



# Account of monetary policy

2013



Correction 2014-03-24

In Table 4:1 the numbers for 2013 have been adjusted to match the data in Figures A2 and A4.



## Account of monetary policy 2013

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

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

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

The main features of the report are summarised in Chapter 1. Chapter 2 examines target attainment in 2013, while Chapter 3 gives an account of the monetary policy conducted over the year. Chapter 4 analyses the accuracy of the forecasts. The report also contains a number of articles on the correlation between low inflation and cost developments, on the Swedish labour market and on financial imbalances in the monetary policy assessment.

This publication was previously named Material for assessing monetary policy. The Account of Monetary Policy 2013 is available, like the previous reports, on the Riksbank's website [www.riksbank.se](http://www.riksbank.se). It is also possible to order a printed version of the report free of charge on the website, or to download the report as a PDF.

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# Monetary policy in Sweden<sup>1</sup>

## MONETARY POLICY STRATEGY

- According to the Sveriges Riksbank Act, the objective for monetary policy is to maintain price stability. The Riksbank has specified this as a target for inflation, according to which the annual change in the consumer price index (CPI) is to be 2 per cent.
- While monetary policy aims at attaining the inflation target, it simultaneously supports the objectives of general economic policy with a view to achieving sustainable growth and high employment. This is achieved through the Riksbank, in addition to stabilising inflation around the inflation target, endeavouring to stabilise production and employment around paths that are sustainable in the long term. The Riksbank therefore conducts what is generally referred to as flexible inflation targeting. This does not mean that the Riksbank neglects the fact that the inflation target is the overriding objective.
- It takes time before monetary policy has a full impact on inflation and the real economy. Monetary policy is therefore guided by forecasts for economic developments. The Riksbank publishes its own assessment of the future path for the repo rate. This repo-rate path is a forecast, not a promise.
- In connection with every monetary policy decision, the Executive Board makes an assessment of the repo-rate path needed for monetary policy to be well-balanced. It is thus normally a question of finding an appropriate balance between stabilising inflation around the inflation target and stabilising the real economy.
- There is no general answer to the question of how quickly the Riksbank aims to bring the inflation rate back to 2 per cent if it deviates from the target. A rapid return may in some situations have undesirable effects on production and employment, while a slow return may have a negative effect on confidence in the inflation target. The Riksbank's ambition has generally been to adjust the repo rate and the repo-rate path so that inflation is expected to be fairly close to the target in two years' time.
- According to the Sveriges Riksbank Act, the Riksbank's tasks also include promoting a safe and efficient payment system. Risks linked to developments in the financial markets are taken into account in the repo-rate decisions. With regard to preventing an imbalance in asset prices and indebtedness, the most important factors, however, are effective regulation and supervision. Monetary policy only acts as a complement to these.
- In some situations, as in the financial crisis 2008–2009, the repo rate and the repo-rate path may need to be supplemented with other measures to promote financial stability and ensure that monetary policy is effective.
- The Riksbank endeavours to ensure that its communication is open, factual, comprehensible and up-to-date. This makes it easier for economic agents to make good economic decisions. It also makes it easier to evaluate monetary policy.

## DECISION-MAKING PROCESS

The Executive Board of the Riksbank usually holds six monetary policy meetings a year, at which it makes decisions regarding the repo rate. In connection with three of these meetings a Monetary Policy Report is published and in connection with the other three a Monetary Policy Update is published. Approximately two weeks after each monetary policy meeting the Riksbank publishes minutes from the meeting, in which it is possible to follow the discussion that led to the interest rate decision and to see the arguments made by the different Executive Board members.

## PRESENTATION OF THE INTEREST RATE DECISION

The repo-rate decision is presented in a press release at 9.30 a.m. on the day following the monetary policy meeting. The press release also states how the individual Executive Board members voted and provides the main motivation for any reservations entered. A press conference is held on the day following the monetary policy meeting.

<sup>1</sup> A detailed description of the monetary policy strategy is contained in the document *Monetary Policy in Sweden*. The document is available as a PDF file on the Riksbank's website, [www.riksbank.se](http://www.riksbank.se) under the heading Monetary policy/Price stability.

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## CHAPTER 1 – Summary

During 2013, inflation was lower than the Riksbank's target of 2 per cent and resource utilisation in the economy was lower than normal. CPIF inflation was on average 0.9 per cent, while CPI inflation, which includes the direct effects of earlier repo-rate cuts, was on average 0 per cent. Inflation was already low at the start of 2013, partly due to an unexpected weakening of economic activity in 2011-2012. To counteract this weakening and bring inflation up towards the target the Riksbank cut the repo rate in several stages from 2 to 1 per cent between the end of 2011 and the end of 2012. The Riksbank's inflation forecasts indicated that inflation would remain low in 2013, but show an upturn over the year. However, this was not the case. Instead, inflation fell further towards the end of 2013. Given this, and also the downward revision in the forecast for inflation, a unanimous Executive Board cut the repo rate to 0.75 per cent in December. At the same time, the assessment was still that household indebtedness remained a risk and that measures in several policy areas were needed to manage this risk.

### Inflation still low in 2013

Inflation, measured in terms of the CPI, amounted on average to 0 per cent in 2013 (see Figure 1:1). The low CPI inflation was largely due to a fall in household mortgage interest expenditure, primarily resulting from the Riksbank's repo-rate cuts of a total of 1 percentage point between December 2011 and December 2012. However, CPIF inflation, which does not include such interest-rate effects, was low in 2013 and amounted on average to 0.9 per cent.

During 2013, GDP increased by 1.5 per cent, which entailed stronger growth than in 2012, but lower than a historical average (see Figure 1:2). The weak growth in the euro area in particular contributed to a decline in Swedish exports, and also investment. However, household consumption developed relatively well.

The number of employed continued to increase, which has been the trend since 2010. However, at the same time unemployment has been maintained at the same level due to an increase in the number of people in the labour force. On average, unemployment was 8 per cent in 2013. Various measures and indicators point to resource utilisation being lower than normal during the year.

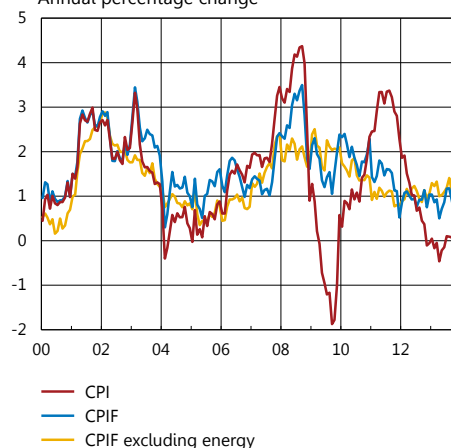
Inflation expectations five years ahead fell somewhat during the course of 2013. However, they were still close to 2 per cent, which indicates that there is still confidence in the Riksbank's inflation target.

### Overestimation of inflation in 2013

#### ■ Weaker international and domestic demand than expected

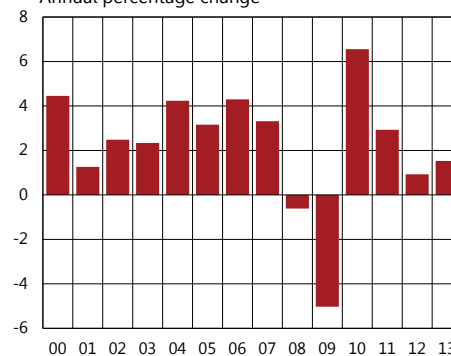
It was primarily through the monetary policy conducted in the period 2011-2012 that the Riksbank had a possibility to influence the outcome for inflation in 2013, as it takes time before monetary policy makes its full impact. The forecasts the Riksbank made in 2011 overestimated both growth and inflation in 2013 (see Figures 1:3 and 1:4). Consequently, the development of the repo rate was also overestimated. The forecasts in 2011 were marked by the fact that the Swedish economy had recovered

**Figure 1:1. Development of inflation**  
Annual percentage change



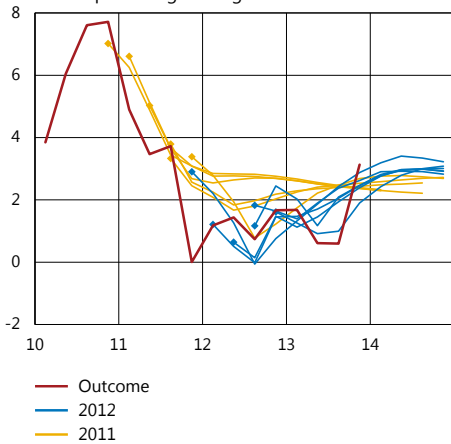
Note. The CPIF is the CPI with a fixed mortgage rate.  
Source: Statistics Sweden

**Figure 1:2. GDP in Sweden**  
Annual percentage change



Source: Statistics Sweden

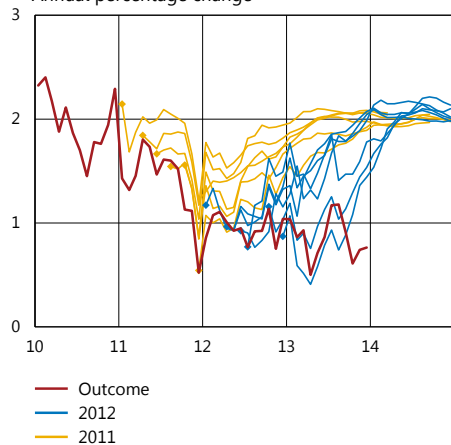
**Figure 1.3. GDP growth, outcome and forecasts**  
Annual percentage change



Note. The yellow and blue lines represent the Riksbank's forecasts 2011–2012. The marks show the starting point of each forecast and may therefore deviate from the latest outcome at that point in time.

Sources: Statistics Sweden and the Riksbank

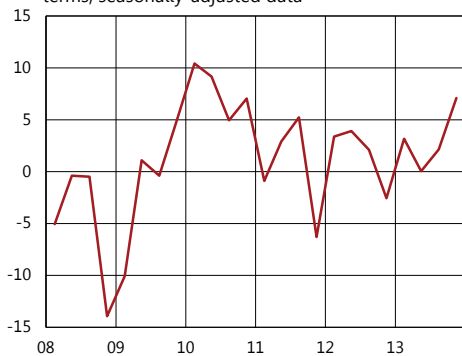
**Figure 1.4. CPIF, outcome and forecast**  
Annual percentage change



Note. See note to Figure 1.3. The CPIF is the CPI with a fixed mortgage rate.

Sources: Statistics Sweden and the Riksbank

**Figure 1.5. GDP**  
Quarterly changes in per cent calculated in annualised terms, seasonally-adjusted data



Source: Statistics Sweden

quickly from the large fall in GDP in the most acute phase of the financial crisis and appeared about to start growing at a more normal rate. During the second half of the year, however, global growth prospects deteriorated and at the end of 2011 there were clear signs that growth in the Swedish economy had also slowed down substantially. In December 2011 and February 2012 the Riksbank cut the repo rate and at the same time revised down the forecasts for GDP growth and inflation in 2013. However, the forecasts were still higher than the outcomes.

The global economy continued to slow down in 2012. Developments in the euro area in particular were weak and hampered by concerns over the high level of public sector debt in many countries and by fiscal policy tightening. However, for most of the year developments in Sweden were good, compared with the euro area. This was largely because domestic demand was relatively high. However, towards the end of the year, a clear slowdown was also visible in the Swedish economy and the repo rate was cut again (see Figure 1:5). The slowdown justified a downward revision to the forecast for GDP growth in 2013, but developments were not really as weak as there was reason to believe at the end of 2012 and beginning of 2013.

The inflation forecasts the Riksbank made at the end of 2012 were relatively accurate. However, these forecasts also contained an upturn at the end of 2013, which was not later realised. For instance, the rate of increase in services prices slowed down unexpectedly.

All in all, during the period 2011–2012 the Riksbank thus revised down its forecasts for GDP and inflation in 2013 as the outcomes proved lower than expected. One event that was not captured in the forecasts was the unexpectedly severe weakening of economic activity during the second half of 2011, which dampened growth and inflation at the end of 2011 and the beginning of 2012. Inflationary pressures were further dampened in the middle of 2012, for instance by an unexpectedly rapid krona appreciation, which pushed down import prices even further.

Given the low inflationary pressures and the weak economic prospects, inflation was expected to be low in 2013. The low inflation in 2013 was partly due to low import prices, which contributed to dampening companies' costs for input goods. During 2013, it also became clear that companies had for some time been having unexpected difficulties in passing on increases in labour costs to consumers, which meant that prices were rising more slowly than expected in relation to costs. This was a contributory factor to inflation being low in 2013, although there are signs that this applied to a lesser extent than in 2012.

The Riksbank's forecasts in 2011–2012 thus overestimated the outcomes for inflation in 2013. As monetary policy was based on these forecasts, one can conclude with the benefit of hindsight that it could have been even more expansionary than it was. However, the decisions taken on each given occasion are based on the information that is available at that time. Moreover, a more expansionary policy could have increased the risks linked to household debt and the housing market.

### ■ The low inflation in 2013 surprised most analysts

A comparison of the forecasts shows that during the first half of 2012, all analysts believed that economic activity would be somewhat stronger and inflation higher in 2013 than was actually the case and consequently that the repo rate would be higher than was the case (see Figures 1:6 and 1:7). However, up to autumn 2012, the Riksbank was one of the forecasters whose forecasts for inflation and the repo rate in 2013 were furthest from the outcome. During autumn 2012, the Riksbank, like other analysts, revised down its forecasts for inflation and the repo rate in 2013, to levels more in line with the final outcomes.

When one studies how the forecasts have developed, it becomes clear that events have occurred that all of the analysts found difficult to predict. Given that most analysts' forecasts usually develop in a similar manner and are often relatively close to one another, this is not so surprising. An assessment of the forecasts made during the period 2007–2013 shows that the differences between the various analysts' forecasting performance are minor and on the whole not statistically verified (see Chapter 4).

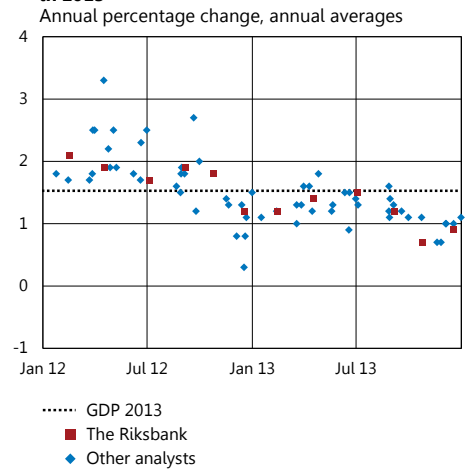
## Expansionary monetary policy in 2013

Given the continued weak economic activity and the low inflationary pressures, the Executive Board was unanimous in 2013 that monetary policy needed to remain expansionary (see Figure 1:8). However, during most of the year, opinions were divided as to how expansionary monetary policy needed to be and what constituted a well-balanced monetary policy.

The most important dividing line was the view of to what extent consideration needed to be given to the risks linked to household debt (see Figure 1:9) and developments on the housing market. On the one hand, low interest rates over a long period of time can contribute to unrealistic expectations of future interest rates and housing prices, which could entail risks for the sustainability of the economic developments. This could justify a somewhat less expansionary monetary policy that allows slightly longer for inflation to return to the target. On the other hand, a less expansionary monetary policy can lead to lower inflation and economic activity in the short term.

This trade-off came to a head towards the end of the year. Inflation outcomes had been unexpectedly low during the autumn, despite economic activity being roughly as expected for most of the year, both in Sweden and abroad. The rate of increase in service prices began to slow down on a broad front, and this was interpreted to mean that the underlying inflationary pressures were lower than the Riksbank had previously anticipated.

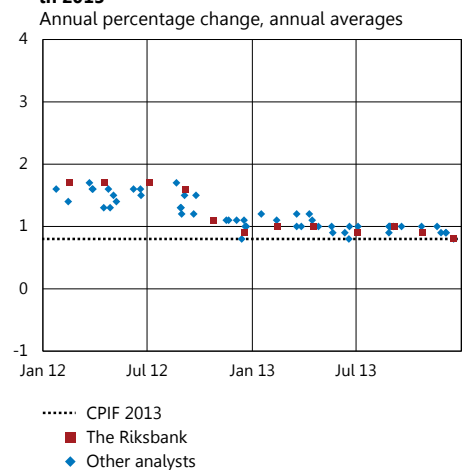
**Figure 1:6. Forecasts 2012–2013 for GDP growth in 2013**



Note. Other analysts refers to the Swedish Ministry of Finance, HUI Research AB, the National Institute of Economic Research, the Swedish Trade Union Confederation (LO), Nordea, SEB, Svenska Handelsbanken, the Confederation of Swedish Enterprise and Swedbank.

Sources: Respective analysts, Statistics Sweden and the Riksbank

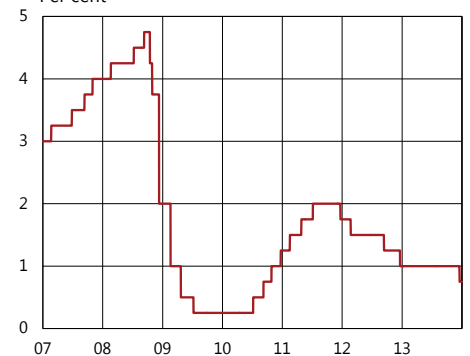
**Figure 1:7. Forecasts 2012–2013 for CPIF inflation in 2013**



Note. Other analysts refers to those specified in Figure 1:6 except HUI research AB. The CPIF is the CPI with a fixed mortgage rate.

Sources: Respective analysts, Statistics Sweden and the Riksbank

**Figure 1:8. Repo rate**



Source: The Riksbank

**Figure 1:9. Household debt**  
Per cent of disposable income



Source: Statistics Sweden

Given this development, a unanimous Executive Board cut the repo rate by 0.25 percentage points in December, to 0.75 per cent and revised down the forecast for the repo rate. As before, the decision involved a trade-off between how low the repo rate needed to be for inflation to approach the target sufficiently quickly and the increased risks linked to households' high indebtedness that could stem from a low interest rate. Despite household indebtedness still being assessed as a risk in the longer run, the unexpectedly low inflationary pressure was considered to weigh heavier, which justified a more expansionary policy.

## ■ The Riksbank's development work 2013

**The Riksbank conducts ongoing development work so that monetary policy decisions are based on the best possible basis. Over the year, there have been projects aimed at gaining more in-depth knowledge of how financial risks, and instruments that counteract these risks, affect the macro economy and what implications this may have for monetary policy.**

### **Financial imbalances in the monetary policy assessment**

The Riksbank is working within the framework of this project on developing an intellectual framework for how the risks of financial imbalances, and the ensuing costs, can be included in the monetary policy decision-making material. The potential consequences of a financial crisis for macroeconomic developments are studied, based on previous experiences in Sweden and abroad. In addition, there is an analysis of what factors affect the risk of a crisis arising and what possibilities monetary policy has to influence this risk. More specifically, the link between the real interest rate and indebtedness is analysed in a longer perspective.

The basis for an intellectual framework was produced in 2013 and has been described in articles in the Monetary Policy Reports. This is also described in the article "Financial imbalances in the monetary policy assessment" in this chapter. The intellectual framework illustrates the fact that giving consideration to financial imbalances in monetary policy entails a trade-off between on the one hand stabilising inflation and the real economy in a more short-term perspective and on the other hand reducing the risks of an unfavourable macroeconomic development in the longer run.

The analysis of risks of financial imbalances and how these risks should be taken into account in the monetary policy deliberations is an important development task that will continue during 2014.

### **Macroprudential policy from a monetary policy perspective**

During 2013, a project was conducted at the Riksbank with the aim of increasing knowledge of the relationship between macroprudential policy and monetary policy. Some macroprudential policy tools, such as countercyclical capital buffers, affect the conditions on the financial markets, partly through the same channels as monetary policy.

Within the scope of this project is an analysis of the effects that macroprudential tools have and might potentially have on both the risks of financial imbalances in the longer run and the real economy and inflation in the shorter run. A central issue here is how the conditions for monetary policy are influenced by these effects. This analysis has links to the analysis of financial imbalances in the monetary policy assessment.<sup>2</sup>

Some of the analysis work during the year has been reported in an article in the Riksbank's journal, *Sveriges Riksbank Economic Review*.<sup>3</sup>

<sup>2</sup> See also the article "Financial imbalances in the monetary policy assessment".

<sup>3</sup> See Jonsson, Magnus and Moran, Kevin, The linkages between monetary and macroprudential policies, *Economic Review*, 2014:1, Sveriges Riksbank.

The article describes, for instance, how monetary policy can be expected to react to the introduction of a countercyclical capital buffer. The analysis shows, for instance, that the reaction of monetary policy is greater if the variations in economic activity are driven by demand shocks rather than supply shocks.

The analysis of the connection between macroprudential policy and monetary policy will continue during 2014.

### **Review of the framework for implementing monetary policy**

During 2013, the Riksbank completed a review of the framework for implementing monetary policy. This review included an examination of whether the current framework is appropriate. In addition, the project included explaining how the Riksbank's current system functions and producing a review of the principles for a good framework for implementing monetary policy. The review will be published as a Riksbank study in spring 2014.

### **The Riksbank's research work in 2013**

During the year, the Riksbank's research focused, among other issues, on analysing financial stability risks and the link between these risks and the macro economy. For instance, there was an investigation of how Swedish households managed perhaps the two most important risks that could jeopardise their housing investments: the risk of unemployment and the risk of a fall in housing prices.

In September, the Riksbank's Research Division arranged an international conference on financial bubbles with empirical and particularly theoretical contributions on the emergence of bubbles and their management. The purpose of the conference was twofold; to present new research and to try to establish the knowledge situation, that is, what we know about bubbles and what we need a better understanding of.

### **New data library to support forecasting work**

In recent years the Riksbank has conducted a project aimed at creating a data library to enable more efficient processing and quality assurance of the data used and generated in the monetary policy process. During 2013, this data library was implemented into the practical work.

### **Other development work in 2013**

In addition to the projects mentioned above, the Riksbank worked on conducting more in-depth analysis into several other areas in 2013. For instance, there was analysis of the causes of the low inflation in Sweden in recent years, of the development of the Swedish krona in a long-run perspective and developments on the Swedish labour market with a focus on the possible structural changes that have taken place in recent years.

## ■ Financial imbalances in the monetary policy assessment

**This article describes an approach for how monetary policy can take the risks associated with financial imbalances into account within the framework of flexible inflation targeting. In the monetary policy deliberations, it is not only necessary to analyse inflation and macroeconomic developments in the short term. It is also necessary to form an idea of the repo rate's effects on the build-up of financial imbalances that may pose a risk to the prospects for inflation and economic activity in the longer term.**

The predominant view prior to the financial crisis was that the central banks would not actively try to counteract the build-up of financial imbalances, but would make do with acting forcefully once a crisis had occurred. Trying to take preventive measures was perceived as too difficult and costly, while it was assumed that it would not be very problematic to quickly clean up after a crisis. Monetary policy was in principle a question of choosing a path for the policy rate so that the forecasts for inflation and resource utilisation in the coming years looked good (see Figure 1:10 for an outline).

### Re-evaluation as a result of the crisis

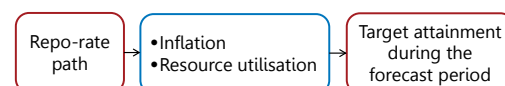
However, the effects of the crisis that later arose were very extensive in many countries. The combination of highly-indebted households and a price fall on the housing market marked the beginning of a period of weak demand, high unemployment and undermined public finances. "Cleaning up afterwards" proved to be more difficult than anyone had thought. It became clear that financial imbalances could ultimately jeopardise both macroeconomic stability and financial stability. A lesson learned from the crisis was therefore that one must work preventively to a much greater degree than before and attempt to counteract the build-up of financial imbalances. The role that monetary policy should play in this respect is currently the subject of discussion among central banks and researchers.

### Risk of poor target attainment in the longer term

In Sweden, housing prices and household indebtedness have increased substantially since the mid-1990s and housing prices have risen more than in several of those countries where prices have fallen dramatically in recent years (see Figure 3:15 in Chapter 3 and Figure 1:11).<sup>4</sup> In the same way as in many other countries, a steep fall in housing prices in Sweden could lead households to rapidly reduce their debts, which would result in a risk of weak demand and high unemployment.<sup>5</sup> Such a development could also give rise to persistent difficulties in stabilising inflation around the inflation target.

If debts increase more quickly than incomes over a very long period of time, households' resilience could also deteriorate. Eventually, even

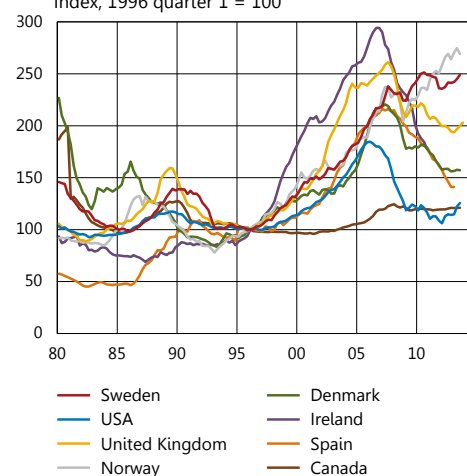
**Figure 1:10. Schematic outline of a monetary policy conceptual framework without consideration of financial imbalances**



Source: The Riksbank

**Figure 1:11. Real housing prices in different countries**

Index, 1996 quarter 1 = 100



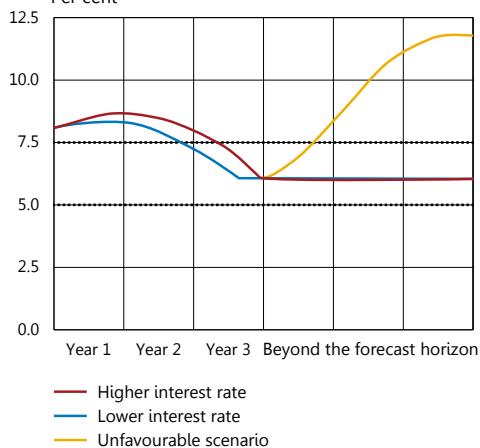
Note. Real housing prices are defined as nominal prices deflated by the CPI.

Sources: National sources

<sup>4</sup> The development of household indebtedness and the development of housing prices are interlinked, as the major part of the households' borrowing consists of mortgages.

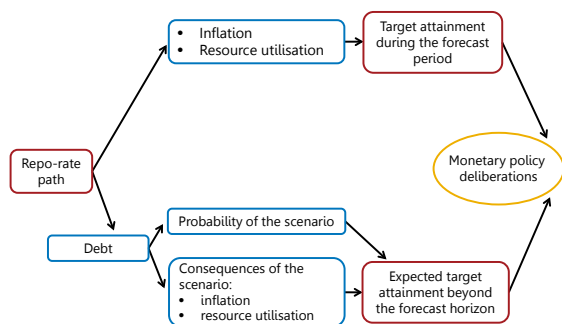
<sup>5</sup> See, for instance, the analysis group of the Council for Cooperation on Macroprudential Policy's "Memo 6 - Risks to the macroeconomy and financial stability arising from the development of household debts and housing prices", Sveriges Riksbank, 2014.

**Figure 1:12. Unemployment with a higher and lower repo-rate path and the risk of an unfavourable scenario beyond the forecast horizon**  
Per cent



Note. The broken lines show the Riksbank's interval, 5-7.5 per cent, for long-term unemployment.  
Source: The Riksbank

**Figure 1:13. Schematic outline of a monetary policy conceptual framework with consideration of financial imbalances**



Source: The Riksbank

fairly small shocks to, for example, incomes, asset prices or interest rates could trigger adjustments that would have rather substantial effects on the macroeconomy.

**A monetary policy trade-off taking financial imbalances into account**

A conceptual framework for monetary policy that takes the risks associated with household indebtedness into account will consider that a continued build-up of debt and a rising trend in housing prices may increase the risks of an unfavourable scenario further ahead. Such a scenario is illustrated in Figure 1:12, in which there is a substantial rise in unemployment beyond the forecast horizon.<sup>6</sup> The scenario is based on an average of the course of events in countries hit by a fall in housing prices and where households have had a high level of indebtedness.

To be able to use this approach in practice, one must estimate how monetary policy affects the build-up of debt and the risk of the unfavourable scenario occurring. The analysis can be performed in two stages: first with regard to how the repo rate affects household indebtedness and then with regard to how indebtedness affects the likelihood of the unfavourable scenario occurring.<sup>7</sup>

It is thus not enough to analyse how the repo-rate path affects inflation and unemployment during the forecast period, as in the outline in Figure 1:10. One must also determine how monetary policy is expected to influence the risk of an unfavourable scenario occurring further ahead. The final monetary policy stance entails a trade-off between short-term target attainment and the risk of a poor outcome in the longer term. The decision-maker's subjective risk assessments affect the stance taken: How much can be tolerated in terms of poorer target attainment in the short term to reduce the risk of very poor target attainment in the longer term?

The conceptual framework thus entails making additional assessments in the monetary policy deliberations and the choice between different repo-rate paths becomes more complicated than if financial imbalances are not taken into account. Figure 1:13 summarises the various assessments that need to be made.

Some countries with problems similar to those in Sweden with regard to household indebtedness and developments on the housing market have been rather clear that they believe the policy rate plays an important role in this context.<sup>8</sup>

**Macroprudential policy may ease monetary policy trade-offs**

A complicating circumstance is that the repo rate is not necessarily the most effective tool for counteracting financial imbalances. More targeted measures are therefore also needed. Macroprudential policy plays an important role in this context.

<sup>6</sup> The three-year forecasting period is used as a boundary between "shorter" and "longer" term, but in practice the unfavourable scenario could be realised either earlier or later.

<sup>7</sup> See the article "The effects of monetary policy on household indebtedness" in *Monetary Policy Report*, February 2014.

<sup>8</sup> Norges Bank, for example, writes in its Monetary Policy Report with financial assessment 3/13: "Weight was also given to the fact that house prices and debt have risen faster than income for a long period. A lower key policy rate may increase the risk of a renewed acceleration in house prices and debt accumulation and of build up of financial imbalances." The Bank of Canada writes in its Monetary Policy Report Summary October 2013: "The Bank must also take into consideration the risk of exacerbating already-elevated household imbalances."



Macroprudential policy comprises instruments that are intended to be used to manage financial imbalances, for example countercyclical capital buffers, changes of risk weights for mortgages, or various limits on how much households may borrow, such as mortgage caps. In August 2013, the government proposed that Finansinspektionen (the Swedish Financial Supervisory Authority) should have the main responsibility for the macroprudential policy instruments. The Government also proposed setting up a formalised financial stability council.<sup>9</sup> Finansinspektionen has already taken and announced measures to reduce the risks associated with household indebtedness.<sup>10</sup>

It will become easier to make monetary policy trade-offs if macroprudential policy can be used to counteract long-term risks (the lower half of Figure 1:13). Monetary policy will then be able to focus to a greater degree on inflation and resource utilisation in the shorter term (the upper half of Figure 1:13).

#### **Measures may be needed in different policy areas**

Even with a framework for macroprudential policy in place, there may be reasons for monetary policy to continue to consider risks associated with house prices and household indebtedness. One reason is that it may prove difficult to design a system for macroprudential policy that market participants are unable to circumvent by, for instance, moving their operations to parts of the economy not covered by the regulations. Another reason is that if monetary policy is very expansionary over a long period of time it could lead to false expectations regarding the development of interest rates and housing prices in the period ahead. It may be difficult to counteract such false expectations with regulations.

There are many indications that even more policy areas must cooperate. Macroprudential policy and monetary policy focus on the demand side of the housing market - by trying to dampen household demand for credit or by getting the banks to restrict their lending and thereby dampening the development of housing prices. However, the supply side of the housing market is also of central importance in this context. Measures in the field of housing policy will be needed to achieve a sustainable development.

<sup>9</sup> The council is made up of the Minister for Financial Markets, the Director General of Finansinspektionen, the Director General of the National Debt Office and the Governor of the Riksbank and should act as a forum for discussions with minuted meetings but not as a decision-making body. On 10 February 2014, they held an inaugural meeting. The council will normally meet twice a year.

<sup>10</sup> A mortgage cap of 85 per cent was introduced in Sweden in the autumn of 2010. In 2013, Finansinspektionen decided on a floor for risk weights for mortgages of 15 per cent and also announced that it may raise this floor to 25 per cent. In addition, Finansinspektionen has announced measures to promote a better amortisation culture. In connection with the implementation of the EU's capital adequacy regulations in Sweden, Finansinspektionen will also be given the opportunity to use the countercyclical capital buffer.



## ■ CHAPTER 2 – Target attainment

**Measured in terms of the CPI, prices on average stood still in 2013, while CPIF inflation was 0.9 per cent. Inflation was already low at the start of the year. An international weakening in economic activity had subdued growth and inflation more than expected at the end of 2011 and beginning of 2012. A surprisingly rapid krona appreciation contributed to further dampening inflationary pressures during the middle of 2012. Despite the more expansionary monetary policy in 2012, it was expected that inflation would also undershoot the target in 2013, but that it would nevertheless begin to rise at the end of the year. Towards the end of 2013, however, inflation unexpectedly fell further. As monetary policy was based on forecasts that overestimated outcomes, one can note with the benefit of hindsight that it could have been even more expansionary than it was. But a more expansionary policy could at the same time have increased the risks linked to household debt and the housing market.**

Target attainment is a natural starting point for assessing monetary policy. However, a simple comparison between the outcomes for inflation and the inflation target does not necessarily show how well monetary policy has been conducted. Inflation is of course also affected by a number of other factors than monetary policy, as the economy is constantly being subjected to unexpected shocks. Consequently, even well-founded and carefully-analysed forecasts often turn out to be wrong. It is then useful to analyse how the forecasts developed over time in relation to the outcomes to identify the shocks that have caused a potential deviation from the target.

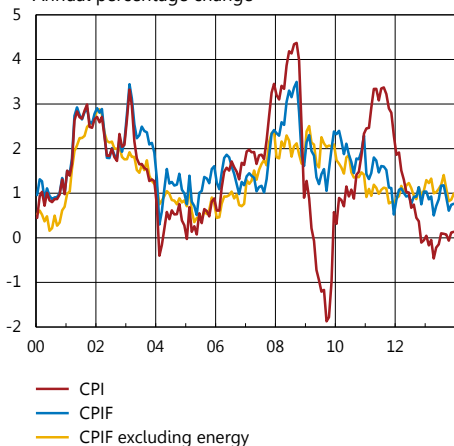
A deviation between outcomes and the target may also be because the forecasts that monetary policy was based on were not good enough and did not take into account events that could have been predicted. Analysing the quality of the forecasts is therefore an important element in assessing monetary policy. For example, the Riksbank's forecasts can be compared with the forecasts made by other analysts.

This chapter is divided up as follows. It begins with an account of outcomes in 2013 with regard to inflation and also economic developments in general. This is followed by a description of the forecasts made and monetary policy conducted in 2011 and 2012. As there is a lag in the effect of monetary policy, it was primarily through the monetary policy conducted then that the Riksbank had a possibility to influence the outcome for inflation in 2013. The description therefore focuses on identifying the unexpected events that occurred. To illustrate whether these events were genuinely unexpected or whether it should have been possible to predict them, the Riksbank's forecasts are compared with those of other analysts. Finally, there is an analysis of inflation expectations. One important question is whether the low inflation of recent years has had an impact on long-run inflation expectations.

### Inflation 2013

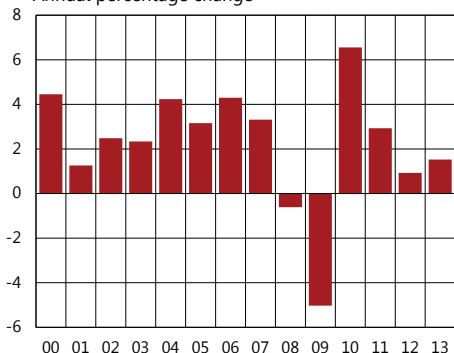
On average, CPI inflation was 0 per cent in 2013 (see Table 2:1). The main reason why CPI inflation was so low was that the Riksbank cut the repo rate from 2 to 1 per cent during the period December 2011 to December

**Figure 2:1. Development of inflation**  
Annual percentage change



Note. The CPIF is the CPI with a fixed mortgage rate.  
Source: Statistics Sweden

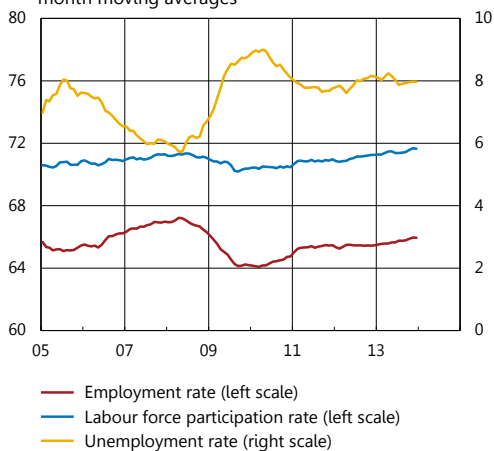
**Figure 2:2. GDP in Sweden**  
Annual percentage change



Source: Statistics Sweden

**Figure 2:3. Labour force, employment and unemployment**

Per cent of the population and per cent of the labour force, aged 15-74, seasonally-adjusted data, three-month moving averages



Sources: Statistics Sweden and the Riksbank

2012. The repo rate was then held at 1 per cent for almost all of 2013, until it was cut to 0.75 per cent in December. When the repo rate is cut, household mortgage interest expenditure declines, which leads to lower CPI inflation (see Figure 2:1).

However, the CPIF inflation rate, that is the CPI with a fixed mortgage rate, was also low in 2013. CPIF inflation has varied around 1 per cent over the past two years, and was on average 0.9 per cent in 2013 (see Figure 2:1 and Table 2:1). The CPIF excluding energy prices rose by 1.1 per cent in 2013.

Most of the sub-groups in the CPI increased relatively slowly in relation to their historical averages. The development of services prices in 2013 stands out, as the rate of increase in this component has been relatively stable in recent years. But during 2013 it fell gradually and then reached a level of around 1 per cent in December.

**Table 2:1. Comparison of different inflation measures**  
Annual percentage change, annual average

	2011	2012	2013
CPI	3.0	0.9	0.0
CPIF	1.4	1.0	0.9
CPIF excluding energy	1.0	1.0	1.1

Note. The CPIF is the CPI with a fixed mortgage rate.  
Sources: Statistics Sweden and the Riksbank

## Economic developments in general in 2013

### ■ Growth weak but increased towards the end of the year

During 2013, GDP increased by 1.5 per cent, which was a higher growth rate than in 2012 (see Figure 2:2 and Table 2:2). The difference between developments at the start of 2013 and at the end of the year were relatively large, however. At the beginning of the year, developments were marked by the weak growth in the euro area. The demand for Swedish export goods was still low then and exports fell. Developments were better towards the end of the year, but all in all exports declined by 0.9 per cent in 2013. With regard to domestic demand, investment followed a similar pattern to exports, and fell by 1.3 per cent on an annual rate. Household consumption, on the other hand, was robust and increased by 2 per cent.

The labour market showed a relatively positive development. Both the number of persons employed and the number of people in the labour force increased by 1.1 per cent over the year. However, as employment and the labour force increased by roughly the same amount, unemployment remained at 8.0 per cent on average (see Figure 2:3 and Table 2:2).

When summarising developments in the level of economic activity, some form of measure of resource utilisation is often used. However, there is no clear-cut way to measure this, and therefore the Riksbank uses a number of different indicators to assess resource utilisation. Examples of such indicators are the GDP gap and the hours worked gap, which measure the percentage deviations of GDP and the number of

hours worked from their respective estimated long-run levels. If each measure is positive, this means that the level of activity in the economy is high and that resource utilisation in the economy is higher than normal. The opposite applies when the measurements are negative. According to both the GDP gap and the hours worked gap, resource utilisation was lower than normal in 2013 (see Figure 2:4).

The Riksbank's own indicator of resource utilisation, the RU indicator, summarises information from surveys and labour market data with the assistance of a statistical method. This indicator also shows that resource utilisation was lower than normal in 2013 (see Figure 2:5).

All three measures described thus indicate that resource utilisation was lower than normal over the year, which also corresponds with the Riksbank's overall assessment of resource utilisation in Sweden.

**Table 2:2. Production and measures of employment 2011–2013**

Annual percentage change, annual average

	2011	2012	2013
GDP	2.9	0.9	1.5
No. of employed, 15–74 years	2.3	0.6	1.1
Number of hours worked	2.0	-0.2	0.3
Unemployment, 15–74 years	7.8	8.0	8.0

Note. Unemployment refers to percentage of the labour force.

Source: Statistics Sweden

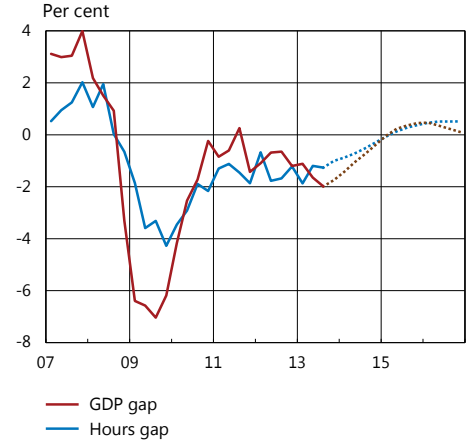
## Monetary policy and forecasts 2011–2012

One way of analysing the causes of the deviations from the inflation target is to examine the accuracy of the forecasts for inflation and other variables made by the Riksbank in 2011–2012, which were used as a basis for the monetary policy decisions. By studying how these forecasts changed over time and examining the reasons for the revisions, one can obtain an idea of what unexpected events have occurred and what deliberations were made. This also provides a good picture of why inflation deviated from the target in 2013.

Figures 2:6–2:9 show the actual development and the Riksbank's forecasts during the period 2011–2012 with regard to CPIF and CPI inflation, GDP and the repo rate. The purpose of the figures is to illustrate in a general manner how the Riksbank's view of the future changed over time. It is therefore not necessary to distinguish individual forecasts.

The overall picture painted by the figures is that the forecasts made by the Riksbank in 2011 and at the beginning of 2012 overestimated GDP growth in 2013. Correspondingly, inflation in 2013 was overestimated in the forecasts made in 2011 and 2012. Consequently, the development of the repo rate was also overestimated. Why did the Riksbank overestimate economic developments and what events took place that led to a revision of the forecasts?

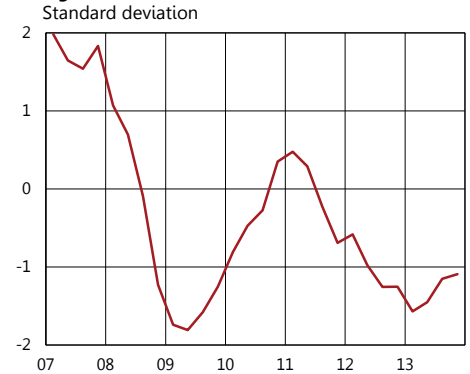
**Figure 2:4. GDP and hours gap**



Note. GDP gap refers to the deviation from trend in GDP calculated using a production function. The hours gap refers to the deviation in the number of hours worked from the Riksbank's assessed trend. The broken lines represent the Riksbank's forecast from February 2014.

Sources: Statistics Sweden and the Riksbank

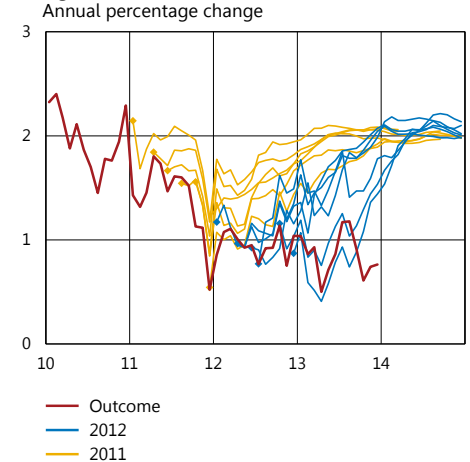
**Figure 2:5. RU indicator**



Note. The RU indicator is normalised so that the mean value is 0 and the standard deviation is 1.

Sources: Statistics Sweden and the Riksbank

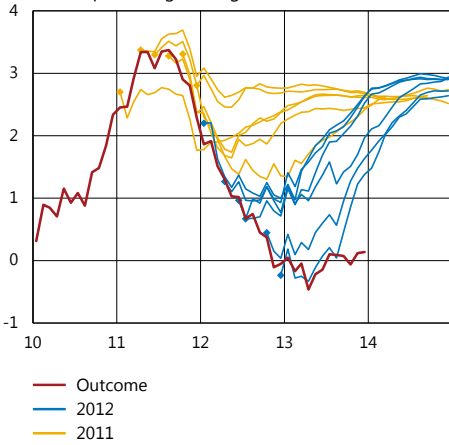
**Figure 2:6. CPIF, outcome and forecasts**



Note. The yellow and blue lines represent the Riksbank's forecasts 2011–2012. The marks show the starting point of each forecast and may therefore deviate from the latest outcome at that point in time. The CPIF is the CPI with a fixed mortgage rate.

Sources: Statistics Sweden and the Riksbank

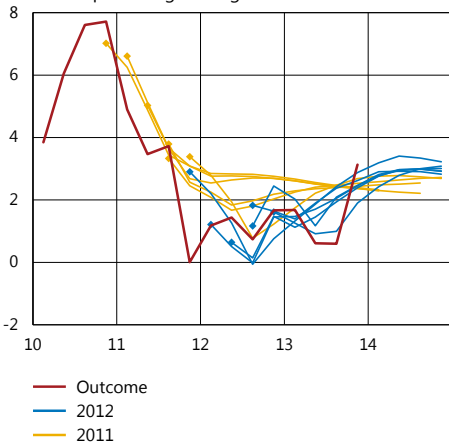
**Figure 2:7. CPI, outcome and forecasts**  
Annual percentage change



Note. The yellow and blue lines represent the Riksbank's forecasts 2011–2012. The marks show the starting point of each forecast and may therefore deviate from the latest outcome at that point in time.

Sources: Statistics Sweden and the Riksbank

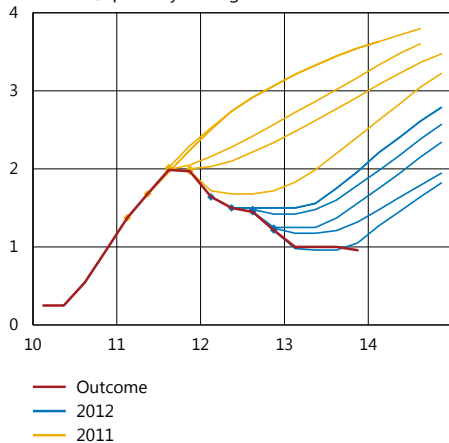
**Figure 2:8. GDP growth, outcome and forecasts**  
Annual percentage change



Note. See the note to Figure 2:7.

Sources: Statistics Sweden and the Riksbank

**Figure 2:9. Repo rate, outcome and forecasts**  
Per cent, quarterly averages



Note. See the note to Figure 2:7.

Source: The Riksbank

## ■ 2011: Deterioration in international economic activity second half of the year

Figure 2:6 shows that the Riksbank was assuming for most of 2011 that CPI inflation would begin to increase again, after a temporary fall, and would be on average close to 2 per cent in 2013. The forecasts were marked by the fact that the Swedish economy had grown at a very good rate following the large fall in GDP in the most acute phase of the financial crisis. During 2010, GDP had increased by more than 6 per cent and would increase by around 3 per cent in 2011. The recovery was also continuing abroad. For instance, the ECB raised its policy rate in both April and July 2011 after holding it unchanged for two years.

Global growth prospects deteriorated during the second half of 2011, however, as unease over the sovereign debt problems in the United States and the euro area increased. The fiscal policy tightening was expected to be relatively comprehensive and to dampen developments in several countries. A number of European countries received support measures from, for instance, the International Monetary Fund (IMF), which required them to make reforms. Uncertainty over the future led to increased pessimism among households and companies and also affected the stock markets. At the end of the year, there were clear signs that growth in the Swedish economy had also slowed down substantially, partly as a result of reduced demand for Swedish export goods. The forecasts for GDP growth and inflation were therefore revised down, and in December the Riksbank cut the repo rate from 2 to 1.75 per cent. However, even at the end of 2011, there was an expectation that growth would exceed 2 per cent in 2013 and that CPI inflation would be close to 2 per cent at the end of 2013.

## ■ 2012: Continued slow development

Developments in the global economy continued to slow down in 2012. Developments in the euro area in particular were weak and hampered by concerns over public sector debt and fiscal policy tightening. Despite weaker demand from abroad, developments in Sweden, with GDP growth of 0.9 per cent, were relatively good in relation to the euro area, where GDP fell by 0.6 per cent. Growth in Sweden was upheld by domestic demand for most of the year. However, towards the end of the year a clear slowdown could also be observed in the Swedish economy, which justified a downward revision to the forecast for GDP growth in 2013 (see Figure 2:10). GDP growth in 2013 did not prove to be quite as weak as there was reason to believe at the end of 2012 and beginning of 2013.

The krona appreciated unexpectedly quickly in the middle of 2012. The strength of the krona partially reflected the fact that the Swedish economy had developed relatively well in relation to other countries and regions. Developments in the world economy, together with the strong krona, also had an impact on inflation. Contrary to the Riksbank's earlier assumption, CPI inflation did not rise during the year, but instead fluctuated around 1 per cent. The poorer economic prospects and the

low inflationary pressure caused the Riksbank to cut the repo rate on three occasions over the year, from 1.75 to 1 per cent.

The forecast for inflation was gradually revised down during the second half of the year, but the overall picture was still that inflation would begin to rise as economic activity improved and that CPIF inflation would be around 2 per cent at the end of 2013 or beginning of 2014 (see Figure 2:6).

The inflation forecasts made at the end of 2012 were relatively accurate. The outcome was close to the forecast for most of 2013. However, these forecasts also contained an upturn at the end of 2013, which was not later realised. As described in greater detail in Chapter 3, the rate of increase in services prices slowed down unexpectedly and the underlying inflationary pressures were assessed as lower than the Riksbank had previously assumed.

#### ■ Consideration to risks linked to household debt and the housing market

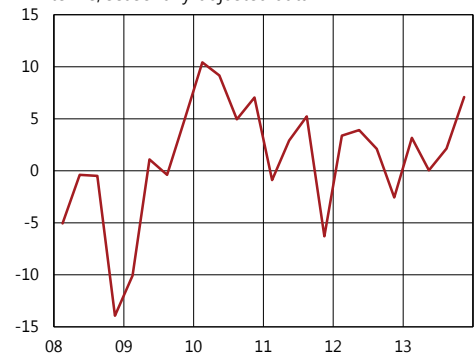
Monetary policy in 2011 and 2012 was partly affected by the risks linked to developments in household debt and housing prices. A majority of Executive Board members assessed that an even more expansionary policy than that conducted and forecast could lead to household debt and housing prices increasing too rapidly. This was in turn feared to jeopardise the sustainability of economic developments, if, for instance a fall in housing prices were to make households quickly reduce their consumption. The risk of such financial imbalances therefore also needs to be included in the repo-rate decisions.<sup>11</sup>

Quite regardless of whether or not an upturn in housing prices has natural economic explanations, it is problematic if debts are increasing at a faster rate than incomes over a very long period of time, and if there are few signs that the trend will be broken. In such a situation, households will become gradually more vulnerable and their financial margins will become smaller. Finally, one reaches a point where even minor shocks, such as unexpected changes in incomes, asset prices or interest rates, may trigger adjustments in household consumption that have significant effects on the macroeconomy. This could lead to a weak development of the economy similar to that affecting many countries in connection with the financial crisis.

It is worth noting that, despite the Riksbank having chosen a somewhat higher repo-rate forecast to take into account financial imbalances, CPIF inflation was expected to be close to 2 per cent a couple of years' ahead in the forecasts made in both 2011 and 2012 (see Figure 2:6). On the other hand, taking into account financial imbalances had significance for how quickly the Riksbank considered it appropriate to try to bring inflation back on target. A more expansionary policy and a more rapid return to the target than implied in the forecasts was thought to be linked to overly high risks regarding the development of household debt and housing prices.

**Figure 2:10. GDP**

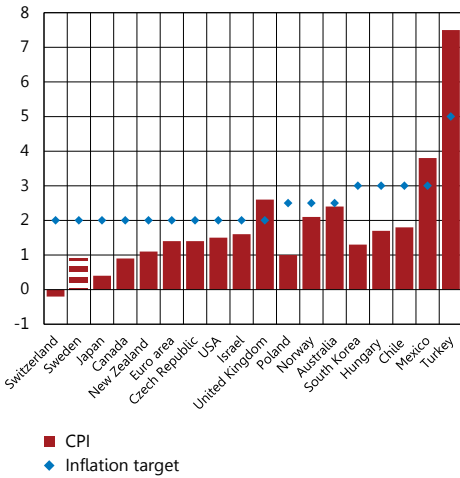
Quarterly changes in per cent calculated in annualised terms, seasonally-adjusted data



Source: Statistics Sweden

<sup>11</sup> See the article "Financial imbalances in the monetary policy assessment" in Chapter 1.

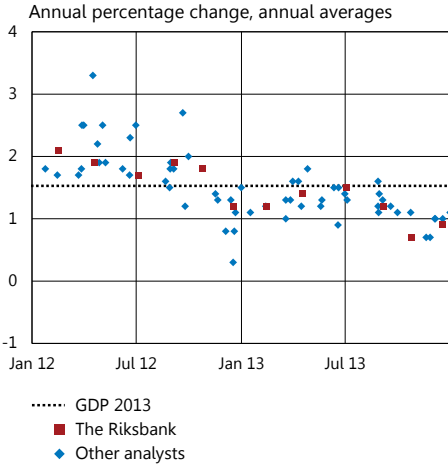
**Figure 2:11. Inflation in 2013 in a number of countries with inflation targets**  
Per cent



Note. Countries with an inflation target in the form of an interval have their mark in the middle of the interval. Countries with a ceiling for inflation have the ceiling as a mark. Euro area refers to HICP. The broken column for Sweden refers to the CPIX (the CPI with a fixed mortgage rate).

Sources: OECD and respective central bank

**Figure 2:12. Forecasts 2012–2013 for GDP growth in 2013**  
Annual percentage change, annual averages



Note. Other analysts refers to the Swedish Ministry of Finance, HUI Research AB, the National Institute of Economic Research, the Swedish Trade Union Confederation (LO), Nordea, SEB, Svenska Handelsbanken, the Confederation of Swedish Enterprise and Swedbank.

Sources: Respective analysts, Statistics Sweden and the Riksbank

## Why did inflation undershoot the target in 2013?

The inflation rate at any given time depends on what has happened earlier, both recently and further back in time. The description in the previous sections shows how the Riksbank revised down its forecasts for economic activity and inflation in the period 2011–2012 as the outcomes proved to be lower than expected. One event that was not captured in the forecasts was the weakening of international economic activity during the second half of 2011, which dampened growth and inflation at the end of 2011 and the beginning of 2012 more than expected. Inflationary pressures were further dampened in the middle of 2012 by an unexpectedly rapid krona appreciation, which pushed down import prices even further.

Given the low inflationary pressures and the weak economic prospects, inflation was also expected to be low in 2013. The low inflation was partly due to low import prices, which contributed to dampening companies' costs for input goods. During 2013, it also became clear that companies had for some time been having unexpected difficulties in passing on increases in labour costs to consumers, which meant that prices were rising more slowly than expected in relation to costs. This was a contributing factor to inflation being low at the beginning of 2013 and also contributed to pushing down inflation over the year, although probably to a lesser extent than before. The unexpectedly low inflation outcomes at the end of 2013 can probably also be explained by the fact that domestic cost pressures declined. Unit labour costs fell as a result of an unusually strong growth in productivity (see the article "The development of costs and inflation"). One reflection of this was that the rate of increase in services prices fell significantly.

As shown earlier, the Riksbank's forecasts in 2011–2012 overestimated the outcomes for inflation in 2013. As monetary policy was based on these forecasts, one can conclude with the benefit of hindsight that it could have been even more expansionary than it was. However, the decisions taken on each given occasion are of course based on the information that is available at that time.<sup>12</sup> Moreover, a more expansionary policy could have increased the risks linked to household debt and the housing market.

All in all, the low inflation in 2013 can in rough terms be said to be due to international economic activity, but also partly to Swedish economic activity, being slower than expected. It is worth noting that inflation has not only been low in Sweden, but in many other countries too. If one studies some of the countries that have an inflation target, it appears to be the rule rather than the exception that inflation undershot the target in 2013 (see Figure 2:11).

<sup>12</sup> There may of course be differing opinions as to how the existing information should be interpreted and what implications it may have for monetary policy.



## The low inflation in 2013 surprised most analysts

One central issue is whether the Riksbank's revisions to its forecasts are in line with those made by other analysts. If this is the case, it is an indication that events occurred which were generally unexpected and difficult to predict. On the other hand, if it was revealed that other analysts succeeded much better than the Riksbank in predicting economic developments, this might indicate that there were inadequacies in the Riksbank's forecasts.<sup>13</sup> Figures 2:12–2:15 show how the forecasts by the Riksbank and other analysts for a number of central variables in 2013 have changed over time, from the beginning of 2012 until the actual outcomes were known at the end of 2013, or beginning of 2014.<sup>14</sup> The reason why the figures only go back to 2012 is that most analysts have a shorter forecast horizon than the Riksbank.

The typical pattern is that the forecasts made at an early stage, in the beginning of 2012, are relatively far from the final outcome. As time passes, the forecasts become gradually more accurate.

Moreover, most analysts' forecasts develop in a similar manner and they are often relatively close to one another. There is some spread, primarily in the earlier forecasts, but it is rare that any forecaster succeeds much more clearly than the others in predicting the final outcome. This is a good illustration of the fact that there are constant changes in the economy which are difficult or impossible to predict and which mean that forecasts must be successively revised along the way.

### ■ Downward revision of economic outlook and inflation prospects for 2013

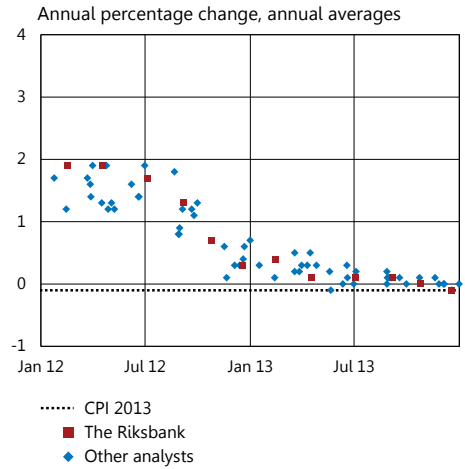
A comparison of the forecasts shows that most analysts believed in the first half of 2012 that economic activity would be somewhat stronger in 2013 than was actually the case (see Figure 2:12). In line with this, most of them also believed that inflation would be higher and the repo rate would be higher than was actually the case in 2013 (see Figures 2:13–2:14). However, it should be noted that the expectations of the level of the repo rate with regard to the end of 2013 were, according to market pricing, close to the outcome of 0.75 per cent as early as the beginning of 2012.

During autumn 2012, the Riksbank and other analysts revised down their forecasts for inflation and the repo rate in 2013, to levels more in line with the final outcomes. The forecasts for CPIF inflation in 2013, for instance, were only a couple of tenths of a percentage point from the outcome of 0.9 per cent from the middle of 2012 onwards. The further downturn in CPIF inflation that took place in the final months of 2012 was not expected, however.

<sup>13</sup> Chapter 4 provides a more detailed analysis of the forecasting performance of the Riksbank and other analysts over a longer period of time.

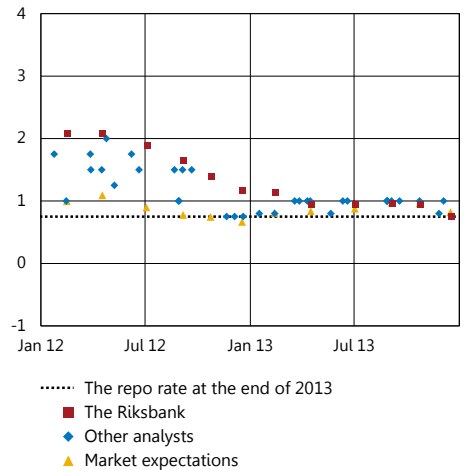
<sup>14</sup> Statistics Sweden publishes the final GDP outcome for 2013 with a delay of around two years. Until then, the outcome can be revised quite a lot as new quarterly outcomes are published for the National Accounts. However, for the purpose of assessing the forecasts, the GDP outcome for 2013 was published in connection with the publication of the outcome for the final quarter of 2013 in March 2014.

**Figure 2:13. Forecasts 2012–2013 for CPI inflation in 2013**



Note. Other analysts refers to those specified in Figure 2:12.  
Sources: Respective analysts, Statistics Sweden and the Riksbank

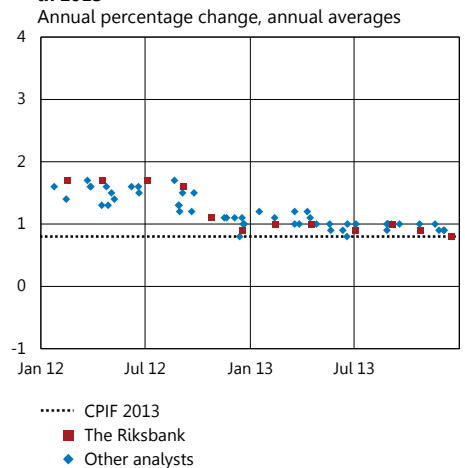
**Figure 2:14. Forecasts 2012–2013 for the repo rate at the end of 2013**



Note. Other analysts are the Ministry of Finance, the National Institute of Economic Research, Nordea, SEB and Swedbank. Market expectations are calculated on the basis of forward rates using interest rates on derivative contracts (RIBA and FRA), adjusted for average risk premiums corresponding to one basis point per month of the maturity period.

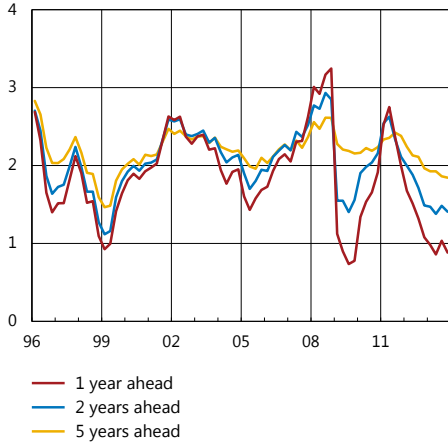
Sources: Respective analysts and the Riksbank

**Figure 2:15. Forecasts 2012–2013 for CPIF inflation in 2013**



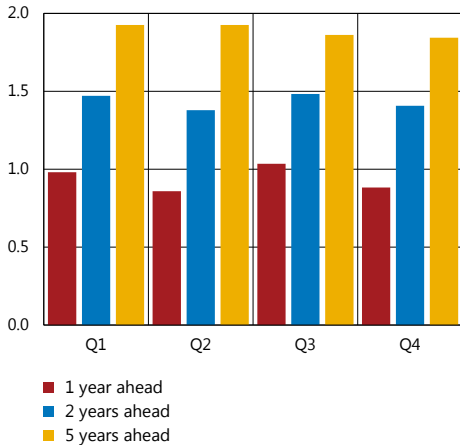
Note. Other analysts refers to those specified in Figure 2:12 except HUI Research AB. The CPIF is the CPI with a fixed mortgage rate.  
Sources: Respective analysts, Statistics Sweden and the Riksbank

**Figure 2:16. All respondents' expectations of inflation**  
Per cent



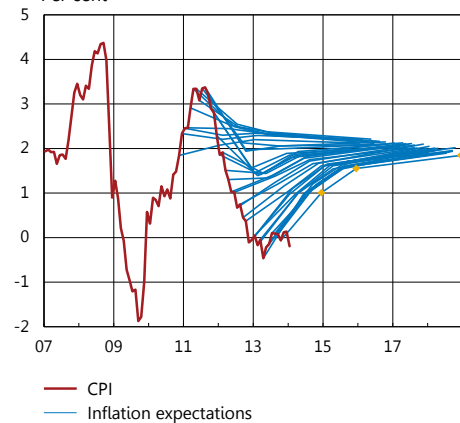
Source: TNS SIFO Prospera

**Figure 2:17. All respondents' expectations of inflation 2013**  
Per cent



Source: TNS SIFO Prospera

**Figure 2:18. Money market agents' expectations of inflation 2011-2013**  
Per cent



Note. Yellow marks refer to one, two and five years ahead in the survey made in December 2013.

Sources: Statistics Sweden and TNS SIFO Prospera

It should be noted that at the end of 2013, all analysts believed that GDP growth for the year as a whole would be lower than it actually was, which may appear contradictory given that one previously overestimated developments. This is explained by the GDP outcome for the final quarter of 2013 being much stronger than expected.

The figures show that until autumn 2012, the Riksbank was one of the forecasters whose forecasts for inflation and the repo rate in 2013 were furthest from the outcome. After summer 2012, the Riksbank adjusted its view of inflationary pressures and the forecasts for inflation and the repo rate were gradually revised to levels more in line with the outcomes. However, the Riksbank's GDP forecasts were relatively accurate and rarely deviated more than 0.5 percentage points from the outcome. Figures 2:13-2:14 nevertheless show there is some spread of a common pattern in the forecasts. The picture that emerges is that the deviations between the forecasts and outcomes can largely be explained by events that all analysts would have had difficulty predicting.

## Inflation expectations in the long run still close to inflation target

A high level of confidence in the inflation target is important to the Riksbank's efforts to achieve price stability. If the general public is confident that the Riksbank will achieve its target, inflation expectations a few years ahead will be close to the inflation target.

A high level of confidence in the inflation target also increases the possibilities for monetary policy to stabilise production and employment. If the economic agents are confident that inflation will stabilise around the inflation target, monetary policy will not need to react to the same extent when the economy is hit by shocks that lead to temporary deviations from the inflation target.

On behalf of the Riksbank, TNS Sifo Prospera conducts surveys of inflation expectations among money market agents, employer and employee organisations and purchasing managers in the retail and manufacturing sectors. Figure 2:16 shows that inflation expectations five years ahead have been relatively well-anchored around the inflation target since the late 1990s. They fell somewhat during the course of 2013, but were on the whole close to 2 per cent, which implies that the general public still has confidence in the Riksbank's inflation target (see Figures 2:16 and 2:17).

Inflation expectations one and two years ahead are more closely affected by the actual inflation rate. This is illustrated by the fact that when CPI inflation fluctuated around 0 per cent over the year, inflation expectations one year ahead fluctuated around 1 per cent, while inflation expectations two years ahead fluctuated around 1.5 per cent (see Figure 2:16). Figure 2:18 illustrates how money market participants' inflation expectations vary in accordance with actual inflation at different horizons. It is clear from the figure that inflation expectations in the short run vary considerably, while the more long-term expectations are anchored around the target of 2 per cent.

## ■ The development of costs and inflation<sup>15</sup>

**During 2013, prices measured in terms of the CPI were unchanged in relation to 2012, and prices measured in terms of the CPIF rose by 0.9 per cent. Inflation has been low and undershot the inflation target in recent years. There are several reasons for this. The weak economic activity has made it difficult for companies to raise their prices, even when production costs have increased. Moreover, global inflationary pressures have fallen and the krona has strengthened since the financial crisis, which has subdued prices of imported goods.**

### **Which factors affect inflation?**

According to economic theory, the price a company sets for a product or service is divided up into two components: the marginal cost and a price mark-up. Changes in these two factors have in this way significance for how prices in the economy change, that is, inflation.

The marginal cost measures what it costs the company to produce one more unit of the product they manufacture. This cost will thus depend on what costs the company has for wages, premises and machinery, for example. Moreover, there are the costs of the goods the company uses as input into its own production. Some of these input goods are imported, which means that the prices on the global market are important.<sup>16</sup> The value of the krona also becomes an important factor, as it affects the price in SEK paid by the company for the imported input goods.<sup>17</sup> The marginal cost for a company is also affected by productivity in the company. If productivity is high, fewer working hours, fewer machinery house and so on will be needed to manufacture one further product and thus the cost of producing it is lower.

The second main component that affects companies' pricing is the price mark-up. This is added because the company wants a return on its invested capital and it therefore sets a price that is higher than the actual cost for producing one further product. The size of this mark-up depends, for instance, on competition in the sector where the company is active and on demand for the company's products. For example, it is easier to charge a higher price when demand is high than when it is low.

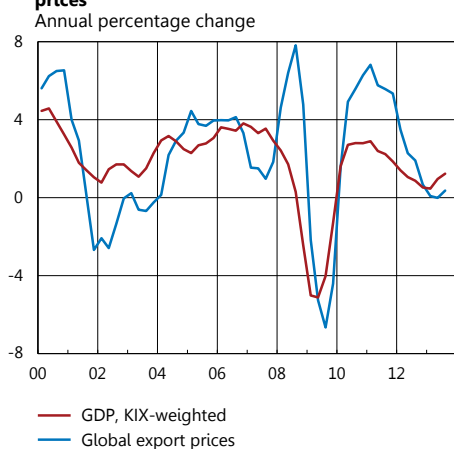
One further factor that affects inflation is inflation expectations. If, for instance, employees believe that prices will rise, they may demand higher wages to be able to buy as much in the future. Employers will agree to raising wages if they also see an opportunity to raise their prices. Inflation expectations are central to both marginal costs and price mark-ups and it is therefore important that the long-term inflation expectations are anchored around the inflation target.

<sup>15</sup> This is an updated and condensed version of the article with the same name in *Monetary Policy Report*, July 2013.

<sup>16</sup> A particular company may of course also use domestically-produced input goods, the prices of which are determined by wages, capital costs and price mark-ups. Aggregated across the entire economy, it is unimportant who produces the domestic input goods; the marginal costs are determined by wages, capital costs and the price of imported input goods.

<sup>17</sup> One can note that the price of all foreign-produced products sold in Sweden contains some Swedish costs (for transport, premises, wages and so on). The prices of directly-imported goods, for instance, the price of a product that is bought directly from a foreign supplier via the Internet, are not included in the CPI.

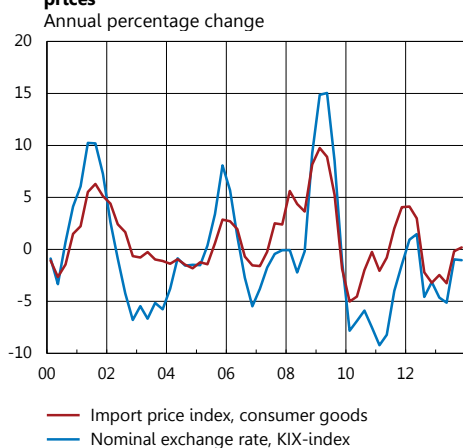
**Figure 2:19. KIX-weighted GDP and global export prices**



Note. Global export prices are an aggregate of export deflators (in local currencies), where Sweden's import shares are used as weights. KIX is an aggregate of countries that are important for Sweden's international transactions.

Sources: National sources and the Riksbank

**Figure 2:20. Nominal exchange rate and import prices**



Note. Import prices refer to consumer goods prices according to the producer price index. KIX is an aggregate of countries that are important for Sweden's international transactions.

Sources: Statistics Sweden and the Riksbank

**Figure 2:21. Unit labour cost and import prices**



Note. Import prices refer to prices on consumer goods according to the producer price index.

Sources: Statistics Sweden and the Riksbank

There are thus several factors that affect companies' price mark-ups and marginal costs. Moreover, many of these factors are in turn affected by monetary policy. Price mark-ups are impacted by the effects of monetary policy on demand. Marginal costs are impacted both via the effects of monetary policy on wages and capital costs and via their effects on the exchange rate, which in turn affects prices of imported input goods calculated in Swedish krona.

### Low import prices but normal development in labour costs

To begin with, one can note that global export prices have followed developments in global economic activity relatively well (see Figure 2:19). After the financial crisis in 2008, both GDP abroad and global export prices fell. During 2010–2011, on the other hand, export prices rose in line with the start of a global recovery. Since then, global economic activity has slowed down again somewhat, which has meant that global export prices are now rising more slowly.

As mentioned earlier, the development of the exchange rate also has significance for developments in costs. The substantial weakening of the krona in connection with the financial crisis more than counteracted the fall in global export prices, and meant that import prices initially rose considerably, when measured in SEK (see Figure 2:20).<sup>18</sup> But as the krona began to strengthen again, import prices also began to fall. Import prices then increased from the middle of 2011, although the strengthening of the krona in summer 2012 contributed to import prices falling again. Although the level of the krona varied considerably in trade-weighted terms during the course of 2013, it was on average stronger than in 2012. This, together with the low rate of increase in global export prices, has continued to push down import prices.

Unit labour costs rose significantly in connection with the financial crisis in 2008 (see Figure 2:21), which was because production fell rapidly, while labour costs did not decline immediately.<sup>19</sup> The crisis agreements signed in the wake of the financial crisis contributed to reducing labour costs per hour. This, together with a recovery in productivity, meant that unit labour costs also began to fall in 2009. Since then, production has recovered somewhat, the number of hours worked has risen, and wage increases have been higher. Altogether, this has meant that unit labour costs have increased on average by around 2 per cent a year from 2011 until the end of the third quarter of 2013 (see Figure 2:21). However, in the fourth quarter of 2013, the rate of increase in unit labour costs fell in connection with the strong increase in productivity at the end of the year.

<sup>18</sup> Import prices here refer to prices of consumption goods imported into Sweden according to the import price index (IMPI), which is part of the statistics for the price index in the producer and importer channel (PPI). Import prices are an important factor in the Riksbank's assessment of developments in inflation.

<sup>19</sup> Under certain circumstances, the marginal cost changes in the same way as the unit labour cost.

### Weak demand has led to low price mark-ups

Companies change their prices relatively rarely. There are several reasons why companies are cautious about changing their prices. One reason could be that the company endeavours to have a long-term relationship with its customers. Another could be that the price contains elements of insurances, such as delivering a certain product or service at a price that cannot be changed during a certain period of time (fixed electricity prices are one example).

Companies may therefore allow temporary variations in costs to affect their profits. However, when the changes in cost are more lasting, companies tend to also change their prices (see Figure 2:22). In recent years, companies have chosen not to raise their prices to the same degree as the more lasting part of the development in labour costs.<sup>20</sup> This implies that companies have found it difficult to pass on their cost increases to consumers. This could be because demand has been weaker than normal and there has been considerable uncertainty regarding international developments. The fact that prices showed a slower development than expected in relation to costs is illustrated by the fact that the Riksbank's forecasts for unit labour costs have been relatively accurate (see Figure 2:23), while the inflation forecasts have been higher than the outcomes (see Figure 2:24).

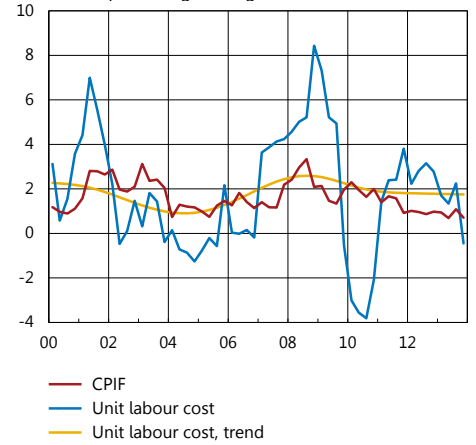
One can also illustrate the fact that inflation has not developed in line with normal patterns, by using an estimated historical relationship where inflation is explained by developments in import prices and labour costs. With this type of estimate, inflation can be projected on the basis of actual developments in the explanatory variables. Figure 2:25 shows these projections of inflation measured in terms of the CPIF excluding energy, together with the outcome.<sup>21</sup> Projections have been made for two starting points: the first quarter of 2011 and the third quarter of 2012. As the figure shows, inflation in 2011–2013 was lower than is indicated by historical relationships, primarily for inflation in 2011–2012.

### Companies emphasise low cost pressures and weak demand

The Riksbank's Business Surveys contain a couple of questions that can be used to gain an idea of what the companies themselves think about the driving forces behind their pricing. For instance, companies are asked what factors they believe will have the greatest impact on the company's price changes, whether up or down, over the coming twelve months. During 2012 and the beginning of 2013, it was clear that demand was considered a factor that would hold back prices in the coming period (see Figure 2:26). However, one can note that this has changed with effect from the middle of 2013.

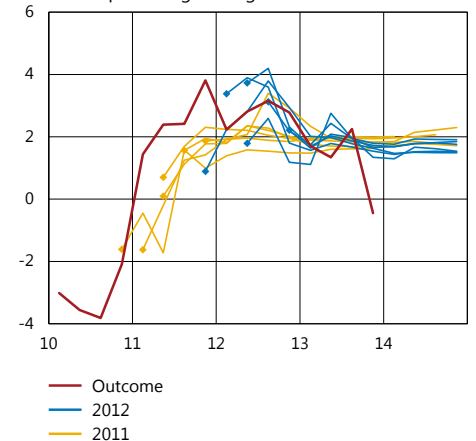
In the surveys held 2010–2011, companies considered that the costs of input goods were a factor that could push up prices. This changed in 2012, and during 2103 companies have also indicated that input goods are no longer expected to push up prices. This supports the picture that

**Figure 2:22. Unit labour cost and CPIF**  
Annual percentage change



Note. The trend is calculated using a so-called HP filter and refers to the trend in the Riksbank's forecast in February 2014.  
Sources: Statistics Sweden and the Riksbank

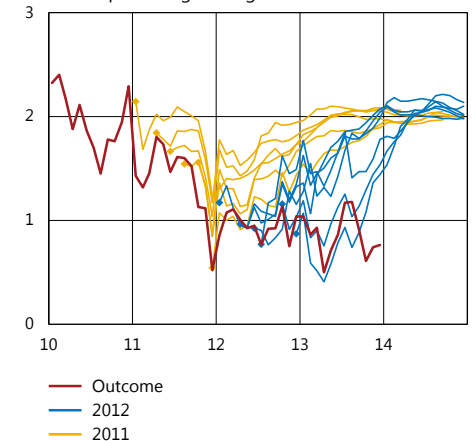
**Figure 2:23. Unit labour cost, outcome and forecasts**  
Annual percentage change



Note. The yellow and blue lines represent the Riksbank's forecasts 2011–2012. The marks show the starting point of each forecast and may therefore deviate from the latest outcome at that point in time.

Sources: Statistics Sweden and the Riksbank

**Figure 2:24. CPIF, outcome and forecasts**  
Annual percentage change



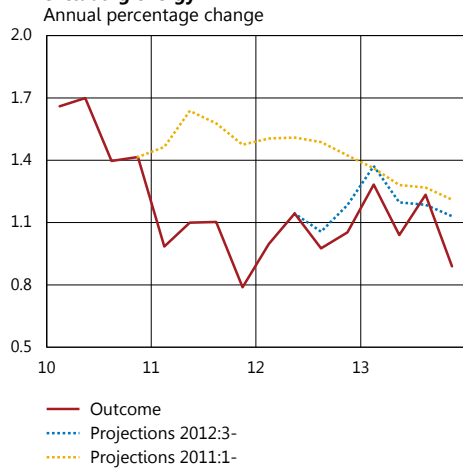
Note. See the note to Figure 2:23. The CPIF is the CPI with a fixed mortgage rate.

Sources: Statistics Sweden and the Riksbank

<sup>20</sup> The lasting part is here measured as the trend in unit labour costs. This trend is calculated using a so-called HP filter.

<sup>21</sup> For details of the estimates, see the article "Perspectives on the low rate of inflation" in *Monetary Policy Report*, February 2014.

**Figure 2:25. Outcome and projections for CPIF excluding energy**

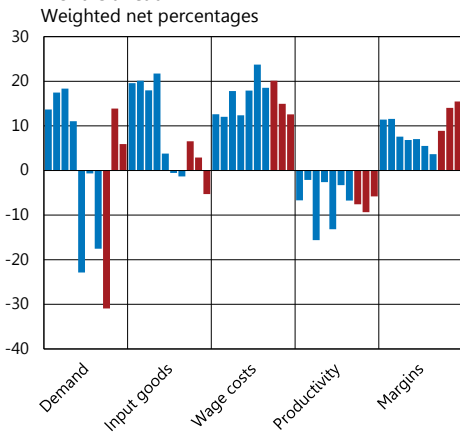


Note. The CPIF is the CPI with a fixed mortgage rate.  
 Sources: Statistics Sweden and the Riksbank

low import prices in 2012–2013 contributed to holding back inflation in these years.

At the end of 2012, companies were assuming that their margins, which are closely linked to price mark-ups, would not have such a large effect on price increases in 2013. Expectations of the price-increasing effect of these margins did increase in 2013, however.

**Figure 2:26. Factors behind pricing in the twelve months ahead**



Note. The columns show the relative percentages (net) for five factors that companies state will affect prices upwards or downwards 12 months ahead. The first column for each factor refers to the survey in September 2010 and the final one to the survey in September 2013. The surveys made in 2013 are marked in red.  
 Source: The Riksbank

## CHAPTER 3 – Monetary policy 2013

**Growth in the Swedish economy was weak on the whole in 2013. This was mainly due to weak growth abroad, which dampened demand for Swedish exports. Employment increased, but as the supply of labour also increased, unemployment remained at roughly the same level as in 2012. Over the year, confidence among households and companies rose, which supported the picture that growth would increase and the labour market would improve more tangibly in 2014. Inflation was low and fell further towards the end of the year. The Riksbank conducted an expansionary monetary policy to support the recovery and contribute to inflation returning to the target. The repo rate was unchanged at 1 per cent up to December, when it was cut to 0.75 per cent. Monetary policy in 2013 involved balancing how low the repo rate needs to be for inflation to approach the target soon enough against the increased risks linked to household debt that can stem from a low interest rate.**

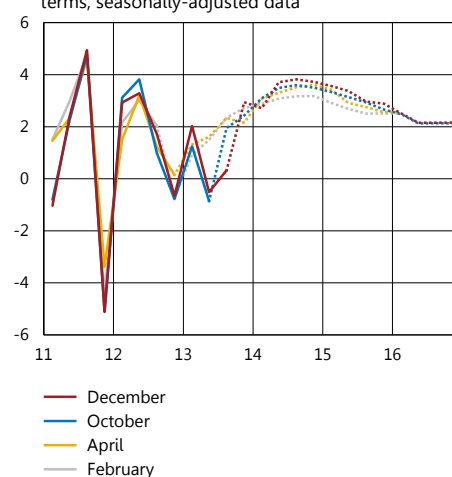
### Monetary policy decisions in 2013

#### ■ February - low growth but some positive signs

At the beginning of 2013, the Swedish economy was still marked by the crisis in the euro area, where problems in the debt crisis countries remained a source of uncertainty and weak demand. This contributed to the expectation that Swedish GDP growth would be weak during the first half of the year. However, there were some positive signs. The unease on the financial markets had declined, and households and companies, both in Sweden and abroad, were slightly more optimistic with regard to the future. Developments in emerging markets were still strong and the recovery in the United States was progressing. The Riksbank therefore assessed that Swedish GDP growth would gradually increase over the year (see Figure 3:1). As the labour market is affected by developments in GDP with some time lag, unemployment was expected to rise somewhat over the year, but as growth gradually increased, employment was expected to rise and unemployment to fall. All in all, resource utilisation in the economy was assessed as lower than normal.

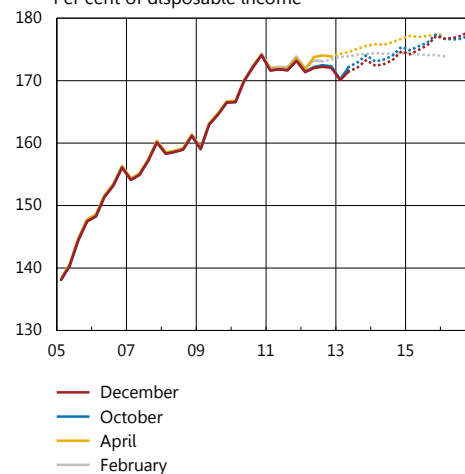
The weak economic developments in Sweden, together with falling prices on imported goods, contributed to low inflationary pressures. The Executive Board of the Riksbank therefore considered that monetary policy needed to remain expansionary to support economic activity so that inflation would rise towards the target of 2 per cent. At the same time, the Board noted that household debt as a percentage of income was still at a high level and that this comprised a risk in the longer run (see Figure 3:2). At the monetary policy meeting in February, the Executive Board decided to leave the repo rate unchanged at 1 per cent. The repo rate was expected to remain at this level throughout 2013 and from the beginning of 2014 to gradually increase to just over 2.5 per cent at the beginning of 2016 (see Figure 3:3). The real repo rate was expected to be negative until the end of 2014 (see Figure 3:4). This monetary policy was expected to contribute to CPI inflation being close to 2 per cent from the middle of 2014 and to resource utilisation normalising during the forecast period (see Figure 3:5). CPI inflation is directly affected by households' mortgage expenditure increasing at a

**Figure 3:1. GDP, forecasts 2013**  
Quarterly changes in per cent calculated in annualised terms, seasonally-adjusted data

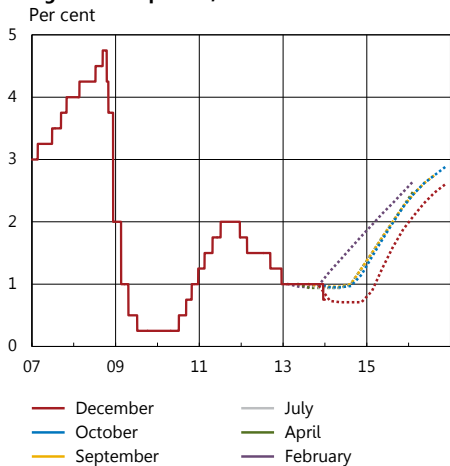


Sources: Statistics Sweden and the Riksbank

**Figure 3:2. Household debt, forecasts 2013**  
Per cent of disposable income

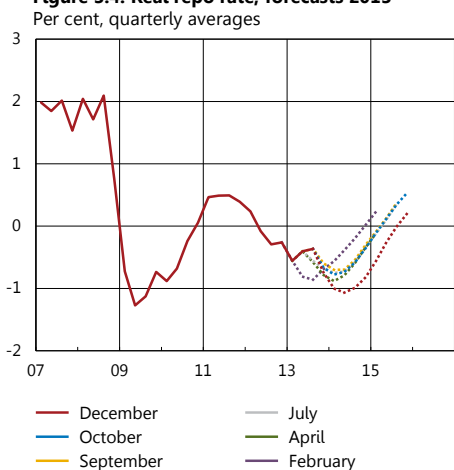


Sources: Statistics Sweden and the Riksbank

**Figure 3.3. Repo rate, forecasts 2013**

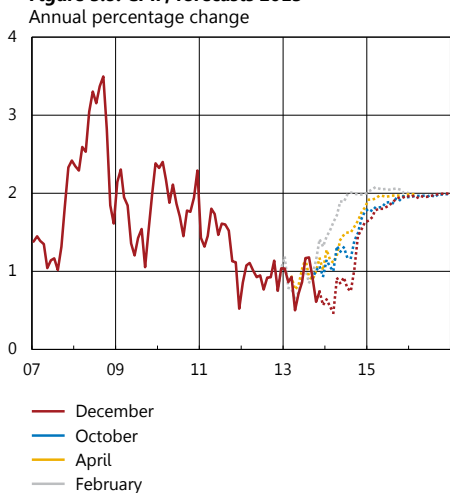
Note. Outcome data are daily rates and forecasts are quarterly averages.

Source: The Riksbank

**Figure 3.4. Real repo rate, forecasts 2013**

Note. The real repo rate is calculated as an average of the Riksbank's repo-rate forecasts for the coming year minus the inflation forecast (CPIF) for the corresponding period.

Source: The Riksbank

**Figure 3.5. CPIF, forecasts 2013**

Note. The CPIF is the CPI with a fixed mortgage rate.

Sources: Statistics Sweden and the Riksbank

faster rate when the Riksbank raises the repo rate. The rate of increase in the CPI was therefore expected to be just over 2.5 per cent towards the end of the forecast period. At the same time, household indebtedness was expected to remain high, but not to increase too quickly in the coming period (see Figure 3:2).

#### ■ Alternative repo-rate scenarios and the monetary policy trade-off

The February Monetary Policy Report contained, as usual, two possible alternative scenarios for the repo rate. These alternative scenarios were calculated with the aid of the Riksbank's macro model, Ramses, and illustrated what might happen in the economy if the Riksbank had chosen a different monetary policy than that described in the main scenario. They thus functioned as simulations of potential effects of different monetary policy alternatives.<sup>22</sup>

According to the model calculations, a lower repo-rate path could have meant that CPIF inflation would have attained 2 per cent somewhat sooner than in the main scenario and that unemployment would have fallen somewhat more than in the main scenario (see Figures 3:6–3:8).

However, most Executive Board members considered it impossible to choose a repo-rate path solely on the basis of the information in these scenarios. Inflation and resource utilisation can also be affected by factors that are not captured in these calculations. Household indebtedness is one such factor. Most members of the Executive Board considered at the monetary policy meeting in February that a lower repo rate would further increase the risks linked to household indebtedness. They also pointed to the risk that low interest rates over a long period of time could cause households to form unrealistic expectations of interest rates in the coming period and might thus increase their indebtedness to unsustainable levels. By not cutting the repo rate, the Riksbank could then contribute to holding back the rate of increase in household indebtedness and thereby reduce the risk of major fluctuations in inflation and resource utilisation further ahead. This trade-off between the main scenario and the alternative with a lower repo-rate path featured in all of the monetary policy decisions during the year.<sup>23</sup>

#### ■ April - repo-rate path lowered as it was expected to take longer for inflation to attain the target

Prior to the monetary policy meeting in April, it was noted that the recovery in the US economy was holding up and that developments in Asia were strong. However, there was still considerable uncertainty regarding developments in the euro area, where GDP growth was expected to remain weak. At the same time, there were signs that the Swedish economy was recovering gradually. Sentiment among

<sup>22</sup> In the first scenario, the Riksbank would conduct a more expansionary monetary policy by cutting the repo rate by 0.25 percentage points in the current quarter and would thereafter set the repo rate 0.25 percentage points lower than in the repo rate path in the main scenario for a further four quarters. After four quarters, the repo rate would gradually approach the repo rate path in the main scenario. In the higher scenario, the repo rate would be set slightly higher to the same extent that it is set lower in the previous scenario.

<sup>23</sup> See also the article "Financial imbalances in the monetary policy assessment".



households and companies was improving and consumption and investment were expected to increase more quickly in the coming period.

Inflation was still low, however. As inflation in 2012 was lower than expected by the Riksbank and other analysts, the Riksbank conducted a review of the assessments used as a basis for the inflation forecast. This review indicated that companies were raising their prices less than before, in relation to developments in costs. This led to the assessment that companies were finding it more difficult than the Riksbank had previously anticipated to pass on increased costs to consumer prices. The fact that the krona had become somewhat stronger than expected provided a further contribution to lower inflationary pressures in the Swedish economy (see Figure 3:9). The forecast for inflation was therefore revised down in April, primarily with regard to 2014, and it would now take longer for inflation to attain the target of 2 per cent (see Figure 3:5). At the same time, household debt was now increasing at a faster pace, from an already high level.

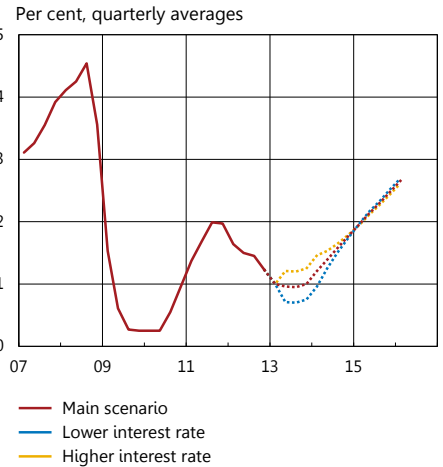
The repo rate was expected to need to remain low for a longer period of time than had been previously calculated, to support the recovery so that inflation would rise towards the target. At the monetary policy meeting in April, the Executive Board of the Riksbank held the repo rate unchanged at 1 per cent, at the same time as they lowered the repo-rate path. The lower repo-rate path was mainly because the inflation forecast had been revised down, primarily with regard to 2014. According to the Riksbank's new repo-rate forecast, it was not until the second half of 2014 that the repo rate would slowly begin to be raised, around one year later than had been assessed in February (see Figure 3:3). The new forecast meant that, by the end of 2014, the repo rate was expected to be around 0.5 percentage points lower than in February's forecast. Given this repo-rate path, CPIF inflation was expected to be close to 2 per cent at the beginning of 2015 (see Figure 3:5). The forecast means that household indebtedness would increase somewhat faster in the coming period, but given the lower inflationary pressure, most Executive Board members assessed that the monetary policy conducted was nevertheless well-balanced.

**July, September and October - prospects for recovery remain good and monetary policy holds same course**

From April to October, economic developments in Sweden and abroad were in line with the Riksbank's forecasts and there were only minor revisions to the forecasts. The Riksbank was counting on a gradual improvement in economic prospects abroad on the whole, on the basis of the significance different countries have for the Swedish economy, in the coming years.

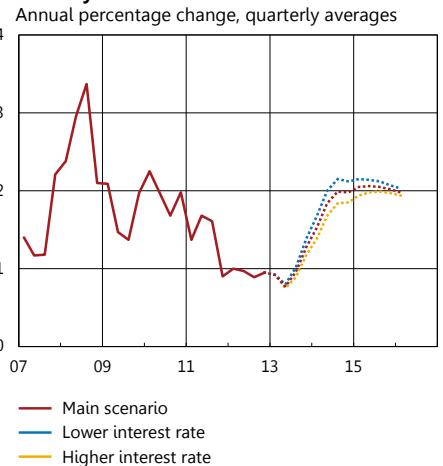
Developments on the financial markets were affected by shifting expectations regarding when and how the US Federal Reserve would begin normalising its monetary policy. In May, an upturn in long-term bond rates worldwide began (see Figure 3:10) after the Federal Reserve announced that it was considering tapering the bond purchases it had

**Figure 3:6. Alternative repo-rate paths, February 2013**



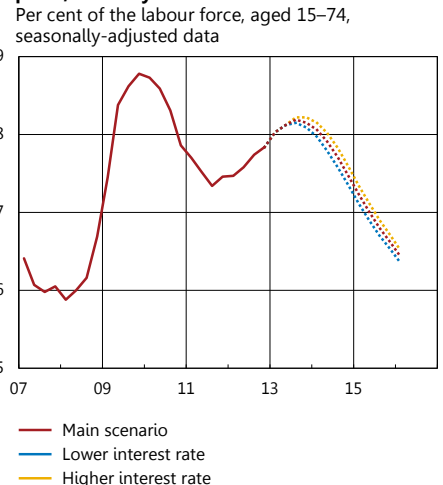
Note. Scenarios in Monetary Policy Report February 2013. Source: The Riksbank

**Figure 3:7. CPIF, alternative repo-rate paths, February 2013**



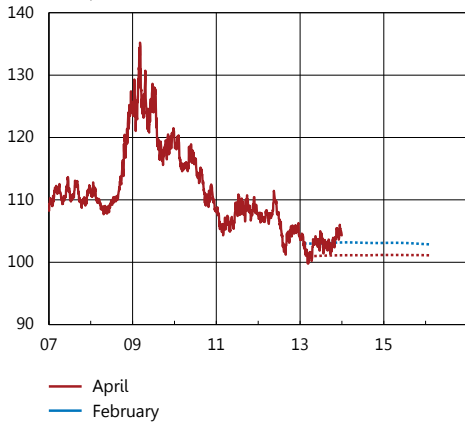
Note. Scenarios in Monetary Policy Report February 2013. The CPIF is the CPI with a fixed mortgage rate. Sources: Statistics Sweden and the Riksbank

**Figure 3:8. Unemployment, alternative repo-rate paths, February 2013**



Note. Scenarios in Monetary Policy Report February 2013. Sources: Statistics Sweden and the Riksbank

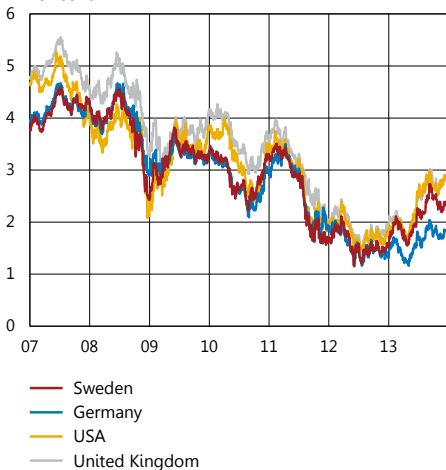
**Figure 3:9. KIX-weighted nominal exchange rate, forecasts 2013**  
Index, 18 November 1992 = 100



Note. KIX is an aggregate of countries that are important for Sweden's international transactions. Outcome data are daily rates and forecasts are quarterly averages.

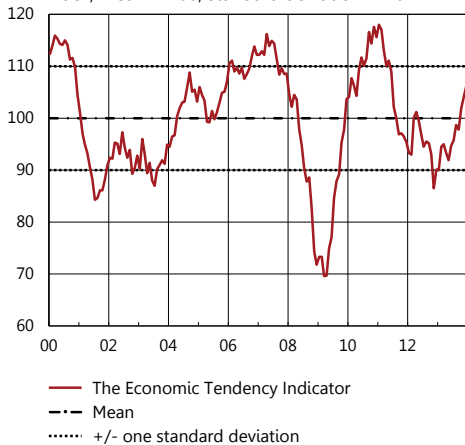
Source: The Riksbank

**Figure 3:10. Government bond rates with 10 years left to maturity**  
Per cent



Source: Macrobond

**Figure 3:11. The Economic Tendency Indicator**  
Index, mean = 100, standard deviation = 10



Source: National Institute of Economic Research

conducted on several occasions since 2008.<sup>24</sup> But interest rates were also affected by signs of stronger development in Europe and a number of other countries.

Rising interest rates and a strengthening of economic prospects in the developed economies contributed during the summer to capital outflows from some emerging markets, where economic prospects were instead somewhat dampened.

In September, the Federal Reserve surprised financial market participants with a decision to continue its monthly asset purchases on an unchanged scale. This meant that government bond yields fell slightly in relation to the strong increase since May.

A lack of political unity on fiscal policy in the United States led to parts of public sector operations being closed down for almost three weeks in October. Work could resume again after Congress decided on a temporary budget and on raising the public debt ceiling in the short term.

Developments in the Swedish economy were divided. Weak demand in the euro area contributed to a decline in exports and investment. At the same time, low interest rates and rising employment contributed to good growth in incomes, which paved the way for a continued steady increase in consumption. Demand for Swedish exports was expected to increase and GDP growth to accelerate towards the end of the year, as the global economy grew at a faster pace (see Figure 3:1).

The National Accounts published in July and September indicated that Swedish GDP had increased somewhat more slowly during the first half of the year than the Riksbank had previously assumed. However, the indicators pointed to a continued recovery and sentiment among Swedish households and companies had gradually risen (see Figure 3:11). The positive signs also included the fact that unemployment turned out lower than the Riksbank had been expecting (see Figure 3:12). The improvement on the labour market was expected to become clearer in 2014, when economic activity strengthened more tangibly.

Prices of tenant-owned apartments and houses had continued to increase over the year (see Figure 3:16). Surveys showed that households' expectations of mortgage rates five years ahead were lower than was compatible with the Riksbank's assumptions regarding the repo rate in the long term. As housing prices are affected by expected future mortgage rates, there was a risk of an unsustainable development in prices in the coming period.

Inflation was still at a low level. According to the Riksbank's Business Survey in September, the low price pressure in the economy would persist in the near term, as a result of stiff competition.

At the monetary policy meetings in July, September and October, the Executive Board of the Riksbank therefore decided to hold the repo rate unchanged at 1 per cent and assessed that it would need to remain at this low level for around one year (see Figure 3:3). All in all, this was

<sup>24</sup> For further information on this, see the article "Expected tapering of the Federal Reserve's asset purchases", *Monetary Policy Report*, October 2013.

expected to lead to CPIF inflation attaining 2 per cent in 2015 (see Figure 3:5).

As was the case earlier in the year, the Executive Board observed at these monetary policy meetings that an even lower repo rate could lead to inflation attaining the target somewhat sooner. At the same time, most of the Executive Board members assessed that a lower repo rate would also increase the risks linked to household indebtedness. Given this holding the repo rate unchanged was considered to be a reasonable trade-off.

### ■ Unexpectedly low inflation resulted in repo-rate cut in December

Prior to the monetary policy meeting in December, it was noted that economic developments both in Sweden and abroad had been largely in line with the Riksbank's forecasts.

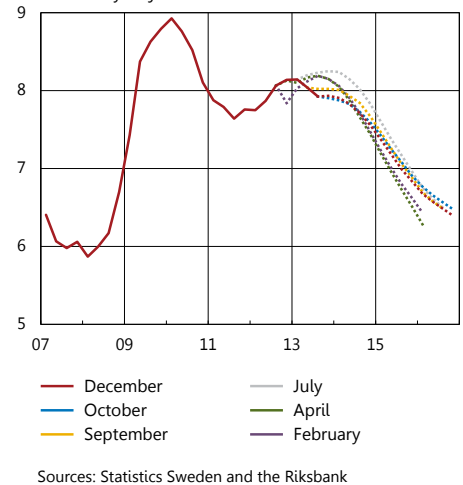
However, the inflation outcomes for October and November, which had been received since the Monetary Policy Report in October, had been much lower than expected. It was now the increase in services prices that showed clear signs of slowing down, and this entailed a downturn on a broad front. This indicated that the underlying inflationary pressures were lower than the Riksbank had previously assumed.

It was further noted that the rate of increase in domestic cost pressures had continued to be higher than inflation. This gave further support to the picture that had been emerging since April, namely that companies were experiencing difficulties in passing on cost increases to higher prices. All in all, inflation was expected to be clearly lower than had been forecast in October; this applied in particular during the coming year (see Figure 3:5).

Given the low inflationary pressures, all of the Executive Board members agreed that it was appropriate to cut the repo rate by 0.25 percentage points to 0.75 per cent and to adjust the repo-rate path downwards (see Figure 3:3). The Executive Board also agreed that the repo rate would probably remain at 0.75 per cent until the beginning of 2015, before slow increases would begin. Towards the end of 2016, the repo rate was expected to be 2.6 per cent. The real repo rate was now expected to be negative until the end of 2015 (see Figure 3:4).

Although the repo rate was cut in December, the decision entailed, as before, a trade-off between how low the repo rate needed to be for inflation to approach the target soon enough against the increased risks linked to households' high indebtedness that could stem from a low interest rate. Without a more expansionary monetary policy, however, it was assessed that there was a risk of inflation failing to reach 2 per cent in the coming years, and there was thus justification for cutting the repo rate by 0.25 percentage points and adjusting the repo-rate path downwards. At the same time, high household indebtedness remained a risk in the longer run. It was observed that several policy areas needed to cooperate to manage this risk, and that macroprudential policy measures play an important role in this context.

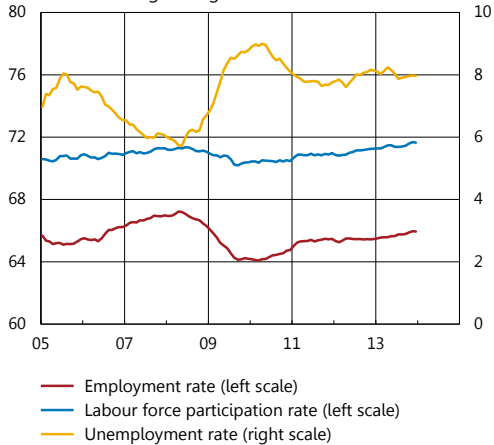
**Figure 3:12. Unemployment, forecasts 2013**  
Per cent of the labour force, aged 15–74, seasonally-adjusted data



Sources: Statistics Sweden and the Riksbank

**Figure 3.13. Labour force, employment and unemployment**

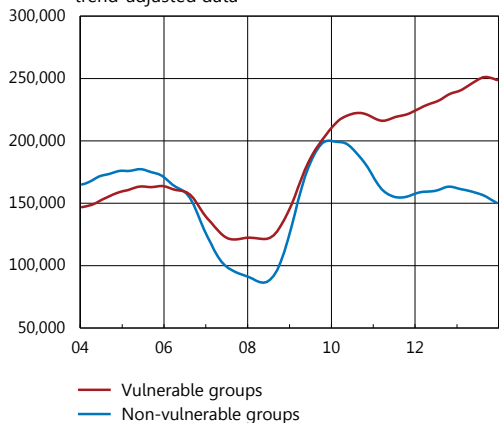
Per cent of the population and per cent of the labour force, aged 15–74, seasonally-adjusted data, three-month moving averages



Sources: Statistics Sweden and the Riksbank

**Figure 3.14. Unemployed, vulnerable groups on the labour market**

Number of unemployed, seasonally-adjusted data and trend-adjusted data



Note. Unemployed including people in programmes with activity grants. According to the Swedish Public Employment Service, there are four groups who have a relatively vulnerable position on the labour market and who find it more difficult to get a new job if they become unemployed: people born outside Europe, people without upper-secondary school education, people in the age group 55–64, and people with a disability that reduces their capacity to work.

Source: The Swedish Public Employment Service

## Important issues in the monetary policy discussion 2013

The Executive Board agreed that the continued weak level of economic activity and the low inflationary pressures meant that monetary policy needed to remain expansionary in 2013. However, with the exception of the decision in December, opinions were divided about how expansionary monetary policy needed to be and what constituted a well-balanced monetary policy.<sup>25</sup> The different assessments primarily reflected differences in the view of the ability of monetary policy to more rapidly reduce unemployment and bring inflation up to the target on the one hand and affect household indebtedness on the other. In this context, the Executive Board discussed the risk that prolonged low interest rates could contribute towards households forming unrealistic expectations of low interest rates and rising housing prices, as well as the risk that the inflation target could lose credibility if inflation were to remain below target for a long period of time. The members of the Executive Board also differed in their assessments of how active monetary policy should be and to what extent the exchange-rate forecasts should be affected by the forecasts of the gap between the repo rate and international policy rates. The Executive Board agreed that the preconditions for managing the risks associated with household indebtedness had improved following the government's decision on the form and structure of the framework for macroprudential policy in Sweden.

### ■ Developments on the Swedish labour market

Despite the weak level of economic activity, the Swedish labour market developed relatively well and the employment rate rose. However, as the labour force also increased, unemployment remained at around 8 per cent (see Figure 3.13). Views differed among the members of the Executive Board about the possible contribution that monetary policy could make to reducing unemployment. Most of the members of the Executive Board felt that the unemployment was to a great extent of a structural nature.<sup>26</sup> The ability of monetary policy to achieve a lower rate of unemployment was therefore limited. One reason for this view was that a larger percentage of the unemployed were assessed to be on the periphery of the labour market than before. Various 'vulnerable' groups on the labour market formed a larger proportion of the unemployed in 2013 than in 2006 (see Figure 3.14). Both the composition of the group unemployed and the length of unemployment spells suggested that unemployed people had a more tenuous foothold in the labour market in 2013 than previously. However, some members of the Executive Board argued that a more expansionary monetary policy, which would lead to higher demand pressure in the economy, was particularly important for increasing the chances of groups with a weak position on the labour market finding employment and thus for avoiding a high level of unemployment becoming entrenched.

<sup>25</sup> See also the article "Monetary policy decisions and reservations 2013".

<sup>26</sup> For a more in-depth analysis of the development of the labour market see the article "Perspectives on developments on the Swedish labour market".

**■ Housing prices and household indebtedness**

The level of household debt in relation to disposable income has roughly doubled since the mid-1990s (see Figure 3:15). The increase in indebtedness relates to the increase in housing prices. House prices and the prices of tenant-owned apartments continued to rise in 2013 (see Figure 3:16). A majority of the members of the Executive Board considered that the high level of household indebtedness in Sweden posed significant risks to macroeconomic development.

The extent to which monetary policy should take these risks into account depends on the extent to which monetary policy itself influences the risks, and it was on this point that the assessments of the members of the Executive Board diverged. Most of the members considered that household indebtedness limited how expansionary monetary policy could be in 2013. That it could thus take somewhat longer to attain the inflation target and normal resource utilisation was seen as an acceptable cost for reducing the risk of significantly weaker macroeconomic development later on. The assessment of two members of the Executive Board was that monetary policy would have far too slight an effect on the risks associated with household indebtedness compared to the costs associated with a longer period of inflation below target and low resource utilisation. They therefore considered that household indebtedness was not a factor that should be taken into account in the monetary policy decisions. Instead, such potential risks should be managed within other policy areas, such as macroprudential policy.

**■ Households' interest-rate expectations**

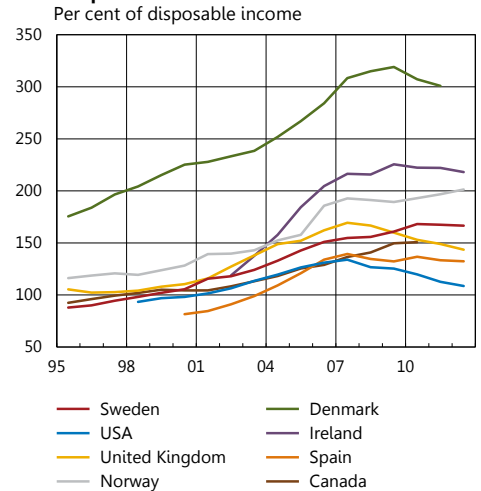
There was also concern among the members of the Executive Board that prolonged low interest rates could lead the households to form unrealistic expectations about the future development of interest rates. Surveys showed that household expectations of mortgage rates five years ahead were lower than appeared to be compatible with the Riksbank's assumptions regarding the repo rate in the long term (see Figure 3:17). Unrealistically-low household expectations of future interest rates could contribute to unsustainable increases in housing prices and indebtedness. For most of the year, the majority of the board members considered that this was an argument against lowering the repo rate further.

**■ Macroprudential policy and monetary policy**

There was agreement among the members of the Executive Board that tools other than the repo rate can be more effective for reducing the risks associated with household indebtedness. A majority of the members thought that it was a matter of urgency to take further measures to halt continued increases in household indebtedness. This was particularly the case following the lowering of the repo rate and the repo-rate path in December.

One issue that was discussed at the monetary policy meetings in the latter part of the year was the implication for monetary policy of the

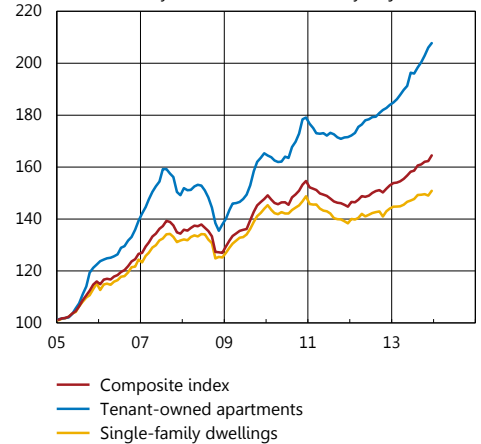
**Figure 3:15. Household debt, international comparison**



Source: OECD

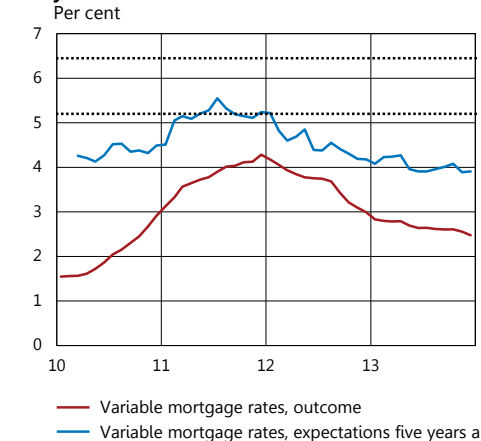
**Figure 3:16. Housing prices**

Index, January 2005 = 100, seasonally-adjusted data



Sources: Valueguard and the Riksbank

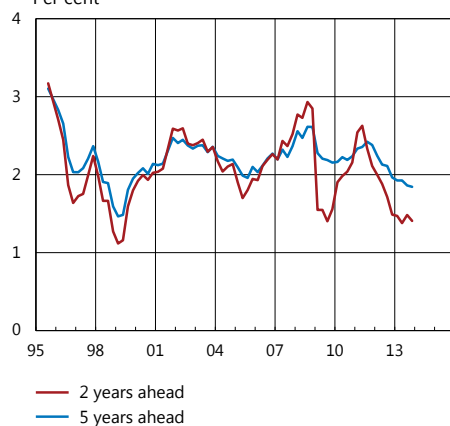
**Figure 3:17. Interest-rate expectations among households regarding variable mortgage rate five years ahead**



Note. The broken lines show an interval for the long-term level of the variable mortgage rate. The interval is based partly on an interval for the long-term repo rate of 3.5-4.5 per cent and partly on an interval for the difference between a three-month mortgage rate and the repo rate of 1.7-2 percentage points.

Sources: National Institute of Economic Research and the Riksbank

**Figure 3:18. All respondents' expectations of inflation**  
Per cent



Source: TNS SIFO Prospera

government's decision to award the main responsibility for the macroprudential-policy instruments to Finansinspektionen. Was the government's decision a reason to no longer take into account the potential risks relating to household indebtedness in the monetary policy decisions? A majority of the board members considered that, despite this decision, the risks linked to financial imbalances must be taken into account in monetary policy in the period ahead. One reason for this was that the development of household indebtedness would continue to be important to macroeconomic stability and to the ability of the Riksbank to attain the inflation target and stabilise resource utilisation in the longer term. In this perspective it was noted that historical experience of macroprudential policy is limited and that the impact of macroprudential policy measures on the economy is very uncertain. It was also pointed out that a lot of work remains to be done before a complete framework for macroprudential policy is in place. It is probable that different policy areas will need to cooperate to manage financial imbalances. It was also noted that the Riksbank's view that the risks linked to financial imbalances should be taken into account in monetary policy is well in line with the reasoning of several other central banks and researchers.<sup>27</sup>

#### ■ Low inflation and the credibility of the inflation target

One important task for monetary policy is to safeguard the credibility of the inflation target, and over the year the Executive Board also discussed the role that the low level of inflation may play in inflation expectations. If the more long-term inflation expectations fall below target, it may be more difficult for the Riksbank to attain the inflation target. Some of the members of the Executive Board considered that this risk was a reason for a more expansionary monetary policy. However, the majority saw no tangible signs as yet that more long-term inflation expectations, measured as expected inflation five years ahead, were beginning to deviate too much from the target (see Figure 3:18).

#### ■ International developments, foreign policy rates and the exchange rate

For most of the year there was consensus within the Executive Board regarding the forecasts for growth, inflation and policy rates abroad. However, at the beginning of the year, a different opinion was presented regarding policy rates and growth abroad, which was that they would be weaker than the Riksbank had forecast.

Opinions were divided, however, on whether the krona exchange rate would be affected by the increased difference between the repo rate and international policy rates which was forecast by the Riksbank but not reflected in current market pricing.<sup>28</sup> The Executive Board agreed that the forecast for the krona exchange rate was very uncertain and that the krona is affected by many different factors. However, two members of the

<sup>27</sup> See also the article "Financial imbalances in the monetary policy assessment" and Smets, Frank (2013), Financial stability and monetary policy: How closely interlinked? *Sveriges Riksbank Economic Review* 2013:3, Sveriges Riksbank.

<sup>28</sup> Market pricing – in the form of forward rates – provides an indication of expected future policy rates in Sweden and abroad.

Executive Board considered that the interest rate differentials in the Riksbank's forecast, all else being equal, should lead to a stronger krona than anticipated by the forecast, and thus to lower inflationary pressures and a need for a more expansionary monetary policy.

## Monetary policy decisions and reservations 2013

**12 February** The repo rate was held unchanged at 1 per cent. The forecast for the repo rate was adjusted marginally downwards. The forecast for the repo rate was that it would remain at approximately 1 per cent in 2013 and then, beginning in the first quarter of 2014, be gradually raised to 2.7 per cent in the first quarter of 2016. Deputy Governor Karolina Ekholm entered a reservation against the repo-rate decision and the repo-rate forecast. She advocated lowering the repo rate to 0.75 per cent and a path in which the repo rate would stay at this level through the first quarter of 2014 and then rise to just below 2 per cent by the end of the forecast period. This was justified by her assessment that a repo-rate path associated with a higher forecast of CPIF inflation and a lower forecast of unemployment during the forecast period constituted a better-balanced monetary policy. Deputy Governor Lars E.O.Svensson entered a reservation against the Monetary Policy Report, the repo-rate decision and the repo-rate forecast in the Report. He advocated lowering the repo rate to 0.5 per cent and a path in which the repo rate stayed at this level through the first quarter of 2014 and then rose to 1.5 per cent by the end of the forecast period. This was justified by his assessment that the Report's forecasts of foreign policy rates further ahead, foreign growth and Swedish inflation were too high and that given these circumstances his repo-rate path implied a forecast for CPIF inflation closer to the inflation target and a forecast for unemployment closer to a long-run sustainable rate and therefore constituted a better-balanced monetary policy. In addition, he considered that his lower repo-rate path would not have any noticeable effect on potential risks relating to household indebtedness as monetary policy normally only has very minor short-term effects on indebtedness and, with low and stable inflation, no long-term effects of this kind.

**16 April** The repo rate was held unchanged at 1 per cent. The forecast for the repo rate was lowered. The new repo-rate path suggested that the repo rate should remain at 1 per cent through the third quarter of 2014, after which it would gradually be raised to 2.5 per cent in the first quarter of 2016. Deputy Governor Karolina Ekholm entered a reservation against the repo-rate decision and the repo-rate forecast. She advocated lowering the repo rate to 0.75 per cent and a path in which the repo rate stayed at this level through the third quarter of 2014 and was then gradually raised to around 1.75 per cent by the end of the forecast period. Deputy Governor Lars E.O. Svensson entered a reservation against the Monetary Policy Update, the repo-rate decision and the repo-rate forecast in the Update. He advocated

lowering the repo rate to 0.5 per cent and then a path where the repo rate stayed at 0.25 per cent from the third quarter of 2013 through the third quarter of 2014, and then rose to 1.5 per cent by the end of the forecast period. Ms Ekholm and Mr Svensson justified their reservations in the same way as in February. Mr Svensson also considered that his lower repo-rate path would perhaps increase the household debt ratio by a couple of percentage points within a couple of years, but not in the long term, and that it would not noticeably affecting potential risks relating to household indebtedness.

**2 July** The repo rate was held unchanged at 1 per cent. The forecast for the repo rate was held unchanged. The forecast was that the repo rate would remain at 1 per cent through the third quarter of 2014, after which it would gradually be raised to 2.75 per cent in the third quarter of 2016. Deputy Governors Karolina Ekholm and Martin Flodén entered reservations against the repo-rate decision and the repo-rate forecast. Ms Ekholm advocated lowering the repo rate to 0.75 per cent and a path in which the repo rate stayed at this level through the second quarter of 2014 and was then gradually raised to around 2.25 per cent by the end of the forecast period. She justified her reservation in the same way as in February and April. Mr Flodén advocated cutting the repo rate to 0.75 per cent and a path in which the repo rate remained at this level until the end of the second quarter of 2014, after which it would follow the repo-rate path in the Monetary Policy Report. This was justified by his assessment that this repo-rate path would entail a forecast where CPI inflation returned to 2 per cent sooner and resource utilisation would be better balanced. Mr Flodén also considered that such a repo-rate path would reduce the risk of having to revise the path downwards in the future, and that it would take a long time before the repo rate could be raised from its current low level.

**4 September** The repo rate was held unchanged at 1 per cent. The forecast for the repo rate was held unchanged. Deputy Governors Karolina Ekholm and Martin Flodén entered reservations against the repo-rate decision and the repo-rate forecast and advocated lower repo-rate paths. They both advocated lowering the repo to 0.75 per cent and the same repo-rate paths as in July. They justified their reservations in the same way as in July.

**23 October** The repo rate was held unchanged at 1 per cent. The forecast for the repo rate was adjusted marginally downwards. Deputy Governors Karolina Ekholm and Martin Flodén entered reservations against the repo-rate decision and the repo-rate forecast and advocated lower repo-rate paths. Ms Ekholm advocated lowering the repo rate to 0.75 per cent and a path in which the repo rate stayed at this level through the third quarter of 2014 and was then gradually raised to approximately 2.4 per cent by the end of the forecast period. Mr Flodén advocated cutting the repo rate to 0.75 per cent and a path in which the repo rate remained at this level until the end of the third quarter of 2014,



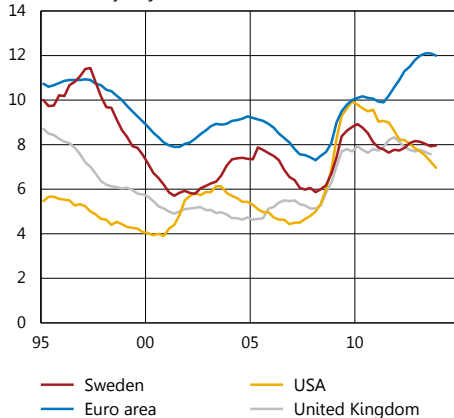
after which, from the fourth quarter of 2014, it would be rapidly raised towards the repo-rate path in the Monetary Policy Report. They justified their reservations in the same way as in July and September.

**16 December** The Executive Board unanimously decided to cut the repo rate by 0.25 percentage points to 0.75 per cent and to lower the repo-rate forecast. In the new repo-rate forecast, the repo rate was expected to remain at 0.75 per cent for approximately one year. The assessment was that it would be appropriate to slowly begin raising the repo rate at the beginning of 2015. The repo rate was expected to be 2.6 per cent at the end of the forecast period.

## ■ Perspectives on the development of the Swedish labour market

**Figure 3:19. Unemployment, international comparison**

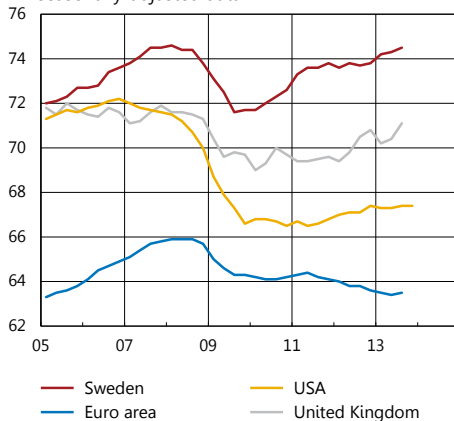
Per cent of labour force, aged 15–74, seasonally-adjusted data



Sources: Eurostat, Statistics Sweden and the Riksbank

**Figure 3:20. Employment rate, international comparison**

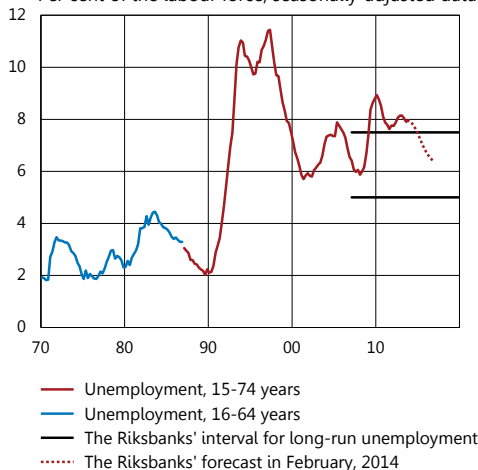
Per cent of the population, aged 15–64, seasonally-adjusted data



Sources: Eurostat and OECD

**Figure 3:21. Unemployment and sustainable unemployment rate**

Per cent of the labour force, seasonally-adjusted data



Sources: Statistics Sweden and the Riksbank

The development of the labour market is important to the Riksbank when formulating its monetary policy. This article illustrates the situation on the labour market in several different ways. The Riksbank's overall assessment is that there is spare capacity in the labour market, which contributes to low inflation and justifies the low repo rate. However, the analysis shows at the same time that there are factors that may make it difficult to tangibly reduce unemployment with the help of monetary policy in the period ahead. One such factor is that the composition of unemployment has changed.

### The situation on the labour market is important to monetary policy

The development of the labour market is of significance to the formulation of monetary policy. Employment and unemployment affect wage formation and thus also inflation. Moreover, resource utilisation on the labour market is also an important component of the economic analysis and of the assessment of how the actual development of the economy relates to what can be regarded as sustainable over the long term. Unemployment is often used as a measure of resource utilisation on the labour market, but the situation on the labour market should be assessed on the basis of a larger set of indicators. This is illustrated in Figures 3:19 and 3:20. Unemployment in Sweden is somewhat higher than in the United Kingdom and the United States (see Figure 3:19). At the same time, the employment rate is much higher in Sweden, and it has also risen substantially in recent years (see Figure 3:20). This clearly shows that unemployment has different determinants in different countries.

In Sweden, the level of unemployment indicates that there are unutilised resources on the labour market, that is that actual unemployment is higher than the long-run sustainable rate of unemployment. The Riksbank's assessment is that the long-run rate of unemployment is in the interval 5 to 7.5 per cent (see Figure 3:21).

This assessment is based on the assumption that unemployment was close to its long-run sustainable rate in 2006. In addition, the assessment is based on assumptions regarding the effects of the reforms implemented on the Swedish labour market since 2006, whose impact should reduce long-term unemployment, and the effects of the demographic changes in this period, whose impact should increase it.<sup>29</sup> The interval reflects how uncertain the different assumptions are. How quickly unemployment can fall is largely due to the efficiency of matching, which makes it important to monitor various indicators of this.

<sup>29</sup> See the article "The long-term development of the Swedish labour market" in *Monetary Policy Report*, July 2012, Sveriges Riksbank.

### Surprisingly strong development of employment and the labour force

Given the level of economic activity, employment and the rate of employment have increased to a surprising degree (see Figure 3:20). But the development of the labour force has also been a positive surprise. It has increased substantially in relation to what can be expected given demographic developments, in terms of a so-called demographic projection (see Figure 3:22).

The demographic projection is performed in two stages. Initially, detailed relations in the labour-market situation in 2006 are held constant. Thereafter, the effects of changes in the number and composition of the population on aggregate labour-force participation are studied. Such a projection reveals that labour-force participation has developed strongly given the demography.

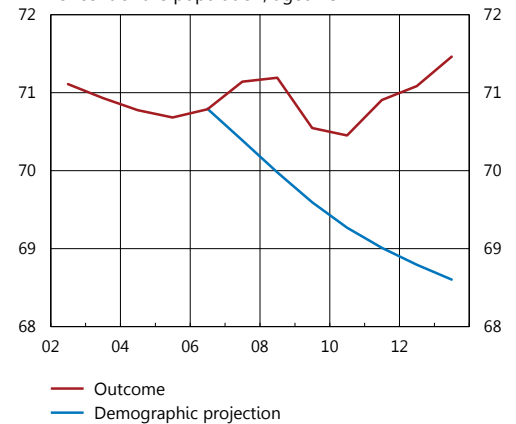
The demographic projection reflects the fact that, compared with 2006, a higher percentage of the population are in age groups with an average lower labour-force participation. This indicates that labour-force participation should be lower (see Figure 3:23 and 3:24). Despite this, aggregated labour-force participation is higher than in 2006. There has been an increasing trend in labour-force participation in several age groups, and the reforms that the government has introduced on the Swedish labour market to stimulate the supply of labour are considered to be one of the reasons for this.

### Changed composition affecting unemployment

In the long term it is assumed that a high labour supply will increase the potential for employment to grow and for unemployment to fall. However, as the employment rate has not yet risen to the same extent as labour-force participation, unemployment has increased since 2006. Demographic developments and the trends for certain groups' labour-force participation have, precisely as in the case of the labour force, led to changes in the composition of unemployment. A larger proportion of the unemployed is now composed of groups on the periphery of the labour market (see Figure 3:25).

These include people with a limited education and people with a disability that reduces their capacity to work. The fact that the unemployed are to a greater degree people that find it more difficult to find work is also reflected by the fact that the average period of unemployment remains unusually long (see Figure 3:26). This is described in an analysis of the functioning of the labour market, which was presented by the Riksbank in autumn 2012. There are still no clear signs that matching efficiency has begun to improve. The probability of those registered as unemployed obtaining work within the course of a month also remains low in relation to the development of the demand for labour.<sup>30</sup> Normally, an increased supply of labour has a restraining effect on inflationary pressures in the economy, as wage developments are slowed down when more people seek jobs. However, this mechanism

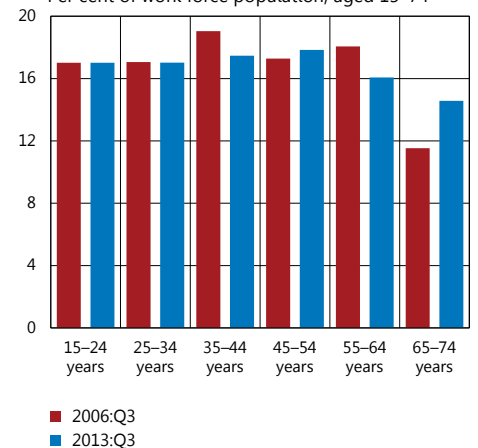
**Figure 3:22. Labour force participation, outcome compared with demographic projection**  
Per cent of the population, aged 15–74



Note. Demographic projection hold constant detailed relationships in the labour market situation in 2006 and show for the following years the effects on the labour market of changes in the number and composition of the population with respect to age, origin and gender.

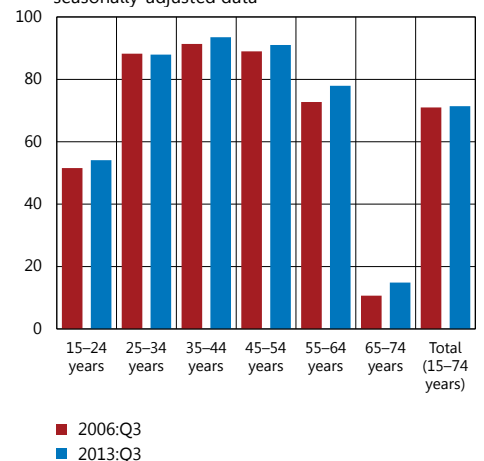
Sources: Statistics Sweden and the Riksbank

**Figure 3:23. Population in various age groups**  
Per cent of work force population, aged 15–74



Source: Statistics Sweden

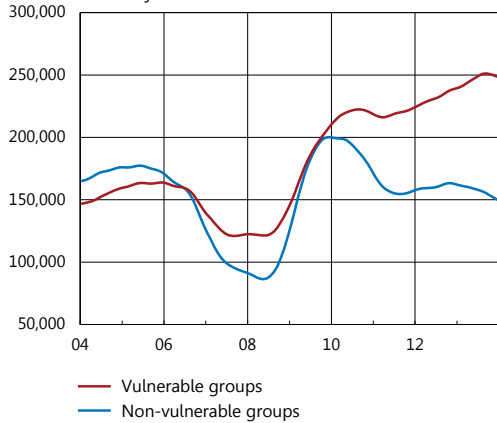
**Figure 3:24. Labour force participation in different age groups**  
Per cent of the labour force, aged 15–74, seasonally-adjusted data



Source: Statistics Sweden

<sup>30</sup> This relates to the percentage of job-seekers that have moved from unemployment to employment.

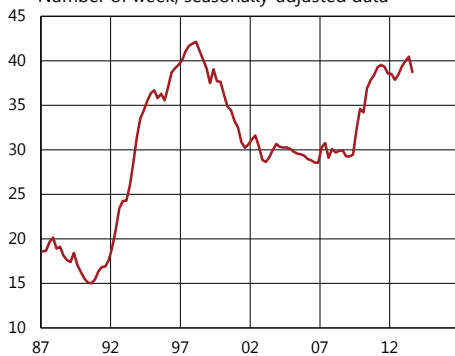
**Figure 3:25. Unemployment, vulnerable groups on the labour market**  
Number of unemployed, seasonally-adjusted data and trend-adjusted data



Note. Unemployed including people in programmes with activity grants. According to the Swedish Public Employment Service, there are four groups who have a relatively vulnerable position on the labour market and who find it more difficult to get a new job if they become unemployed: people born outside Europe, people without upper-secondary school education, people in the age group 55–64, and people with a disability that reduces their capacity to work.

Source: The Swedish Public Employment Service

**Figure 3:26. Average length of unemployment, 20–64 years**  
Number of week, seasonally-adjusted data



Source: Statistics Sweden

is weakened if a larger percentage of the new job-seekers have a weaker anchor on the labour market.

The Riksbank's overall assessment is that over the course of last year there was spare capacity in the labour market, which has contributed to low inflation and justified the low repo rate. The low repo rate helps to strengthen economic activity and thus contributes to a brighter outlook on the labour market. However, the analysis shows that there are factors that may make it difficult to tangibly and lastingly reduce unemployment with the help of monetary policy in the period ahead. One such factor is the change in the composition of the unemployed. This poses a challenge above all to other policy areas, which may need to take measures to make it possible to achieve low unemployment.

## ■ CHAPTER 4 – Forecasting performance

**Monetary policy acts with a lag and must therefore be based on forecasts. An assessment of the forecasts made in the period 2007–2013 shows that the Riksbank has produced relatively good forecasts of CPI inflation, GDP growth and unemployment. On the other hand, the accuracy of the forecasts of CPI inflation is, relatively speaking, lower, which reflects a lower relative level of accuracy for the forecasts of the repo rate. An analysis shows that it is above all a relatively large forecasting error in 2009 that affects the Riksbank's results for the CPI forecasts. The assessment also shows that the differences in forecasting performance between different forecasters are minor and on the whole not statistically reliable.**

### Assessment of forecasts made in the period 2007–2013

Forecasts are rarely completely accurate. Figures 2:12–2:15 in Chapter 2 illustrate how the forecasts of the Riksbank and a number of other analysts regarding the development of a number of central variables in 2013 changed from forecasting round to forecasting round. The typical pattern is that the forecasts made at an early stage, in the beginning of 2012, are relatively far from the final outcome. As time passes, the forecasts become gradually more accurate.

Another typical feature is that most analysts' forecasts will develop in a similar manner and will often be relatively close to one another. There is some spread, primarily in the earlier forecasts, but it is rare that any forecaster succeeds much more clearly than the others in predicting the final outcome. This is a good illustration of the fact that there are constant changes in the economy which are difficult or impossible to predict and which mean that even well-founded and carefully-analysed forecasts must be revised along the way.<sup>31</sup>

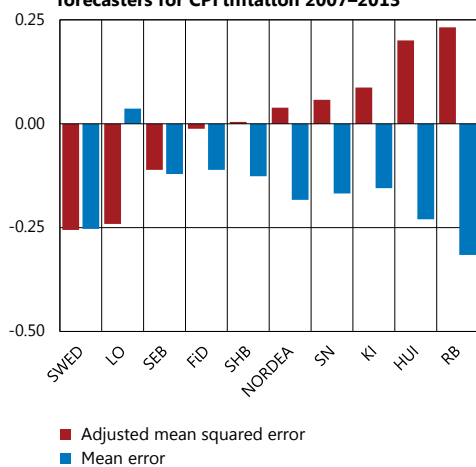
#### ■ Measurement of accuracy

Although the similarities between different analysts' forecasts are more striking than the differences, there is nevertheless some dispersion among the forecasts. One means of comparing the accuracy of different analysts' forecasts is to calculate the mean error, that is, to calculate how much the forecasts have on average deviated from the outcome. In Figure 2:13, for instance, the Riksbank's mean error for CPI inflation is determined by calculating, for each time a forecast is made, the difference between the outcome (the broken line in the figure) and the forecast (the red dot in the figure) and then taking the mean value of these differences. A negative mean error indicates that the forecasts were on average above the final outcome, while a positive mean error means that the forecasts were on average too low.

One weakness with this method is that positive and negative forecasting errors offset one another. Large forecasting errors that go in different directions - overestimates on some occasions and underestimates on others - may thus give a small mean error and incorrectly give the impression that the forecasts have been accurate. To avoid the problem of positive and negative forecasting errors offsetting

<sup>31</sup> See the article "On assessing monetary policy" in *Account of monetary policy* 2012.

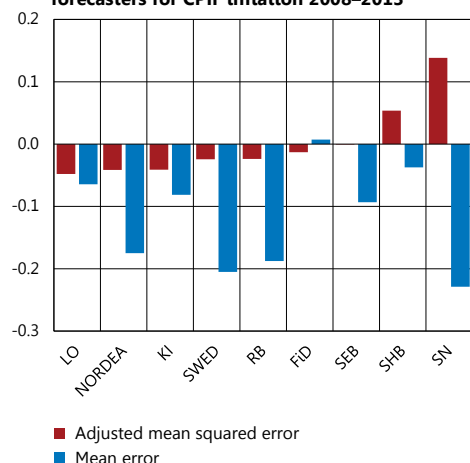
**Figure 4.1. Accuracy of the forecasts of various forecasters for CPI inflation 2007–2013**



Note. FiD = Swedish Ministry of Finance, HUI = HUI Research AB, KI = National Institute of Economic Research, LO = Swedish Trade Union Confederation, RB = the Riksbank, SHB = Svenska Handelsbanken, SN = Confederation of Swedish Enterprise and SWED = Swedbank. See footnote 34 and 35 for information on the data on which the Figure is based.

Sources: Respective analysts and the Riksbank

**Figure 4.2. Accuracy of the forecasts of various forecasters for CPIF inflation 2008–2013**



Note. See Figure 4.1 for an explanation of the abbreviations. See footnote 34 and 35 for information on the data on which the Figure is based. The CPIF is the CPI with a fixed mortgage rate.

Sources: Respective analysts and the Riksbank

one another it is therefore usual to also calculate the average *squared* forecasting error – the mean squared error. This means that the forecasting error for each point in time is squared before the mean is calculated. This avoids the problem of positive and negative forecasting errors offsetting one another.

#### ■ The accuracy of the forecasts for the period 2007–2013

Statistical measures of accuracy, such as mean errors and mean squared errors, do not tell us very much about forecasting performance when calculated for individual years. If a forecaster succeeds particularly well in an individual year, it may be largely due to chance. Next year the same forecaster may not do so well at all. These figures should therefore be interpreted with great caution.<sup>32</sup>

It is better to study forecasts made over a longer period of time to get a more stable picture of accuracy. Figures 4:1–4:5 show mean errors and mean squared errors for the forecasts of CPI and CPIF inflation, GDP growth, unemployment and the repo rate calculated over the period 2007 to 2013.<sup>33</sup>

The mean error, the blue bars in the figures, is thus the mean forecasting error during the period. A positive bar means that the forecasts have on average underestimated the outcomes, while a negative bar entails an overestimation.

The red bars in the figure show the adjusted mean squared error. The adjustment is made using a method that takes into account the fact that some forecasters on average make their forecasts later than others and therefore have access to more information.<sup>34</sup> The figures present the respective analysts' adjusted mean squared errors as a deviation from the average for all analysts. A negative value means that an analyst has a lower adjusted mean squared error and is thus more accurate than the average. The ranking of accuracy in the figures is based on the adjusted mean squared errors (the red bars). The most accurate forecasts are thus those made by the analysts with the lowest values.

Two changes have been made this year compared with the corresponding analysis in previous years' accounts of monetary policy. The first change relates to how the adjusted mean squared errors of the analysts are presented. The change only affects the scale in the figures, it has no impact on the ranking of the analysts.<sup>35</sup> The second change relates to the assessment period, which this year begins in 2007. Previously the Riksbank presented assessments of forecasts made since

<sup>32</sup> The calculations of mean errors and mean squared errors for the forecasts of a number of analysts in 2013 are shown in the Appendix.

<sup>33</sup> For CPIF inflation the period is 2008–2013 as the CPIF measure was introduced in July 2008. In the case of the Riksbank, the forecasting errors during the first half of 2008 refer to inflation measured in terms of the CPIX, which was the measure of underlying inflation that was eventually replaced by the CPIF. The forecasts by other analysts at the beginning of the period may also refer to the CPIX. The common factor for these two measures is that they disregard the direct effects of changes in mortgage rates on the CPI.

<sup>34</sup> The calculation method is based on being able to divide the squared forecasting errors into a component that is due to the amount of information available at the time of publication, a component that reflects the different forecasters' forecasting performance and a component that captures the fact that different years can be more or less difficult to forecast for all analysts. For a description of the method, see Andersson, Michael and Aranki, Ted (2009), "Forecasters' performance – what do we usually assess and what would we like to assess?" *Sveriges Riksbank Economic Review*, 2009:3, Sveriges Riksbank.

<sup>35</sup> In the corresponding figures in previous reports, the adjusted mean squared errors of the respective analysts were scaled up by the mean squared error for all of the analysts' forecasts. The difference compared to the figures in this report thus relates only to a constant and has no impact on the ranking of the analysts. The change makes the Riksbank's figures consistent with the way other institutions choose to present the results of similar calculations.

1 January 1999. However, a problem with the assessments of the longer period was that the Riksbank's forecasts prior to 2007 were not based on what the Riksbank itself considered to be the most likely development of the repo rate.<sup>36</sup> During this period, the forecasts were so-called conditional forecasts – up to 2005 they were forecasts of how inflation, GDP, unemployment and so on would develop under the assumption that the repo rate was held unchanged during the forecast period. This was an assumption that may have been instructive in some ways, but it was not normally particularly realistic. It is therefore difficult to assess how good the *conditional* forecasts actually were given that the precondition for the forecasts – that the repo rate would not be changed – was usually not met.

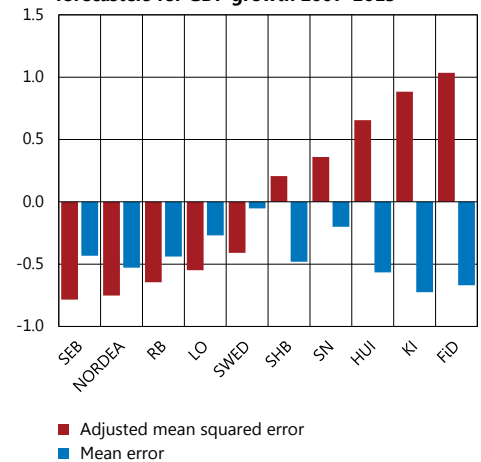
Since 2007, however, the Riksbank has published its own forecasts for the repo rate that reflect the development of the repo rate that, in the assessment of the Executive Board, will provide a well-balanced monetary policy during the forecast period. Nowadays, the forecasts are thus made under completely different conditions than previously and in a way that is better suited to comparisons with other forecasters. It is therefore natural to make 2007 the beginning of the assessment period. One disadvantage is of course that this means that the assessment of the forecasts of the CPI, GDP and unemployment is made over a shorter period of time than before, so that chance has a greater impact on the results.

It is worth pointing out that the change of period does not entail any major change in the Riksbank's ranking compared with other forecasters – the only difference is in the case of the GDP forecasts, where the Riksbank moves up one place. In order to illustrate this, and to be able to compare the results of this year's forecast assessment with last year's results, an assessment of the forecasts of the CPI, GDP and unemployment over the longer period 1999–2013 is also presented in the Appendix.

### ■ Relatively small differences in accuracy

The Riksbank appears to have made relatively good forecasts of GDP growth and unemployment, while the forecasts for CPI inflation are roughly in the middle of the field of forecasters.<sup>37</sup> However, the accuracy is relatively lower for CPI inflation. As the development of the repo rate plays a central role in the difference between the CPI and the CPIF, the lower precision of the CPI inflation forecast should be reflected in a lower relative accuracy for the repo rate, too.<sup>38</sup> This is confirmed by Figure 4:5.

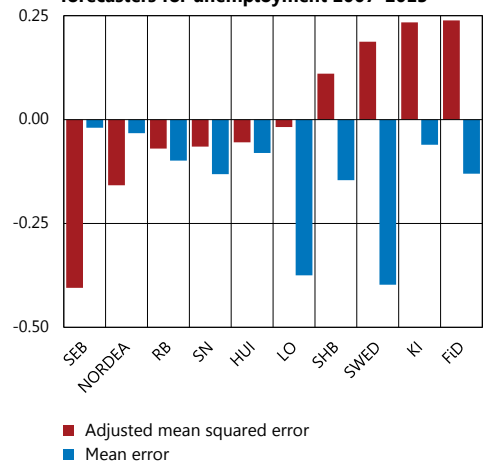
**Figure 4:3. Accuracy of the forecasts of various forecasters for GDP growth 2007–2013**



Note. See Figure 4:1 for an explanation of the abbreviations. See footnote 34 and 35 for information on the data on which the Figure is based.

Sources: Respective analysts and the Riksbank

**Figure 4:4. Accuracy of the forecasts of various forecasters for unemployment 2007–2013**



Note. See Figure 4:1 for an explanation of the abbreviations. See footnote 34 and 35 for information on the data on which the Figure is based.

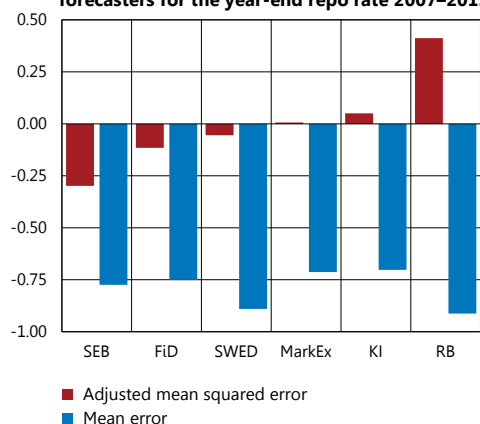
Sources: Respective analysts and the Riksbank

<sup>36</sup> The Riksbank has always emphasised that this was a potential source of problems when comparing forecasts. For more information on this, see Andersson, Michael and Palmqvist, Stefan (2013), A fairer picture of the Riksbank's inflation forecasts, *Economic Commentary* no. 7 2013, Sveriges Riksbank.

<sup>37</sup> Statistics Sweden implemented a change of method in the labour force survey statistics in February 2013, and at the same time updated the outcomes for the period 2010–2012 (for details, see Statistics Sweden's press release no. 2013:34). As the forecasts from 2012 and the beginning of 2013 were made before the size of the revision in the unemployment figures was known, it is fairer to compare these forecasts with an outcome that does not include the revision. The Riksbank has therefore adjusted the outcome these forecasts are compared with. The adjustment is 0.3 percentage points, which approximately corresponds to the average upward adjustment in the figures for unemployment in 2010–2012 that the change in method brought about.

<sup>38</sup> Developments in mortgage rates, which are what distinguish the CPI from the CPIF, are also affected by the banks' costs for funding mortgages and by the banks' margins on mortgages. See the article "The relationship between the repo rate and interest rates for households and companies" in the *Monetary Policy Report*, February 2012.

**Figure 4.5. Accuracy of the forecasts of various forecasters for the year-end repo rate 2007–2013**



Note. See Figure 4:1 for an explanation of the abbreviations. See footnotes 34 and 35 for information on the data on which the Figure is based. MarkEx = Market expectations are calculated on the basis of forward rates using interest rates on derivative contracts (RIBA and FRA), adjusted for average risk premiums corresponding to one basis point per month of the maturity period. Prior to 2007, the Riksbank did not publish forecasts for the repo rate. The Riksbank's quarterly forecasts have been estimated to daily values to produce a value at the end of the year.

Sources: Respective analysts and the Riksbank

All of the analysts have on average overestimated the repo rate, but the Riksbank has the largest adjusted mean squared error.

An analysis shows that it is above all relatively large forecasting errors in 2009 that affect the Riksbank's results for the CPI forecasts.<sup>39</sup> Table 4:1 presents the ranking of the Riksbank's CPI forecasts for each year since 2007. As the table illustrates, it was only in 2009 that the Riksbank's forecasts were the least accurate, in the other years the Riksbank's forecasting performance has been ranked approximately in the middle of the field. Despite this, the Riksbank comes last in an assessment of the entire period 2007–2013. The explanation is that the Riksbank's CPI forecasts for 2009 were very inaccurate and as the differences between the forecasters' forecasting errors for individual years are normally fairly small, a large forecasting error in one particular year has a major impact on an assessment that summarises several years.

It is worth noting that even if there are some differences in accuracy among the different analysts, seen over longer period of time, these differences are in general relatively small. Formal tests show that the differences are usually not statistically reliable. There is thus little in statistical terms that contradicts the theory that all analysts make equally good forecasts.<sup>40</sup>

**Table 4:1. Annual rating of the Riksbank's forecasts 2007–2013**

	GDP	Unemployment	CPI	CPIF	Repo rate
2007	1	5	5	-	4
2008	4	2	4	6	5
2009	4	6	10	8	6
2010	3	6	5	3	2
2011	3	5	6	4	4
2012	4	7	7	5	5
2013	4	5	8	8	6
2007–2013	3	3	10	5	6

Note. The figures in the table give the Riksbank's ranking, based on estimated accuracy. The highest ranking is 1. Ten institutions make forecasts of GDP, unemployment and the CPI. Nine make CPIF forecasts and five make forecasts of the repo rate. The assessment of the repo rate forecasts also includes market expectations according to market pricing, based on forward rates. These forward rates are calculated using interest rates on derivative contracts (RIBA and FRA). The forward rates are adjusted for average risk premiums corresponding to one basis point per month of the maturity period.

Sources: Respective forecasters, Statistics Sweden and the Riksbank

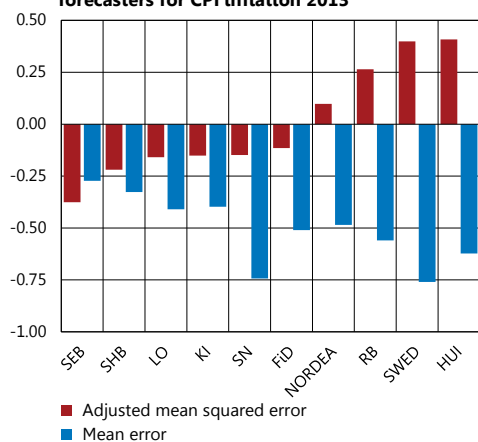
<sup>39</sup> See Andersson, Michael and Palmqvist Stefan (2013), "The Riksbank's forecasts hold up well", *Economic Commentary* no. 3, 2013, Sveriges Riksbank. This commentary shows, among other things, that if 2009 is excluded from the analysis of the CPI forecasts the Riksbank's ranking improves considerably in an assessment of the period 2007–2012.

<sup>40</sup> See Tables A1 and A2 in the Appendix for an account of the test results. Pairwise comparison between the Riksbank and other analysts show two differences that are statistically reliable. SN makes significantly poorer forecasts of CPIF inflation and SEB makes significantly better forecasts of unemployment.



## Appendix

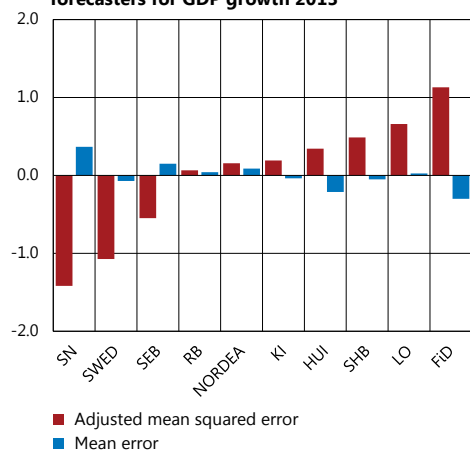
**Figure A1. Accuracy of the forecasts of various forecasters for CPI inflation 2013**



Note. FiD=Ministry of Finance, HUI=HUI Research AB, KI=National Institute of Economic Research, LO=Swedish Trade Union Confederation, RB=the Riksbank, SHB=Svenska Handelsbanken, SN=Confederation of Swedish Enterprise and SWED=Swedbank.

Sources: Respective analysts and the Riksbank

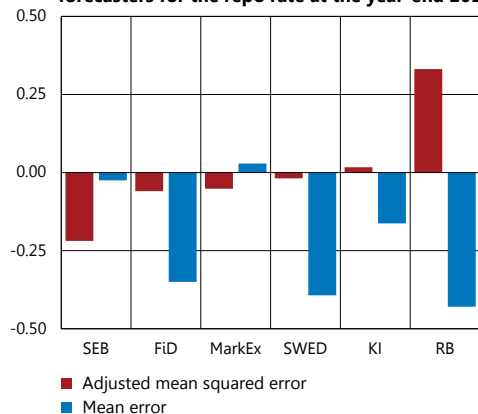
**Figure A3. Accuracy of the forecasts of various forecasters for GDP growth 2013**



Note. See the note to Figure A1 for an explanation of the abbreviations.

Sources: Respective analysts and the Riksbank

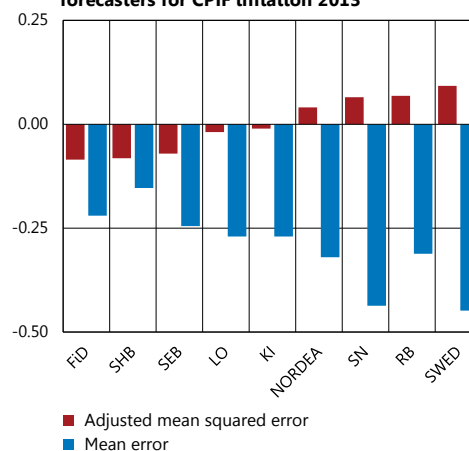
**Figure A5. Accuracy of the forecasts of various forecasters for the repo rate at the year-end 2013**



Note. See Figure 4:1 for an explanation of the abbreviations. MarkEx = Market expectations are calculated on the basis of forward rates using interest rates on derivative contracts (RIBA and FRA), adjusted for average risk premiums corresponding to one basis point per month of the maturity period. Prior to 2007, the Riksbank did not publish forecasts for the repo rate. The Riksbank's quarterly forecasts have been estimated to daily values to produce a value at the end of the year.

Sources: Respective analysts and the Riksbank

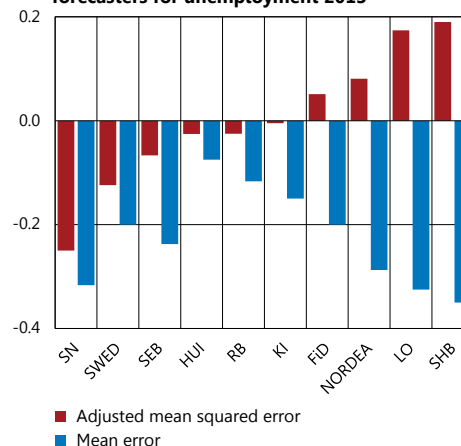
**Figure A2. Accuracy of the forecasts of various forecasters for CPI inflation 2013**



Note. See the note to Figure A1 for an explanation of the abbreviations.

Sources: Respective analysts and the Riksbank

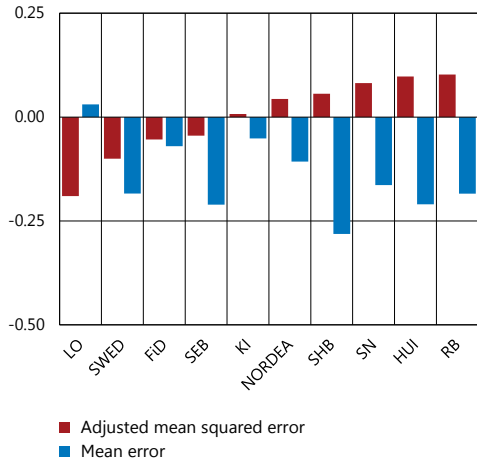
**Figure A4. Accuracy of forecasts of various forecasters for unemployment 2013**



Note. See the note to Figure A1 for an explanation of the abbreviations. Some adjustments have been made to some forecasts made during 2012–2013. See footnote 37.

Sources: Respective analysts and the Riksbank

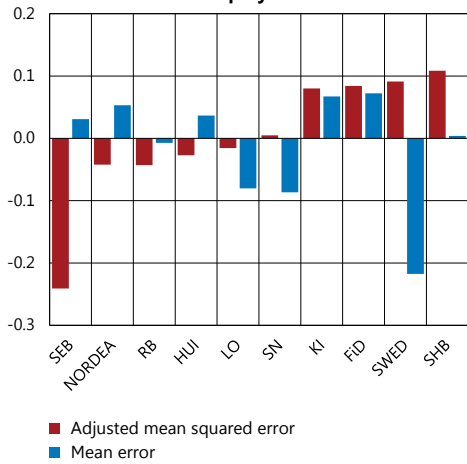
**Figure A6. Accuracy of the forecasts of various forecasters for CPI inflation 1999–2013**



Note. See the note to Figure A1 for an explanation of the abbreviations.

Sources: Respective analysts and the Riksbank

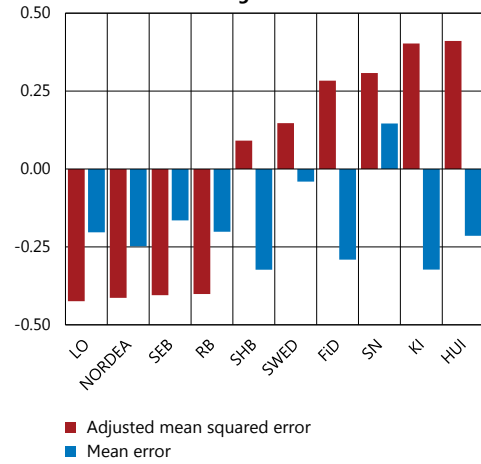
**Figure A8. Accuracy of forecasts of various forecasters for unemployment 1999–2013**



Note. See the note to Figure A1 for an explanation of the abbreviations.

Sources: Respective analysts and the Riksbank

**Figure A7. Accuracy of the forecasts of various forecasters for GDP growth 1999–2013**



Note. See the note to Figure A1 for an explanation of the abbreviations.

Sources: Respective analysts and the Riksbank

Table A1 tests the hypothesis (H0) that all analysts make equally good forecasts against the alternative hypothesis (HA) that at least one analyst makes better or poorer forecasts than the others. The table reports the so-called p value. If the p value is small, it is unlikely that the hypothesis (H0) that all analysts make equally good forecasts is correct. Normally, a p value below 0.05 or 0.1 is a criterion (which comprises the so-called significance level) for rejecting H0. Table A1 shows that according to this criterion one cannot reject the hypothesis that all analysts make equally good forecasts.

Table A2 correspondingly tests the hypothesis (H0) that the Riksbank makes equally good forecasts as another analyst against the alternative hypothesis (HA) that the Riksbank makes better or poorer forecasts than the other analyst. This test is made against one other analyst at a time. The table shows that normally one cannot reject the hypothesis that the Riksbank in the statistical sense makes equally good forecasts as any other analyst. There are two exceptions: SEB makes better forecasts of unemployment and CSE poorer forecasts of CPIF inflation.

**Table A1. Test of all individually-specific effects being the same (H0) or of there being differences (HA)**

P-value less than significance level rejects the null hypothesis

GDP	Unemployment	CPI	CPIF	Repo rate
0.88	0.19	0.87	0.51	0.80

Note. The periods studied are 2007–2013 for GDP, unemployment, the CPI and the repo rate, and 2008–2013 for the CPIF. Some of the forecasts in the period 2008–2009 are for the CPIX rather than the CPIF.

Source: The Riksbank

**Table A2. Test of whether the Riksbank is as good as other forecasters (H0) or significantly better or worse than other forecasters (HA)**

P-value less than significance level rejects the null hypothesis

	GDP	Unemployment	CPI	CPIF	Repo rate
FiD	0.25	0.26	0.52	0.93	0.37
HUI	0.31	0.91	0.94		
KI	0.27	0.23	0.68	0.69	0.47
LO	0.95	0.87	0.15	0.68	
Nordea	0.93	0.62	0.51	0.73	
SEB	0.90	0.06*	0.30	0.73	0.13
SHB	0.53	0.35	0.52	0.35	
SN	0.46	0.93	0.63	0.04**	
SWED	0.87	0.45	0.15	0.94	0.39
MarkEx					0.38

Note. The periods studied are 2007–2013 for GDP, unemployment, the CPI and the repo rate, and 2008–2013 for the CPIF. Some of the forecasts in the period 2008–2009 are for the CPIX rather than the CPIF. \* denotes that the result is significant at the 10-per cent level. \*\* denotes that the result is significant at the 5-per cent level. FiD = Ministry of Finance, HUI = HUI Research AB, KI = National Institute of Economic Research, SHB = Svenska Handelsbanken, SN = The Confederation of Swedish Enterprise, SWED = Swedbank and MarkEx = market expectations calculated on the basis of market pricing.

Source: The Riksbank





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