

## SPEECH

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# Reflections on the high inflation in recent years<sup>1</sup>

Thank you for inviting me to this traditional meeting of the Swedish Economic Association. In my calendar, this meeting is a sign of spring and an event to look forward to. Here I have the chance to discuss a topic in a little more depth and also have the opportunity to highlight new and interesting analyses by staff at the Riksbank.

The last few years have been tough and turbulent. First came the pandemic, plunging the whole world into a huge health crisis that also had a major economic impact. As the world began to recover from the pandemic, Russia invaded Ukraine, which, in addition to the human suffering, has also had major economic consequences and led to geopolitical tension. Moreover, since last autumn, a war between Israel and Hamas has fuelled geopolitical unrest and led to terrible humanitarian consequences. So there are still many storm clouds and in that sense this turbulent period is not over. But from an inflation perspective, things look much brighter now.

When I was here last May, inflation was still too high. The Riksbank had raised the policy rate by 0.5 percentage points to 3.5 per cent in April, and we emphasised the importance of inflation quickly coming down to the inflation target. To ensure this, we then raised the policy rate to 4 per cent, and we have kept it at this level since September last year, until two weeks ago (see Figure 1). Meanwhile, CPIF inflation has been trending down towards 2 per cent and we have now started to cut the policy rate.

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<sup>1</sup> Thank you to Björn Andersson and Iida Häkkinen Skans for help with the speech. Thanks also to Hanna Armelius, Aino Bunge, Mattias Erlandsson, Martin Flodén, Marie Hesselman, Peter Kaplan, Mathias Klein, Stefan Laséen, Mårten Löf, Stefania Mammos, Åsa Olli Segendorf, Marianne Sterner, Pär Stockhammar, Klara Strömberg and Oskar Tysklind for their input and valuable comments and Elizabeth Nilsson for translation.

Since the introduction of the inflation target in the 1990s, the challenges have centred on navigating in a low-inflation environment. In fact, the last few years are the first time that inflation targeting has been seriously tested on the upside and – as it turns out – has withstood a major upswing in inflation. Now that we have passed the interest rate hike cycle and have started to cut the interest rate, it may be appropriate to reflect on the period we have gone through.

Today I intend to start by going through the reasons why inflation rose as it did. What actually happened? Sometimes one hears confident claims, such as that it was just a question of large increases in energy prices or an effect of Russia's invasion of Ukraine. Both of these factors have certainly contributed but they are not the whole explanation. I intend to go into a little more detail on another factor that was important and that may also have implications for monetary policy in the long run, namely firms' pricing behaviour. I would also like to address developments in the real economy. Looking back over the past few years, it is striking that the real economy as a whole has performed better than many feared it would with several percentage points higher interest rates. Finally, I would also like to look ahead and say a few words about possible future developments.

## The upturn in inflation – what actually happened?

But let me start with inflation. In 2021, inflation started to rise from a low level, both in Sweden and abroad. At the end of 2021, inflation measured as the annual percentage change in the CPIF was around 4 per cent, which was then the highest inflation figure we had had in Sweden for thirty years. In February 2022, the Riksbank assessed that inflation was likely to fall back towards the end of the year, but as is well known, the opposite was the case. Inflation picked up significantly and by December 2022, CPIF inflation was in double digits. What happened?

### **Rapid recovery from the pandemic combined with global supply shocks**

To understand these developments, we first need to go back to the 2020 pandemic. When countries shut down, demand fell dramatically as people adapted their behaviour to both coercive and self-imposed restrictions. It hit the Swedish economy via a decline in demand both abroad and in Sweden, with firms in many service industries, such as hotels and restaurants, being particularly hard hit. But the pandemic also meant that international supply chains were disrupted and workers fell ill, making it harder for companies to maintain production. The pandemic thus affected the economy via both the demand and the supply side.

As households reduced their consumption, their savings increased markedly.<sup>2</sup> As households had needed to restrain their consumption for a long time, the recovery was then very fast as effective vaccines were put in place and countries could start opening up in 2021. In some areas, activity rose from almost non-existent to very high levels in a short period of time (see Figure 2). Compared with the 1990s crisis and the 2008 global financial crisis, GDP recovered much faster after the pandemic (see Figure 3).

In many countries, labour supply had fallen sharply as many people had left the labour force during the pandemic. In Sweden, the overall labour force participation rate did not decline significantly, but many people chose to retrain or change sector. As a result, when demand quickly recovered, many companies found it difficult to recruit labour with the right skills. The labour shortages caused wages to rise relatively substantially in several countries.

The recovery was supported by various fiscal policy support packages, which in some cases were very extensive.<sup>3</sup> For households, this included support in the form of unemployment benefits and sickness benefits. In the United States, large amounts of direct cash assistance were also paid out. Companies received support in the form of grants and guarantees to cover revenue losses and to continue borrowing at a relatively low cost. In Europe, there were also furlough schemes that saved many workers from being laid off. Fiscal policy support was generally large, but in comparison with the United States and other European countries, fiscal policy support measures were relatively smaller in Sweden.<sup>4</sup> At the same time, it is difficult to compare, as the social security systems already in place provided different protection in different countries. It is also difficult to compare how effective the measures were in different countries. For example, furlough schemes can stabilise employment in the short term, but in the longer term they can reduce the dynamism of the economy and contribute to weaker productivity growth.

### **Global supply disruptions lingered longer than expected**

The upturn in global demand contributed to a rapid increase in commodity prices for metals and food in 2021. At the same time, disruptions to global trade persisted, causing, among other things, a significant increase in freight prices. Input prices rose to record highs for both manufacturing and services companies.

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<sup>2</sup> In Sweden, surplus savings, i.e. the difference between normal savings and temporarily higher savings, rose to a historically high level and amounted to just over 5 per cent of household disposable income in the first quarter of 2022. See the article "Household savings increased significantly during the pandemic" in Monetary Policy Report, September 2023, Sveriges Riksbank.

<sup>3</sup> See, for example, the article "Expansionary fiscal policy abroad are contributing to the recovery" in Monetary Policy Report, July 2021.

<sup>4</sup> See SOU 2022:10, "Sverige under pandemin" [Sweden during the pandemic], final report of the Corona Commission.

This had a lagged effect on producer prices, but the impact on Swedish consumer prices was initially quite small. This was not surprising in itself, as the link between commodity prices and consumer prices is usually weak. In 2021, energy prices, in particular electricity prices, also started to increase rapidly. This contributed greatly to pushing CPIF inflation up and above the inflation target – excluding energy, CPIF inflation was around 2 per cent at the end of 2021.

Much of the discussion around monetary policy in late 2021 and early 2022 centred on the extent to which these factors would have a temporary or more permanent effect on inflation.<sup>5</sup> How much of their increased costs would companies pass on through higher prices? Given that producer prices had risen rapidly, consumer prices would likely increase with some lag. Historical patterns indicated there would be a limited and temporary upturn, but how much confidence could be placed in those patterns in the exceptional circumstances that prevailed? As the rise in CPIF inflation was mainly due to energy prices, and the Riksbank assessed that their contribution would decline in 2022, the forecast was that inflation would fall back towards the end of the year.

But the situation worsened in February 2022, when Russia invaded Ukraine. New disruptions in global value chains emerged. The supply of Russian oil and gas decreased, as well as the supply of agricultural goods from Ukraine. This caused the world market prices of some foods to rise and, instead of falling back, energy prices rose even more. Inflation thus received an extra boost and continued to rise globally. Following the monetary policy meeting in February 2022, the CPIF outcomes for the beginning of the year showed that prices for food and other goods in particular had contributed to a rapid rise in inflation. Clearly, by early 2022, the pace of goods price increases had picked up across the board and underlying inflation rose faster and was much higher than expected.<sup>6</sup> In the spring, the rate of increase in many services prices also rose, signalling that there were also more domestically generated inflationary pressures.

During summer and autumn 2022, CPIF inflation continued to rise as price increases for food and other goods became more pronounced (see Figure 4). In December, inflation was just over 10 per cent and just under 8.5 per cent excluding energy prices. In 2023, however, inflation gradually declined. To begin with, the contribution from energy prices, which had fallen at the end of 2022, was reduced. However, CPIF inflation excluding energy was still significantly higher than expected in early 2023. The contributions from prices of food and other goods declined gradually over the year, but services prices increased

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<sup>5</sup> See, for example, the articles “How are higher commodity prices and freight costs affecting inflation in Sweden?” in Monetary Policy Report, July 2021, “Higher inflation – temporary or persistent?” in the Monetary Policy Report, November 2021, and “High energy prices – how will other consumer prices be affected?” in the Monetary Policy Report, February 2022.

<sup>6</sup> See the article “Price rises are spreading in the economy” in Monetary Policy Report, June 2022.

unexpectedly fast. At the end of 2023, inflation excluding energy was just over 5 per cent, with services prices being the main driver of inflation.

### **The large increase in energy prices had spillover effects**

Thus, in addition to the persistent disruptions in global value chains that pushed up input and freight prices, the rise in energy prices was both larger and more protracted than expected. This meant that the spillover effects from energy prices to other prices were also larger than expected. The spillover was via indirect effects, with the large increases in energy prices driving up firms' production costs, which were passed on to consumers via larger price increases for goods and services. In Sweden, however, we experienced very little secondary effects via large wage increases to compensate for the large price increases.

Energy prices tend to be volatile and affect measured inflation quite substantially. But while energy prices rose dramatically, they are not the only reason why inflation rose as fast and as much as it did. Earlier attempts by the Riksbank and the National Institute of Economic Research (NIER) to estimate the indirect effects on inflation of a permanent change in the price of oil or electricity showed that the indirect effects have been about the same size as the direct effect. However, the indirect effects come with a lag and they are spread over a longer period of time.<sup>7</sup> By the end of 2021, the direct contribution of energy prices to CPIF inflation was close to 2.5 percentage points and remained at almost the same level until autumn 2022, with the exception of occasional monthly outcomes. According to estimates of the indirect effects, one could therefore have expected, as a rule of thumb, that CPIF inflation would have been pushed up by a further 2.5 percentage points overall in 2022–2024. As inflation rose significantly more and faster, indirect effects cannot be the only explanation.

### **The trend raised questions about companies' pricing behaviour**

One should remember, however, that calculations of this type of relationship are very uncertain, which was also emphasised when the Riksbank and the NIER published their estimates. The calculations capture the average impact on inflation of earlier changes in energy prices. But how companies actually set their prices when energy prices and other production costs rise will be influenced by a range of factors, depending on the circumstances.

The large and rapid upturn in inflation in 2021–2022 raised questions about this. How do companies usually set their prices when costs increase and how was this

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<sup>7</sup> See M. Bjellerup and M. Löf (2008), "The effects of the oil price on inflation in Sweden", Economic Commentaries No. 4, Sveriges Riksbank, the article "Energy prices and Swedish inflation" in Monetary Policy Report, February 2008, Sveriges Riksbank, and the article "Råoljehets betydelse för konsumentpriserna" (The significance of crude oil prices for consumer prices) in Konjunkturläget, mars 2016, National Institute of Economic Research.

period different? To what extent were the large price increases indicative of a change in pricing behaviour, with companies now perhaps raising prices more than usual in relation to cost increases? New analysis in recent years has provided interesting insights and some answers to these questions, although data limitations make it difficult to speak with certainty about this.

### **The rise in inflation coincided with more frequent price increases**

Normally, the Riksbank analyses the development of the CPIF and price increases in relatively large sub-groups such as goods, services, food and so on. However, Statistics Sweden's calculations of inflation are based on a very large data set of prices for individual products. For some years now, researchers at the Riksbank have been conducting a research project to analyse the development of prices at this micro level and gain a deeper knowledge of companies' pricing behaviour and how this is linked to price increases at the aggregate level.<sup>8</sup>

For example, it turns out that the **frequency** of price changes, i.e. how often prices change, seems to play a more important role for inflation than the **size** of them. The analysis of prices at the micro level shows that the frequency of price changes – both raises and cuts – increased in the 2010s up to the pandemic, while the average size of the changes remained fairly stable.<sup>9</sup> There were significant differences both within and between product groups. In general, food and goods prices changed on average more frequently than services prices.

In the early part of the 2020 pandemic, price increases were less frequent (see Figure 5). But from the summer of 2021, there was a dramatic change. The frequency of price increases then increased noticeably. At the same time, price cuts were more rare. The difference in the frequency of increases and decreases thus widened, while inflation rose rapidly.<sup>10</sup> Perhaps somewhat surprisingly, the average size of price changes was only slightly larger during this period, so the rise in inflation mainly coincided with companies raising their prices **more often** on average, rather than raising them **more**.

These are preliminary results from an ongoing research project. Going forward, the Riksbank will receive data on prices at the micro level on an ongoing basis and it is possible that the research project will be able to develop an inflation indicator

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<sup>8</sup> See, for example, E. Ahlander, M. Carlsson and M. Klein (2023), "Price pass-through along the supply chain: Evidence from PPI and CPI microdata", Working Paper no. 426, Sveriges Riksbank, or J. Ewertzh, M. Klein and O. Tysklind (2022), "Price dynamics in Sweden – insights from a new dataset", Economic Commentaries, no. 1, Sveriges Riksbank. The study uses data for the period 2010–2018.

<sup>9</sup> The increase in the frequency of price changes in the 2010s is likely to be partly due to changes in measurement methods during the period. In 2013, for example, scanner data for food were widely introduced, causing the reported frequency of food price changes to increase significantly.

<sup>10</sup> This does not seem to be unique for Sweden. For example in Canada, the companies' price-setting behaviour changed in a similar manner, see Bank of Canada (2024), "Analyzing businesses' price-setting behaviour", Box 3, Monetary Policy Report, April.

from the information on the frequency of price changes. Although it is not necessarily a leading indicator, it could still complement other indicators and provide a fuller picture of developments – judging by recent years, it is certainly worth keeping an eye on inflation as prices start to rise more frequently.

### **In general, prices increased by about the same amount as companies' costs**

However, to understand the rise in inflation, we also need to look at how price increases have related to companies' costs. In 2022 and 2023, the NIER conducted such a study on behalf of the government.<sup>11</sup> The main conclusion of the study is that the CPIF rose by roughly the same amount as business sector costs from spring 2019 through spring 2023 – costs that were driven up by rising import prices for commodities and inputs and, to a slightly greater extent, higher labour costs. However, there are major differences in price adjustments between different product groups. Smaller price increases than cost increases in some products, notably services, offset the effect of larger price increases than cost increases in other products, notably goods.

Food prices have been of particular interest and the NIER's overall assessment is that consumer food prices increased more than was justified by production costs. However, it is difficult to assess whether any particular part of the food supply chain accounted for the bulk of the price increase. An interesting finding of the study is that changes in, among other things, energy prices and the exchange rate appear to have affected food prices significantly more since 2022 – not only because the changes were larger than before, but also because pricing appears to have reacted more to the changes than it did before. Companies in general may also have been somewhat faster in passing on their cost increases to consumers in recent years.

### **Stronger link between producer prices and consumer prices**

The pass-through from cost increases to price increases thus appears to have been greater than before. Another sign of this is that the link between producer prices and consumer prices seems to have become stronger. Consumer prices are the prices of goods and services consumed by households, while producer prices are the prices at the first sales stage, i.e. the selling prices of goods and services produced by Swedish companies and purchased by Swedish importers. Comparing the evolution of producer prices and overall consumer prices for food and other goods in the 2000s, the relationship was relatively weak until recent years,

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<sup>11</sup> The NIER analysed the development of prices relative to costs in various industries in four special studies. The results of these are summarised in the special study *Prissättning hos svenska företag 2023* [Pricing in Swedish companies in 2023].

although somewhat more pronounced for food. The fact that the pass-through is normally different in different product groups is confirmed by a study of more disaggregated data.<sup>12</sup>

An important explanation for the fact that changes in producer prices tend not to have a full impact on consumer prices is that the purchase of goods represents only part of companies' total costs. Consumer prices will therefore not fluctuate as much as producer prices, even if companies allow changes in costs to directly affect prices. Companies may also choose to pass on variations in purchasing costs to profit margins instead of passing them on directly to customers, for example if there are costs or competitive disadvantages associated with frequent price changes. However, in recent years, the pass-through from producer prices to consumer prices seems to have been greater and faster than before.<sup>13</sup>

### **Greater impact of a weaker krona on consumer prices**

Signs that this has been the case are also visible in the pass-through from the exchange rate to inflation. With some variations, the krona has been depreciating against a trade-weighted basket of currencies for a long time, but the trend was particularly evident from the beginning of 2022 until the end of 2023. Compared to the dollar and the euro, the krona weakened a lot in a short period of time and I discussed possible reasons for this at an SNS seminar last year.<sup>14</sup> As a weaker exchange rate raises the prices of imported products in krona terms, the exchange rate was another reason for Swedish companies' cost increases in 2022-2023.

Based on previous calculations, one would expect variations in the exchange rate to have moderate effects on inflation – a rule of thumb based on various empirical estimates has been that if the exchange rate were to depreciate lastingly by 10 per cent against a trade-weighted basket of currencies, this would lead to around 0.5 percentage points higher inflation after one year.<sup>15</sup> Given that inflation increased by several percentage points in 2022, there were suspicions that the

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<sup>12</sup> In general, pass-through appears to be faster for goods, such as food, where prices are updated frequently, see E. Ahlander, M. Carlsson and M. Klein (2023), "Price Pass-Through Along the Supply Chain: Evidence from PPI and CPI Microdata", Sveriges Riksbank Working Paper Series 426. As the study points out, there are significant differences in the goods covered by the producer price and consumer price indices and how they are weighted together. This makes it more difficult to study the relationship between the indices. One way to reduce this problem is to match similar products at the producer and consumer levels using price microdata.

<sup>13</sup> See the analysis entitled "Relationship between producer and consumer prices", Monetary Policy Report, March 2024.

<sup>14</sup> See "The krona will strengthen in the long run", speech on 22 September 2023, and the article with a similar title in Monetary Policy Report, September 2023. A discussion of the krona in a longer perspective and the role of monetary policy in the development of the exchange rate can be found in C.-J. Belfrage, J. Hansson and A. Vredin (2023), "How should we view the development of the krona?", Economic Commentary no. 3, Sveriges Riksbank.

<sup>15</sup> See the article "The impact of the exchange rate on inflation" in Monetary Policy Report, December 2016.



pass-through of the krona depreciation was much larger and faster than before.<sup>16</sup> For example, goods prices increased faster in Sweden than in the euro area and, compared with neighbouring countries, goods prices increased faster in Sweden and Norway, both of whose currencies depreciated against the euro, than in Denmark, whose krona is pegged to the euro.

The rapid rise in inflation in the rest of the world has also led researchers to focus on the question of whether the pass-through varies depending on the state of the economy.<sup>17</sup> A recent Riksbank study has examined whether this has been the case in terms of the krona's impact on various measures of inflation from 2000 until autumn 2023.<sup>18</sup> The study finds that the impact on CPIF inflation is on average in line with the Riksbank's earlier calculations. These, in turn, are close to the performance of other developed economies. However, there appears to be a non-linear relationship whereby a weakening exchange rate has a much greater impact on inflation in times of geopolitical uncertainty or when domestic inflation is above the inflation target.

### **Why was the pass-through from costs to prices higher this time?**

There are thus many indications that companies have allowed cost increases to be reflected in price increases to a greater extent in recent years than they did earlier in the 2000s. The natural follow-up question is why. What was the difference from previous episodes when production costs increased?

One obvious difference is the particular circumstances and magnitude of the disruption that affected companies this time. Costs rose rapidly and significantly via higher prices for energy, commodities, inputs, freight and so on in a context where many companies were already under pressure since the pandemic. For some companies, it was simply not possible to offset the increased costs in the normal way through their margins, and so they passed on the costs to consumer prices to a greater extent than before. Others could then follow suit and raise their prices.

Households also had a pent-up need to consume after the pandemic, so demand in the economy was high. Households were willing to pay more for certain goods and services that they had not been able to consume for a long time. This made it easier for companies to raise prices, as they ran less risk of losing customers. It is also possible that households were, at least to some extent, more accepting of

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<sup>16</sup> See the article "The pass-through of the krona to inflation appears to have been larger than usual", Monetary Policy Report, November 2023.

<sup>17</sup> See, for instance, the Fact box "Pass-through of the exchange rate when inflation is high" in Monetary Policy Report, June 2023.

<sup>18</sup> See M. Almgren and D. Stoyko (2024), "Is there state-dependency in the exchange rate pass-through to inflation in Sweden?", Staff memo, April, Sveriges Riksbank.

price increases, as they could see and understand that companies were struggling with large cost increases.<sup>19</sup> However, as the debate on high food prices in spring 2023, for example, showed, this is likely to have been a factor that may have played a greater role for some goods and services than for others.

### **The rise in inflation was due to a combination of high demand and supply shocks**

So what can we learn from this turbulent period of high inflation? I discussed this in a speech last winter and I think that developments since then and new analysis support the conclusions I drew then.<sup>20</sup> A first conclusion is that the rise in inflation was driven by a combination of both supply-side and demand-side factors. There has been a strong focus on this issue in the monetary policy debate, where the argument has been that the rise in inflation was, in principle, purely an effect of supply shocks that monetary policy could not influence.

One of the Riksbank's analysis projects has used various models to study the drivers of inflation broken down into supply and demand factors during the period of high inflation.<sup>21</sup> The results show that both have affected inflation. Overall, the results suggest that slightly more than half of the inflation in recent years can be attributed to supply factors and the rest to demand factors (see Figure 6). However, the results vary, for example, depending on the model used.

### **Tighter monetary policy was necessary to bring inflation back to target**

These breakdowns help us understand what drives economic developments. But as I discussed in my December speech, monetary policy cannot simply react when inflation is fuelled by demand factors and completely ignore increases due to supply factors. Inflationary impulses from the supply side can also propagate – for example, through changes in pricing behaviour, as I have discussed today, and through expectations of future inflation. Expectations are not formed in a vacuum – if the Riksbank does not act to ensure that inflation is on target in the long term, the credibility of the target may decline.

Monetary policy is very much about expectations and credibility. Thus, while the rise in inflation was to a fairly large extent caused by various supply shocks related to the pandemic and war – which central banks cannot directly influence – it was important to tighten monetary policy. The purpose of the Riksbank's interest rate increases has been to bring inflation back to the target within a reasonable time, without slowing economic activity unnecessarily. The fact that inflation has now

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<sup>19</sup> My colleague Anna Breman discussed this, among other things, in her speech "The psychology of inflation" on 12 April 2024.

<sup>20</sup> E. Thedéen (2023), "Lessons from a turbulent period", speech on 20 December, Sveriges Riksbank.

<sup>21</sup> M. Löf and P. Stockhammar (2024), "What were the driving forces behind the rise in inflation?", forthcoming Staff memo, Sveriges Riksbank.

come down and is close to the inflation target is due to the fading of global shocks and the dampening effect of tight monetary policy on demand.

What would have happened if we had not raised interest rates? When people criticise the interest rate increases, they rarely comment on this counterfactual development. It is inherently difficult to give precise figures, but based on the impact of monetary policy in the past, inflation would have been significantly higher. Model estimates show that it would likely have peaked somewhere around 14 per cent instead of around 10 per cent if we had only raised interest rates very little or not at all in 2022.<sup>22</sup>

In addition, these models do not take into account the risk that prolonged deviations from the inflation target could lead to households and companies losing confidence in the inflation target. If they start to expect high inflation to persist for a longer period of time, this can become self-fulfilling and so-called wage-price spirals can arise. In such cases, bringing down inflation becomes even more difficult and costly for the real economy, as the experiences of the 1970s and 1980s show. I therefore judge that the Riksbank's interest rate increases were necessary, both to prevent inflation from becoming even higher and to keep long-term inflation expectations anchored to the target. We have succeeded in doing so (see Figure 7).

But, of course, this was not only due to the Riksbank. In the work to bring down inflation, Sweden has also benefited from well-functioning wage formation and a restrained fiscal policy. Wage increases have been somewhat higher than in the past, but relatively moderate given the high inflation, and lower than in many other countries. However, wage formation based on the inflation target presupposes that the Riksbank also does its job and brings inflation back down to the target within a reasonable time. If we hadn't done that, the conditions for the autumn wage bargaining rounds would have been different.

## Where do we stand now?

That was all about the years of high inflation. Where do we stand now? Inflation has thus come down and is expected to stabilise around 2 per cent. Moreover, inflation expectations are firmly anchored and wage increases are moderate. The Riksbank has now begun to cut the policy rate. The adjustment of monetary policy going forward will be characterised by caution, with gradual cuts to the policy rate. I have made it sound as though the inflationary upswing is over, and most

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<sup>22</sup> See A. McKay and C. Wolf (2023), "What can time-series regressions tell us about policy counterfactuals?", *Econometrica*, vol. 91, issue 5, and S. Laséen and C. Nilsson (2024), "How does the Riksbank's monetary policy affect the Swedish economy: does inflation rise when the policy rate is raised?", Staff memo, January, Sveriges Riksbank.

indications are that this is the case. But it is best not to be too confident in the forecasting business, and there is still a risk of setbacks. The geopolitical unease could increase, for instance, and lead to renewed supply shocks. Future developments in the exchange rate and companies' pricing also remain uncertain.

### **Inflation has come down but this does not necessarily mean that old relationships apply again**

So, as I have described, there are clear signs that something happened to companies' pricing behaviour when inflation was high. For example, the correlations between producer prices and consumer prices, between energy prices and consumer prices, and between exchange rates and inflation have not followed historical patterns. Inflation has now come down and a relevant question is whether this also means that we are back in the old relationship again. There are certainly signs that pricing is normalising and that price increases at the producer level have decreased.<sup>23</sup> The frequency of consumer price increases has declined steadily since the beginning of 2023 and, at the beginning of 2024, was at about the same level as before the pandemic (see Figure 5). According to the Economic Tendency Survey and the Riksbank's Business Survey, companies' plans for price increases are now more modest, although there are differences between different sectors. As I mentioned, there is also evidence to suggest that the pass-through from the exchange rate should become more normal once inflation is close to the target again. Normalisation thus seems to be underway.

However, one conclusion from recent years is that old relationships cannot always be relied upon to remain valid – even those that have been stable over longer periods. As a policymaker, you need to be prepared for this because it is easy to get caught up in the prevailing zeitgeist. This may sound simple and obvious but in practice is not that easy. With the benefit of hindsight, it may seem obvious that relationships have changed. But decisions are made in real time, mostly based on data that is lagging behind.

We now know that inflation is by no means “dead”, as it was sometimes labelled when inflation was below the central banks' inflation targets for a long period. The threshold for raising prices may be lower now than it was in the past, allowing inflation to accelerate in earnest under certain circumstances. We should therefore not take it for granted that pricing behaviour and cost-price relationships will return to those that prevailed before the upsurge in inflation in recent years. For monetary policy, it will be important to monitor indicators that can quickly reflect changes in price-setting behaviour. The Riksbank has also

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<sup>23</sup> See the analysis entitled “Relationship between producer and consumer prices”, Monetary Policy Report, March 2024.

started to make greater use of different scenarios, which clearly focus on the possible consequences for inflation, and thus for the interest rate, if developments do not follow old relationships.<sup>24</sup>

### **Overall, the Swedish economy has been more resilient to the rise in interest rates than expected**

In December, I noted that conclusions remained to be drawn about the impact on the real economy of the years of high inflation and interest rate hikes. The purpose of monetary policy during the interest rate hikes was to bring inflation back to the target within a reasonable time, without slowing economic activity unnecessarily. We now know more about how it has worked, although it is still too early to say how successful it has been. It is possible that we have not yet seen the full impact of the rate hikes on the labour market. Redundancy notices are at relatively high levels and unemployment has risen slightly. In addition, the number of job vacancies has decreased. There is therefore a risk that developments in the real economy will be worse than expected and also that inflation will undershoot the target.

But so far, it can at least be noted that the real economy in Sweden, as is the case internationally, has not been affected by the rise in interest rates as much as many were expecting. This is perhaps more notable in Sweden's case, given that we entered the period of interest rate hikes with more interest rate-sensitive households than in many other countries, which is related to the high indebtedness of Swedish households and short fixed-rate mortgage periods.

Interest rate-sensitive parts of the Swedish economy, such as household consumption and housing investment, have of course been significantly affected by the interest rate hikes. Household consumption has declined and is weak from a historical perspective. Residential investment has fallen sharply, as interest rate rises have dampened demand for housing and construction companies' costs have increased. The interest rate increases have thus had a major impact on these parts of the economy.

GDP growth in Sweden has also been weak, with GDP falling by a couple of tenths of a per cent in 2023. However, the decline has not been as large as many feared when interest rates rose. At the end of 2022, for example, both the Riksbank and the NIER expected GDP to fall by just over 1 per cent in 2023, assuming that the policy rate peaked at 2.5-3.0 per cent, i.e. considerably lower than was actually

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<sup>24</sup> This is well in line with one of the recommendations of Ben Bernanke's recent evaluation of the forecasts and forecasting process at the Bank of England. Mr Bernanke argues that well-considered scenarios can improve the ability to evaluate and communicate different policy options and risk assessments; see B. Bernanke (2024), "Forecasting for monetary policy making and communication at the Bank of England: a review", Bank of England.

the case. Nor has the labour market been affected as much as feared. Despite the slight decline in the employment rate, it remains at a high level. The number of persons employed increased in 2023 and estimates indicate that it increased more than would be expected given the development of GDP (see Figure 8).<sup>25</sup>

Overall, the Swedish economy has thus been surprisingly resilient to the interest rate hikes. The sectors close to households have been very much affected by the rise in interest rates since 2022, but at the aggregate level this has been offset by the relatively better performance of other parts of the economy. In particular, net exports have developed strongly. An important factor behind this resilience has been the high demand for labour, especially in some sectors that were hit hard during the pandemic. Many companies have retained more staff in 2022–2023 than they believed demand would require in the short term. This may reflect the fact that the companies have not anticipated a deep or prolonged downturn in economic activity and that real wages have been weak (see Figure 9).

In general, households have thus been able to cope with higher interest rates and prices sustained by continued labour income. Households have also been saving substantially, which should have served at least partly as a buffer, although the excess savings built up during the pandemic still appear to be relatively intact. However, we are almost fumbling in the dark here, as data is only available at aggregate level and we cannot see any breakdown for household assets and savings.

The rise in interest rates has undoubtedly been a tough test of the finances of many households with large mortgages. But in general, there seems to have been a good ability to pay interest and amortisation. This shows the importance of banks' credit assessments and discretionary income calculations. The resilience of the economy at aggregate level starts in some sense with the resilience of individual households. I believe that macroprudential measures introduced after the global financial crisis to promote a sound lending and amortisation culture, such as amortisation requirements and mortgage caps, have contributed to the relatively low level of payment problems on the mortgage side.

## In conclusion – what do we see ahead?

We have now started to cut the policy rate and it is natural that many people wonder what interest rate to expect in the slightly longer term. Will we return to zero interest rates or has something fundamentally changed?

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<sup>25</sup> See the article "Strong labour market in Sweden and abroad" in Monetary Policy Report, June 2023.

### **Uncertainty about the level of the neutral rate**

How will global real interest rates develop going forward? This issue is currently dominating discussions in both the central banking and academic communities. It is also central to monetary policy in the long run, as it affects the neutral interest rate, i.e. the level of the real interest rate that neither stimulates nor tightens the economy. The neutral rate cannot be observed directly but must be estimated using econometric models and assumptions about the functioning of the economy. The level of the neutral interest rate is therefore associated with considerable uncertainty. Right now, it is clear that the level of interest rates is contractionary, but later in the rate-cutting phase, it will be more important to know where the neutral interest rate level lies.

Various estimates of the neutral interest rate in advanced economies show that it has fallen to a historically low level over a couple of decades. The downturn is explained by, for instance, increased demand for safe assets, changes in demographics and lower productivity. However, it is difficult to say what will happen in the future. For a small, open economy like Sweden, the trends in the neutral interest rate are almost exclusively determined by structural changes abroad. There are factors that suggest it will rise, for example, the development of artificial intelligence (AI) could lead to higher productivity and investment growth and thus higher neutral interest rates.<sup>26</sup> But there are also factors that suggest it will remain low or perhaps even become lower in the coming decades, such as the fact that the world's population is continuing to age.

### **The discussions on the role of fiscal policy and its interaction with monetary policy will probably continue**

But regardless of what interest rate levels become normal in the longer run, it is uncertain where the policy rate will end up in practice. The economy is constantly affected by new short-term economic shocks that mean the policy rate will over time be both higher and lower than the assessment of the long-term policy rate. It is not impossible that future shocks will take us back to the lower bound of the policy rate. This means that it would once again be difficult to use the policy rate to stabilise inflation and resource utilisation. In such a case, fiscal policy may need to take a more active role.

This is an important discussion, and I raised the interaction between fiscal and monetary policy here at the Economic Association last year.<sup>27</sup> A key question here is what role fiscal policy should play in helping to maintain confidence in the inflation target – which does not always coincide with stabilising the economy.

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<sup>26</sup> See C. Flodberg (2024), "Structural factors determine interest rates in the longer run", Economic Commentaries no. 5, Sveriges Riksbank.

<sup>27</sup> E. Thedéen (2023), "The links between monetary policy, financial stability and fiscal policy", speech 23 May, Sveriges Riksbank.

Another is how to avoid a more active stabilisation policy role for fiscal policy making it systematically too expansionary. It is important not to forget why the fiscal framework was set up in the first place, and that it has served us well. Sweden also has large automatic stabilisers, which means that fiscal policy is already helping to stabilise the economy. My view is that you should always be open to adjusting the frameworks if there are good reasons to do so. But the pillars need to remain in place.

### **Time for a new phase of monetary policy**

To conclude, we have gone through a tough period, where inflation targeting has been put to the trial and the economic policy frameworks have been stress-tested by a sharp rise in inflation. I have tried to describe the upturn and point out that it cannot be explained by a single factor alone. The upturn was partly due to large cost increases among companies, and partly due to a large pent-up need to consume among households following the pandemic. Together, these factors in their turn contributed to a change in the nature of companies' pricing behaviour, which manifested itself in more frequent price increases and in a greater pass-through from cost increases to price increases.

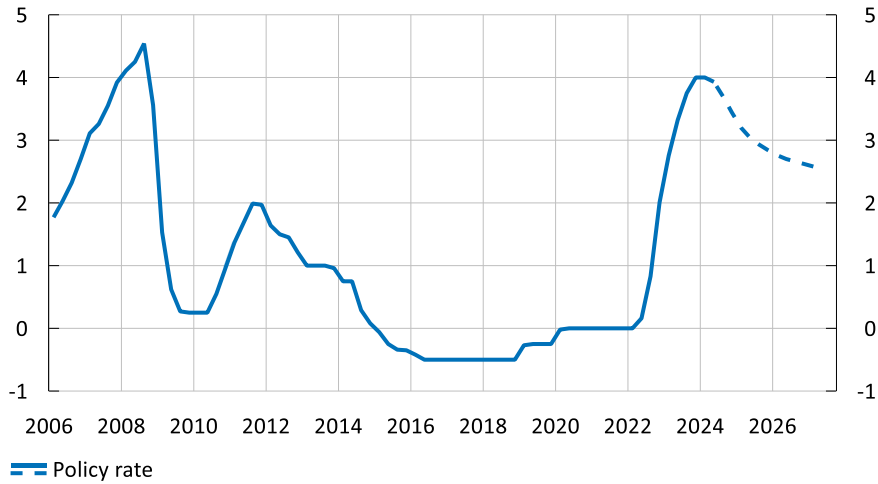
As global shocks have subsided and tight monetary policy has dampened demand, inflation has fallen back to 2 per cent. High inflation and interest rate hikes have had a significant impact on households and household-related sectors. But overall, the Swedish economy has so far shown unexpected resilience. In particular, the labour market has been surprisingly strong given GDP growth. The sustained demand for labour has helped households in general to get through this tough period with continued labour income.

There are some questions about what has happened to the structural economic relationships after the years of high inflation and, as always, there are risks of worse developments ahead. But so far I think there are reasons to be optimistic and I look forward to now entering a new phase of monetary policy.



**Figure 1. The Riksbank's policy rate**

Per cent

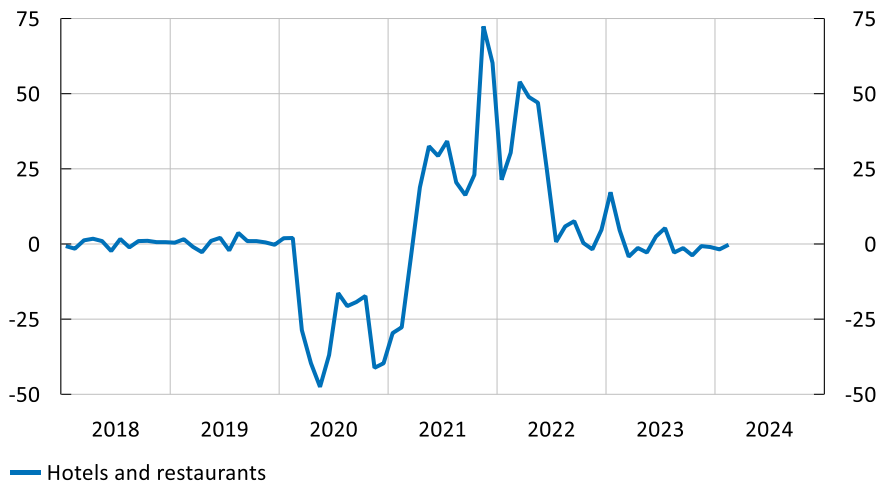


Note. The solid line represents outcomes, the dashed line represents the Riksbank's forecast in the Monetary Policy Report, March 2024.

Source: The Riksbank.

**Figure 2. Household consumption of hotel and restaurant services**

Annual percentage change

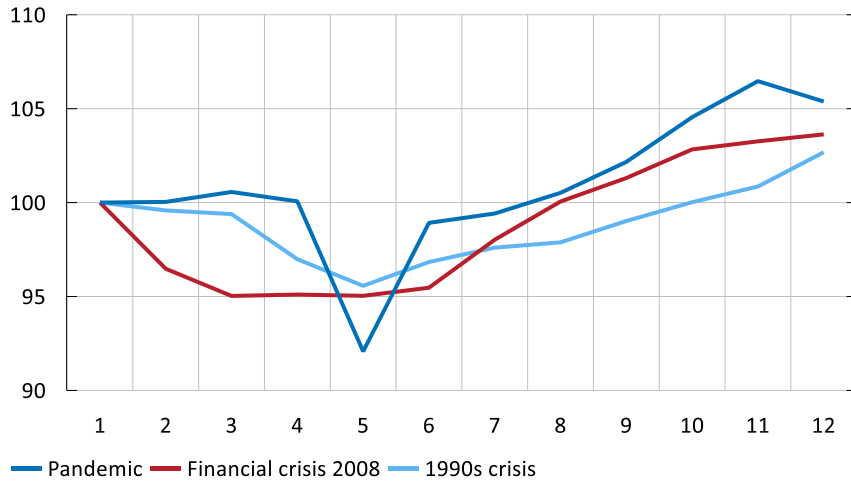


Note. Fixed prices, seasonally adjusted data.

Source: Statistics Sweden.

**Figure 3. GDP developments in the context of three crises**

Index

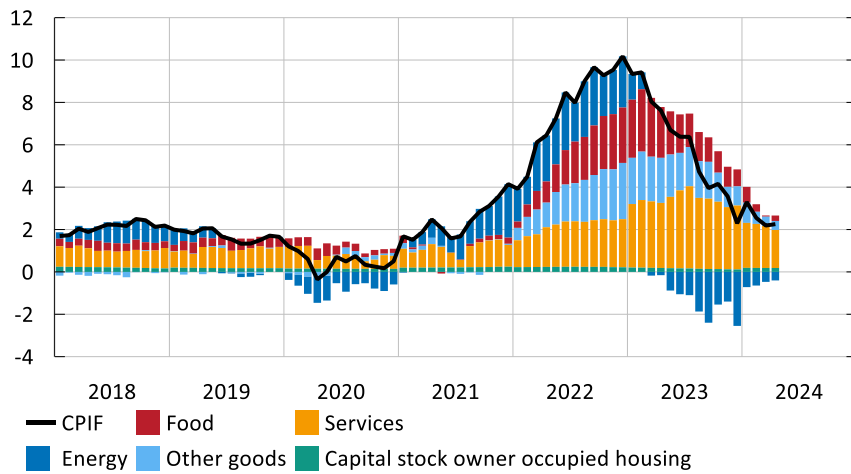


Note. Index = 100 five quarters before the trough, x-axis shows the number of quarters.

Source: Statistics Sweden.

**Figure 4. Contributions to CPI inflation**

Annual percentage change and percentage points

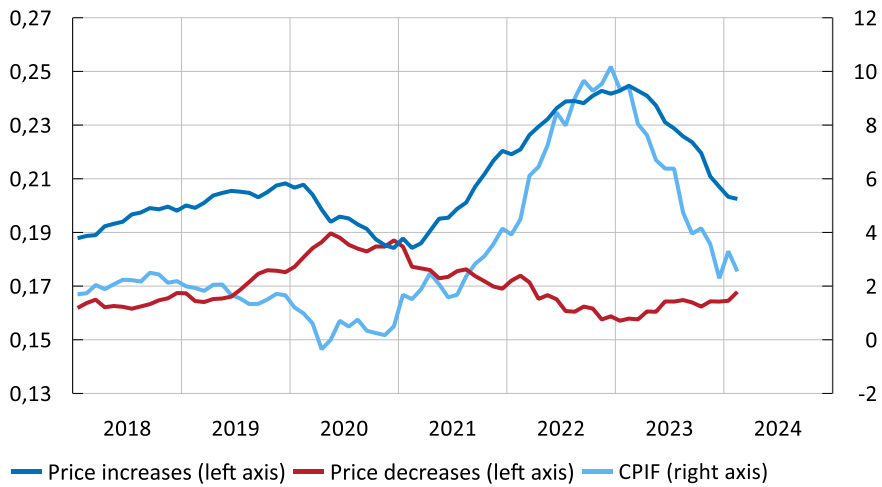


Note. The bars illustrate each price group's contribution to the rate of increase in the CPIF over the past twelve months. The contributions can be interpreted as the annual rate of increase in each group multiplied by the group's weight in the CPIF.

Sources: Statistics Sweden and the Riksbank.

**Figure 5. Frequency of price changes in CPI and CPIF inflation**

Share and annual percentage change

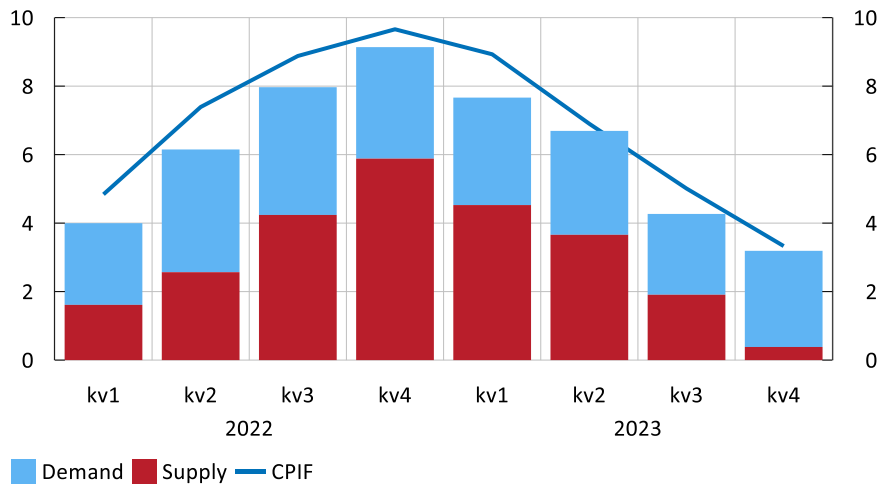


Note. Share of price increases and decreases per month, 12-month moving average.

Sources: Statistics Sweden and the Riksbank.

**Figure 6. Drivers of CPIF inflation**

Percentage points and annual percentage change

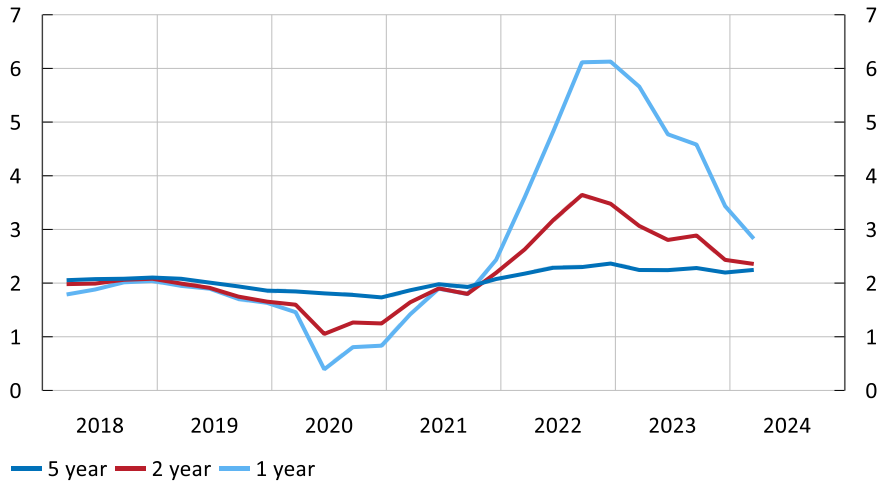


Note. The bars illustrate the contribution of supply and demand factors to inflation according to a simple model decomposition. The model is estimated on national accounts data for 63 consumption areas and the contributions will therefore not sum to the CPIF. The model uses seasonally adjusted quarterly data for the period 1993–2023. For a description of the model, see A. H. Shapiro (2022), “Decomposing supply and demand driven inflation”, Working Paper 2022-18, Federal Reserve Bank of San Francisco.

Sources: Statistics Sweden and the Riksbank.

**Figure 7. Inflation expectations**

Per cent

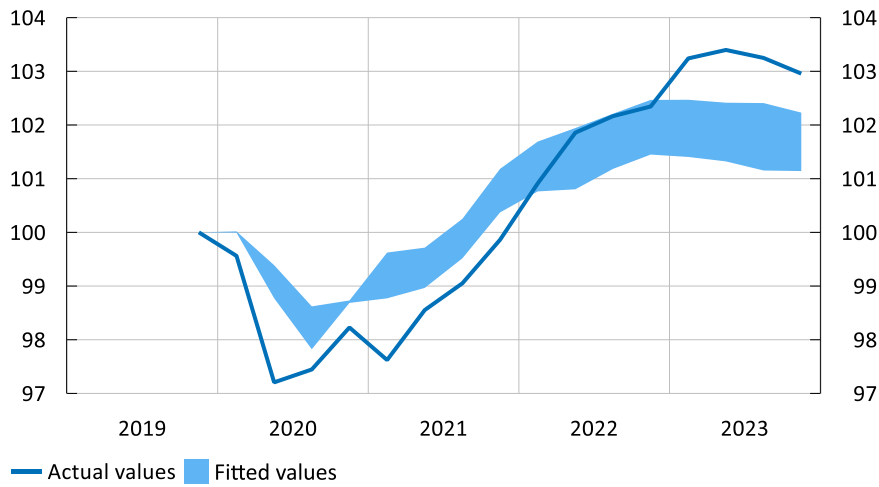


Note. Expectations refer to the CPI. Inflation expectations of all agents.

Source: Kantar Prospera.

**Figure 8. Outcome and model projections of number of persons employed**

Index, Q 4 2019 = 100

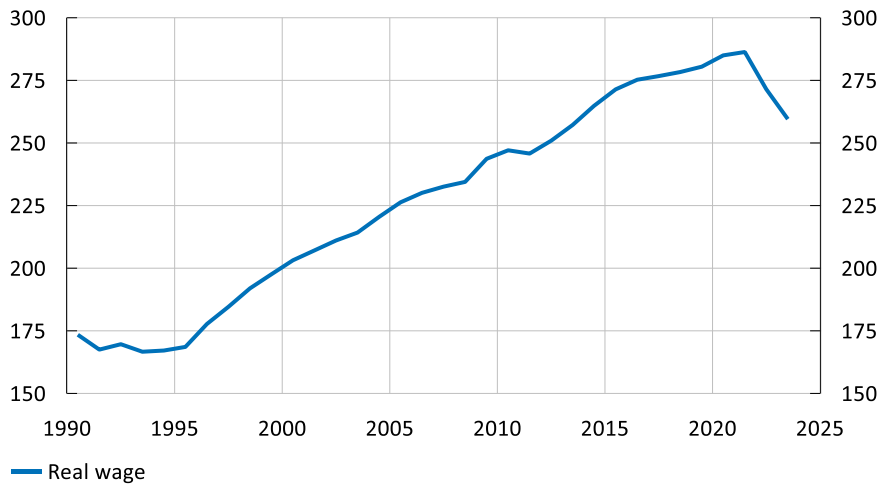


Note. The field shows the lowest and highest estimated value from two Okun models.

Sources: Statistics Sweden and the Riksbank.

**Figure 9. Real wages**

Index 1960 =100



Sources: National Mediation Office and Statistics Sweden.