SPEECH

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The interest rate, the exchange rate and inflation*

Today, I will give an account of my stance at the latest monetary policy meeting in February. However, I will keep this relatively brief – the main part of my talk will focus on the significance of the exchange rate in the monetary policy process. There is no target level for the exchange rate, but, as it affects both inflation and resource utilisation, it is of fundamental interest to the Riksbank's analysis work. The fact that it is difficult to forecast does not mean that it can be ignored.

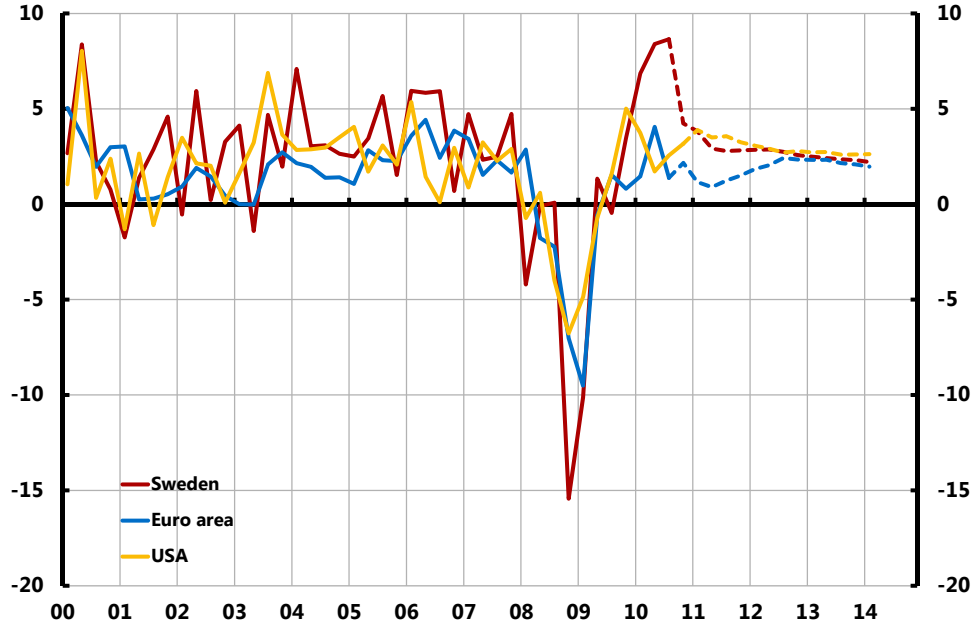
The current situation and the monetary policy decision

In February, the majority of the Riksbank's Executive Board decided to raise the repo rate to 1.5 per cent and to revise the interest rate path upwards slightly. The justification for this decision was that the Swedish economy remains strong. For example, GDP growth in 2010 was historically strong (see Figure 1). The development of the labour market is also continuing to be strong, and unemployment has fallen somewhat more steeply than was anticipated at the monetary policy meeting in December. Furthermore, inflation has increased at a slightly faster rate due to higher energy and commodity prices. On the whole, growth abroad is also deemed to be strong. While it is true that developments in Europe are still uncertain due to the fiscal problems in several European countries, prospects in the United States are judged to have brightened somewhat.

* The views expressed here are my own and are not necessarily shared by the other members of the Executive Board of the Riksbank or the Riksbank's staff. I would like to thank Johanna Jeansson and Pär Österholm for their great assistance in the writing of this speech.

Figure 1. GDP growth in Sweden, the euro area and the United States.

Quarterly changes in per cent calculated as an annual rate, seasonally adjusted data



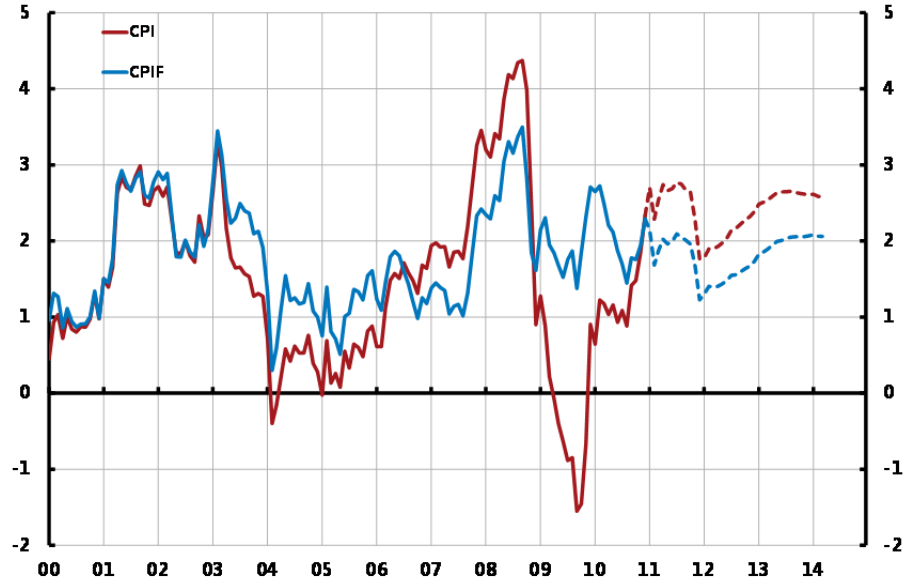
Sources: Bureau of Economic Analysis, Eurostat, Statistics Sweden and the Riksbank.

As you are no doubt aware, on a number of occasions over the last year, I have entered reservations against monetary policy decisions, including the most recent one in February. One important argument for me has been that increased interest rate differentials in relation to other countries may have effects on the exchange rate. During the autumn in particular, my reservations have essentially been due to my scepticism of the assumption that foreign central banks will raise their policy rates at the rate specified by the Riksbank's main scenario. In my opinion, this has meant that the main scenario's repo rate path has given rise to a considerably larger interest rate differential in relation to other countries than has been assumed in the Riksbank's forecast. This could lead to a greater appreciation of the Swedish krona than this forecast suggests, which, in turn, would dampen both inflation and resource utilisation. My view has been that the further appreciation of the Swedish krona has risked leading to impaired target fulfilment, and this has been the motivation behind my stance in favour of a lower repo rate path than that decided upon.

Am I not concerned that a lower repo rate path would lead to excessive inflation, considering how inflation has increased recently due to higher energy and commodity prices? It remains to be seen how permanent these increases will be. In our most recent forecast, which assumed the stabilisation of these prices, underlying inflation, even in the main scenario, was estimated at less than 2 per cent for most of the forecast period (see Figure 2). On the basis of this forecast, there is thus scope for a more expansionary monetary policy.

Figure 2. CPI and CPIF

Annual percentage change



Sources: Statistics Sweden and the Riksbank

One matter that I intend to address at the next monetary policy decision is the wide gap between CPI inflation and CPIF inflation that we saw in January and February. This gap is partly due to a detail, related to mortgage costs, in the calculation method used, which also results in higher CPI inflation over the rest of the year than was forecast in the monetary policy report in February. However, in my opinion, the underlying inflationary pressure in the economy is still low, which, for example, is reflected by the low outcome for CPIF inflation. Monetary policy has to be forward-looking, as its influence on the economy is subject to a time-lag. Consequently, the monetary policy significance of temporary variations in the CPI in the near future should not be exaggerated. However, if long-term inflation expectations and wage formation risk being tangibly affected, we should consider taking measures.

How should the exchange rate be taken into account?

The Riksbank has no target for the exchange rate, but, in a small, open economy such as Sweden's, the exchange rate is an important determinant for both inflation and resource utilisation. However, the analysis of exchange rates is an admittedly difficult area. I will explain some of the difficulties involved in this analysis, as well as how they have affected my view of the manner in which the exchange rate should be handled in the monetary policy analysis.

The exchange rate's empirical relationship with interest rate differentials in relation to other countries

Let me first clarify my earlier claim that a greater interest rate differential in relation to other countries than that forecast in the Riksbank's main scenario

- may lead to a greater appreciation of the krona than that forecast by the Riksbank.

The theoretical basis for this is formed by a condition known as uncovered interest rate parity. This is a theoretically fundamental concept and is used frequently. Uncovered interest rate parity says that the interest rate differential between two countries corresponds to the anticipated change in the exchange rate during the period in question. For example, if the one-year interest rate was 2 percentage points higher in Sweden than in the United States, this would be compatible with a 2-per cent weakening of the Swedish krona against the US dollar during the year. The logic behind this is that "risk-free" investments in different currencies ought to have largely the same expected return.

According to uncovered interest rate parity, a higher interest rate in Sweden than abroad should thus be linked with an expected future weakening of the krona. So how is this connected to my claim that the krona would become stronger as a consequence of an increased interest rate differential in relation to other countries? The answer lies in expectations and in what has already been priced on the market. This can be explained by a simplified example. Assume that the interest rate is originally as high in Sweden as in the rest of the world. In that case, uncovered interest rate parity says that the anticipated future exchange rate will be the same as the current exchange rate. If this expectation of the future exchange rate is taken for granted, an unexpected interest rate increase in Sweden would lead to an inflow of capital and an appreciation of the krona. The krona would now be expected to weaken in the period ahead, as the present rate is stronger than the anticipated future rate. Note that, on average, the krona will be stronger during the period in question due to the rise in interest rates in this example. The krona thus appreciates today before moving towards the same anticipated future exchange rate as previously.

However, empirical support for uncovered interest rate parity is mixed.[1] As in all empirical analysis, it is difficult to isolate the effects of interest rate differentials on the exchange rate. Furthermore, there are difficulties in measuring expectations, and there may be frictions on the financial markets that mean that the relationship does not fully hold true. Be that as it may, the presence of other factors complicating the relationship is hardly reason to completely disregard it.

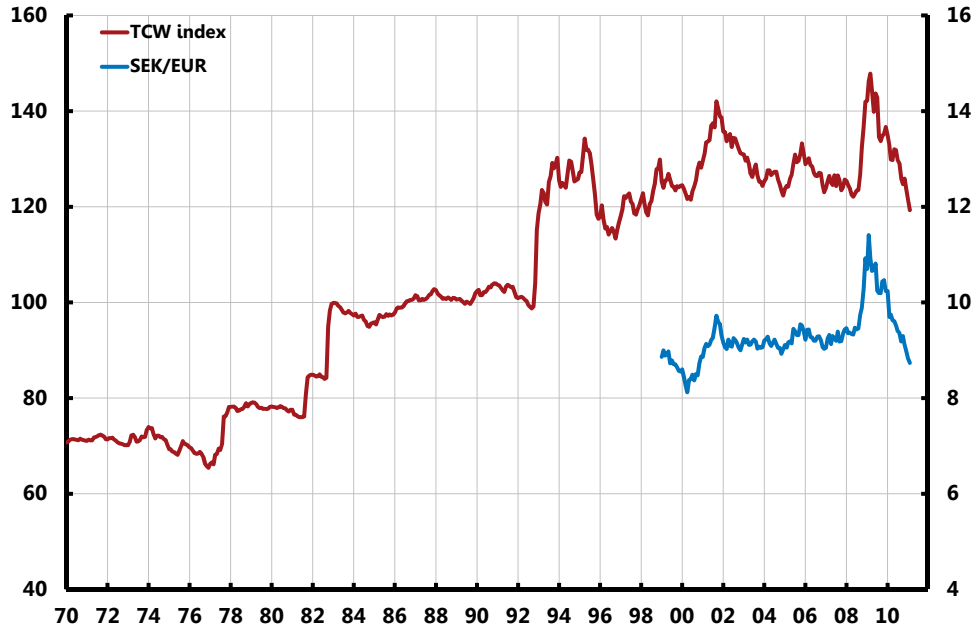
The exchange rate is volatile

Another circumstance complicating the analysis is the tendency for floating exchange rates to be highly volatile. This is illustrated in Figure 3, which shows the development of the krona's trade-weighted exchange rate. The figure shows that the krona can both depreciate and appreciate to a relatively large degree over relatively short periods. For example, the krona depreciated by almost 20 per cent in TCW terms between the second quarter of 2008 and the first quarter of 2009. Unease on the financial markets, which tends to weaken comparatively small currencies like Sweden's, contributed towards this. Following this, the krona appreciated strongly and now lies at approximately the same level as prior to the financial crisis.

[1] See, for example, Chinn and Meredith (2004) for an outline and Lothian and Wu (2011) for a recently published empirical study.

Figure 3. Nominal exchange rates

Index, 18 November 1992=100 and SEK per euro



Sources: Reuters EcoWin and the Riksbank

This volatility in itself argues that a central bank with an inflation target should not focus unduly on exchange rate fluctuations.[2] If the central bank were to react to every such fluctuation, monetary policy would also be volatile. This is obviously undesirable as it may mean that the central bank itself becomes a source of unnecessary disruptions in the economy.

A volatile exchange rate can be regarded as particularly problematic if the central bank allows the exchange rate to take a very prominent position in its analysis, for example by relying on what is known as a Monetary Conditions Index (MCI). An index of this kind is intended to summarise, in one measurement, the effects of interest rates and the exchange rate on inflation and resource utilisation. Somewhat simplified, the idea behind the MCI can be described as this: all other factors being equal, if the exchange rate is strengthened, the interest rates should be lower, and vice-versa. During several of the initial years of the inflation-targeting regime, the Riksbank used an MCI in its monetary policy analysis.[3] Its intention during this period was to demonstrate very clearly that, in a small, open economy, the exchange rate influences inflation and resource utilisation. Today, the Riksbank no longer uses any such index as a summarising measure. One reason for the abandonment of MCI was that it could be interpreted in an excessively mechanistic way: when the exchange rate weakened, MCI tended to be used in a simplified manner as an argument for a higher interest rate, and vice-versa. Considering the wide fluctuations that can take place in the exchange rate over short periods, an MCI in which a large weight is placed on the exchange rate means that very large

[2] This is closely linked with Krugman's (1989) assertion that exchange rates are so volatile because the fluctuations are of so little significance to the economy. This effect is generated by a feedback loop in which increased volatility reduces the exchange rate's effect on trade, which, in turn, leads to an even more volatile exchange rate.
[3] See Hansson and Lindberg (1994) for a description. The Bank of Canada and the Reserve Bank of New Zealand have also used similar measures.

- changes to the interest rate may be demanded to compensate for exchange rate fluctuations.[4]

The exchange rate pass-through on import and consumer prices is uncertain

The price of imported consumer goods is partially determined by the exchange rate. If the krona is weakened, importers must generally pay more in Swedish kronor for goods bought overseas. Importers must choose how to handle this. Should they increase their prices to compensate for the increased purchase prices or should they reduce their margins? The answer to this question depends on a number of factors.

In the short term, importers may avoid price changes, as far as this is possible. Partially, this is because price changes are intrinsically costly,[5] but also because firms often wish to maintain customer goodwill by not immediately passing increased costs along. Furthermore, many firms hedge their foreign trade on the foreign exchange forward market so as not to be affected by short-term exchange rate fluctuations.[6]

This very time horizon is an important aspect of exchange rate fluctuations. If the change is deemed to be temporary, it is reasonable to assume that many firms will avoid changing their prices and that the pass-through will thus be moderate. If, on the other hand, it is deemed to be permanent, the pass-through should be greater, as otherwise margins will be lower (in the event of a depreciation of the krona). Another important aspect here is the competitive situation on the market. On a market characterised by strong competition, it will be more difficult for a firm to increase prices without losing sales.

The general demand situation can also play a part. It will probably be easier to raise prices in a period of high economic activity, when many domestic competitors will also have a tendency to increase their prices, than in periods in which domestic demand is developing weakly.

Empirical studies suggest that, for example, a weakening of the exchange rate by 4 per cent will increase import prices by about 2 per cent, which is to say that the pass-through is about 50 per cent over the short term.[7] The pass-through on consumer prices will be lesser, as the price in Sweden for imported goods is also determined by domestic components such as wages, taxes and transportation costs. A pass-through of about 15 per cent over one year would seem to be a reasonable assessment.[8]

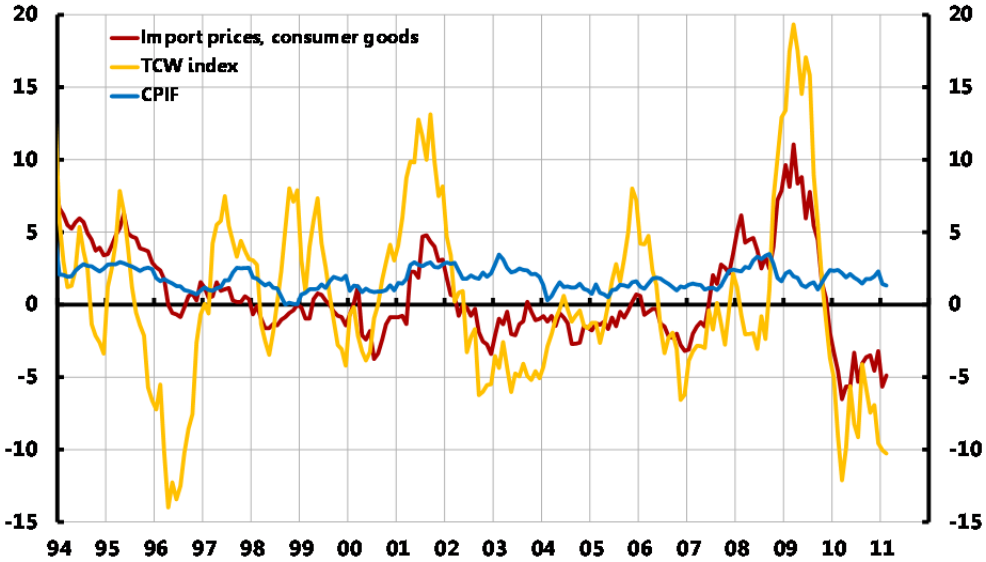
Figure 4 illustrates the pass-through of the exchange rate on import prices and consumer prices. It shows a clear connection between the exchange rate and

[4] However, MCI has also been called into question on a number of other bases and is currently considered by many not to be a reliable variable for use in monetary policy analysis. See, for example, Stevens (1998), Svensson (2001) and the European Central Bank (2002).
[5] So-called menu costs.
[6] This means that a firm has contracted to buy or sell a certain amount of a currency at a future date at a given exchange rate. This allows the firm to eliminate exchange rate risk in its overseas transactions.
7 See, for example, Campa and Goldberg (2005) and Sveriges Riksbank (2001, 2004). In the long term, the pass-through will be higher – estimates vary between 80 and 100 per cent (Sveriges Riksbank, 2001, 2004). Full pass-through is a reasonable assumption over the very long term, when permanent exchange rate changes are considered.
8 See, for example, Ekholm (2010).

import prices. The connection between the exchange rate and consumer prices is weaker.

Figure 4. Nominal TCW-weighted exchange rate, import prices for consumer goods and consumer prices

Annual percentage change



Note. The import prices refer to consumer goods in the producer sector. The CPIF is the CPI with a fixed interest rate.
Sources: Statistics Sweden and the Riksbank

However, the pass-through of the exchange rate may be non-linear, so that minor or no adjustments are made in the event of small changes in the exchange rate, and relatively major adjustments are made in the event of large changes in the exchange rate. But it may also be the case that relatively large changes in the exchange rate have minor or no effects on consumer prices, depending on what are known as composition effects. Firms can choose to import other products or to import from other countries.[9]

The effects on the economy of the real exchange rate

When the general public discusses exchange rates, this usually means the nominal exchange rate. However, economists are more focused on the real exchange rate, which shows the price of foreign goods expressed in Swedish kronor against the price of Swedish goods in kronor. In other words, the real exchange rate reflects Sweden's purchasing power and competitiveness. The stronger the real exchange rate becomes, the greater purchasing power a Swedish krona will have abroad. At the same time, a stronger real exchange rate means that Swedish-produced goods will be more expensive compared with foreign goods, and competitiveness will thus decrease.

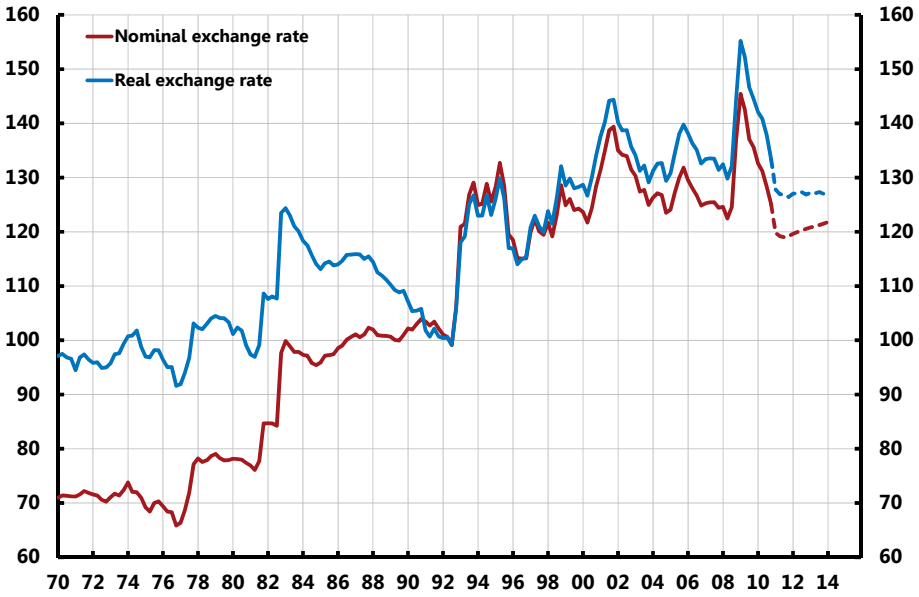
The real exchange rate is the one that is most important to the real economy; the nominal exchange rate should primarily be regarded as an asset price that affects the real exchange rate over the relatively short term. As Figure 5 shows,

9 See Marazzi et al. (2005) for a more detailed discussion.

the nominal and real exchange rates have co-varied closely during the inflation-targeting regime. The explanation for this is that, as I mentioned, exchange rates that are determined freely by the market tend to be volatile. At the same time, most of Sweden's trading partners have monetary policy frameworks resembling our own, so inflation rate differences are generally fairly minor. The nominal exchange rate can change rapidly, but prices generally move more slowly. All in all, this means that short-term fluctuations in the real exchange rate, to a large extent, are driven by variations in the nominal exchange rate.

Figure 5. Nominal and real TCW-weighted exchange rates

Index, 18 November 1992=100



Note. The broken lines represent the Riksbank's forecast. The real exchange rate has been calculated using Swedish and TCW-weighted CPI.
Sources: Statistics Sweden and the Riksbank

Movements in the nominal exchange rate were smaller before 1992, when Sweden had a fixed exchange-rate regime, even if the devaluations carried out during the 1970s and 1980s led to relatively large fluctuations. However, even during periods with fixed nominal exchange rates, large fluctuations took place in the real exchange rate. These were driven by differences in inflation rates between Sweden and the rest of the world. Between 1982 and 1992, the real exchange rate strengthened markedly, with Swedish competitiveness being undermined considerably as a result.

Changes in the real exchange rate mainly affect the economy via net exports, in which a weakening of the real exchange rate tends to increase net exports. Slightly simplified, it could be said that higher net exports lead to increased resource utilisation, higher wage growth and thus to higher inflationary pressures. The exchange rate effects arising in inflation via net exports can thus be seen as being significantly less direct than those arising via import prices, which I discussed earlier. Changes in the real exchange rate may entail adjustments to the economy that monetary policy may need to consider. For example, during a real appreciation of the krona, exporting and import-competing firms may have to review their costs so as to restore competitiveness. Among other strategies, the firms can achieve this by

implementing operational changes to increase productivity.[10] Such adjustments can contribute towards lower inflationary pressures, as increased productivity lowers unit costs. Another possibility for some firms is to move operations overseas. For major firms with broad international operations, it may be relatively easy, in some cases, to reorganise operations so that costs arise in another currency than Swedish kronor. However, for smaller firms with all of their production in Sweden, relocating operations overseas is generally associated with high costs.

Monetary policy decision-making in consideration of the exchange rate

I would now like to say a few words about how everything I have said so far about the exchange rate affects my view of monetary policy analyses and decisions.

As its influence on the economy is subject to a time-lag, monetary policy has to be conducted in a forward-looking manner. Consequently, forecasts play a decisive role in analyses and decision-making. At the same time, the exchange rate, like other prices set on financial markets, is very difficult to forecast.[11] Nevertheless, due to its significance for the development of small, open economies such as Sweden's, it is important to form an understanding of exchange rate developments.

The Riksbank tries to analyse and forecast the development of the trade-weighted exchange rate, which is to say the value of the Swedish krona against a basket of the currencies of Sweden's most important trading partners. Due to the volatile nature of the exchange rate, no attempts are made to capture short-term variations in it. Instead, the focus lies on the more long-term trend. The starting point for this a statistical model in which the real exchange rate is related to relative GDP, the terms of trade and net foreign assets.[12] However, the final forecast for the exchange rate considers the fact that the exchange rate both influences and is influenced by a multitude of other variables, including the interest rate differential in relation to other countries.[13]

As I mentioned earlier, the main scenario in the Riksbank's most recent Monetary Policy Reports is based on a forecast that, in my opinion, expects excessively high policy rates abroad. One of the most important reasons that I expect lower policy rates is the public finance situation prevailing in parts of the world. In the United States, the United Kingdom and large parts of the euro area, there is little to no scope for using fiscal policy to give an extra boost to the recovery. All that remains, therefore, is relatively expansionary monetary policy.

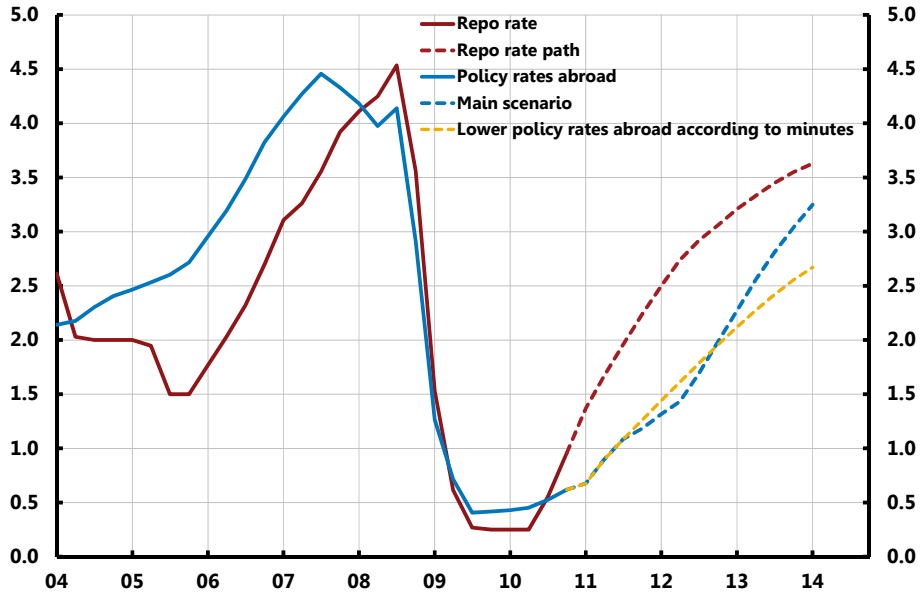
[10] See, for example, Ekholm et al. (2008). Pressure on firms to improve productivity can be seen as a positive aspect of a strong real exchange rate. A weak real exchange rate is otherwise frequently seen as being advantageous for a country as it benefits its exporting firms.
[11] In the evaluation of different forecast strategies, it has been shown that it is difficult to outperform what is known as a naïve forecast – that is, using the current actual value as a forecast. See, for example, Meese and Rogoff (1983). However, a number of other studies show more positive results for the possibilities of making forecasts, for example Mark (1995) and Gourinchas and Rey (2007).
[12] See Sellin (2007) and Lagerwall and Nessén (2009).
[13] It may be noted that, as the rate of inflation in Sweden tends to be about the same as it is among most of Sweden's trading partners, there is a high degree of similarity in the forecasts for the nominal and real exchange rates.

Moreover, I see a risk that the desire to avoid stronger exchange rates will lead to lower interest rates in general abroad. When it is not possible to use fiscal policy to stimulate domestic demand, it is tempting to put one's hope in exports. Countries will then be unwilling to allow exchange rates to take a direction that will lead to poorer competitiveness for them.

One consequence of my assessment of foreign policy rates is that the main scenario's repo rate path entails a greater interest rate differential in relation to other countries than was assumed in the Riksbank's forecast. In the most recent monetary policy decision, the gap between the main scenario's forecast of foreign policy rates and the forecast I preferred was certainly significantly narrower than it was during the autumn of 2010 – but, even so, it still concerned a difference of more than 50 basis points towards the end of the forecast horizon (see Figure 6). This could mean that the krona will appreciate more than the forecast suggests.

Figure 6. Policy rates in Sweden and abroad

TCW-weighted, quarterly averages



Note. The broken lines represent the Riksbank's forecast.
Sources: The respective countries' central banks and the Riksbank

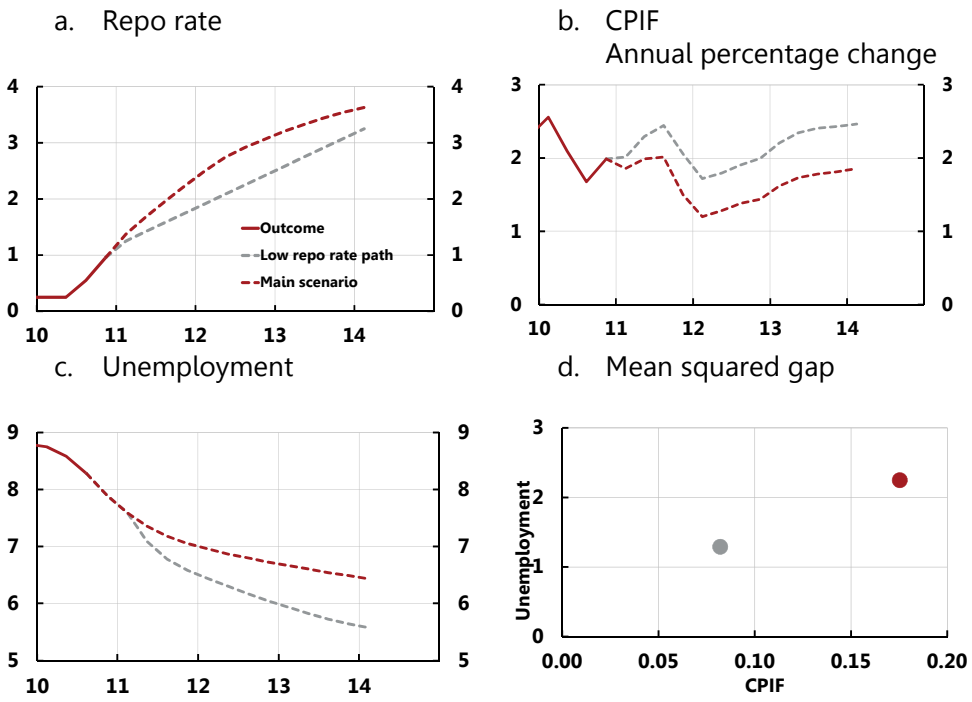
To illustrate the effects that lower international interest rates would have on Swedish monetary policy if the actual interest rates were to be adjusted completely towards the Riksbank's repo rate path, I would like to show you an analysis included in the minutes of the most recent monetary policy meeting. Figure 7 shows model simulations of the effects on the CPIF and unemployment, according to the main scenario's repo rate path and according to the repo rate path I voted for, under the assumption that foreign interest rates will be lower than in the forecast, particularly towards the end of the forecast period.[14] My preferred repo rate path, which goes up to 3.25 per cent at the end of the forecast period, gives a lower unemployment forecast than does the main scenario's repo rate path.

[14] In the figure, foreign policy rates are obtained from adjusted implied forward rates at the date of the Monetary Policy Report.

It may seem that the target fulfilment of the CPIF forecast is worse, as it lies above 2 per cent towards the end of the forecast period. However, my assessment is that this is an overestimate of inflation. Inflationary pressures are influenced by resource utilisation, and it can probably be expected that the level of resource utilisation that is consistent with unchanged inflationary pressures will actually rise during the forecast period. In deep recessions, it is usual for the functioning of the labour market to be impaired initially, as typically the jobs that have disappeared differ from those arising once the economy has recovered. However, eventually it does start to function normally. In that case, perhaps inflationary pressures will be significantly lower towards the end of the forecast period than is shown by these simulations. The difference in outcome between the two repo rate paths is partially due to the different development of the exchange rate, but it is, of course, also largely due to the divergence of the interest rates influencing investments and saving.

Figure 7. Monetary policy alternatives

Foreign interest rates according to forward rates



Note. The red curves deviate from the main scenario in the Monetary Policy Report as they are based on foreign interest rates being given by implied forward rates.

The exchange rate effects of choosing another repo rate path are naturally uncertain. However, the fact that the exchange rate in general is associated with great uncertainty does not mean that it can be disregarded when decisions are taken on the repo rate path. And, in my opinion, neither does the fact that market interest rates do not fully incorporate the repo rate path – possibly because they are influenced by foreign interest rates to a large degree – form a strong argument for disregarding the potential exchange rate effects of increased interest rate differentials. As a matter of principle, I consider that monetary policy should be a matter of choosing the repo rate path that gives

- the forecast for inflation and resource utilisation with the best target fulfilment when fully incorporated into expectations. Another principle is that high uncertainty is not an argument for refraining from using the best forecast as a basis for decisions.

Conclusion

In summary, I would like to say that, even if there are factors suggesting that the significance of the exchange rate should not be exaggerated, it is my opinion that it should be considered in monetary policy decisions. Recently, the development of the exchange rate has been an important reason for the reservations I have entered against monetary policy decisions.

The Swedish economy grew very strongly during 2010, but this should be seen in the light of the very steep fall that started in 2008 and continued in 2009. My assessment is that there are still relatively many unutilised resources in the Swedish economy and that both resource utilisation and inflationary pressures will continue to be lower than normal over large parts of the Riksbank's forecast period. Contributing to this is the fact that the krona has (nominally) strengthened by about 10 per cent over the last year, which is more than was previously expected. As a stronger krona dampens both inflationary pressures and resource utilisation, I believe that a lower repo rate path than that decided upon would lead to better target fulfilment.

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