

ARTICLE – Alternative scenarios for inflation and monetary policy

The Riksbank's monetary policy is focused on getting inflation back to the target of 2 per cent within a reasonable time frame. The forecast in the main scenario involves inflation falling rapidly next year and being close to 2 per cent during 2024. However, there is significant uncertainty and a risk that inflation will be higher than forecast. The extent to which monetary policy would have to react in this case depends on the driving forces behind the development of inflation.

One uncertainty factor is the development of energy prices, which have varied sharply during the year. The possibility of them rising faster than forecast and driving up CPIF inflation above the Riksbank's forecast cannot be ruled out. As inflation is already very high, it is likely that monetary policy may need to be tightened further in that case. This article illustrates a scenario with the help of a macroeconomic model. The scenario implies a more unfavourable development, in which inflation goes higher than in the Riksbank's main scenario and becomes entrenched in the expectations of economic agents. Monetary policy must then become significantly tighter than in the main scenario to bring inflation down to the target.

There is good reason to assume that inflation will shift downwards significantly next year, which is described in more detail in Chapter 3. However, inflation is at its highest level in 30 years, at the same time as outcomes over most of the year have surprised on the upside. Future developments are therefore very hard to judge and there is a risk that inflation will become higher than in the Riksbank's main scenario. In this case, monetary policy may have to be adjusted in a tighter direction. By how much, however, depends on the underlying causes of the continued high inflation.

Unexpectedly high energy prices may demand tighter monetary policy

Energy prices have been high and variable over the last year and the Riksbank has regularly discussed the uncertainty surrounding both the energy prices themselves and the spillover effects they may have on other prices.²⁸ A scenario with higher

²⁸ See, for example, the article "Higher energy prices – how will other consumer prices be affected?", in *Monetary Policy Report*, February 2022, Sveriges Riksbank, and the article "What indicates that inflation will fall back next year?", in *Monetary Policy Report*, September 2022, Sveriges Riksbank.

energy prices than in the Riksbank's forecast cannot be ruled out. In this case, inflation would also be unexpectedly high, as a result of several different effects.

Energy prices are included in the consumer price index, with a weight of approximately 6 per cent (see Figure 36 in Chapter 3 for an overview of price development in various components of the CPIF). A higher rate of increase in energy prices has therefore a *direct effect* on CPIF inflation.

Energy price rises also give rise to spillover effects on other prices, known as *indirect effects*. Some examples of such effects include higher fuel prices leading to more expensive taxi travel and higher electricity prices pushing up the price of hotel stays. There is a particularly strong link between energy and food prices. Rising energy costs usually affect the entire supply chain in the food industry, from farming to transport, processing, storage and sale.²⁹ In turn, food makes up almost 20 per cent of the basket in the CPIF.

Normally, higher energy prices would not necessarily have to lead to any adjustment at all of monetary policy. But in a situation when inflation is already very high, and the increase also depends to a high degree on the direct and indirect effects of rising energy prices, there are strong reasons for monetary policy to react, as there is a substantially higher risk than normal that inflation will rise further and more persistently. In the Riksbank's Business Survey, companies also confirm that energy costs are not normally very important for pricing but that they will have major significance going forward.³⁰ As was mentioned above, there is a clear link between the development of energy and food prices via indirect effects. Research also indicates that households' inflation expectations are substantially affected by goods that they purchase often and whose prices are easy to observe, as is the case with energy and food.³¹

In a scenario with unexpectedly high inflation driven by rising energy prices, tighter monetary policy can help to limit the spillover effects to other prices, i.e. the indirect effects.³² The tighter monetary policy can also help long-term inflation expectations remain relatively unaffected and anchored at the inflation target. This reduces the risk of the higher energy prices affecting companies' pricing behaviour and wage formation, i.e. that *secondary effects* arise.

²⁹ See the article, "Many indications that inflation will be high this year and next year" in *Monetary Policy Report*, April 2022, Sveriges Riksbank.

³⁰ See "Costs accelerating, economy slowing down", *Riksbank's Business Survey*, September 2022, Sveriges Riksbank.

³¹ See, for example, Vlasenko, P. and S.R. Cunningham (2015), "Capturing the Inflation that People Experience: The Everyday Price Index vs. the Consumer Price Index", *Working Paper* No 004, American Institute of Economic Research.

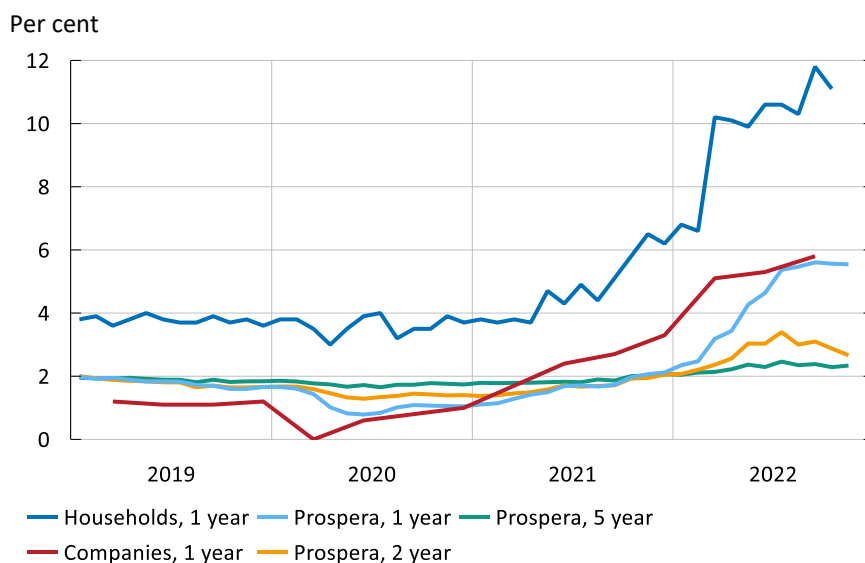
³² The tighter monetary policy via a stronger krona can also marginally mitigate the direct effects by lowering energy prices measured in Swedish kronor.

If inflation becomes entrenched in price and wage formation, a powerful monetary policy reaction will be required

Expectations among economic agents is affected by the inflation observed. High inflation over a longer time may increase the risk that price- and wage-setting will be affected by higher inflation expectations. One way to understand this is that agents' expectations become increasingly backward-looking, or adaptive, if inflation deviates considerably and for a long time from the inflation target so that confidence in the target weakens.³³

Figure 42 shows that short-term inflation expectations in Sweden have risen heavily in step with the increasingly higher inflationary outcomes over the year. This particularly true of households. One conceivable explanation for this, as discussed above, is that they base their expectations to a large extent on food and energy prices, which have risen faster than inflation as a whole (see Figure 36 in Chapter 3). However, short-term expectations are also high among companies and money market participants (see Figure 42). On the other hand, inflation expectations five years ahead are relatively unaffected by the high inflation, which is an indication that confidence in the inflation target remains.

Figure 42. Inflation expectations



Note. Quarterly data for companies, monthly data for others. Prospera refers to money market agents.

Sources: Kantar Prospera and National Institute of Economic Research.

³³ For a description, see, for example, the speech by C. Mann (2022), 5 September 2022, "Inflation expectations, inflation persistence and monetary policy strategy", Bank of England.

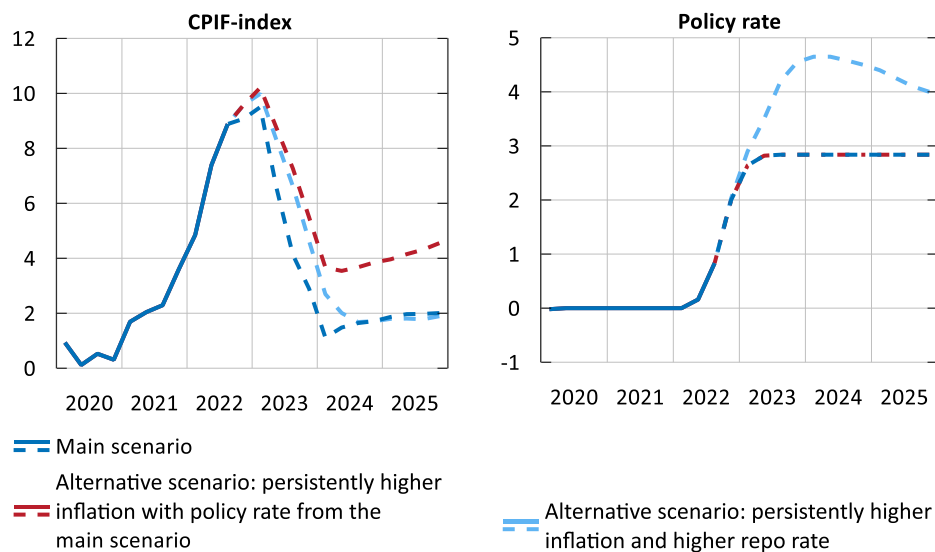
A scenario in a macroeconomic model

A more unfavourable scenario would be inflation being driven up by higher domestic price pressures and rising inflation expectations. The scenario presented here is based on simulations in the Riksbank’s macroeconomic model MAJA.³⁴ Earlier in the year, the Riksbank has previously described similar scenarios in the Monetary Policy Report.³⁵

In the scenario, high inflation outcomes in the near term are assumed to be distributed across a broad set of product and service groups. We can understand this in terms of most prices in the CPIF, apart from energy, rising more rapidly than in the forecast.³⁶ This implies that economic agents start to expect that inflation will exceed 2 per cent also in the longer term. Companies would then start to raise their prices significantly and wages would rise substantially faster than in the Riksbank’s main scenario. These factors would result in persistently high CPIF inflation if monetary policy does not react.³⁷ This is illustrated by the red line in the left-hand image in Figure 43.

Figure 43. Alternative scenario with persistently higher inflation

Annual percentage change



Sources: Statistics Sweden and the Riksbank

Counteracting such a development requires a significantly higher policy rate than in the main scenario, as shown by the light blue line in the right-hand chart in Figure 43. Such a monetary policy is needed to ensure that inflation falls back and is close to

³⁴ For a detailed description of MAJA, see V. Corbo and I. Strid (2020), “MAJA: A two-region DSGE model for Sweden and its main trading partners”, *Working Paper* No 391, Sveriges Riksbank.

³⁵ See the article “High energy prices – how will other consumer prices be affected?” in *Monetary Policy Report*, February 2022, Sveriges Riksbank, and Chapter 1 in *Monetary Policy Report*, April 2022, Sveriges Riksbank.

³⁶ Energy prices are assumed to develop in line with the Riksbank’s main scenario.

³⁷ Underlying inflation, measured as the CPIF excluding energy, would reach approximately the same level as CPIF inflation at the end of the forecast period, around 4 per cent.

2 per cent at the end of the forecast period, as shown by the light-blue line in the left-hand chart in Figure 43.

In this scenario, considerable monetary policy tightening is required to bring inflation back to target. The tighter monetary policy in this inflationary scenario also entails greater strains for the real economy. GDP growth would be substantially lower and unemployment significantly higher than in the Riksbank's main scenario during the forecast period.

It is difficult to say in advance how monetary policy will react

The alternative scenario just described should be seen as an illustration of a possible monetary policy strategy when inflation becomes unexpectedly high. In practice, monetary policy could act differently. There may be information other than inflation outcomes indicating that a more or less significant monetary policy reaction is needed than in the alternative scenario. For example, a changed economic outlook can affect the scope of companies for increasing prices. In addition, the MAJA model has been estimated using data collected since 1995 and captures average effects since then. The effects look different today. Firstly, inflation has been low and stable for most of the period since 1995, meaning that companies and households have not taken much account of it in their economic decisions. There is a much greater willingness to do this in the current high inflation environment, which can be seen in companies' pricing behaviour, for example. This phenomenon is usually called *rational inattention*.³⁸ Secondly, the effects of a changed monetary policy may be greater than described in the scenario in MAJA, as households' high indebtedness and short interest-rate fixation periods are increasing the interest-rate sensitivity in their consumption.³⁹

It is worth pointing out that inflation may also turn out to be lower than in the Riksbank's main scenario. However, such a scenario would probably be significantly easier to manage, primarily by deferring continued policy rate rises.

³⁸ The Federal Reserve, among others, has highlighted this; see the speech by J. Powell (2022), 26 August 2022, Jackson Hole. "Monetary Policy and Price Stability".

³⁹ See the article "Higher sensitivity to interest rates in the Swedish economy", in *Monetary Policy Report*, September 2022, Sveriges Riksbank, and P. Stockhammar, I. Strid and P. Tornese (2022), "How has the impact of the policy rate on consumption changed when the debt-to-income ratio has risen?", *Economic Commentaries* No. 9, Sveriges Riksbank.