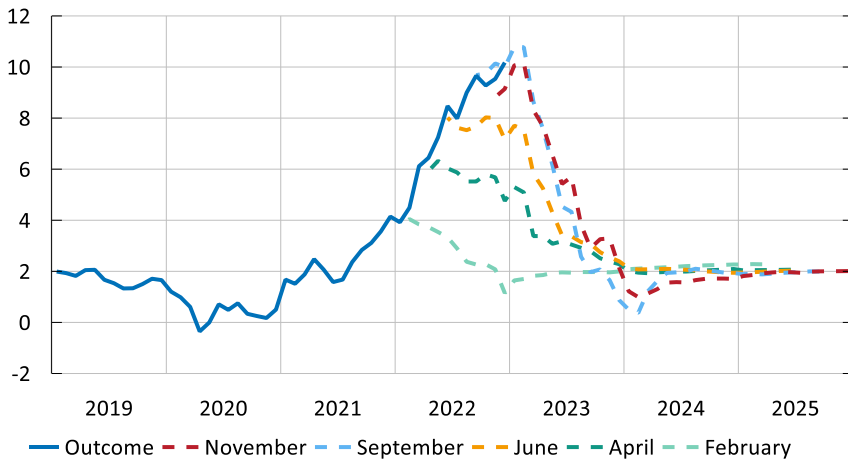
Percentage of labour force, 15-74 years, seasonally adjusted data.



Source: Statistics Sweden and the Riksbank.

**Figure 16. CPIF, 2022 forecasts**

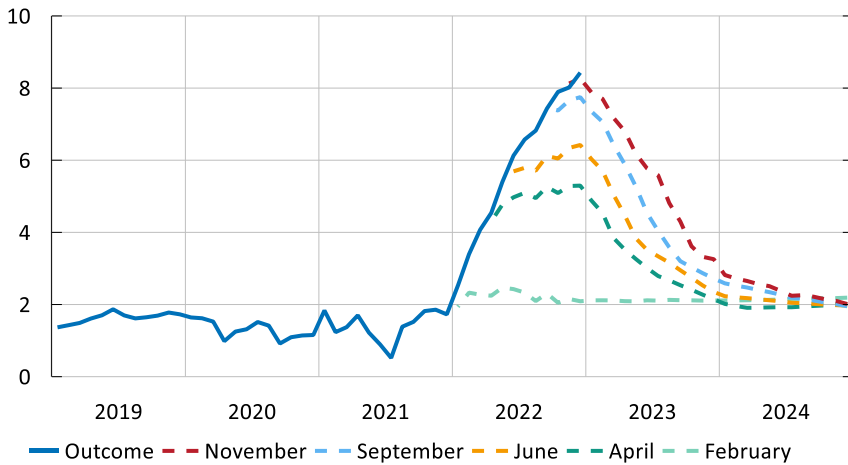
Annual percentage change



Sources: Statistics Sweden and the Riksbank.

**Figure 17. CPIF excluding energy, forecasts 2022**

Annual percentage change

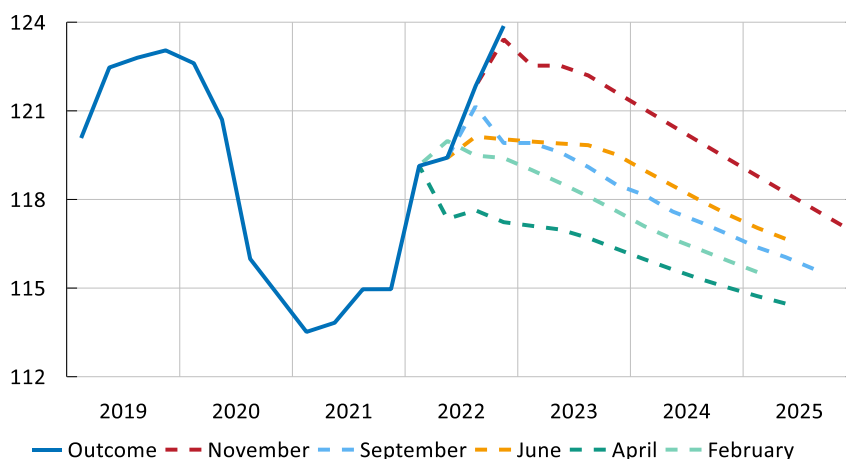


Sources: Statistics Sweden and the Riksbank.



**Figure 18. Nominal exchange rate, KIX, 2022 forecasts**

Index, 18 November 1992 = 100



Note. The KIX (krona index) is a weighted average against currencies in the countries that are important for Sweden's international transactions.

Sources: National sources and the Riksbank.

## 2.2 Lessons learned from the rise in inflation 2022

The rapid and unexpected rise in inflation in 2022 resulted in a continuous upward revision of inflation forecasts, while the policy rate was raised more than previously announced. Although the development was difficult to predict, there is every reason to go back and try to understand whether there were signs of rising inflation that were overlooked and what lessons can be learned from the course of events.

Like many other central banks around the world, the Riksbank underestimated the strength of the recovery after the pandemic. A high level of savings among households, combined with continued supply disruptions, resulted in an unexpectedly strong inflationary impulse when the economies opened up and demand had an impact.<sup>16</sup>

One contributing factor to the underestimation of the upturn in inflation was that the forecast models used by the Riksbank as a rule were estimated on data since the mid-1990s and captured average effects since then. Inflation has been low and stable for most of that period, so firms and households tend to take little account of it in their economic decisions.<sup>17</sup> In an environment where prices for producers and consumers are increasing rapidly, there is a much greater tendency to take inflation into account,

<sup>16</sup> See also speech by T. Macklem (2022), "[Putting the resolutions in resolutions: Looking ahead to lower inflation](#)", 12 December 2022, Bank of Canada.

<sup>17</sup> This phenomenon is known as rational inattention and has been highlighted in communications from several central banks. For example, see speech by P. Beaudry (2023), "[No two ways about it: Why the Bank is committed to getting back to 2%](#)", 16 February 2023, Bank of Canada, speech by J. Powell (2022), "[Monetary Policy and Price Stability](#)", Jackson Hole, 26 August 2022, and speech by C. Mann (2022), "[Inflation expectations, inflation persistence and monetary policy strategy](#)", 5 September 2022, Bank of England.

which was noted, for instance, in companies' pricing behaviour at the beginning of the year. In the past, cost increases have not been fully passed on to the consumer, but a study from the National Institute of Economic Research suggests that this occurred to a large extent in 2021–2022.<sup>18</sup>

Another sign that pricing behaviour has changed is visible in the Riksbank's business surveys. After long reporting on the difficulty of raising prices, the survey in March 2022, instead, returned opinions such as "never experienced customers accepting price increases so easily". And this was despite the fact that these interviews were carried out prior to the Russian invasion of Ukraine.<sup>19</sup> Changes in pricing behaviour may have meant that the Riksbank initially underestimated the indirect effects of rising energy prices on inflation. Similarly, the impact of a weaker krona on inflation may also have been greater in 2022 than indicated by historical correlations. One lesson is that changes in pricing behaviour among companies need to be followed very closely.

There are a number of further lessons from developments in 2022 with regard to inflation forecasting methods.<sup>20</sup> The Riksbank's short-term models, which have worked well in the past, proved to have difficulty capturing the rise in inflation over the year. More "fast data" may be needed to follow developments in consumer prices, such as data from the Internet on different prices. In addition, the monitoring of inflation in the rest of the world may need to be further strengthened. In the United States, for example, inflation already rose sharply in 2021, and the significance of this for developments in the rest of the world may have been underestimated.

During the year, the Riksbank placed a great focus on trying to understand inflation better, including a number of articles on inflation and the methods for forecasting its development.<sup>21</sup> However, the developments underline the importance of further analysis of the uncertainty surrounding the forecasts, for example by using more widely different scenarios for inflation.

Although several scenarios for future inflation were presented in the Monetary Policy Report in 2022, the scenarios could have been integrated further into the monetary policy strategy and communication. One possible lesson could be, in addition to the main scenario, to take greater account of alternative scenarios in the monetary policy decisions. This would also create an increased focus on the uncertainty of the assessments in monetary policy communication. In this way, the readiness of economic agents to cope with unexpected developments could be improved.

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<sup>18</sup> A study by the National Institute of Economic Research (NIER) indicates that consumer prices increased approximately as much as production costs between the second quarter of 2021 and the second quarter of 2022; see National Institute of Economic Research (NIER) (2022), "Pricing in Swedish companies in 2022", *Special Studies*, December 2022.

<sup>19</sup> See "I've never before experienced customers accepting price increases so easily", *The Riksbank's Business Survey*, February 2022, Sveriges Riksbank.

<sup>20</sup> See J. Johansson, M. Löf, P. Stockhammar and I. Strid (2022), "What explains the Riksbank's forecast error for inflation?", *Staff memo*, June, Sveriges Riksbank.

<sup>21</sup> See also the article "The Riksbank's monetary policy development work" in this account.

## 2.3 List of monetary policy decisions 2022

The Executive Board of the Riksbank held five monetary policy meetings in 2022. In conjunction with these, a Monetary Policy Report was published containing forecasts for the policy rate, inflation and other economic variables.

**9 February.** The Executive Board decided to hold the policy rate unchanged at zero per cent and that this decision should apply with effect from Wednesday 16 February 2022. In addition, it was decided that, between 1 April and 30 June 2022, the Riksbank would

- a) purchase Swedish nominal and real government bonds and the Swedish state's green bonds to a total nominal amount of SEK 12 billion,
- b) purchase Swedish treasury bills to such a nominal total amount that the Riksbank's holdings of treasury bills could be maintained at a level around SEK 20 billion,
- c) purchase bonds issued by Swedish municipalities and regions and by Kommuninvest i Sverige AB for a nominal amount of SEK 12 billion, which could also include purchases of green municipal bonds,
- d) purchase covered bonds issued in Swedish krona by Swedish credit institutions to a nominal amount of SEK 12 billion,
- e) purchase bonds issued in Swedish kronor by Swedish non-financial corporations for a nominal amount of SEK 1 billion, which could also include the purchase of green bonds.

Deputy Governors Anna Breman, Martin Flodén and Henry Ohlsson entered reservations against the decision on and forecast for asset purchases. They advocated purchases of government and municipal bonds as well as covered bonds in the second quarter of 2022 for SEK 9 billion per bond type and a gradual tapering of purchases during the second half of the year. They also advocated that the Riksbank's purchases of treasury bills should cease after the first quarter of 2022 and that purchases of corporate bonds should decrease to SEK 500 million in the second quarter and then be either further tapered or discontinued completely. In their view, such a tapering of purchases would be consistent with continued expansionary financial conditions, strong development of the real economy and attainment of the inflation target.

**27 April.** The Executive Board decided to raise the policy rate to 0.25 per cent and that this decision would apply from Wednesday, 4 May 2022. In addition, the Executive Board decided to reduce the pace of the asset purchases during the second half of the year, so that the holdings would begin to decline. In detail, the decision meant that, between 1 July and 31 December 2022, the Riksbank would

- a) purchase Swedish government bonds for a nominal amount of SEK 12 billion, which could also include the purchase of the Swedish State's green bonds,

- b) purchase bonds issued by Swedish municipalities and regions and by Kommuninvest i Sverige AB for a nominal amount of SEK 12 billion, which could also include purchases of green municipal bonds,
- c) purchase covered bonds issued in Swedish krona by Swedish credit institutions to a nominal amount of SEK 12 billion,
- d) purchase bonds issued in Swedish kronor by Swedish non-financial corporations for a nominal amount of SEK 1 billion, which could also include the purchase of green bonds.

In addition, it decided that the Riksbank should cease buying Swedish treasury bills with effect from 28 April 2022.

**29 June.** The Executive Board decided to increase the policy rate to 0.75 per cent and that this decision would apply from Wednesday 6 July 2022. In addition, it was decided that, between 1 July and 31 December 2022, the Riksbank would

- a) purchase Swedish government bonds for a nominal amount of SEK 6 billion, which could also include the purchase of the Swedish State's green bonds,
- b) purchase bonds issued by Swedish municipalities and regions and by Kommuninvest i Sverige AB for a nominal amount of SEK 6 billion, which could also include purchases of green municipal bonds,
- c) purchase covered bonds issued in Swedish krona by Swedish credit institutions to a nominal amount of SEK 6 billion,
- d) purchase bonds issued in Swedish kronor by Swedish non-financial corporations for a nominal amount of SEK 500 billion, which could also include the purchase of green bonds.

Finally, it was decided that, as of 1 September 2022, the Riksbank would only purchase corporate bonds issued by companies that report their annual direct and indirect emissions of greenhouse gases (scope 1 and scope 2) in accordance with the recommendations of the Task Force on Climate-related Financial Disclosures.

**19 September.** The Executive Board decided to raise the policy rate by 1 percentage point to 1.75 per cent and that this decision would apply from Wednesday 21 September 2022.

**23 November.** The Executive Board decided to raise the policy rate by 0.75 percentage points to 2.5 per cent and that this decision would apply from 30 November 2022.

### 3 The Riksbank's forecasts and monetary policy in recent years

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Economic activity abroad was about as strong as the Riksbank had expected in 2022, while economic activity in Sweden developed, overall, in line with the more optimistic forecasts from previous years. The invasion of Ukraine, as well as imbalances between supply and demand in the wake of the pandemic, contributed to inflation rising in Sweden and abroad and becoming exceptionally high – much higher than in the Riksbank's forecasts. Swedish inflation reached the highest levels since the introduction of the inflation target and prices for almost all goods and services rose sharply. The rise was thus broad-based. One criterion for determining whether monetary policy was well designed in 2020 and 2021 is to assess whether the forecasts in those years look reasonable in retrospect. In those years, the Riksbank expected significantly lower inflation and therefore continued to pursue an expansionary monetary policy. Although the rise in inflation in 2022 was largely due to unforeseen events to which monetary policy cannot react in advance, the Riksbank underestimated the effects of, among other things, rapidly rising energy prices and business costs in 2021. It is important to learn from the forecasting errors and the Riksbank is therefore working continuously to improve its forecasting methods.

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As it takes time for monetary policy to have a full impact on inflation and the rest of the economy, monetary policy is based on forecasts of economic developments. The economy is constantly subject to disturbances that cause inflation to deviate from the target. When this happens, the Riksbank normally adjusts its monetary policy so that CPIF inflation returns to 2 per cent within a reasonable time horizon. The inflation forecast on each occasion shows how quickly the Riksbank intends to bring inflation back to the target after a deviation. Other forecasts also show how the adjustment to inflation has been weighed against the effect on real economic variables, such as production and employment.

Although it takes time for monetary policy to attain full impact on the economy, some effects can still appear relatively quickly. This is the case, for example, when changes in the exchange rate affect import prices. The monetary policy conducted during 2022, described in more detail in Chapter 2, can thus to some extent have affected inflation during the same year. Having said this, the remainder of this chapter will focus on the Riksbank's forecasts and monetary policy in 2020 and 2021.

One way to shed light on monetary policy in 2020 and 2021 is to study the accuracy of the Riksbank's forecasts from those years. At the same time, forecast errors do not

necessarily describe how well monetary policy has been conducted or how well-founded the forecasts are. The objective is obviously that the Riksbank's forecasts should be accurate so that monetary policy decisions are based on an as accurate picture as possible of economic developments going forward. However, unforeseen events in the economy occur constantly, which in turn means that economic developments often deviate even from well-founded forecasts. Some statistics are also revised afterwards, which means that the outcomes, the very starting point for monetary policy assessment, may in turn change.

Most of the figures in this chapter show the actual development, together with the Riksbank's forecasts for a number of key variables. The purpose of the figures is to illustrate in an overall way the Riksbank's previous assessments of economic developments and to compare these with outcomes. It is therefore not necessary to identify individual forecasts. As the pandemic completely changed the conditions for economic development, this chapter presents and discusses only the forecasts from the Monetary Policy Report in July 2020 onwards.<sup>22</sup> The accounts of monetary policy published in the past two years described in more detail the forecasts and motives for monetary policy decisions in 2020 and 2021.

### 3.1 Economic developments in Sweden and abroad

#### **In 2022, GDP abroad developed in line with the Riksbank's expectations, but international inflation continued to rise unexpectedly quickly**

Sweden is a small open economy, meaning that what happens abroad has considerable significance for what happens domestically. To capture developments abroad, the Riksbank weighs together different countries based on their significance for Sweden's foreign trade according to the krona index (KIX). Developments in the euro area are particularly important, as it accounts for almost 50 per cent of the index.

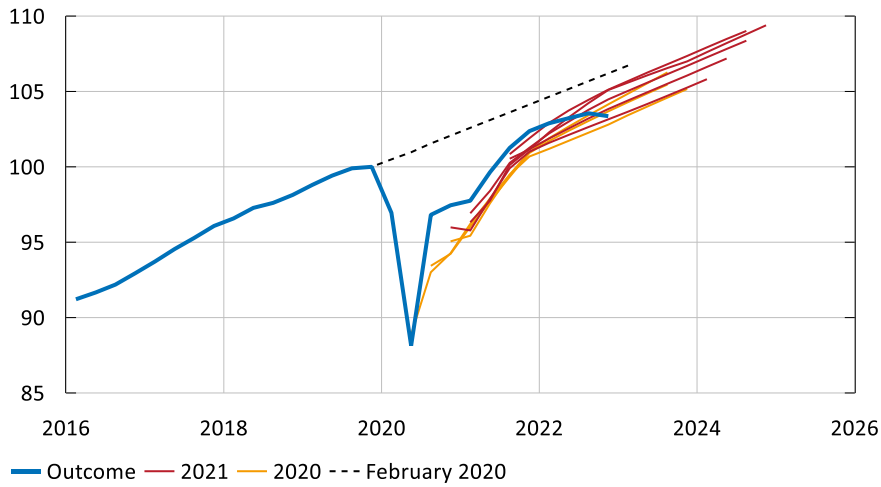
The Riksbank expected GDP in the rest of the world to recover relatively quickly after the pandemic (see Figure 19). Although the recovery up to and including the first half of 2021 was somewhat faster than expected, these forecasts can still be considered as relatively accurate, given the high level of uncertainty about how the pandemic would develop and be managed. At the end of 2021, problems in production and supply chains and a new wave of the coronavirus pandemic contributed to slowing global growth. During 2022, growth slowed down slightly more than expected, resulting in a GDP level somewhat lower than the final forecasts made in 2021. In the western world, the surprisingly high inflation contributed to a larger than expected decline in purchasing power, and thus also demand. In China, the zero tolerance of Covid-19, and the shut-downs it entailed, contributed to a historically low growth.

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<sup>22</sup> The February 2020 Monetary Policy Report was published before the coronavirus had developed into a pandemic and the April 2020 Monetary Policy Report did not present a forecast, but two scenarios instead.

**Figure 19. GDP abroad, outcomes and forecasts**

Index, 2019 Q4 = 100, seasonally adjusted data



Note. KIX-weighted GDP. KIX is an aggregate of the countries that are important to Sweden's international transactions. 2020 refers to the forecasts made from July onwards that year. The February 2020 forecast is shown for comparison.

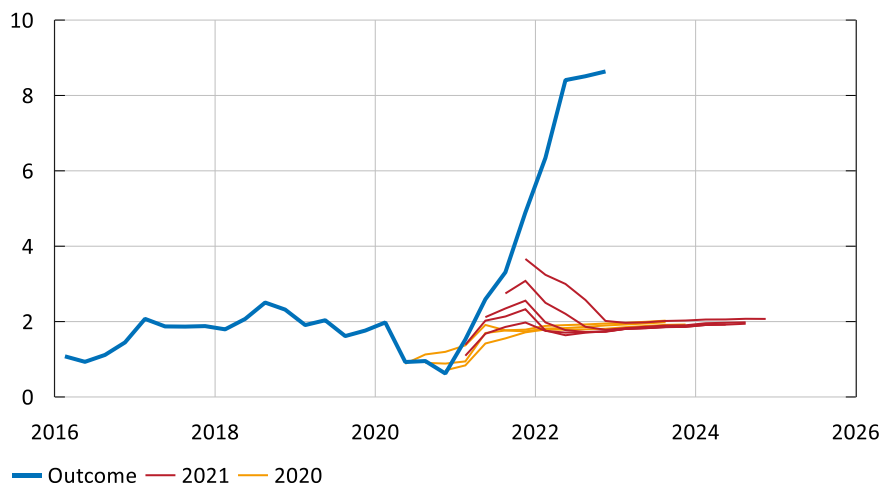
Sources: National sources and the Riksbank.

Inflation in the rest of the world initially fell at the onset of the pandemic. The forecasts from 2020 show that the Riksbank expected inflation in the rest of the world to rise gradually as the economy recovered (see Figure 20). However, compared with these forecasts, inflation in the rest of the world was significantly higher than expected from the second quarter of 2021 onwards. In 2021, forecasts were also gradually adjusted upwards as outcomes continued to be surprisingly high. Higher energy and food prices were the main contributors to rising inflation in many countries. The rise in inflation came earlier and was more pronounced in the United States than in Europe.

Like many other forecasters at the end of 2021, the Riksbank forecasted that inflation in the rest of the world would fall back in 2022, partly because supply problems were expected to ease and energy prices were not expected to rise at the same high pace as before. However, several extraordinary disruptions linked to the war in Ukraine and the pandemic pushed up world prices for many commodities, inputs, energy and food even further. In Europe in particular, the war led to a sharp rise in energy prices. At the same time, the labour market remained strong in, for example, the United States and the euro area, which contributed to higher wages, and generally good demand enabled companies to pass on their higher production costs to consumer prices.

**Figure 20. International inflation, outcome and forecasts**

KIX-weighted, annual percentage change



Note. KIX is an aggregate of the countries that are important to Sweden's international transactions. 2020 refers to the forecasts made from July onwards that year.

Sources: National sources and the Riksbank.

### Krona clearly weaker than expected in wake of greater financial uncertainty

How the exchange rate develops affects Swedish inflation and the real economy. A direct effect on inflation comes via imported goods purchased in foreign currency. Exchange rates vary a lot and are difficult to forecast accurately. The Riksbank's exchange rate forecast is based on a gradual adjustment to a long-term real equilibrium exchange rate. In the last forecasts from 2020 and during 2021, the krona was assessed to be relatively close to its long-term level and was therefore expected to strengthen relatively slowly (see Figure 21). After the krona strengthened faster than expected in 2020, the exchange rate was relatively unchanged in 2021.

In 2022, the value of the krona fell unexpectedly fast and it became much weaker than the Riksbank's forecasts from 2020 and 2021. One explanation for this is considered to be higher global financial uncertainty caused by, among other things, Russia's invasion of Ukraine.<sup>23</sup> Increased financial uncertainty tends to lead to weaker currencies in small open economies.<sup>24</sup> Another contributing factor is that market rates in several countries have risen more than in Sweden. The Riksbank's previous estimates, based on historical relationships, suggest that a permanent weakening of the krona by 10 per cent leads to CPI inflation being at most about 0.5 percentage points higher after around one year.<sup>25</sup> The impact on inflation may have been greater recently, as the krona has weakened considerably while many producer prices have increased. Firms have then probably been more likely to transfer higher import prices

<sup>23</sup> See the article "Why has the krona weakened this year?" in *Monetary Policy Report*, November 2022, Sveriges Riksbank.

<sup>24</sup> See, for example, P. Bacchetta and P. Chikhani (2021), "On the weakness of the Swedish krona", *Economic Review* No. 1, Sveriges Riksbank.

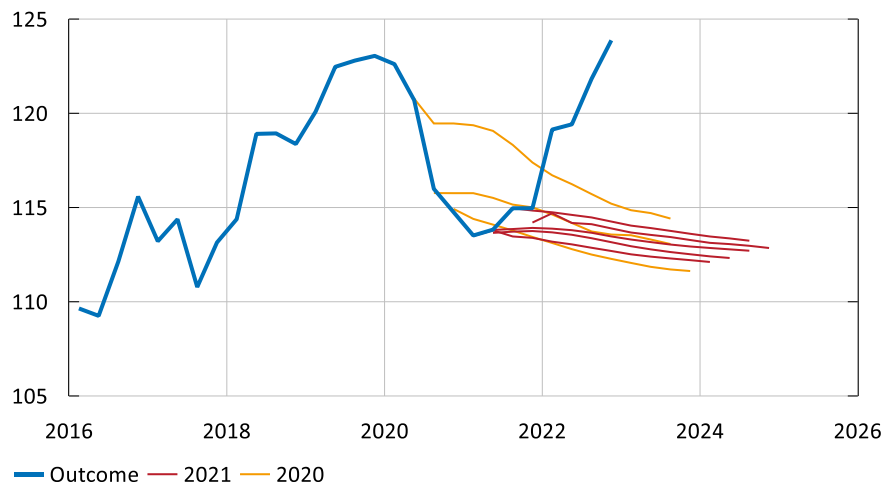
<sup>25</sup> See the article "The impact of the exchange rate on inflation" in *Monetary Policy Report*, December 2016, Sveriges Riksbank.



to consumer prices, regardless of whether the increase in costs is due to the weak krona or high freight and commodity prices in foreign currency. The actual weakening of the krona, as measured by the KIX, in 2022 was just over 7 percent.

**Figure 21. Nominal exchange rate, KIX, outcomes and forecasts**

Index, 18 November 1992=100



Note. 2020 refers to the forecasts made from July onwards that year. The KIX (krona index) is an weighted average of the krona exchange rate against currencies in countries that are important for Sweden's international transactions. A higher value indicates a weaker exchange rate.

Source: The Riksbank.

### Unexpectedly strong economic activity in Sweden in 2022

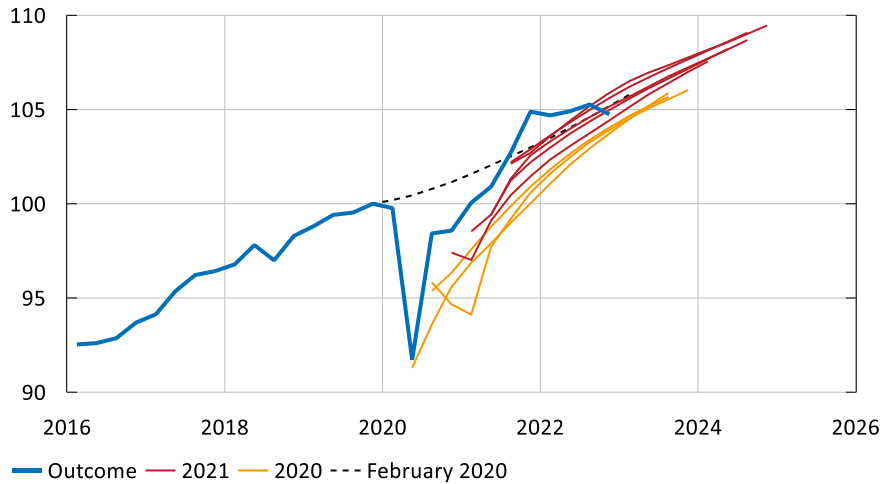
In 2020, the Riksbank expected that GDP in Sweden would recover after the initial fall in connection with the outbreak of the pandemic, but that GDP would still not reach the level expected prior to the pandemic (see Figure 22). At the same time, unemployment was expected to rise initially and then fall back towards pre-pandemic levels (see Figure 23). As the recovery progressed faster than expected, the GDP forecast was gradually revised upwards. Nevertheless, the overall level of GDP was slightly higher in the first three quarters of 2022 than the Riksbank had expected in the previous two years, when both investment and household consumption were surprisingly high. However, there was a marked slowdown in the fourth quarter when GDP fell and was lower than expected in 2021.

The labour market also developed strongly in 2022, although it weakened slightly in the last quarter (see Figure 24). Both unemployment and employment developed in line with the more optimistic forecasts from 2021 and clearly stronger than those from 2020. The employment rate reached historically high levels. The stronger labour market performance than projected in 2020 reflects the slower recovery expected at that time. An evaluation of the unemployment and employment forecasts is complicated by the fact that Statistics Sweden implemented some changes in the Labour Force Survey (LFS) in 2021, as the forecasts from 2020 to February 2021 were based on the old statistics. Nevertheless, the overall picture is that economic activity was

slightly stronger than expected, even if it slowed down somewhat in the last quarter of 2022.

**Figure 22. GDP, outcomes and forecasts**

Index, 2019 Q4=100, seasonally adjusted data

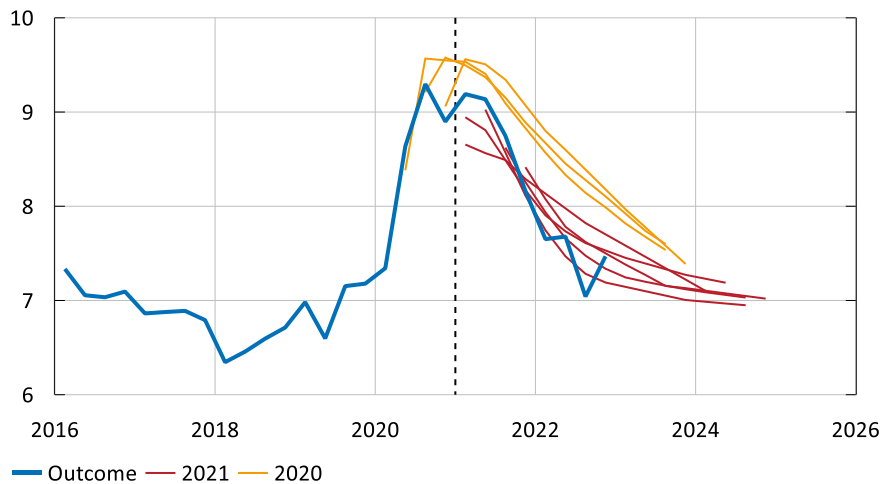


Note. 2020 refers to the forecasts made from July onwards that year. The February 2020 forecast is shown for comparison.

Sources: Statistics Sweden and the Riksbank.

**Figure 23. Unemployment, outcomes and forecasts**

Percentage of labour force, 15-74 years, seasonally adjusted data

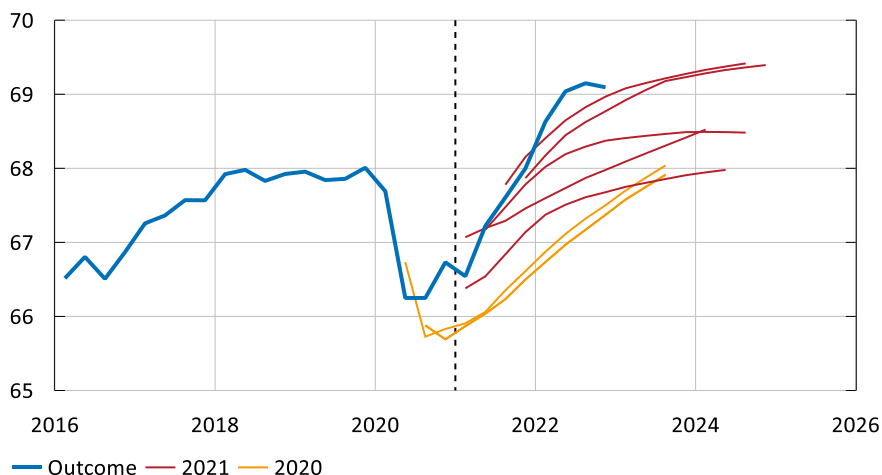


Note. 2020 refers to the forecasts made from July onwards that year. The broken vertical line marks a time series break in the LFS in January 2021. For further information on the break in the time series, see the Fact Box in the April 2021 Monetary Policy Report and the article "The LFS reorganisation and the Riksbank's analysis of the labour market" in the February 2021 Monetary Policy Report.

Sources: Statistics Sweden and the Riksbank.

**Figure 24. Employment rate, outcomes and forecasts**

Percentage of population, 15-74 years, seasonally adjusted data



Note. 2020 refers to the forecasts made from July onwards that year. The broken vertical line marks a time series break in the LFS in January 2021. For further information on the break in the time series, see the Fact Box in the April 2021 Monetary Policy Report and the article “The LFS reorganisation and the Riksbank’s analysis of the labour market” in the February 2021 Monetary Policy Report.

Sources: Statistics Sweden and the Riksbank.

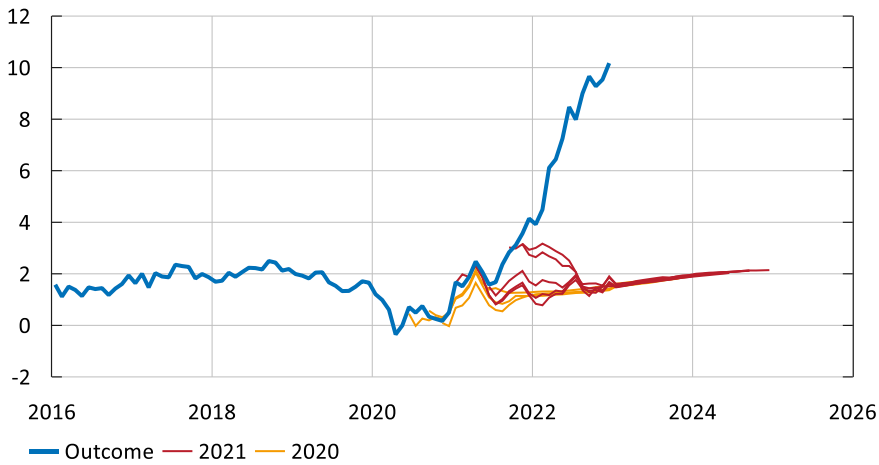
### Unforeseen events contributed to Swedish inflation becoming much higher than expected

In 2020, when the pandemic hit and inflation was low, there was reason to believe that it would take time for activity to recover and reach more normal levels. CPIF inflation was therefore expected to remain below the target in 2022 (see Figure 25). In the second half of 2021, CPIF inflation rose gradually. Although the Riksbank highlighted risks of further increases in inflation, the upturn was seen as essentially transitory and the Riksbank expected inflation to decrease in 2022, the contribution of energy prices to inflation to fall in line with forward pricing, supply problems to be resolved and demand to normalise.<sup>26</sup> The fact that energy prices were behind the rise in the second half of 2021 is evident when comparing the development of CPIF inflation including and excluding energy prices (see Figure 25 and Figure 26). Contrary to expectations, inflation rose very rapidly in 2022, reaching by far the highest levels since the introduction of the inflation target.

<sup>26</sup> See the in-depth article “Higher inflation - temporary or permanent?” in *Monetary Policy Report*, November 2021, Sveriges Riksbank.

**Figure 25. CPIF, outcomes and forecasts**

Annual percentage change

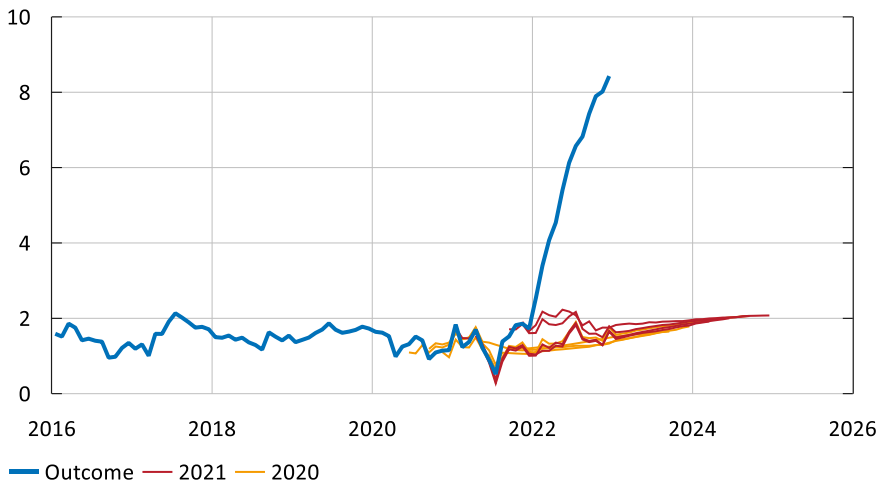


Note. 2020 refers to the forecasts made from July onwards that year.

Sources: Statistics Sweden and the Riksbank.

**Figure 26. CPIF excluding energy, outcomes and forecasts**

Annual percentage change



Note. 2020 refers to the forecasts made from July onwards that year.

Sources: Statistics Sweden and the Riksbank.

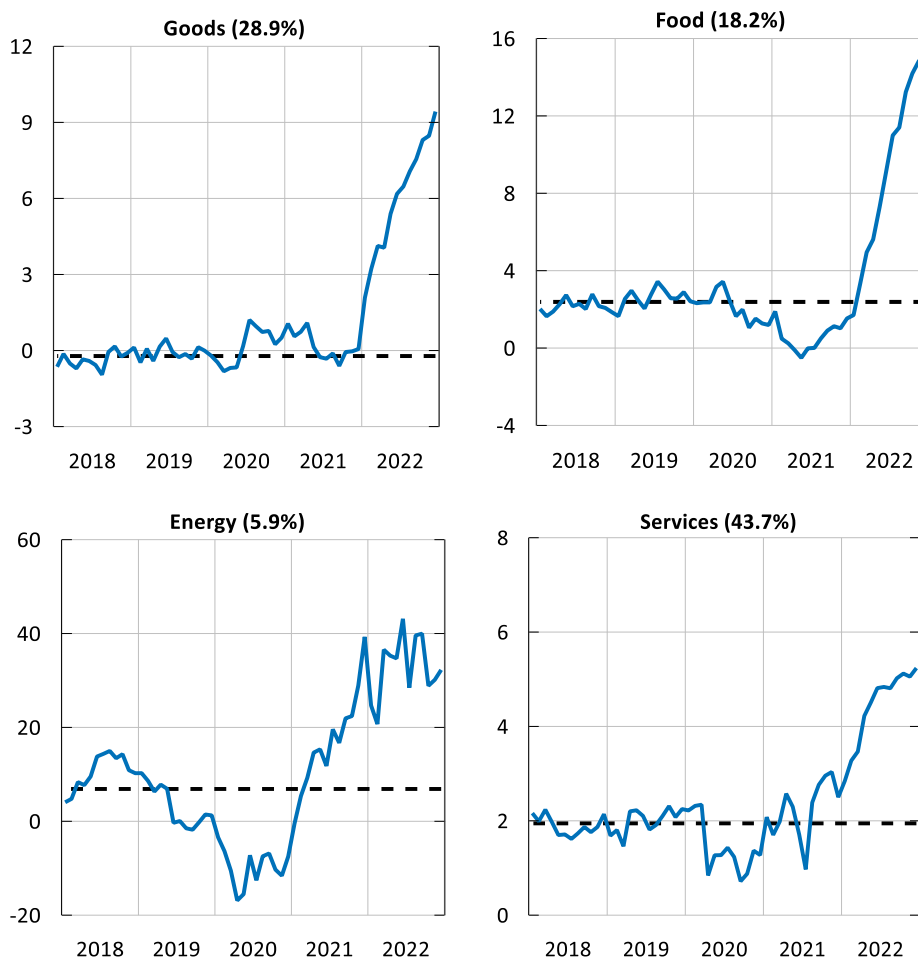
One way to shed light on what drove the rapid rise in inflation in 2022 and the large forecast deviations is to study the rate of price increases for different sub-components of the CPIF. Figure 27 shows that the rise in inflation was broad-based in 2022, with all subcomponents showing a rate of increase significantly higher than the period 2000-2019 average. At the beginning of 2022, the rate of price increase on goods rose rapidly, and bottlenecks in global supply chains were assessed to be one of the reasons. Food and energy prices also rose much faster than expected, especially after the Russian invasion of Ukraine, when world market prices for commodities, energy and food prices rose. The simultaneous weakening of the krona should have

contributed to international price increases having a greater impact on Swedish prices.

For the price category mainly affected by domestic conditions, service prices, the rate of increase in 2022 also rose in the wake of the strong economic activity and as a result of the other broad price increases. With regard to service prices, it can be seen that the annual rate of increase began to rise as early as the second half of 2021, but this should be seen in the light of weak price developments during the pandemic and so-called base effects, i.e. relatively low prices in the previous year. The monthly rate of service prices clearly accelerated from February 2022. Prices were expected to rise faster in some service sectors, such as restaurants, as economies reopened, but the rise in service prices was stronger than expected. Strong demand, as illustrated by stronger than expected GDP and labour market developments, helped businesses to pass on their cost increases to consumer prices.

**Figure 27. Development of various sub-indices of the CPIF to end of December 2022**

Annual percentage change

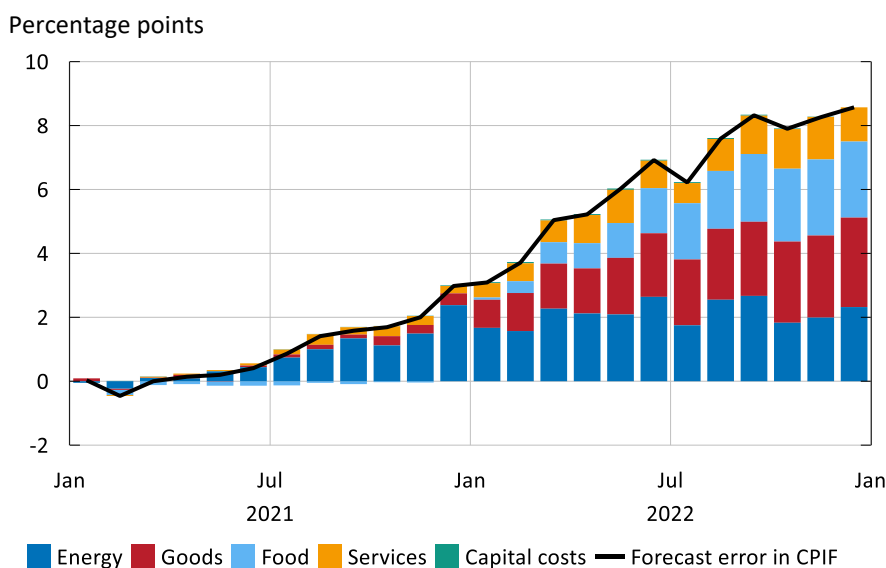


Note. Goods refers to prices of goods excluding energy and food. Weight in the CPIF according to the Riksbank's classification shown in brackets. The capital stock index, which has a weight of 3.4 per cent, is not shown here. Horizontal broken lines represent mean values for the period 2000–2019.

Sources: Statistics Sweden and the Riksbank.

Figure 28 shows the contribution of different components to the forecast error for CPIF inflation in the forecast from February 2021, made before inflation started to clearly rise. The picture would be similar if compared with other forecasts published earlier. The chart illustrates that the rise in inflation is broad, but also that the forecast errors for food and commodity prices contribute significantly more than service prices, even though the weight of the latter is larger in the CPIF. Thus, price increases on food and goods were much higher than expected.

**Figure 28. Difference between the Riksbank's forecast in February 2021 and the outcome. CPIF inflation and contributions from different sub-groups.**



Note. The forecast error has been calculated for the forecast published in the Monetary Policy Report in February 2021. At this time, the Riksbank had access to outcomes for inflation until the end of December 2020. The weights in the CPIF 2022 are 18.2 per cent for food, 5.9 per cent for energy, 28.9 per cent for goods, 43.7 per cent for services, and 3.4 per cent for cost of capital.

Sources: Statistics Sweden and the Riksbank.

The exceptionally large forecasting errors the Riksbank has had for inflation in 2022 are mainly due to exogenous disturbances, and other analysts made similar forecasts, see for instance Figure 30 in Chapter 4. As described in more detail in the “Evaluation of the Riksbank’s forecasts”, all forecasters underestimated inflation in 2022 substantially.<sup>27</sup> In the second half of 2021, the Riksbank certainly saw that business costs were rising in many different sectors and estimated that these would affect consumer prices over time and lead to higher inflation excluding energy in 2022. However, the effects of the higher costs were still underestimated.<sup>28</sup> As discussed in Chapter 2, there are signs of a change in pricing behaviour in the Riksbank’s business surveys. After stating for a long time that it was difficult to raise prices, companies stated in March that it was easy.<sup>29</sup> The impact of rising costs on inflation may thus have been greater than indicated by historical relationships.

### 3.2 Inflation and the conduct of monetary policy

In light of Sweden’s long history of low inflation and the fact that the upturn appeared to be driven mainly by rising and volatile energy prices, the overall assessment from June 2020 to November 2021 was that an expansionary monetary policy was needed

<sup>27</sup> “Evaluation of the Riksbank’s forecasts”, *Riksbank Studies* No. 1, March 2023, Sveriges Riksbank.

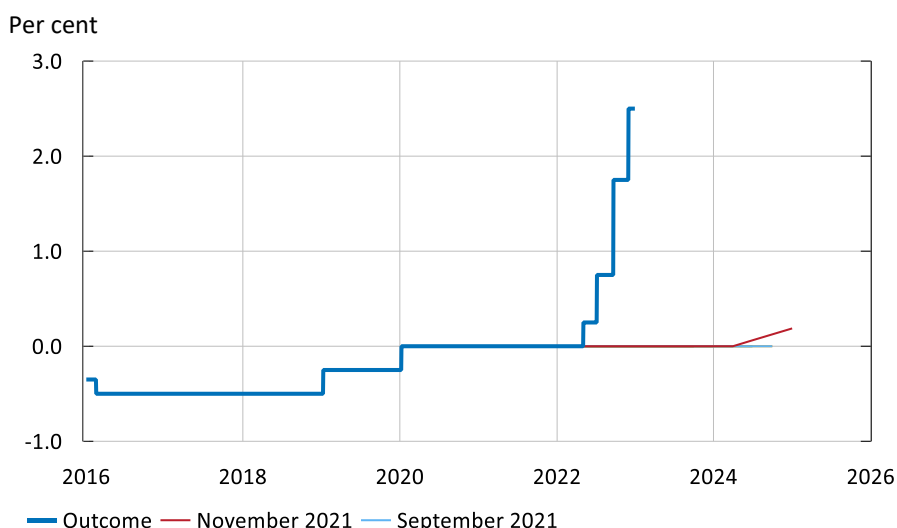
<sup>28</sup> See the article, “Many indications that inflation will be high this year and next year” in *Monetary Policy Report*, April 2022, Sveriges Riksbank.

<sup>29</sup> See “I’ve never before experienced customers accepting price increases so easily”, *Riksbank’s Business Survey*, March 2022, Sveriges Riksbank.

to keep inflation close to the inflation target in the longer term. In addition to signalling that the interest rate would remain close to zero, the Riksbank more than doubled its asset holdings from the onset of the pandemic until the end of 2021 (see Figure 12 in Chapter 2).

One criterion for determining whether monetary policy has been well-balanced is to examine whether the forecasts on which it was based appear reasonable in retrospect. Economic developments in 2022 were genuinely uncertain in the wake of the pandemic. However, the recovery in Sweden was somewhat faster than the Riksbank had expected. The Riksbank, like other analysts, was in particular surprised by the exceptionally high inflation in Sweden and abroad. In line with other central banks, the Riksbank therefore raised the policy rate more than previously assumed (see Figure 29).

**Figure 29. Policy rate, outcomes and forecasts**



Note. Outcomes are daily rates and forecasts refer to quarterly averages. In the forecasts from June 2020 to September 2021, the policy rate was expected to remain at zero per cent over the respective forecast horizon. Of these, only the forecast from September 2021 is therefore shown.

Source: The Riksbank.

The monetary policy conducted in 2020 and 2021 was based on forecasts that predicted too low inflation in 2022. The exceptionally large forecast errors are, as discussed above, largely due to unforeseen disturbances, but also because the Riksbank, like other analysts, underestimated the impact of rising energy prices and rising business costs in the second half of 2021.

However, the Riksbank can and must constantly develop its forecasting methods and analyses in order to make better forecasts. It is important to analyse the forecast errors and draw lessons from them.<sup>30</sup> As a means to better understand the pricing

<sup>30</sup> See J. Johansson, M. Löf, P. Stockhammar and I. Strid (2022), "Vad förklarar Riksbankens prognosfel för inflationen? [What can explain the Riksbank's forecast error for inflation?]", *Staff Memo*, June, Sveriges Riksbank. In Swedish.



mechanism, the Riksbank has, for instance, increased the number of questions in the Business Survey regarding how firms set prices. The Riksbank is also continuing to work with micro data on price changes in individual products to better understand aggregate inflation.<sup>31</sup> Possible areas for development include reviewing the assessment of the indirect effects of higher energy prices and the impact of exchange rate movements. It is possible that other prices are affected more than proportionately in the case of large changes, as in the recent energy price hike.<sup>32</sup> To improve its forecasts, the Riksbank also continuously exchanges experiences with central banks in other countries that have faced similar problems. The lessons from the inflation upturn in 2022 are also discussed in more detail in Chapter 2.

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<sup>31</sup> See for example J. Ewertzh, M. Klein and O. Tysklind (2022), "Price changes in Sweden – insights from new micro data", *Economic Commentaries*, no. 1, Sveriges Riksbank.

<sup>32</sup> Model calculations from the National Institute of Economic Research indicate that companies have been able to pass on their higher costs, as consumer prices increased in the first three quarters roughly corresponding to the increased production costs, see National Institute of Economic Research (NIER) (2022), "Pricing in Swedish companies in 2022", *Special Studies*, December 2022. In the Riksbank's business surveys, companies also testified that there was greater acceptance of rising prices.

## 4 Important monetary policy issues

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The Riksbank's primary task in monetary policy is to maintain permanently low and stable inflation. Households and companies must be able to rely on deviations from the inflation target not being too prolonged. This reduces the risk of them changing their view of what is normal inflation in the economy. A credible inflation target serves as a benchmark for price setting and wage formation, creating good conditions for favourable economic development. The debate on monetary policy during the year focused on high inflation – what role monetary policy has played in this development and how it should act in the new situation that has arisen. The asset purchases were also discussed. The discussion here focused on when it was appropriate to stop increasing the asset holdings and on the financial losses that the Riksbank has made on its holdings.

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### 4.1 The purpose of the inflation target

The main task of monetary policy is to maintain confidence in the inflation target of 2 per cent. The decision to introduce the inflation target was taken in 1993 by the Riksbank's General Council (then called Governing Board), which was then the decision-making body of the Riksbank.<sup>33</sup> The new Sveriges Riksbank Act, which entered into force on 1 January 2023, specifies that the Riksbank is to maintain price stability through lasting low and stable inflation. The previous wording was that the Riksbank would maintain a stable value of money. The current specification of the objective, i.e. an inflation target of 2 per cent as measured by the CPIF, has explicit political support.<sup>34</sup>

It is not possible to keep inflation at 2 per cent all the time, because there are constant changes in the economy that cause inflation to fluctuate in ways that cannot be predicted or counteracted in the short term. Moreover, there may be reasons not to try to bring inflation back to target very quickly by means of substantial adjustments to interest rates, for example when inflation is above target but the economy is still markedly weak. The return to target may then take a little longer than normal. The important thing is that households and businesses have confidence that

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<sup>33</sup> The General Council consisted of eight members, with seven being elected by the Riksdag and the eighth, the Governor of the Riksbank, being appointed by the others. Many of the members were active politicians (See, for example, B. Dennis, "Första året med flytande krona" [First year with a floating krona], in L. Jonung, (ed.), *På jakt efter ett nytt ankare* [Looking for a new anchor], SNS Förlag, 2003). The General Council at that time was thus largely politically appointed, unlike the Executive Board that has governed the Riksbank since 1999.

<sup>34</sup> *A new Sveriges Riksbank Act*, Government Bill 2021/22:41, p. 275. For a review of the implications of the new Sveriges Riksbank Act for monetary policy, see the article "The new Sveriges Riksbank Act and the monetary policy framework" in *Monetary Policy Report*, February 2023, Sveriges Riksbank.

deviations from the target will not be too prolonged and that they will not change their view of what constitutes normal inflation.

### **Common expectations contribute to favourable economic development**

The inflation target is intended to act as a benchmark for price setting and wage formation in the economy – it shall constitute what is usually referred to as a nominal anchor. When inflation does not vary so much and economic agents have a collective picture of how prices will develop in the future, it becomes easier to plan for the long term. This, in turn, improves the conditions for favourable economic development with good growth.

Most people agree that high inflation is harmful in many ways. One obvious reason is that you get fewer goods and services for the same amount of money when you shop, which makes you poorer in that sense. This is something that is evident in everyone's day-to-day life. If high inflation is built into the expectations of households and businesses, this can lead to price-wage spirals that mean inflation becomes entrenched at a high level. It will then be difficult to bring it down again without a sharp policy tightening. When average inflation is high, it also tends to fluctuate substantially from one year to the next. This makes it more difficult to make economic decisions about the future. High inflation also has a redistributive effect which generally favours borrowers at the expense of lenders, and generally those who have the means to protect themselves against inflation in various ways, over those who do not. The experience of previous episodes of high inflation, such as those in the 1970s and 1980s, shows that high inflation can be very costly for the economy.

There are also good economic reasons for having a target of 2 per cent and not lower. One reason is that it is becoming more difficult to allocate resources in the economy efficiently via wage formation when average inflation is too low. The reason is that, in practice, it is difficult to cut nominal wages. If inflation is low and nominal wages cannot be lowered, then it becomes difficult to adjust relative wages between different professions, companies and sectors. This makes it more difficult to attract labour to the parts of the economy where it has the most benefit. This can ultimately lead to both higher unemployment and poorer productivity growth. It could be said that a certain level of inflation acts as a lubricant in the economy.

### **Inflation target of 2 percent creates scope to counteract recessions**

Another important function of the inflation target became increasingly relevant in the 2010s and early 2020s. This is that it provides some scope to counteract recessions by cutting interest rates.

The increasing importance of this function is due to the fact that the general, global real interest rate has fallen over a couple of decades to a historically low level. Expressed in terms of economics terminology, the global real equilibrium rate has fallen. Driving forces behind this development, which are often highlighted, are a high

global propensity to save, partly as a result of demographic factors.<sup>35</sup> It is widely thought that central banks determine the general interest rate level in the economy, and that the current low interest rates were only due to the expansionary monetary policy conducted by the central banks. However, the general interest rate level is essentially determined by factors over which the central banks have no influence. The central banks set their policy rates in relation to this underlying general interest rate level.

A key circumstance here is that the average nominal rate level (regardless of whether it is central bank policy rates or general global interest rates) is affected by how high inflation is on average. If average inflation is very low, say close to zero, instead of being on the target of 2 per cent on average, interest rates will also, on average, be about 2 percentage points lower.<sup>36</sup>

This in turn means that if inflation and inflation expectations are persistently below target, the scope for cutting interest rates will also be smaller than if they are at the 2 per cent target. The policy rate will then hit its lower bound sooner, meaning it cannot be cut further, and needs to remain there for a longer period of time. It will thus be difficult to make monetary policy sufficiently expansionary.<sup>37</sup> It is the combination of low global real interest rates and the ambition to avoid inflation and inflation expectations becoming entrenched at a too low level that explains why policy rates were a long time at zero or negative.

## 4.2 The monetary policy debate in 2022

### **New conditions for monetary policy**

In 2022, the discussion of the problems of too low inflation and policy rates at the lower bound disappeared from the agenda, at least for the near future. Inflation rose sharply around the world and central banks started to raise their policy rates. During the year, the Riksbank raised its policy rate by 2.5 percentage points, the fastest increase in such a short time during the inflation targeting period. Other central banks, such as the Federal Reserve, the Bank of England and the Bank of Canada, raised their policy rates considerably more (see Figure 13 in Chapter 2).

Overall, there seems to be a relatively broad understanding and acceptance that the Riksbank needs to raise interest rates to maintain the credibility of the inflation

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<sup>35</sup> See, for instance, H. Lundvall (2020), "What is driving the global trend towards lower real interest rates?" *Economic Review* no. 1, Sveriges Riksbank.

<sup>36</sup> The relationship is described by the so-called Fisher equation, named after the American economist Irving Fisher. The Fisher equation is normally expressed as  $i = r + \pi$ , where  $i$  is the nominal interest rate,  $r$  the real interest rate and  $\pi$  (expected) inflation.

<sup>37</sup> One conclusion drawn by many economists is that the inflation target should be higher than 2 per cent, as this would increase the scope for monetary policy. There is a debate, particularly in the academic community, as to whether such a change is appropriate and, if so, how and under what circumstances it could be implemented (see, for example, L. Calmfors, J. Hassler and A. Seim (2022), "*Samspel för stabilitet – en ESO-rapport om rollfördelningen mellan finans- och penningpolitik*", (Interaction for stability – an ESO report on the division of roles between financial and monetary policy, report to the Expert Group for Public Economic Studies).

target. However, there have also been discussions about, among other things, the role that monetary policy has played in developments and how it should react to the new situation that has arisen.

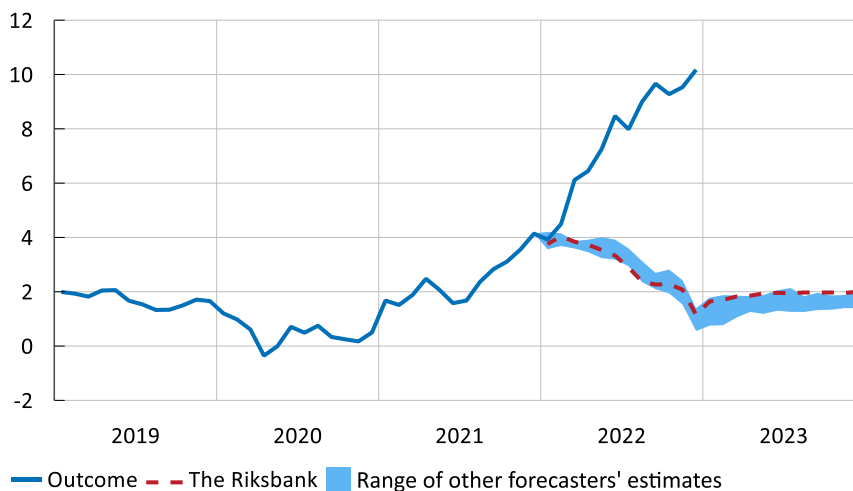
### Did the Riksbank react too late?

One issue discussed during the year is to what extent the Riksbank reacted too late to the rising inflation. Given the developments we have now seen, it is fairly obvious that it would have been preferable for monetary policy to have been tightened earlier.

As shown in Chapter 2, the situation in February was difficult to assess. Inflation had risen, but this was mainly linked to the rapid price increases for electricity and fuel. Energy prices were not expected to continue to increase and there were no clear signs of a broader rise in inflation. Although the general picture was that inflation in 2022 would be higher than the target of 2 per cent, the Riksbank and other forecasters expected that the effect would be short-lived and that in 2023 inflation would again be on average just below the target (see Figure 30). This development was judged to be compatible with a policy rate maintained at zero per cent in 2022. Only a few analysts were expecting moderate increases during 2023.

**Figure 30. The development of CPIF inflation was different from that expected by the forecasters at the beginning of 2022**

Annual percentage change



Note. Refers to forecasts based on outcomes for the CPIF to the end of December 2021. The Riksbank's forecast is the CPIF forecast in the Monetary Policy Report February 2022. The interval shows the spread between the highest and lowest projections made by other analysts.

Sources: Statistics Sweden, the respective forecasters and the Riksbank.

It should be pointed out that even in situations where inflation is above the target, there may be reason to proceed relatively cautiously with rate increases as long as confidence in the target does not risk being weakened.<sup>38</sup> In combination with active

<sup>38</sup> This is in accordance with the wording in the Sveriges Riksbank Act that the Riksbank shall contribute to a balanced development of production and employment, if this can be done without neglecting the price stability objective.

monetary policy communication, a relatively moderate tightening may in some cases be sufficient. If this does not turn out to be the case, the policy needs to be tightened more forcefully.

Russia's invasion of Ukraine in February 2022 dramatically changed the global economic playing field and exacerbated the disruptions that the pandemic had already caused. For instance, Russia cut off its exports of natural gas to Europe, pushing up electricity prices to exceptionally high levels.

But even before then there were indications that the rise in inflation could be larger and more lasting than the forecasts indicated. In the Riksbank's business surveys, companies had for many years been indicating that it was very difficult to raise prices. The interviews that took place in February, before Russia's invasion, and which were reported in the March Business Survey, showed a shift in the attitude. Many companies now stated that raising prices was no longer particularly hard.<sup>39</sup>

The combination of a strong recovery after the pandemic, an expansionary monetary policy and rapid global cost increases seems to have created the conditions for a change in pricing behaviour in the economy in relation to what had been dominant for a long time. The increase in costs could quickly be passed on to the consumer to a greater extent than before, and there seems to have been greater acceptance of this. Rapid behavioural changes of this kind are difficult to capture in the forecasts, as it is not entirely clear what triggers them. However, they are probably a reason why the Riksbank and other forecasters initially underestimated the indirect effects on inflation of, for example, rising energy prices. This demonstrates the importance of following companies' pricing behaviour very carefully.

Moreover, the unstable and uncertain economic environment since the pandemic has generally made it more difficult to forecast inflation.<sup>40</sup> The Riksbank's short-term models, which previously worked satisfactorily, have had difficulties in recent years in capturing developments, including the rise in inflation last year. As noted in section 2.2, more "fast data" may be needed to monitor developments in consumer prices, such as data from the Internet of different prices.

There may also be reason in future, in the material on which monetary policy decisions are based, to analyse to a greater extent scenarios with relatively large differences in inflation. Although very large deviations from the main forecast are not seen as very likely at any given time, an increased focus on alternative scenarios could improve readiness to handle a situation where such a scenario is nevertheless realised.

### **The role of monetary policy in dampening inflation**

Another type of argumentation is that high inflation is largely due to the impact of the pandemic and the war in Ukraine on the supply of raw materials and inputs. It is

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<sup>39</sup> See Chapter 2.

<sup>40</sup> See J. Johansson, M. Löf, P. Stockhammar and I. Strid (2022), "Vad förklarar Riksbankens prognosfel för inflationen? [What can explain the Riksbank's forecast error for inflation?]", *Staff Memo*, June, Sveriges Riksbank. In Swedish.

therefore, some argue, counter-productive for the Riksbank to try to bring inflation down again by raising interest rates. Inflation will fall back without monetary policy being tightened to any significant extent.

However, as described above, inflation is not only due to supply-driven price rises; it has spread more widely in the economy. Various measures of underlying inflation, which capture such broader trend movements, have risen sharply during the year (see Figure 6 in Chapter 1). This is underlined by the fact that price increases are visible in both goods and services prices (see Figure 27 in Chapter 3). Long-term inflation expectations also rose in the first half of 2022 and were well above target (see Figure 7 in Chapter 1).

There is therefore no reason to believe that inflation of around 10 per cent will fall back without monetary policy needing to do anything to contribute to this. It was largely because the policy was not sufficiently tightening that the high inflation of the 1970s was able to take hold, as a result of rapidly rising energy prices. But it is, of course, a matter of judgement exactly how much interest rates will need to be raised to avoid this.

### **The Riksbank concluded its securities purchases**

The Riksbank's asset purchases have been discussed with varying intensity since they started in 2015. At the end of 2021, the Riksbank ended its pandemic asset purchase programme, and in 2022 the Riksbank's holdings decreased slightly. As of 2023, reinvestments are no longer made to compensate for assets that mature and the Riksbank will sell government bonds with effect from April so that the asset holdings decrease at a faster rate. At the end of last year, a Riksbank study was published on the experience of the asset purchases made during the period 2015-2022.<sup>41</sup> Such a summary has also been requested by the Riksdag's Finance Committee.

As noted in the Riksbank Study, the purchases can be divided into two phases: the period 2015–2017 and the pandemic years 2020–2021. The two phases differ in terms of the motives for the purchases, but above all in terms of their composition. During the first phase, the Riksbank bought only government bonds. The aim was to maintain confidence in the inflation target in a situation where inflation had long been low and below the target, long-term inflation expectations had shown a falling trend and the possibilities for the policy rate to function as an effective monetary policy tool had begun to be exhausted. The purchases were thus intended to act as a more general monetary policy stimulus.

By the time the second phase began in the context of the 2020 pandemic, inflation had again been relatively close to the target in the preceding years. This time the purchases included government and municipal bonds, covered bonds (mortgage bonds), treasury bills and corporate bonds and commercial paper. The purchases were now largely aimed at securing the supply of credit and ensuring that the Riksbank's policy rate would have a good impact on the economy even in uncertain

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<sup>41</sup> B. Andersson, M. Beechey Österholm and P. Gustafsson (2022), "The Riksbank's asset purchases 2015–2022", *Riksbank study* no. 2, Sveriges Riksbank.

times. Inflation, which again fell dramatically some way into the pandemic, was expected to be below the target in the coming years. In times of financial unrest, the objectives of maintaining stability in the financial markets and maintaining confidence in the inflation target usually coincide. The purchases would prevent a development whereby lending to households and companies declined sharply. If such a scenario were to materialise, it could significantly worsen the already vulnerable economic situation. The primary objective of the purchases was therefore to prevent a sharp reduction in the supply of credit and an increase in interest rates, not to clearly reduce lending rates to households and companies.

One conclusion of the Riksbank study is that asset purchases in crisis situations are crucial to mitigate and prevent major problems, as was the case at the beginning of the pandemic. The Riksbank's purchases then helped to limit the damage to the economy and enabled Sweden to avoid a financial crisis. Another conclusion is that in more normal times, asset purchases contribute to a more expansionary monetary policy, but that these effects are small. At the same time, the study finds that the international literature on quantitative easing, as large purchases of securities are also known, does not currently provide any clear indication of which channels the purchases mainly operate through and in which situations the various channels are most important for the economy. This may also differ from country to country depending, for example, on the more specific design of financial and credit markets. The study also points out that there are relatively few studies of the effects of asset purchases in small open economies such as the Swedish one. Thus, there is room for different views on how the purchases work and what their effects have been.

In recent years, the debate on asset purchases has focused on whether the pandemic purchases lasted too long and on how to view the purchase of private securities as a monetary policy tool in general. More recently, there has also been a discussion about the losses that the Riksbank has incurred on its securities holdings as a result of the higher interest rates.

### **When can asset purchases be concluded without problems?**

One debate surrounding the asset purchases has been whether it was necessary for the Riksbank to continue buying assets and increasing its holdings throughout 2021. The background to this discussion was that interest rates in the markets where problems arose were already close to or lower than the level before the pandemic outbreak towards the end of 2020. Some analysts argue that the purchases should therefore have been concluded then or at least some time into 2021.

The reason why the Riksbank decided to continue with the purchases was that it was still uncertain how the pandemic would develop and what the consequences would be for the financial markets. Inflation was also judged to be below target and there was scepticism amongst Executive Board members with regard to lowering the policy rate below zero again. The decision was very much about preventing a worse development.



It is, of course, difficult to know what the development would have been if the Riksbank had not continued with purchases throughout 2021. The Riksbank study notes that it is difficult to draw any clear conclusions from the results reported in various studies of the effects of asset purchases. However, these indicate that the impact on economic activity and inflation of reducing purchases earlier can be expected to have been relatively small. At the same time, inflation and long-term inflation expectations were below target in 2020 and early 2021. If the Riksbank had stopped buying assets, the economic recovery could have been more protracted and the impact of the pandemic on the economy could thus have risked becoming even greater. If the Riksbank had adjusted the announced purchases too sharply, it would have also risked reducing its credibility in future announcements.

The decisions to extend purchases and to proceed with announced purchases are an example of where judgements have to be made and decisions taken in circumstances of great uncertainty. That it is in essence a matter of judgement is reflected, among other things, in the fact that there were different views even among members of the Executive Board of the Riksbank.<sup>42</sup>

### **Purchases of private securities as monetary policy instruments**

The first phase of securities purchases in 2015–2017 involved removing a sovereign asset (government bonds) from the market and replacing it with another asset with a similar risk profile (reserves held by the Riksbank). During the second phase in 2020–2021, the Riksbank also purchased securities issued by private parties in the form of covered bonds and corporate bonds and commercial paper. The Riksbank then entered as buyer into markets which, due to the high level of uncertainty, were functioning poorly when many wanted to sell and few wanted to buy. This was important to prevent problems in the financial markets from having a further negative effect on the economy in the midst of the pandemic. These purchases thus meant that the Riksbank was taking over risk from market participants.

The Riksbank study addresses a couple of aspects that are added to the purchase of private securities in relation to the purchase of government securities. One is the problem of so-called *moral hazard*, i.e. that creditors and borrowers take greater risks if they expect the central bank to always step in when problems arise. The problem of *moral hazard* should be taken into account when the central bank takes this type of action, but refraining from supporting the financial markets in a crisis situation can also be very costly for the economy as a whole. There is therefore reason to review what overall economic policy can do to ensure that the risks that are being built up are not too great.

It may also be necessary to take into account that the view of risk may be affected if the financial markets consider the central bank to be a safe buyer of securities even during times of no direct crisis. One aspect highlighted by the Riksbank study is that long-term purchases of private securities risk having a more permanent impact on the pricing mechanisms of markets, which can be expected to reduce the efficiency of

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<sup>42</sup> See, for example, speech by M. Flodén, “My thoughts on the Riksbank’s asset purchases”, 14 December 2022, Sveriges Riksbank.

credit allocation in the economy in the long run. Even if the purchases initially allow the market to function at all, they may over time lead to it functioning less well than it did before problems arose. Over time, it is important that the risks that exist in more normal circumstances are reflected in fair risk premiums in financial markets. The key issues are, therefore, how long the asset purchases should continue, and when and at what rate the holdings that have been built up should be phased out.

In the bill proposing a new Sveriges Riksbank Act, the Government concluded that changes in policy rates and purchases of government securities are generally preferable to purchases of non-government assets. Under the new Act, however, the Riksbank will also be able to purchase non-government securities if there are exceptional reasons. The purchases shall then be designed to have the least possible impact on the allocation of credit and resources, given the effects the Riksbank wants to achieve. All in all, this can be interpreted as meaning that the legislator regards purchases of non-government securities as a less appropriate monetary policy instrument in more normal times. However, this does not prevent it from being used in more exceptional situations, such as when turmoil has arisen in the financial markets and monetary policy transmission is at risk of being adversely affected, as was the case during the pandemic.

### **The effects on the Riksbank's financial result**

One consequence of central banks building up large holdings of bonds and other securities is that they take on interest rate risk and can make financial losses or gains if interest rates rise or fall rapidly. This is an unavoidable part of the transmission of asset purchases that the Riksbank and other central banks have been well aware of and have communicated.<sup>43</sup> However, the recent rapid rise in inflation and interest rates has meant that the risk of financial losses has materialised in a very short period of time. The article "Effects of the asset purchases on the Riksbank's financial result" discusses these losses in more detail.

Following the global financial crisis in 2008, and especially during and after the pandemic, many central banks have purchased securities for similar reasons to the Riksbank. In addition, several of them have purchased considerably larger volumes in relation to the size of their economy than the Riksbank (see Figure 31). They have also often bought assets with a longer maturity – and thus more interest risk – than the Riksbank. These central banks will also report losses.

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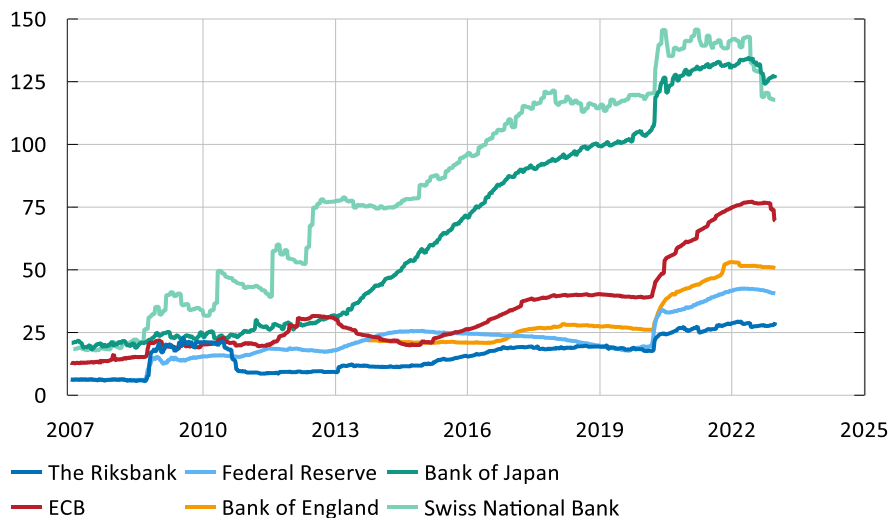
<sup>43</sup> The fact that bond purchases increase the risks on central banks' balance sheets in general and on the Riksbank's balance sheet in particular is noted, for instance, in the speeches by K. af Jochnick (2015), "Does the Riksbank have to make a profit? Challenges for the funding of the Riksbank", 23 January 2015, Sveriges Riksbank and M. Flodén (2016), "The Riksbank's bond purchases affect government finances", 9 November 2016, Sveriges Riksbank. Losses of the magnitude expected for 2022 have also been mentioned earlier by the Riksbank as a possible but highly unlikely scenario with large interest rate rises, see "Decision on provisions for financial risk 2020", decision document, ref. no. 2020-01285, Sveriges Riksbank. For compilations on the fact that losses have now occurred, see for example D. Kjellberg and M. Åhl (2022), "The Riksbank's financial result and capital are affected by higher interest rates", *Economic Commentary* No 8, Sveriges Riksbank and M. Flodén, "My thoughts on the Riksbank's asset purchases", 14 December 2022, Sveriges Riksbank.

Central banks do not aim to make a profit, nor has that been the purpose of buying assets.<sup>44</sup> Depending on the period, the aim has instead been to ensure that monetary policy has the desired effect, stimulating demand in the economy, raising inflation and maintaining confidence in the inflation target. It is primarily this type of effect that the losses must be set against.

A loss also means that the Riksbank cannot deliver profits to the national budget. At the same time, however, the expansionary monetary policy has strengthened public finances through various channels. Among other things, higher economic activity has resulted in higher tax revenues and lower expenditure on unemployment benefits, for example. The government's borrowing costs are also lower because interest rates have been kept low.

**Figure 31. Central banks' balance sheet totals**

Per cent of GDP



Note. GDP is calculated as the sum of the present quarter and the three previous quarters. For any quarter(s) that GDP has not yet been published, the most recently published GDP statistics are used.

Sources: National sources and respective central banks.

If the central bank makes a large loss, this can lead to a reduction in the central bank's equity. This need not affect the central bank's ability to conduct monetary policy, but it may have negative consequences if it leads to speculation that it has been reduced. Moreover, under certain conditions, low capital may impair the central bank's ability to self-finance its activities, which may weaken its financial independence. As noted in the article "Effects of the asset purchases on the Riksbank's financial result", the low demand for banknotes and coins in Sweden is a factor that creates problems. The surplus from the monopoly on issuing money is very small and this hampers the Riksbank's ability to build up its equity. The low earning capacity is an issue the

<sup>44</sup> For a discussion of what it means for a central bank to make a loss, see, for example, A. Nordström and A. Vredin (2022), "Does central bank equity matter for monetary policy?", *Staff memo*, December, Sveriges Riksbank.

Riksbank needs to address. It is important that concerns about this do not lead to the Riksbank's ability to fulfil its objectives and tasks being called into question.

### **The monetary policy debate and the framework for inflation targeting**

For some time, and also during the past year, criticism has been levelled that the Riksbank has in recent years conducted a policy in which it has retained the policy rate at zero or negative despite the Swedish economy developing well. This has sometimes been described in terms of the Riksbank holding “negative interest rates in a boom” and “chasing tenths of a percentage of inflation”.

The aim of the Riksbank's expansionary monetary policy during these years was ultimately to maintain confidence in the inflation target, which is the Riksbank's task. The Riksbank's assessment was that inflation needed to rise towards the target to avoid long-term inflation expectations becoming entrenched at a too low level, with the problems that might then arise. Monetary policy was aimed at ensuring that inflation did not deviate from the target for too long.<sup>45</sup> By showing that the Riksbank takes the inflation target seriously when inflation is too low, it will probably also be easier to keep long-term inflation expectations anchored when inflation exceeds the target.

The monetary policy conducted by the Riksbank was thus well in line with the monetary policy framework and the Riksbank's mandate. In light of the historically low global real interest rates, which govern the interest rates that central banks can set, policy rates at or near the lower bound were an international phenomenon. In other countries with the same problem of low inflation, the policy rate was zero or negative during this period as well. The policy changes made by the US Federal Reserve in August 2020 and by the European Central Bank in July 2021 were intended, among other things, to address concerns that excessively low average inflation would reduce the scope for monetary policy.<sup>46</sup>

To maintain confidence in the inflation target and keep long-term inflation expectations anchored to the target, the Riksbank may sometimes need to conduct an expansionary policy even when the economy is developing relatively well, or to tighten monetary policy even when the real economy is developing relatively weakly. This is fully in line with the monetary policy framework and the Sveriges Riksbank Act, which state that the overriding objective of the Riksbank is to maintain low and stable inflation. The inflation target is thus not a means of stabilising the economy, but a way of laying the foundations for sound long-term economic development.

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<sup>45</sup> The basic framework for monetary policy with an inflation target is described in Section 4.1.

<sup>46</sup> The Federal Reserve introduced a target for average inflation (see, for example, speech by J. Powell (2020), “New Economic challenges and the Fed's Monetary Policy Review”, 27 August 2020, Federal Reserve). The ECB changed to a symmetrical target and stressed the importance of strong or sustained monetary policy measures when the interest rate is close to the lower bound to avoid negative deviations from the inflation target becoming permanent (see, for example, the ECB (2021), “The ECB's monetary policy strategy statement”, [https://www.ecb.europa.eu/home/search/review/html/ecb.strategyreview\\_monpol\\_strategy\\_statement\\_en.html](https://www.ecb.europa.eu/home/search/review/html/ecb.strategyreview_monpol_strategy_statement_en.html)).

When the Riksbank began its truly expansionary policy in 2014, inflation measured as an annual average was 0.5 per cent, i.e. well below the target (it was 0 per cent in March of that year). The monetary policy transmission mechanism proved to work more or less as normal even when the policy rate was lowered to just below zero.<sup>47</sup> In the years before the pandemic, 2017–2019, inflation again averaged close to 2 per cent.

The policy pursued by the Riksbank is evaluated each year by the Riksdag's Finance Committee and, in addition, approximately every five years by external assessors, on behalf of the Finance Committee. Karnit Flug and Patrick Honohan, who evaluated monetary policy for the years 2015–2020, concluded that the expansionary stance of monetary policy “appears to have had the desired effect in pushing inflation up towards the target”.<sup>48</sup>

## 4.3 Questions for the future

### **Just a temporary break for low interest rates?**

One question in a slightly longer time perspective is whether the recent high inflation and rising interest rates mean that the global economic playing field has changed in a more fundamental way – that we have more permanently left behind the environment of very low interest rates and low inflationary pressures.

One factor contradicting this is that there is little evidence that the global real equilibrium interest rate has changed to any great extent. It is determined by the propensity to save and invest around the world and by the level of demand for safe assets relative to riskier ones.<sup>49</sup> It is not clear that the factors affecting these variables have changed or will change very much in the future. For example, the geopolitical situation is now more uncertain than it has been for a long time, suggesting a high degree of precautionary savings and continued high demand for safe assets. According to most estimates, the real equilibrium rate is expected to remain at a historically low level for the foreseeable future.<sup>50</sup>

If the real equilibrium interest rate were to remain low, this would mean that in a few years' time we could be back in a situation where the general level of interest rates is once again low and the effects of monetary policy on the economy and inflation are periodically hampered by the policy rate hitting the lower bound. This could, as has

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<sup>47</sup> H. Erikson and D. Vestin (2021), “The impact of negative policy rates”, *Economic Commentaries* No 9, Sveriges Riksbank.

<sup>48</sup> K. Flug and P. Honohan, *Evaluation of the Riksbank's monetary policy 2015-2020*, 2021/22:RFR4, Sveriges Riksdag, p. 9. On the other hand, Flug and Honohan were critical of the Riksbank raising the policy rate to zero per cent at the beginning of 2020, because then inflation had only recently returned to 2 per cent and inflation expectations were on the way down again.

<sup>49</sup> See, for instance, O. Blanchard (2022), *Fiscal Policy under Low Interest Rates*, The MIT Press.

<sup>50</sup> See, for example, A. Auclert, H. Malmberg, F. Mertonet and M. Rognlie (2021), “Demographics, wealth, and global imbalances in the twenty-first century”, *NBER Working Paper* 29161, and J. Platzer and M. Peruffo (2022), “Secular Drivers of the Natural Rate of Interest in the United States: A Quantitative Evaluation”, WP/22/30, International Monetary Fund.

been the case over the past decade, contribute to a tendency for inflation to remain below target. This could again raise the need for a better interaction of macro-economic policies when interest rates and inflation are low.<sup>51</sup>

### Higher inflationary pressures in the future?

Even if inflation were to return to target relatively soon, it is possible that developments over the past two years will still have some lasting impact on the inflation process and the conditions for monetary policy.

In recent decades, factors such as digitalisation and globalisation have reduced inflationary pressures. But both the pandemic and the war in Ukraine have shown that many companies and businesses are vulnerable to disruptions in supply chains. It therefore seems increasingly common to start thinking about how dependence can be reduced and production made more robust. One way of doing this is through so-called reshoring, that is, moving businesses closer to home again. If this becomes a common phenomenon, it could reduce the downward pressure on inflation to which globalisation has contributed.

For Sweden, it could be that the current high inflation highlights the important role that inflation targeting plays in price setting and wage formation. One view that has emerged in the debate in recent years is that the inflation target no longer fulfils any function as an anchor for wage formation. It was only a means to bring down the excessively rapid wage increases in relation to other countries. But, as this has been achieved, the inflation target has fulfilled its purpose, according to this view. The argument was put forward at a time when it seemed that inflation would remain low more or less permanently.

Developments in 2022 were a reminder that inflation will sometimes also be above target. It is possible that this will strengthen the role of the inflation target in wage formation and that it will be perceived more as the symmetric benchmark it is intended to be. This would in itself facilitate the attainment of the target. But if this is not the case and the economy returns to a situation of below-target inflation and a policy rate close to the lower bound in a few years' time, the interaction between the inflation target and wage formation becomes an important issue to analyse.

Climate change and the climate transition required in the coming decades could also contribute to higher future inflationary pressures. In 2022, reduced supplies of Russian oil and gas, as well as agricultural commodities such as wheat from Ukraine, contributed to higher world energy and food prices. This was a major factor in the rise

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<sup>51</sup> For example, see speech by P. Jansson (2021), "Is it time to review the division of roles in macroeconomic policy?" 8 December 2021, Sveriges Riksbank, and L. Calmfors, J. Hassler and A. Seim (2022), *Samspel för stabilitet – en ESO-rapport om rollfördelningen mellan finans- och penningpolitik*, (*Interaction for stability – an ESO report on the division of roles between financial and monetary policy*), report to the Expert Group for Public Economic Studies.

in global inflation. The background was of course the war in Ukraine, but climate change and climate transition may cause similar negative supply effects.<sup>52</sup>

Climate change may mean that extreme weather events such as droughts, floods and hurricanes become more common. This, in turn, can lead to crop failures and supply chain disruptions, for example, putting upward pressure on the prices of food, raw materials and other products. Climate transition is based on increasing the price of goods and services that emit greenhouse gases compared to goods and services that do not. In the short term, this may lead to higher prices for energy in general, and for products where energy is an important input. The impact on inflationary pressures will depend on how quickly and smoothly alternative, non-fossil energy sources are phased in.<sup>53</sup>

Of course, it is difficult to say how important these factors are and to what extent they will contribute to higher underlying inflationary pressures in the future than has been the case in the past decade. But if this is the case, it will go some way towards offsetting the prospect that the global real equilibrium interest rate will remain at a historically low level. With a “tailwind” for inflation instead of the “headwind” of the past, the policy rate would not need to be cut as much to maintain the inflation target. This would also reduce the incidence of the policy rate hitting the lower bound and reduce the need to conduct monetary policy by other means, such as asset purchases.

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<sup>52</sup> For more detailed descriptions, see for example speech by A. Breman (2020), “How the Riksbank can contribute to climate policy”, speech at the Royal Swedish Academy of Engineering Sciences on 3 March 2020, Sveriges Riksbank, *Account of Monetary Policy 2020 and 2021*, Sveriges Riksbank, and the *Riksbank’s Climate Report 2021 and 2023*.

<sup>53</sup> For a calibrated model where the effect on inflation will be small, see C. Olovsson and D. Vestin (2023), “Greenflation?”, *Working Paper No 420*, Sveriges Riksbank.

## ARTICLE - Effects of the asset purchases on the Riksbank's financial result

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The Riksbank has purchased large amounts of assets since 2015, for partly different purposes. These purchases were discontinued in 2022. As inflation rose sharply in 2022, the Riksbank and other central banks had to raise the policy rate substantially and quickly. The rising interest rates caused the value of the assets to fall. The Riksbank reported a large financial loss for 2022, and equity will be negative after the profit appropriation in spring 2023. This article highlights the expected impact of the asset purchases on the result and how that impact is distributed over different time periods and asset classes.

The socio-economic benefits of the purchases, in terms of improved target attainment, are estimated to be considerable. At the same time, it is important to be aware of the negative consequences for the Riksbank's financial result. Even if the ability to conduct monetary policy in the short term is not affected by large losses and negative equity, problems may arise in the longer term. If the Riksbank's financial position becomes too weak, financial independence may be threatened, which in turn may weaken confidence in the inflation target and monetary policy.

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### The Riksbank's asset purchases 2015-2022 – safeguarding the inflation target and managing the effects of the pandemic

The purpose of this article is to explain how the Riksbank's asset purchases have resulted in financial losses. The reasons for the purchases are therefore only briefly described.<sup>54</sup>

In the spring of 2015, inflation fell clearly below the Riksbank's target, at the same time as inflation expectations also fell. The Riksbank's policy rate was already at zero per cent, which was deemed to be close to the lower bound. At the same time, monetary policy needed to be made more expansionary to ensure that inflation rose towards 2 per cent and that the credibility of the inflation target was maintained. The Riksbank implemented a combination of measures. First, the policy rate was cut to negative levels, at the lowest to -0.5 per cent, and second, purchases of government bonds were initiated. The purchases were gradually increased until 2017, and the total holdings amounted to just under SEK 300 billion (see Figure 12 in Chapter 2).

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<sup>54</sup> See B. Andersson, M. Beechey Österholm and P. Gustafsson (2022), "The Riksbank's asset purchases 2015-2022", *Riksbank Study* no. 2, Sveriges Riksbank, for a detailed account.

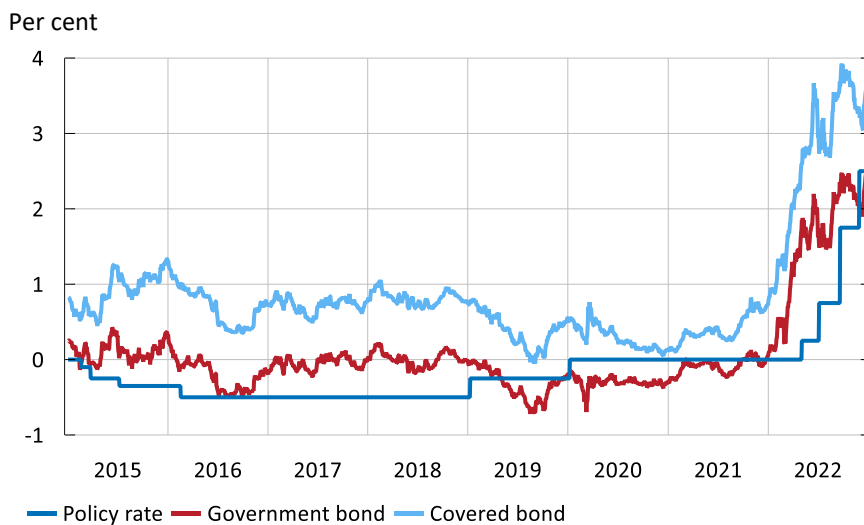


After 2017, the level of holdings was maintained through purchases that compensated for bond maturities, while the policy rate was raised in two steps to zero per cent in December 2018 and 2019, respectively.

The coronavirus pandemic in spring 2020, in addition to causing widespread human suffering, had a major negative impact on economies around the world. Initially, uncertainty increased dramatically in the financial markets. Interest rate markets were significantly affected. The higher the risk the assets had, the more yields rose. The Riksbank did not lower the policy rate, which was instead kept at zero per cent, as it was not considered worthwhile to stimulate demand in an economy that was largely closed. However, one of the problems that arose was that interest rates charged to households and businesses risked rising, with a further tightening effect on an economy that was already in free fall. Among the measures taken by the Riksbank were significant asset purchases. Unlike in the past, the purchases covered a broader range of interest-bearing securities, with an emphasis on covered bonds. However, corporate bonds, municipal bonds and additional purchases of government bonds were also included (see Figure 12 in Chapter 2). The purchases were expanded and extended in a number of stages. Overall, the Riksbank's purchases to manage the effects of the pandemic were considerably more extensive than the purchases in 2015-2017 and resulted in a total increase in holdings of around SEK 700 billion over the period 2020-2021.

## Rapid rise in inflation and large policy rate hikes in 2022

Inflation rose rapidly in 2022, to the highest levels in over 30 years. The Riksbank, like most other central banks, has therefore raised the policy rate fairly substantially and rapidly, and general interest rates have followed suit. This means that both the Riksbank's policy rate and the yields on the bonds it has bought have risen sharply (see Figure 32).

**Figure 32. Interest rate developments in Sweden**

Note. Bond rates refer to estimated zero-coupon rates with a maturity of 5 years.

Sources: Macrobond and the Riksbank.

## Why does the Riksbank's financial result deteriorate when interest rates rise?

As early as at the time of the first phase of asset purchases in 2015, the Riksbank recognised that the risks to earnings were increasing and that losses could occur in the future.<sup>55</sup> But that interest rates would rise as much as they did in 2022 came as a total surprise. This is illustrated not least by the fact that the Riksbank's forecast as late as February 2022 indicated that the policy rate would not start to rise from zero until the second half of 2024.<sup>56</sup> The fact that interest rates rose so much also means that the Riksbank is making large losses on its asset purchases.<sup>57</sup> Why is this?

The bond purchases were financed with newly created money in the form of deposits in the Riksbank, at the policy rate. If the Riksbank holds the bonds until they mature, the return on the investment is the difference between the bond rate at the time of purchase and the average policy rate over the life of the bonds. The Riksbank has thus "borrowed short and invested long". This means that the Riksbank has taken an

<sup>55</sup> See speech by M. Flodén (2016), "The Riksbank's bond purchases affect the state's finances", 9 November 2016, Sveriges Riksbank. Even before the asset purchases were launched, attention was also drawn to the risks to the Riksbank's result due to a larger balance sheet, mainly linked to the expansion of the foreign exchange reserve following the financial crisis; see speech by K. af Jochnick (2015), "Does the Riksbank have to make a profit?", 23 January 2015, Sveriges Riksbank.

<sup>56</sup> See *Monetary Policy Report*, February 2022, Sveriges Riksbank. The report also states that the upper limit of the 90 per cent uncertainty interval for the policy rate in the fourth quarter of 2022 was 1.25 per cent. The outcome was 2 per cent.

<sup>57</sup> In previous publications, the Riksbank has also described and commented on how rising interest rates negatively affect the result. See, for example, Sveriges Riksbank Annual Report 2022 and D. Kjellberg and M. Åhl (2022), "The Riksbank's financial result and capital are affected by higher interest rates", *Economic Commentary* No 8, Sveriges Riksbank.

interest rate risk: while the long-term interest rate was 'locked in' at the level at the time of purchase, the future policy rate during the life of the bond was unknown.

A simple example shows how losses can occur:

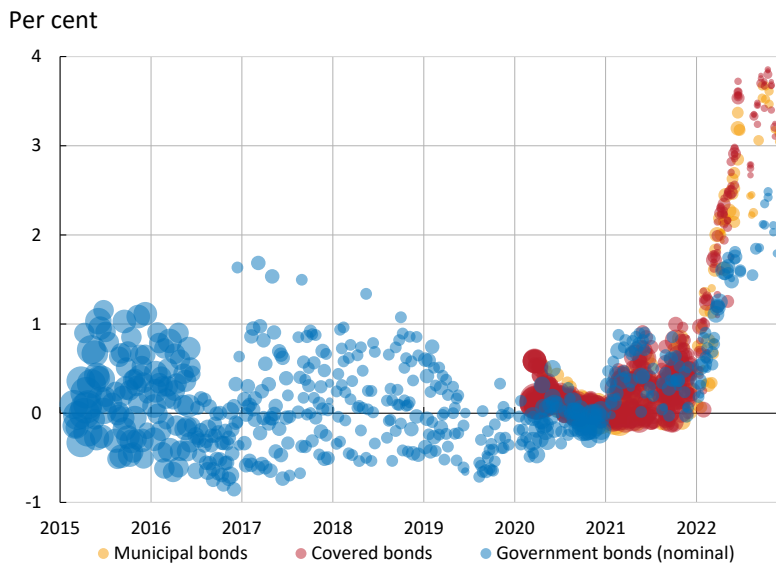
- The Riksbank borrows 1,000 billion at a variable interest rate (the policy rate) and invests the money in bonds at zero interest rate with a 5-year maturity.
- The policy rate is zero percent at the time of purchase.
- Thereafter, the policy rate rises over the life of the bond.
- If the policy rate averages 1 per cent, the total interest income will be SEK zero, while the total interest cost will be SEK 50 billion.
- In this way, the Riksbank loses an average of SEK 10 billion per year and a total of SEK 50 billion over a five-year period.

So how has this worked in practice? One way to understand how the Riksbank's performance has been affected is to translate the simple example into the concrete purchases that the Riksbank has made.

The Riksbank has built up a portfolio of Swedish securities that initially consisted exclusively of government bonds, but which was later expanded to include mainly covered bonds, but also municipal bonds and, to a small extent, corporate bonds. Figure 33 shows the purchases in three dimensions: the size of the purchases, illustrated by the size of the balls, the interest rate at which the purchases were made, illustrated by the position of the balls on the y-axis, and finally the timing of the purchases, illustrated by the position of the balls on the x-axis.<sup>58</sup> It can be seen that most of the purchases of government bonds took place in 2015–2016 at a rate close to zero per cent on average. It also shows that most purchases of covered bonds and municipal bonds took place in 2020 and 2021 at an interest rate around 0.5 per cent on average.

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<sup>58</sup> However, the figure does not show the maturity of the bonds.

**Figure 33. Yield on the Riksbank's bond purchases**

Note. The ball size is proportional to the face value of the purchase. The figure shows the fixed rate given if the bond is held to maturity.

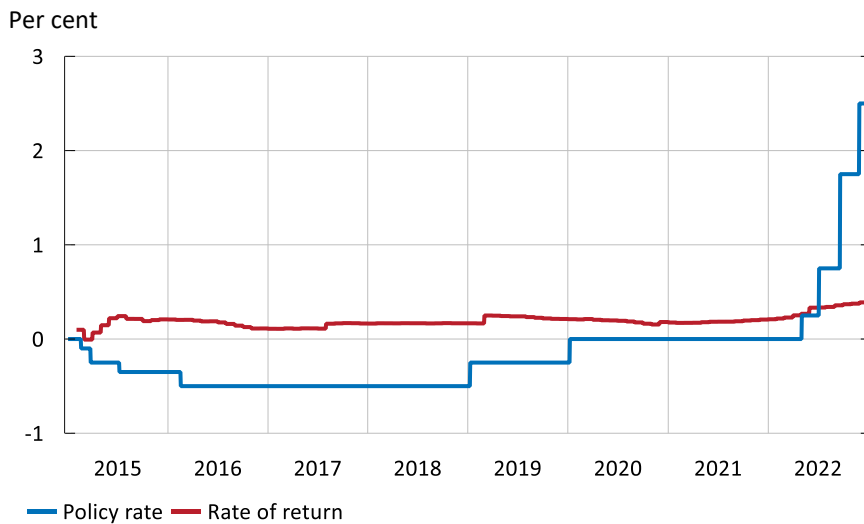
Source: The Riksbank.

Figure 34 shows the aggregate rate of return on the Riksbank's holdings of Swedish securities, together with the policy rate at which the purchases were financed.<sup>59</sup> It shows that from the beginning of 2015 until the beginning of 2022, the rate of return slightly exceeded the policy rate and was between 0 and 0.5 per cent. During the course of 2022, the policy rate was raised sharply from 0 to 2.5 per cent.

The Riksbank's net interest income, i.e. the difference between the rate of return and the financing rate, was thus slightly above zero until the middle of 2022, but quickly turned very negative during the remainder of the year. Other central banks, such as the Federal Reserve, report the effect on earnings in precisely this way, i.e. as a net interest income year on year. If the Riksbank were to do the same, it would mean small gains on asset purchases in 2015-2021 and a fairly large loss in 2022. It would thus work much like the simple example described earlier. The final impact on the result will depend on how the difference between the rate of return and the policy rate develops in the future.

<sup>59</sup> The rate of return is the rate that the holding will yield if the bonds are held to maturity.

**Figure 34. Average annual return on bond holdings if held to maturity and current financing rate (Riksbank's policy rate)**



Note. The Riksbank's policy rate (blue line) can be seen as the current percentage financing rate for the bond holding (the Riksbank's interest expenditure for deposits of the reserves created at the time of the bond purchases). The rate of return (red line) refers to the holding of bonds in kronor (fixed coupons only) and shows how the average annual return on the holding would be from the current date until all bonds have expired. The changes in this average were due to purchases and maturities. If the blue line is above the red line at a point in time, the current financing rate exceeds the return we can expect from the bond holding if the Riksbank holds it to maturity.

Source: The Riksbank.

## Depreciation in value affects the Riksbank's profit

The Riksbank uses accounting principles that follow the guidelines of the European System of Central Banks (ESCB). These guidelines provide different ways of reporting the results, but the method chosen by the Riksbank is described here.<sup>60</sup> This method means that the current market value of the bond holdings can have a significant impact on the Riksbank's results. And the market value of a bond falls when interest rates rise. This is how it works: the Riksbank's profit and loss account does not include unrealised gains but does include unrealised losses. When determining the result, assets are marked to market at the end of an accounting year. If the market value of a bond purchased by the Riksbank exceeds the purchase price and has therefore increased in value, this is not included in the profit for the year but is added to a so-called value adjustment account on the liabilities side of the balance sheet. However, if the market value is instead lower than the purchase price, a write-down is made to the acquisition cost. The write-down is charged to the result for the year, even though the Riksbank still owns the bond and no cash flow has been generated nor any loss

<sup>60</sup> See the Guideline of the ECB on the Legal Framework for Accounting and Financial Reporting in the ESCB, (EU) 2016/2249 (ECB/2016/34) amended according to (EU) 2019/2217 (ECB/2019/34) and (EU) 2021/2041 (ECB/2021/51).

realised. This asymmetric treatment of the impact of changes in market value on the reported result follows a kind of precautionary principle.<sup>61</sup>

It is important to emphasise that the overall effect on the result using the Riksbank's method is the same as with the second method above, where net interest income is recorded year by year. A write-down in the value of the bonds can be likened to the Riksbank first selling the bonds and then buying them back at the new lower market value. This entails two things. First, there is a loss on the sale, which is charged to the profit and loss account. Secondly, the "repurchases" are made at a higher rate. The future interest income recognised will therefore be higher and will improve the results in the following years, just enough to compensate for the loss in value associated with the sale. But in the case of the Riksbank, the losses are concentrated in the period when interest rates are rising and the value of the bonds is falling.

Since interest rates have risen so much in 2022, the value of the bonds in the Riksbank's asset portfolio has fallen sharply. Table 3 shows that the value has fallen by SEK 70 billion. Broken down by asset class, government bonds and covered bonds have contributed most to the decline in value, as they make up the majority of the portfolio.

**Table 3. Changes in the Riksbank's monetary policy assets 2022**

SEK billion

Asset type	Change in value
Government bonds	-41
Municipal bonds	-7
Covered bonds	-23
Corporate bonds	0
<b>Total</b>	<b>-70</b>

Note. Refers to changes in value during 2022. The calculations refer to fixed-coupon bonds. Rounding off means that the amounts do not sum up.

Source: The Riksbank.

During much of the period when the Riksbank was buying bonds, interest rates were low, while bond yields fell. The acquired assets then increased slightly in value, which resulted in gains on previous bond purchases.<sup>62</sup> When interest rates began to rise in 2022, large parts of the first phase purchases from 2015 had either already matured or had a short remaining maturity. As mentioned earlier, the scope of the asset purchase programme was also smaller in the first phase from 2015 than in the second phase from 2020. The cumulative financial result over time is therefore not nearly as negative for the purchases in the first phase, which is shown clearly in Table 4.<sup>63</sup>

<sup>61</sup> See the Riksbank's Annual Report for 2022, section on asset management, for a more precise description.

<sup>62</sup> However, as mentioned earlier, unrealised gains are not recorded on the Riksbank's profit and loss account.

<sup>63</sup> These calculations are based on the cash flows that have so far been generated for each bond purchased, combined with a market valuation at current prices of the bonds that have not yet matured. The calculation can therefore be seen as the final result of the purchases, assuming that the remaining holding is sold today.

**Table 4. Financial result of the Riksbank's purchases in the various phases**

SEK billion

Phase	Financial result
Phase 1 (decisions 2015–2019)	-9
Phase 2 (decisions March 2020–June 2022)	-51
<b>Total</b>	<b>-59</b>

Note: Refers to total results since the start of the purchases and is based on market valuation on 31 December 2022. The calculations refer to fixed-coupon bonds. Rounding off means that the amounts do not sum up.

Source: The Riksbank.

Since the Riksbank has mostly bought government bonds and covered bonds, it is hardly surprising that it is these purchases that have produced the largest losses (see Table 5). Although the Riksbank has mostly bought covered bonds in recent years, government bond purchases have generated roughly the same amount of losses. This is partly because government bonds have a longer maturity and thus depreciate more when interest rates rise, and partly because the interest rates at which they were purchased were lower (see Figure 33).

**Table 5. Financial results of the Riksbank's purchases of different asset types**

SEK billion

Asset type	Financial result
Government bonds	-29
Municipal bonds	-7
Covered bonds	-24
Corporate bonds	0
<b>Total</b>	<b>-59</b>

Note. Refers to total results since the start of the purchases and is based on market valuation on 31 December 2022. The calculations refer to fixed-coupon bonds. Rounding off means that the amounts do not sum up.

Source: The Riksbank.

## Large financial loss and negative equity in 2022

The total financial result of the Riksbank's asset purchases will not be known until all bonds have matured or been sold. But we do know that rising interest rates in 2022 significantly reduced the value of the Riksbank's bond holdings. Although these are not realised losses, the decrease in value must therefore be recorded as a loss for the Riksbank. Overall, the Riksbank's result for 2022 was SEK -81 billion, which also includes depreciation in value from higher interest rates on the Riksbank's foreign securities in the foreign exchange reserve.<sup>64</sup> This implicates a negative equity position in 2022 when the profit appropriation is completed.

<sup>64</sup> This includes a reversal of risk provisions of SEK 5 billion, which improves the result. See "SEK 5 billion reversed from previous risk provisions to profit for 2022", news item on [www.riksbank.se](http://www.riksbank.se) on 11 January 2023.

The new Sveriges Riksbank Act that came into force in January 2023 contains rules on the amount of equity capital required. According to the Act, the Riksbank must submit a petition to Parliament if its capital falls below SEK 20 billion. However, unrealised gains booked to revaluation accounts must be taken into account in the amount described in the petition. In this case, any petition will only be made on the basis of the financial statements for the financial year 2023. The fact box below shows the formal procedure in more detail.

## The Riksbank's equity capital and possible need for a capital injection

The new Sveriges Riksbank Act, which entered into force on 1 January 2023, sets a target level for the Riksbank's equity of SEK 60 billion. The target level is to be adjusted annually by the CPI. If the Riksbank's equity falls below one-third of the target level, the Riksbank must submit a petition to the Riksdag to restore its equity.

This provision shall apply for the first time for the financial year 2023. A mandatory petition can only become possible in spring 2024 when the annual accounts for 2023 have been adopted. The Executive Board will decide on the petition. The table below gives an overview.

**Table 6. Sveriges Riksbank Act and equity (from financial year 2023)**

When	What	Who
January (2024–)	Risk provision decision (Chapter 8, Section 11 of the Sveriges Riksbank Act)	The Executive Board
February (2024–)	Annual Report (Chapter 8, Section 4 of the Sveriges Riksbank Act)	The Executive Board
February (2024–)	Decision on appropriation of profit (including profit distribution) (Chapter 8, Section 4 and Sections 12–14 of the Sveriges Riksbank Act)	General Council
February (2024–)	Petition to the Riksdag for the restoration of equity, if equity falls below one third of the target level (Chapter 8, Section 15 of the Sveriges Riksbank Act)	The Executive Board
April/May (2024–)	Adopt the balance sheet and profit and loss account Approve the appropriation of profit (including dividend) (Chapter 8, Section 6 of the Sveriges Riksbank Act)	Sveriges Riksdag

## Large socio-economic gains from the asset purchases

The Riksbank's task is not to generate profits. The overriding objective is to maintain permanently low and stable inflation and, without prejudice to this objective, to contribute to a balanced development of output and employment.

The Riksbank's asset purchases from 2015, together with a negative policy rate, are assessed to have contributed to improving the attainment of the target. Inflation rose towards the target and remained very close to 2 percent in 2017 and 2018, while



inflation expectations stabilised around the target (see Figure 1 and Figure 7 in Chapter 1).<sup>65</sup>

The Riksbank's assessment is that the measures taken during the pandemic, of which asset purchases were an essential element, also worked largely as intended.<sup>66</sup> Interest rates charged to households and businesses were kept low through the acute phase of the pandemic. This, together with the extensive measures taken by the government and Finansinspektionen, kept the credit supply and activity in the economy going, even though the fall in GDP was extremely dramatic. The overall economic policy response helped to avert a financial crisis and the economy recovered strongly from the initial downturn.

## The monetary policy toolbox needs to be reviewed continuously

In the short term, central banks generally have no problem conducting monetary policy even if the level of their own capital is low, since they have, at least in theory, unlimited possibilities to create a means of payment in their own currency. But the ability of the central bank to cover its costs in the longer term is important for maintaining financial independence and the credibility of monetary policy.<sup>67</sup> The Riksbank's ability to generate long-term profits has been weakened by the decline in the use of cash.<sup>68</sup> The Riksbank therefore has less scope to rebuild its own capital after large losses than many other central banks.

The monetary policy toolbox needs constant review, as evidenced not least by developments since the global financial crisis. One question that is important for the Riksbank to analyse in the future is how different monetary policy tools relate to one another in terms of, on the one hand, the possibilities of achieving the monetary policy objectives and, on the other hand, the risks of the Riksbank's results deteriorating.<sup>69</sup>

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<sup>65</sup> See Account of Monetary Policy for 2017 and 2018, Sveriges Riksbank.

<sup>66</sup> See, for example, the in-depth article "The coronavirus crisis and the Riksbank's asset purchases" in the *Account of Monetary Policy Report 2021*, Sveriges Riksbank.

<sup>67</sup> See A. Nordström and A. Vredin (2022), "Does central bank equity matter for monetary policy?", *Staff memo*, December, Sveriges Riksbank.

<sup>68</sup> See D. Kjellberg and D. Vestin (2019), "The Riksbank's balance sheet and financial independence", *Economic Review*, No. 2, Sveriges Riksbank.

<sup>69</sup> For a comprehensive review of new monetary policy tools that have figured in the international debate, see, for example, speech by A. Breman (2021), "Monetary policy after corona – we need to think along new lines", 23 February 2021, Sveriges Riksbank.

## ARTICLE – The Riksbank’s monetary policy development work

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The focus of the Riksbank’s monetary policy development work in 2022 was on analysing developments in inflation and the effects of monetary policy measures. Among other things, it examined how inflation developments are affected by rapid rises in energy prices and how price rises spread through the economy. There were also studies of how the climate transition and the Swedish economic policy framework affect the conditions for inflation developments moving forward. In connection with the Riksbank tightening its monetary policy, there were also studies of how the economy is affected by changes in the policy rate and the asset holdings, as well as how the Riksbank’s financial result is impacted by higher interest rates.

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### Focus on inflation developments and the effects of monetary policy measures

The focus for the Riksbank’s development work during the year was primarily on inflation developments and their driving forces. The fact that this was analysed carefully in preparation for the monetary policy decisions is evident from the articles published in the Monetary Policy Reports. One important question was how the unexpectedly large increases in energy prices might affect other consumer prices, and another was whether the price increases were spreading through the economy, other than via higher costs, and whether there was evidence of spillovers via expectations and wages. In addition, the Riksbank examined and drew lessons from the major forecast errors for 2022 to better understand inflation developments going forward. The Riksbank also studied how the climate transition will affect inflation in the future and how the Swedish economic policy framework, with, for example, an inflation target and a well-functioning wage formation, contributes to good conditions for inflation to return to the target. The Riksbank also analysed the economic consequences of the war in Ukraine and why the krona weakened in 2022. To better understand aggregate inflation, the Riksbank also worked further on the analysis of micro data on price changes for individual products.

As a result of the high inflation, the Riksbank tightened monetary policy. An empirical analysis showed that the higher indebtedness among households meant that the policy rate did not need to be raised as much as before to achieve the same tightening effect. The Riksbank also studied how the effects of monetary policy differ depending on whether interest rate changes are expected to be temporary or more long-lasting. A Riksbank study on the impact of changes in securities holdings on the economy was also carried out. This illustrates the effect of the Riksbank’s asset purchases 2015 –

2022. Studies also analysed the impact of the Riksbank’s purchases of covered bonds on mortgage rates, as well as the effect of asset purchases on financial prices during the pandemic. The Riksbank also organised an international research conference on central banks’ tool kits, and in particular on how purchases of financial assets can be used as a monetary policy tool. Linked to the tightening, an analysis was also made of the impact of higher interest rates on the Riksbank’s financial result.

**Table 7. Monetary policy-related studies conducted in 2022.**

Year of publication 2022, unless otherwise specified

<b>Articles in Monetary Policy Reports</b>
“High energy prices – how will other consumer prices be affected?”, February
“Economic consequences of the war in Ukraine”, April
“Many indications that inflation will be high this year and next year”, April
“Price rises are spreading in the economy”, June
“Labour shortages and higher wage pressures abroad”, June
“The economic-policy framework facilitates a return to the target”, September
“Higher interest-rate sensitivity in the Swedish economy”, September
“What indicates that inflation will fall back next year?”, September
“What effect can measures to dampen the electricity price have on inflation?”, September
“Why has the krona weakened this year?”, November
“Alternative scenarios for inflation and monetary policy”, November
<b>Economic Commentaries</b>
J. Ewertzh, M. Klein and O. Tysklind, “Price dynamics in Sweden – insights from a new dataset”, no. 1
C. Flodberg, I. Häkkinen Skans and P. Wasén, “Long-term unemployment in the wake of the pandemic”, no. 2,
M. Sjödin, “The path to a monetary policy decision”, no. 3
M. Apel, “How does the climate transition affect inflation?”, no. 5
D. Kjellberg and M. Åhl, “The Riksbank’s financial result and capital are affected by higher interest rates”, no. 8
P. Stockhammar, I. Strid and T. Tornese “How has the impact of the policy rate on consumption changed when the debt-to-income ratio has risen?,” no. 9
J. Almenberg, M. Ankarhem, K. Blom and T. Jansson, “House prices and interest rate expectations”, no. 10
R. Emanuelsson, E. O. Andersson and T. Vasi, “The Riksbank’s purchases of covered bonds and the impact on mortgage rates”, no. 12
S. Laséen, J. Lindé and U. Söderström, “How much is inflation affected by monetary policy?”, no. 13
<b>Sveriges Riksbank Economic Review</b>
S. Ingves, “Sweden’s role in international economic cooperation – yesterday, today, tomorrow”, no. 1
A. Nordström, “Understanding the foreign exchange market”, no. 1

**Sveriges Riksbank Economic Review**

M. Apel and H. Ohlsson, “Monetary policy and inflation in times of war”, no. 2

M. Beechey Österholm, “The Riksbank’s bond purchases: who sold bonds to the Riksbank?”, no. 2

**Staff Memos**

P. Gustafsson, “An event study of the effects of asset purchases on financial prices during the pandemic”, March

J. Johansson, M. Löf, P. Stockhammar and I. Strid, “What can explain the Riksbank’s forecasting error for inflation?”, June

K. Doherty, M. Eriksson and D. Hansson, “Välfungerande kreditförsörjning för flertalet företag under pandemin. En analys av mikrodata” [Well-functioning credit supply for most firms during the pandemic – An analysis of microdata], July

S. Laséen, “Hushållens skuldsättning och penningpolitik: ett regionalt perspektiv” [Household indebtedness and monetary policy: a regional perspective], September

C. Flodberg, M. Hesselman and M. Löf, “Can inflation forecasts be improved by using alternative measures of labour market slack?”, November

A. M. Ceh, “How much is priced in? Market expectations of monetary policy lift”, December

A. Nordström and A. Vredin, “Does central bank equity matter for monetary policy?”, December

**Riksbank Studies**

“Evaluation of the Riksbank’s forecasts”, no. 1

B. Andersson, M. Beechey and P. Gustafsson, “The Riksbank’s asset purchases 2015–2022”, no. 2

**Working Paper series**

R. Billi and C. Walsh, “Seemingly Irresponsible but Welfare Improving Fiscal Policy at the Lower Bound”, no. 410

R. Billi, “Inflation Targeting or Fiscal Activism?”, no. 412

M. Carlsson, A. Clymo and K-E. Joslin, “Dispersion over the Business Cycle: Passthrough, Productivity, and Demand”, no. 414

T. Broer, J. Kramer and K. Mitman, “The Curious Incidence of Monetary Policy Across the Income Distribution”, no. 416

C. Bertsch, I. Hull, R. L. Lumsdaine and X. Zhang, “Central Bank Mandates and Monetary Policy Stances: through the Lens of Federal Reserve Speeches”, no. 417

**Monetary policy speeches by the Executive Board**

S. Ingves, “Penningpolitiska erfarenheter i Norge och Sverige – en resa under 10 år” [Monetary policy experience in Norway and Sweden – a trip for 10 years], speech at Norges Bank, 21 March

A. Breman, “Inflation and monetary policy in the shadow of war”, speech at Sveriges Riksbank, 23 March

M. Flodén, “Monetary policy will bring inflation back to target”, speech at DI Risk and Return, Grand Hotel Stockholm, 6 April

C. Skingsley, “High inflation and rising repo rate – what happens to the Riksbank’s balance sheet?”, speech at Handelsbanken, 6 May

H. Ohlsson, “Monetary policy and inflation in times of war”, speech at the Department of Economic History, Uppsala University, 17 May

S. Ingves, “Inflation-targeting for nearly 30 years – a robust framework for all times?”, speech at the Swedish Economic Association, 31 May

A. Breman, “from 500 per cent to –0.5 per cent – what is next?”, speech at Sveriges Riksbank, 31 August

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**Monetary policy speeches by the Executive Board**

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P. Jansson, “Monetary policy when inflation is too high – prerequisites and challenges”, speech at Swedbank, 9 December

M. Flodén, “My thoughts on the Riksbank’s asset purchases”, speech at Handelsbanken, 14 December

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