

## Lars E O Svensson: Assessment of monetary policy in Sweden in 2009

Speech by Prof Lars E O Svensson, Deputy Governor of the Sveriges Riksbank, at the Centre for Business and Policy Studies (SNS), Stockholm, 18 March 2010.

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*Carl Andreas Claussen and Gabriela Guibourg have contributed to this speech.*

Assessments of monetary policy are important for several reasons. First, because the Riksbank has had an independent position in relation to the Riksdag and the government since 1999. This means, for instance, that the Executive Board makes the monetary policy decisions without seeking or taking instructions. The Riksbank's independence gives its governors a great deal of power. It is therefore also important that the activities of the Riksbank can be monitored and assessed and that the governors can be called to account. A high level of transparency and regular assessments are also necessary to maintain the legitimacy of the Riksbank's activities. Second, regular assessments also help to ensure that the Riksbank can develop its monetary policy analysis in the best possible way.

Every year, the Riksdag Committee on Finance examines and assesses the monetary policy conducted by the Riksbank during the preceding years. The Riksbank compiles and publishes material for this assessment. We published such material just a few days ago. The main message in this material is that the Riksbank responded to the crisis by taking forceful measures. The repo rate was cut to almost zero and the Riksbank announced its intention to let the repo rate remain at this level for a relatively long period of time. The turbulence on the financial markets also meant that monetary policy had less of an impact than normal. The Riksbank responded to this by complementing monetary policy with extensive lending to the banks. In this way, monetary policy has helped to dampen the fall in production and employment. It has also helped to keep inflation in line with the target in the longer term.

This is what I intend to talk about today. First, however, I would like to say a few words about some of the principles that are important when assessing monetary policy.

### **What should we consider when we assess monetary policy?**

When can one say that the monetary policy conducted over the past year has been good? The answer to this question naturally depends on what the target for monetary policy is.

The Riksbank has an explicit inflation target according to which the annual change in the consumer price index (CPI) should be 2 per cent. As monetary policy acts with a time lag, it should be based on forecasts. The Riksbank's forecasts are based on the assumption that the repo rate – the Riksbank's policy rate – will develop in such a way that monetary policy can be regarded as well-balanced. In the normal case, a well-balanced monetary policy means that the inflation forecast is close to the inflation target a couple of years ahead at the same time as the forecast for inflation and the real economy (production, employment and unemployment) does not fluctuate excessively. It thus a question of finding an appropriate balance between stabilising inflation and stabilising the real economy and resource utilisation. The Riksbank therefore conducts what is generally referred to as flexible inflation targeting.

One might think that it should be enough to simply compare the outcome for inflation with the inflation target when assessing monetary policy. But it is not that simple, for two reasons. The first is that it takes time for changes in the repo rate to have an effect on inflation and the real economy. During this period of time, shocks may occur that can push the economy in a different direction than was forecast. The monetary policy adopted may have been right, but the Riksbank is unlucky and unforeseen shocks lead to inflation deviating from the target.

The monetary policy adopted may have been wrong, but the Riksbank is lucky and unforeseen shocks nevertheless lead to inflation hitting the target.

The second is that flexible inflation targeting means that the Riksbank strives not only to stabilise inflation around the inflation target but also to stabilise resource utilisation around a normal level. This can sometimes entail a difficult balancing act. Shocks may, for example, occur that make it difficult to quickly bring inflation to the target without creating major fluctuations in the real economy. One may then choose to let the outcome for inflation deviate from the target. This deviation is then deliberate and represents part of a compromise between stabilising inflation and stabilising resource utilisation.

So, how should one assess monetary policy? Two approaches can be used. The first is to assess monetary policy a couple of years after the monetary decisions concerned, so that inflation and the real economy have had time to react to the monetary policy measures, and to use all the information available at the time of the assessment, that is including the information that has become available after the decision was made. This is, in other words, an assessment after the fact, or what can be called an assessment *ex post*. Although it may be very interesting to analyse the shocks that occurred after the monetary policy decisions were made, it is practically self-evident that monetary policy could have been better if the shocks that occurred later had been known at the time the decisions were made. An assessment after the fact is not therefore necessarily the most relevant form of assessment.

A more relevant approach is to put ourselves in the position of the decision makers at the time the decision was made and to try to assess the decision given the information that was then available. In other words, perform an assessment based on the information available to the decision makers, or what can be called an assessment *ex ante*. The question that should then be answered is whether the analysis and the interest rate decision were reasonable given the information and the forecasts available at the time. Did the Riksbank, for example, arrive at a reasonable balance between stabilising inflation and stabilising resource utilisation?

An assessment based on the information available to the decision maker also has the great advantage that it can be conducted in real time immediately after the publication of the monetary policy decision and the information and analysis on which the decision is based. One does not thus need to wait for a couple years to see what the outcomes for inflation and the real economy will be. The decisions of the Riksbank can therefore be assessed and debated on an ongoing basis.

An important part of the assessment of a flexible inflation targeting policy is to assess how credible the inflation target is, measured in terms of the extent to which various economic agents' inflation expectations correspond to the inflation target. If inflation expectations are stable close to the inflation target then the target is credible and it will therefore be easier for the Riksbank to stabilise both inflation and resource utilisation.

As I have already said, it takes time for monetary policy to have an impact on inflation and the real economy. Monetary policy is therefore governed by forecasts. It is a question of choosing a repo-rate path so that the forecast for inflation and resource utilisation entails the best possible stabilisation of inflation and resource utilisation. As the forecasts play such a central role in the monetary policy decisions, it is of course important that the Riksbank employs good forecasting methods and uses all the relevant information available when the forecasts are produced so that they are as accurate as possible. An important step in the assessment of monetary policy is therefore to investigate whether the forecasts are reasonably accurate. One way to do this is to compare the Riksbank's forecasts with those of other forecasters. The Riksbank makes such comparisons every year.

Another component of the assessment of monetary policy is to analyse how predictable monetary policy is and what impact it has on market rates. Monetary policy mainly acts by influencing expectations regarding interest rates, inflation and the real economy in the future. Expectations regarding the repo rate in the years immediately ahead affect interest rates with

longer maturities, and therefore inflation and the real economy, more than the repo rate in the period up to the next monetary policy decision. The predictability of monetary policy can be measured in terms of how well the market predicts the next repo-rate path. How effectively monetary policy steers market expectations and market rates can be measured in terms of how closely the market expectations regarding future repo rates correspond to the repo-rate path after it is published.

The Riksbank's material for the assessment of monetary policy in Sweden in 2009 is based on the principles I have just described and this entails a certain renewal compared to the assessments of previous years.<sup>1</sup> I now intend to present the material for assessing monetary policy in 2009 that the Riksbank published a few days ago. As you probably know, from and including the meeting held in April 2009 I have entered reservations against the monetary policy decisions and advocated a lower repo-rate path, on the grounds that this would better stabilise both CPI inflation and resource utilisation without leading to problems for financial stability or the functioning of the financial markets.<sup>2</sup> However, in my speech today I will focus on the policy conducted by the majority of the Executive Board.

### **2009 – an extraordinary year for monetary policy**

In 2009, the Riksbank continued to conduct an increasingly expansionary monetary policy. The aim was to attain the inflation target and to mitigate the effects of the financial crisis on the real economy. From February to the beginning of July, the Riksbank cut the repo rate from 2.0 per cent to the all-time low of 0.25 per cent. The repo-rate path, that is the Riksbank's forecast of the development of the repo rate in the years ahead, was also revised downwards at every monetary policy meeting during this period. During the rest of the year, the repo rate and the repo-rate path were left unchanged. As a result of the turbulence on the financial markets, however, the impact of monetary policy was weaker than normal in 2009. The Riksbank responded to these problems by complementing monetary policy with extensive lending to the banks.

So, what was the nature of the forecasts and assessments that formed the basis for the monetary policy decisions?

#### ***The repo rate was cut to 1 percent and the repo-rate path was adjusted downwards in February***

In February, it appeared that the downturn in economic activity, in Sweden and abroad, would be more severe and would happen much more quickly than previously assessed by the Riksbank. At the monetary policy meeting on 10 February, the Riksbank therefore decided to cut the repo rate by a whole percentage point to one percent. The repo-rate path was adjusted downwards and a further repo-rate cut during 2009 was indicated (see Figure 1).

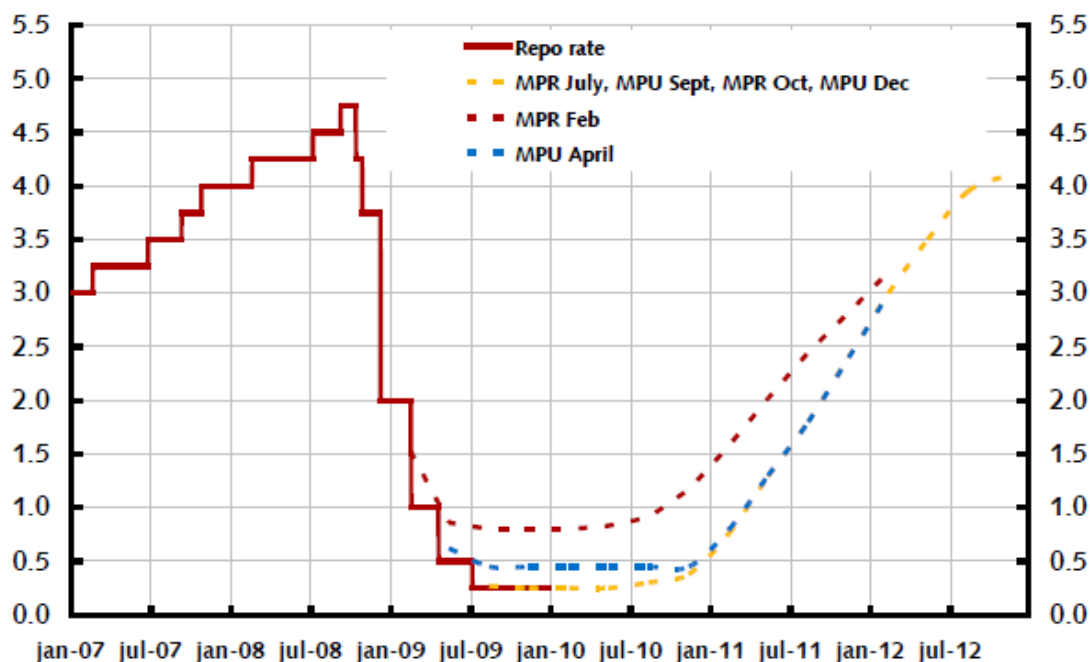
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<sup>1</sup> For a more detailed description of how one can assess monetary policy see Lars E.O. Svensson, "Assessing monetary policy", speech at Uppsala University, 13 March 2009.

<sup>2</sup> For a more detailed description of the arguments behind my reservations see Lars E. O. Svensson: "Why a lower repo-rate path?", speech at Umeå University, 24 February 2010.

Figure 1. Repo rate outcome and repo rate forecasts

Per cent



Source: The Riksbank

The Monetary Policy Report from February 2009 presented forecasts based on the Report's main scenario and alternative forecasts based on the repo-rate path adopted at the meeting in December 2008.<sup>3</sup> These are shown in Figure 2.a, where the higher repo rate path (the blue broken curve) represents the forecast from December 2008. The lower repo rate path (the red broken curve) represents the Riksbank's main scenario from February 2009.

The Riksbank's inflation targets are expressed in terms of CPI inflation. However, this varied strongly during the later part of 2008 and in 2009, due to the major changes in the repo rate. This is because the CPI includes mortgage costs. In such a situation, it is reasonable instead to look at inflation measured in terms of the CPIX, which excludes interest rate changes. Figure 2.b illustrates the Riksbank's forecasts for CPIX inflation, based on the two repo-rate paths. The lower repo-rate path, as proposed in the main scenario, gave an inflation forecast, measured in terms of the CPIX, approaching 2 per cent two years ahead. The higher repo rate path instead gave an inflation forecast that fell widely short of the target during the entire forecast period. Equivalent forecasts for CPI inflation are shown in Figure 2.c.

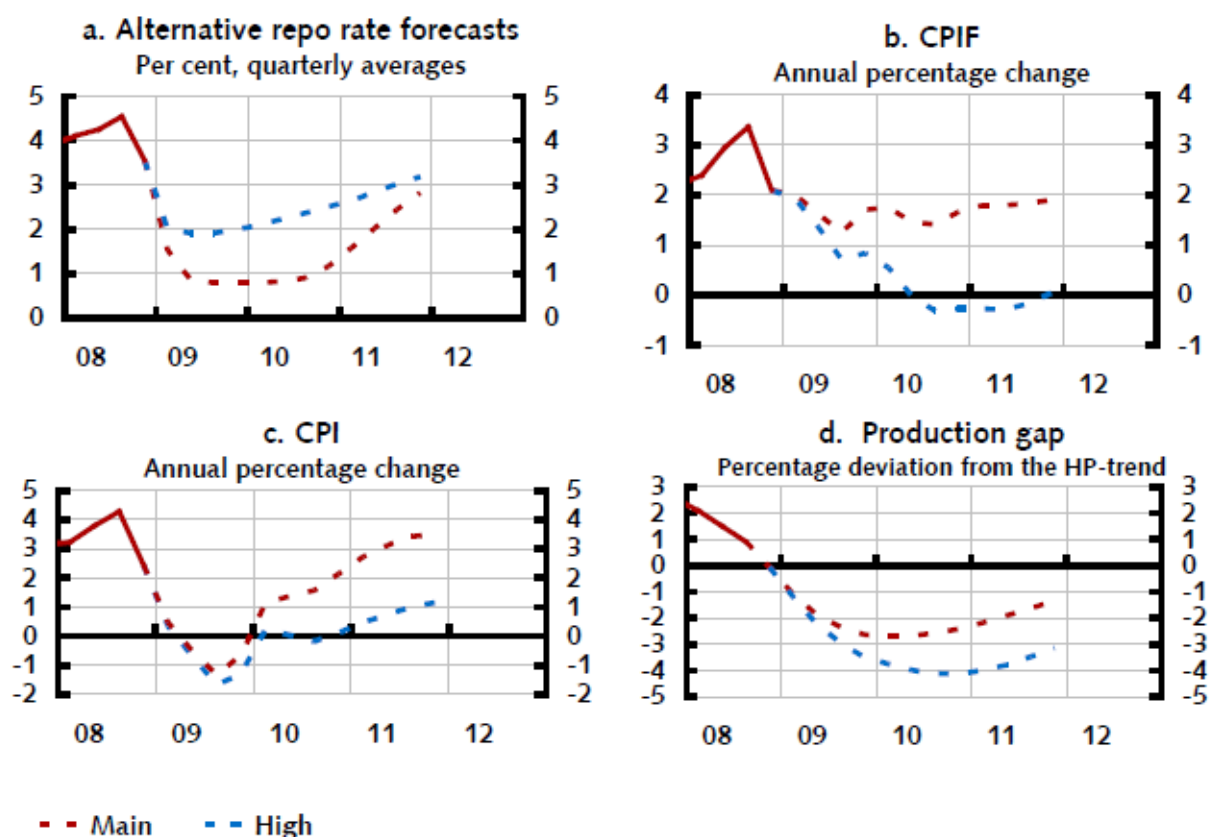
The Riksbank uses a number of measures and indicators to measure resource utilisation in the economy. One of these measures is the output gap, calculated as the percentage difference between GDP and an estimated trend.<sup>4</sup> If the gap is positive, this signifies that the level of activity in the economy is high and that GDP is above its trend level. The opposite

<sup>3</sup> Alternative forecasts for the repo rate are published in the Monetary Policy Reports, three times per year. Alternative forecasts for the repo rate are also discussed ahead of the remaining monetary policy meetings, but these are not published in the Monetary Policy Updates.

<sup>4</sup> The trend is estimated using a so-called Hodrick-Prescott filter (HP filter). This is a statistical method for dividing the movements of a variable into trend and cyclical components. The method can be described as a weighted double-sided moving average where greater weight is placed on observations close at hand and gradually decreasing weight on more distant observations. The output gap according to the HP method should not necessarily be interpreted as the Riksbank's overall assessment of resource utilisation.

applies when the gap is negative. Figure 2.d illustrates the output gap based on the two repo rate paths. Both paths resulted in negative output gaps during the forecast period, that is to say resource utilisation below the normal level. However, using the repo rate path in the main scenario gave a less negative output gap, using this measurement method, than using the repo rate path from December 2008. The lower repo-rate path thus stabilised both CPI inflation and resource utilisation better than the higher repo rate path.

Figure 2. The Riksbank's forecasts in February 2009



Sources: Statistics Sweden and the Riksbank

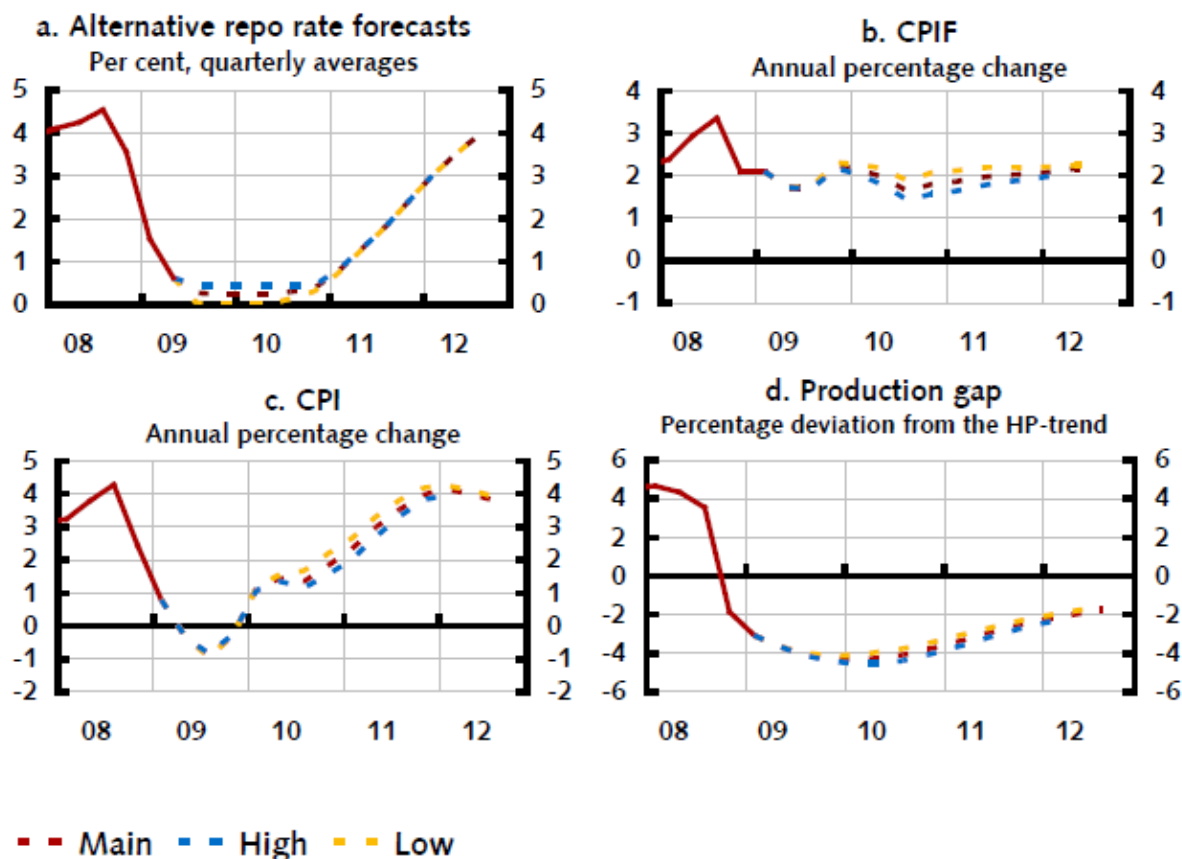
### Further repo-rate cuts in April and July

GDP continued to fall dramatically during the first quarter of the year, in Sweden as well as abroad, and the GDP forecast for 2009 was revised further downwards compared to the Riksbank's assessment in February. The Riksbank also assessed that CPI inflation would fall very rapidly during 2009, which was largely due to the rapid interest rate cuts implemented at the end of 2008 and start of 2009. At the monetary policy meeting on 20 April, the repo rate was cut by 0.5 percentage points to 0.5 per cent. The repo rate was expected to remain at a low level until the beginning of 2011 (see Figure 1).

In July, the assessment was that the decline in economic activity during 2009 would be slightly deeper than the assessment made by the Riksbank in April. The Riksbank's assessment was that the repo rate and the repo-rate path needed to be even lower. The repo rate was cut by 0.25 percentage points to 0.25 per cent at the monetary policy meeting on 1 July. The repo rate was expected to remain at this low level until the autumn of 2010 (see Figure 1). The Riksbank also assessed that the cut did not represent a threat to the functioning of the financial markets. Furthermore, the Riksbank deemed that, following the cut to 0.25 per cent, the repo rate had in practice reached its lower bound.

The alternative repo-rate paths published in the Monetary Policy Report in July and the associated forecasts for CPIIF inflation and the output gap are shown in Figure 3. The majority of the Executive Board adopted the repo-rate path marked as the main scenario.

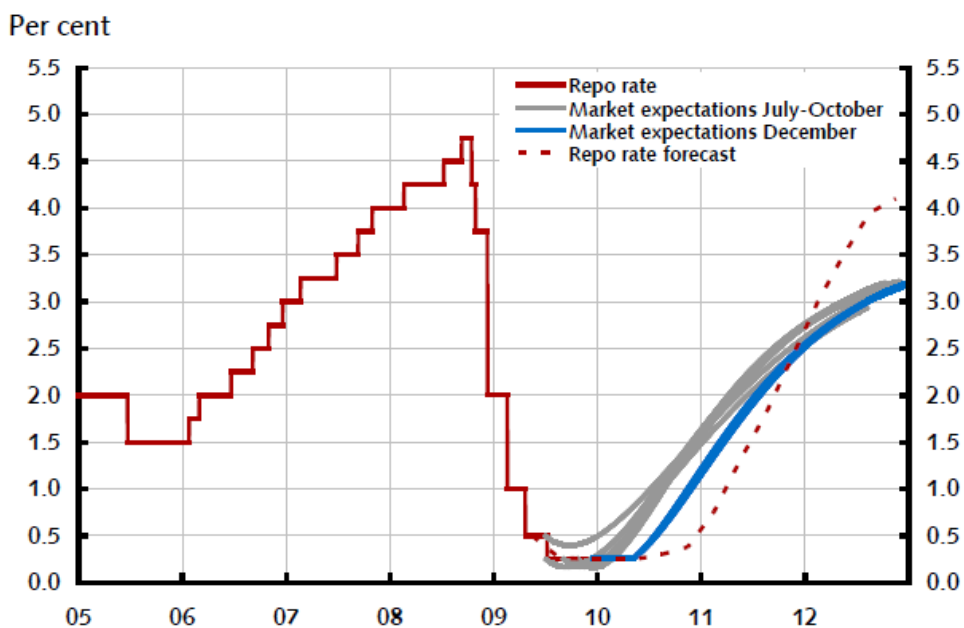
Figure 3. The Riksbank's forecasts in July 2009



Sources: Statistics Sweden and the Riksbank

The situation on the financial markets in Sweden and abroad started to show signs of improvement during the spring, but was still highly uncertain. Major divergences between the market's repo rate expectations and the Riksbank's repo-rate path also arose during the year (see Figure 4). This resulted in monetary policy having less impact than intended. Partly for this reason, the Riksbank decided to lend up to SEK 100 million to the banks in the form of fixed-rate loans at a maturity of 12 months. It was deemed that this measure could contribute to lower interest rates on loans to companies and households.

Figure 4. The repo rate, the repo rate path and monetary policy expectations in July – December 2009

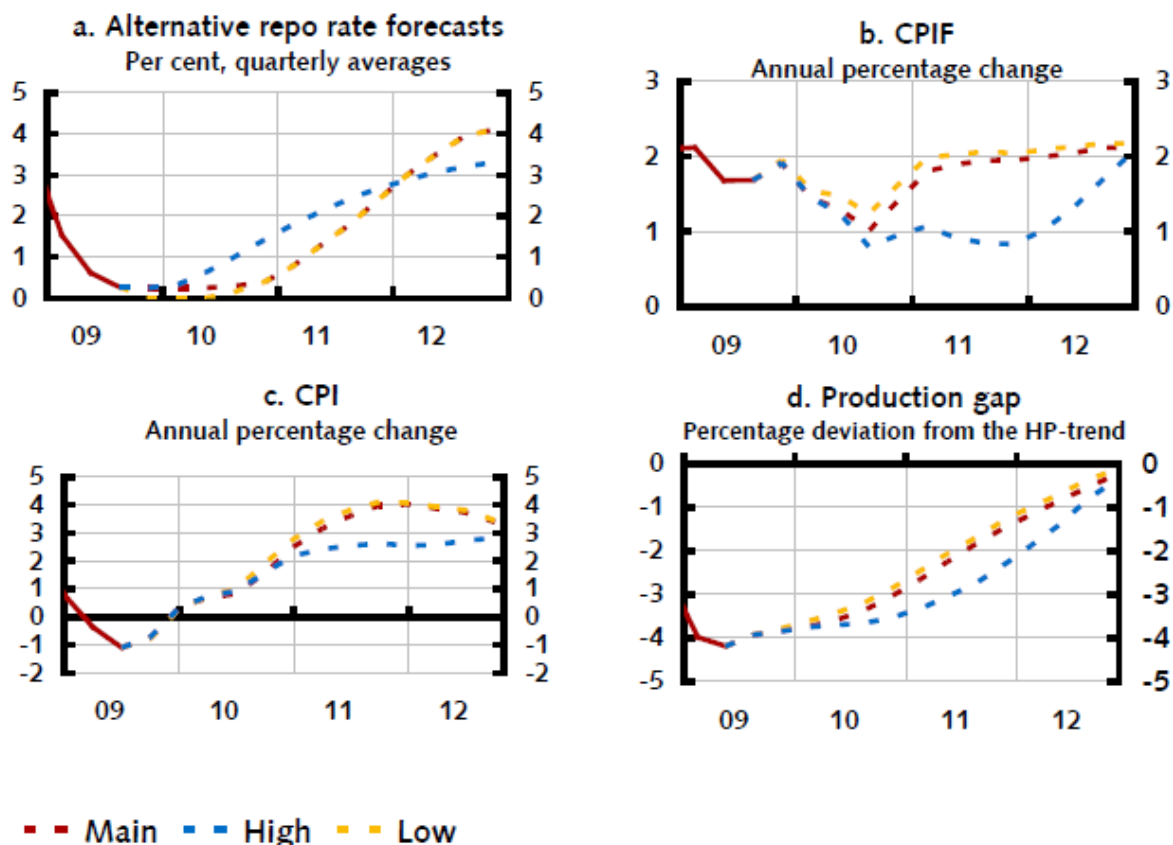


Sources: Reuters EcoWin and the Riksbank

***The repo rate and the repo-rate path were left unchanged during the rest of the year***

Following the decision in July, there were an increasing number of signs of a turnaround in economic activity in Sweden and abroad. At the monetary policy meetings on 2 September and 22 October, it was decided to keep the repo rate unchanged at 0.25 per cent. The forecast for the repo rate was also held unchanged on both occasions (see Figure 1). Figure 5 illustrates the alternative forecasts for the repo rate, inflation and resource utilisation discussed at the monetary policy meeting in October.

Figure 5. The Riksbank's forecasts in October 2009



Sources: Statistics Sweden and the Riksbank

As a complementary monetary policy measure, the Riksbank decided, on both occasions, to make further fixed-rate loans of up to SEK 100 billion available to the banks for twelve months.

The recovery from the deep recession continued during the autumn. At the Monetary Policy Meeting on 15 December, the Riksbank resolved to leave the repo rate unchanged, at 0.25 per cent. The forecast for the repo rate was also held unchanged.

### How can different monetary policy alternatives be assessed?

In connection with every monetary policy decision, the Executive Board makes an assessment of the repo-rate path needed for monetary policy to be considered to be well-balanced.

One natural way of assessing which repo-rate path is best in a given situation is to compare the forecasts for inflation and resource utilisation for alternative repo-rate paths. Such a comparison can be found in Chapter 2 of the Monetary Policy Report and in the material for the assessment of monetary policy in 2009 that was recently published by the Riksbank.<sup>5</sup> The alternative scenarios are usually presented in the form of figures that show the forecast for inflation and various measures of resource utilisation that a particular repo-rate path is expected to give rise to.

<sup>5</sup> See "Material for assessing monetary policy in 2009", Sveriges Riksbank.



A box in the material for assessing monetary policy in 2009 describes a method for summarising the information in the alternative forecasts. This method uses an easily-grasped measure, a so-called mean squared gap, of how effectively an interest rate path can stabilise inflation around the inflation target and resource utilisation around a normal level.<sup>6</sup>

Allow me to illustrate the method by using an example from the Monetary Policy Report published in October 2009, in which a box presented the method. Figure 6 shows the forecast development of inflation measured in terms of the CPIF and resource utilisation measured in terms of the output gap for the various repo-rate paths discussed in the Monetary Policy Report of October 2009.

The various repo-rate paths are shown in Figure 6.a. The path in the middle is that of the main scenario, the repo rate path that the majority of the Executive Board chose at the meeting in October. The lower path is the one I advocated.

Figure 6.b shows the forecasts for CPIF inflation that each repo-rate path was expected to give rise to.<sup>7</sup> The output gap, which is shown in Figure 6.d, is calculated in the same way as in the figures I presented earlier.

Figure 6.c shows the mean squared gap. A lower mean squared gap for inflation entails a better acquisition of the inflation target; that is a better stabilisation of inflation around the inflation target. A lower mean squared gap for resource utilisation entails a better stabilisation of resource utilisation around a normal level. Consequently, the closer a point lies to origo, or “south-west” in the figure, the smaller are the total deviations of inflation from the inflation target and of resource utilisation from a normal level.

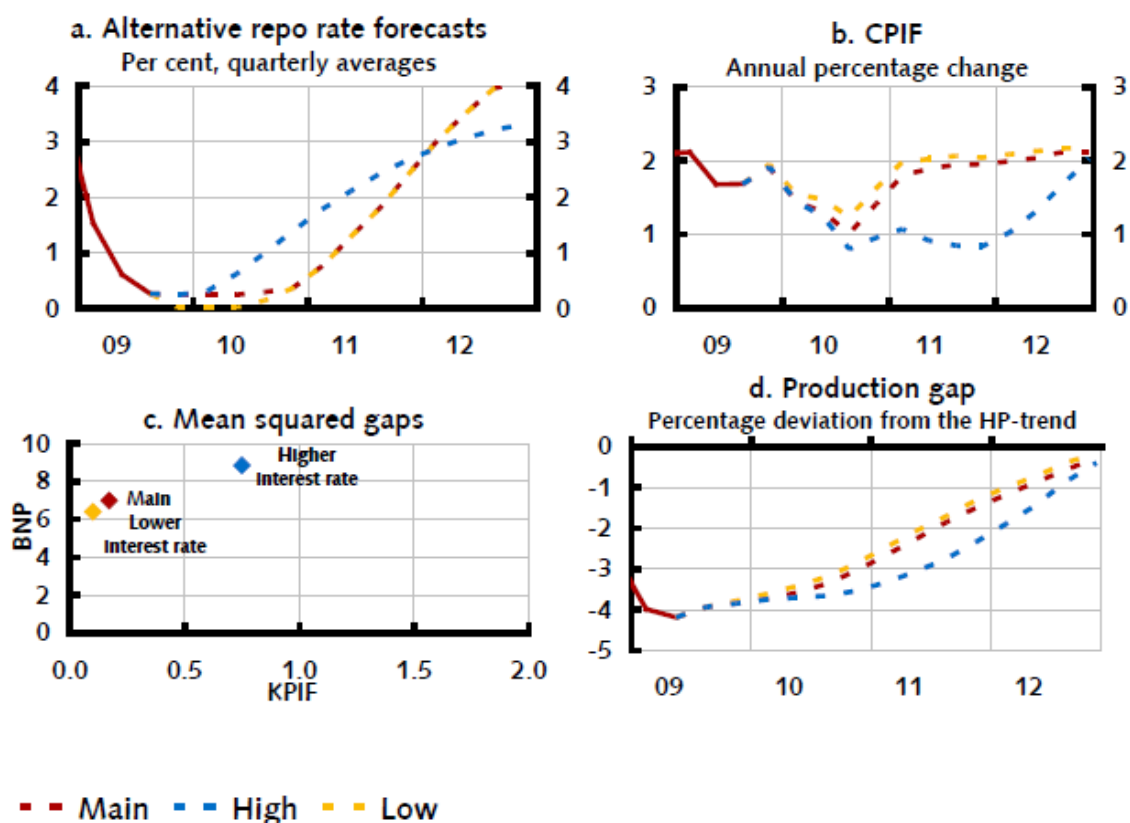
From Figure 6.c, it can be seen that the lower repo-rate path from the alternative scenario in the Monetary Policy Report of October 2009 was closer to origo in both dimensions when inflation is measured in terms of the CPIF. It thus stabilises both inflation and resource utilisation better.

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<sup>6</sup> The mean squared gap for inflation measures the gap between the inflation forecast and the inflation target or, more precisely, the mean squared deviation between the inflation forecast and the inflation target during the forecast period. The mean squared gap for resource utilisation, measured as the output gap, measures the deviation between the forecast for resource utilisation and normal resource utilisation – more precisely, as the average squared gap during the forecast period. For more discussion of this see Lars E.O. Svensson, “Evaluating Monetary Policy,” forthcoming in Koenig, Evan, and Robert Leeson, eds., *From the Great Moderation to the Great Deviation: A Round-Trip Journey Based on the Work of John B. Taylor* (revision and update of a speech at Uppsala University on 13 March 2009).

<sup>7</sup> One may ask why the focus should be on the CPIF and not the CPI. In a situation in which extensive repo-rate changes have very large direct effects on the CPI, I consider it to be more appropriate to focus on stabilising the CPIF around the inflation target, instead of the CPI.

Figure 6. The Riksbank's forecasts in October 2009



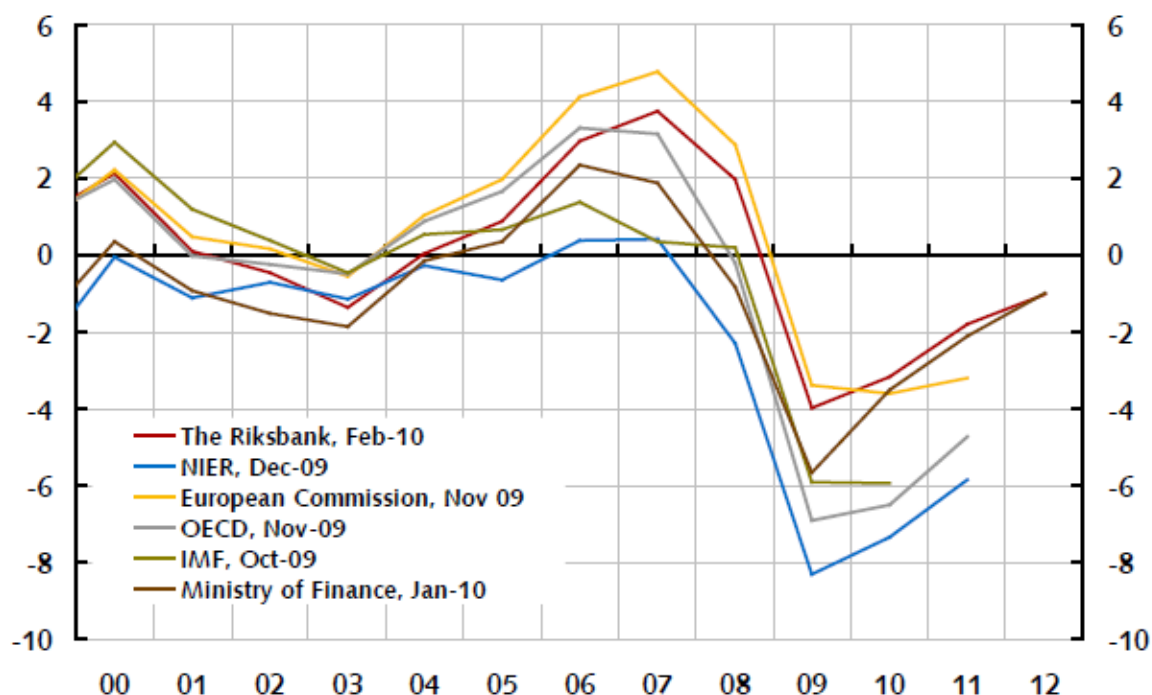
Sources: Statistics Sweden and the Riksbank

However, the assessment of the majority of the Executive Board was that the lower repo-rate path was not appropriate. At the monetary policy meetings held during the course of the year, the view of several members of the Executive Board was that the effects of the very low repo-rate levels on the economy and the financial markets were uncertain and that there was therefore reason to be cautious about reducing the repo rate below 0.25 per cent.

It is not easy to make reliable estimates and forecasts of potential production and resource utilisation. The Riksbank's estimates and forecasts for potential production and hours worked are in need of improvement and development. Such development work is currently underway. In 2009, the financial crisis reduced potential production so that resource utilisation in the economy is not as low for a given level of production as before. There is no doubt, however, that resource utilisation is very low and will remain lower than normal during the forecast period (see Figure 7).

Figure 7. Production gap for various forecasters

Per cent



The numerical inflation target has entailed great progress for practical monetary policy and made it possible to measure and evaluate the target fulfilment of monetary policy in a much more efficient manner than before. However, the fact that monetary policy is not just directed towards stabilising inflation, but also towards stabilising resource utilisation has, in the absence of quantitative measures of stability in these variables, made it difficult to measure and evaluate target fulfilment in this stability dimension. Quantitative measures such as the mean squared gaps make it possible to measure and evaluate this target fulfilment, however. Work is now underway at the Riksbank to determine how such measures can be used. The results of this work will be successively reported in the Monetary Policy Report and in other documents published by the Riksbank.

### How did the outcome for 2009 compare to our forecasts?

#### *Inflation far below the target and a record fall in GDP*

The rate of inflation, measured as the change in the CPI, averaged  $-0.3$  per cent in 2009; it was thus far below the inflation target of 2 per cent. This is explained – as I have already mentioned – by the Riksbank’s substantial repo-rate cuts, which began in the autumn of 2008. The Riksbank’s repo-rate cuts led to lower mortgage rates and mortgage rates are included in the CPI. Measured in terms of the CPIF, which is the CPI with a fixed mortgage rate, inflation was more stable and averaged 1.9 per cent in 2009.

The repo-rate cuts in 2008 and 2009 were made in the full realisation that CPI inflation would be low. In the longer term, however, the repo-rate cuts will help to keep CPI inflation up in line with the target. The fact that CPI inflation was far below the target can thus be seen as the result of a deliberate monetary policy from the autumn of 2008.

GDP fell by 4.9 per cent in 2009. This is the largest fall in Swedish GDP in a single year in modern times. Average unemployment increased by approximately 2.2 percentage points during the year and amounted to 8.4 per cent in 2009. Both employment and the number of

hours worked fell significantly. The reason that Sweden was so hard hit by the global crisis is that the Swedish economy is highly dependent on exports. The effect on GDP was reinforced by the fact that the households increased their saving. Companies also sold from stock to a great extent during the year, thus reducing investments in stock and contributing to the fall in GDP.

### ***The impact of the financial crisis surprised all the forecasters***

The turmoil on the financial markets has been part of the picture and has influenced monetary policy and the forecasts since 2007. It nevertheless came as a surprise that the situation would deteriorate as dramatically as it did in the autumn of 2008 and result in such a dramatic fall in production around the world. Neither the Riksbank nor other analysts predicted the strength of the global financial crisis and how much it would affect inflation and the development of the real economy.

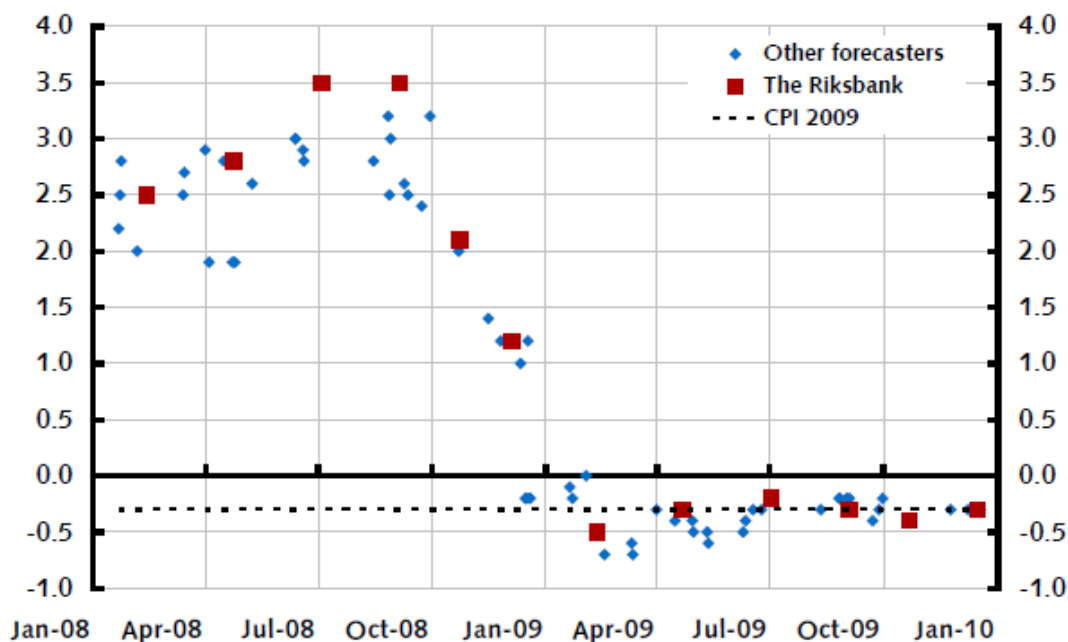
Figure 8 shows the forecasts for average CPI inflation in 2009 made by various forecasters during 2008 and 2009.<sup>8</sup> The figure shows that the pattern over time is roughly the same for all the forecasters. During the first half of 2008, most forecasters expected that inflation would be between 2 and just below 3 per cent in 2009, while the actual outcome was -0.3 per cent. The explanation for this overestimation is that the forecasters did not foresee that the financial crisis would take such a dramatic turn in the autumn and, consequently, that inflation would fall so quickly as a result of the Riksbank's repo-rate cuts. Once the financial crisis was upon us and the dramatic downturn in economic activity that followed in its wake had begun, all of the forecasters revised their forecasts downwards quickly and substantially. From the beginning of 2009, the forecasts were gathered around the actual outcome.

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<sup>8</sup> The analysis is based on data gathered by the National Institute of Economic Research. One advantage of these data is that they show exactly when the forecasts were made. The forecast comparison covers ten forecasting institutions and their whole-year forecasts for GDP growth, the CPI and the percentage of unemployed. The ten forecasting institutions are: the Swedish Ministry of Finance, the Swedish Retail Institute, the National Institute of Economic Research, the Swedish Trade Union Confederation (LO), Nordea, SEB, Svenska Handelsbanken, the Confederation of Swedish Enterprise, Swedbank and the Riksbank. The figure is interpreted as follows: Each mark represents a particular inflation forecast. The red marks show the Riksbank's forecasts, while the blue marks show the forecasts made by a number of other forecasters. It is possible to see how high an inflation rate a forecaster has predicted by looking at the vertical axel, while the horizontal axel shows when the forecast was made. The dotted line in the figure shows the actual outcome for CPI inflation in 2009.

Figure 8. Forecasts of CPI inflation 2009

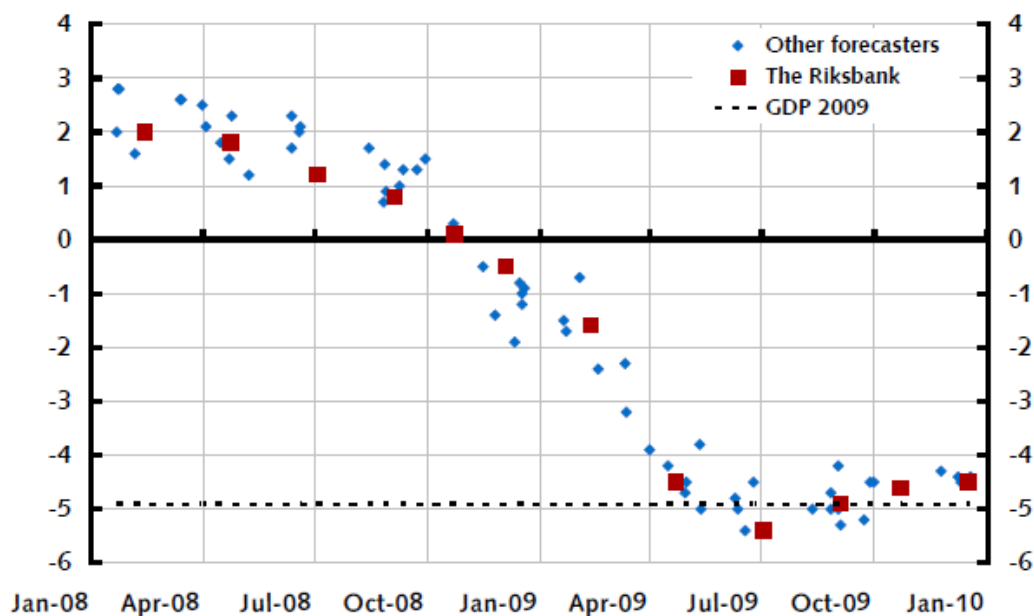
Per cent, annual average



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

Figure 9. Forecasts for GDP growth 2009

Per cent, annual average



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

Figure 9 shows the forecasts for GDP growth in 2009 made by various forecasters in 2008 and 2009. In this case, too, it is clear that the forecasts follow a common pattern. Initially, the forecasters tended to overestimate GDP growth in 2009. During the first half of 2008, they estimated on average that growth in 2009 would be approximately 2 per cent. As it appeared

that the financial turmoil would dampen growth in both Sweden and abroad, the GDP forecasts were gradually revised downwards. After April 2009, many of the forecasts were gathered around the actual outcome for GDP growth, which was –4.9 per cent. However, most of the forecasters revised their forecasts upwards towards the end of the year and were thus surprised by the lower outcome.

All in all, it can be noted that the Riksbank overestimated the outcome for inflation in 2009 to approximately the same extent as the average for other forecasters, although with the exception of July and September 2008 when the Riksbank's forecasts overestimated the prospects for inflation to a higher degree than other forecasters (see Figure 8). This was because energy prices increased more than expected during the spring, which led to inflation reaching over 4 per cent in the summer of 2008. The Riksbank thus saw a risk that the substantial increases in the prices of food and oil would also lead to rapid increases in other prices. Unusually high inflation expectations also contributed to this assessment.

With regard to the outcome for GDP growth, the Riksbank's overestimation was approximately the same as the average of the other forecasters. All of the forecasters continued to overestimate GDP growth for 2009 even during the first quarter of 2009. In other words, no forecaster predicted the economic downturn sooner than any other.

### **How accurate are the Riksbank's forecasts?**

As monetary policy is based on forecasts it is important that the Riksbank's forecasts are acceptably accurate. However, it is not possible to assess accuracy by analysing the forecasts for a single year. Even forecasters with a good average accuracy may be less successful in an individual year. A fairer assessment requires a longer observation period.

A fair comparison of the accuracy of different forecasts should take into account the fact that the forecasts are made at different points in time and that different forecasters therefore do not have the same information available to them. In the comparison of forecasts made in the material for the assessment of monetary policy, a method is used that takes such differences into account.<sup>9</sup>

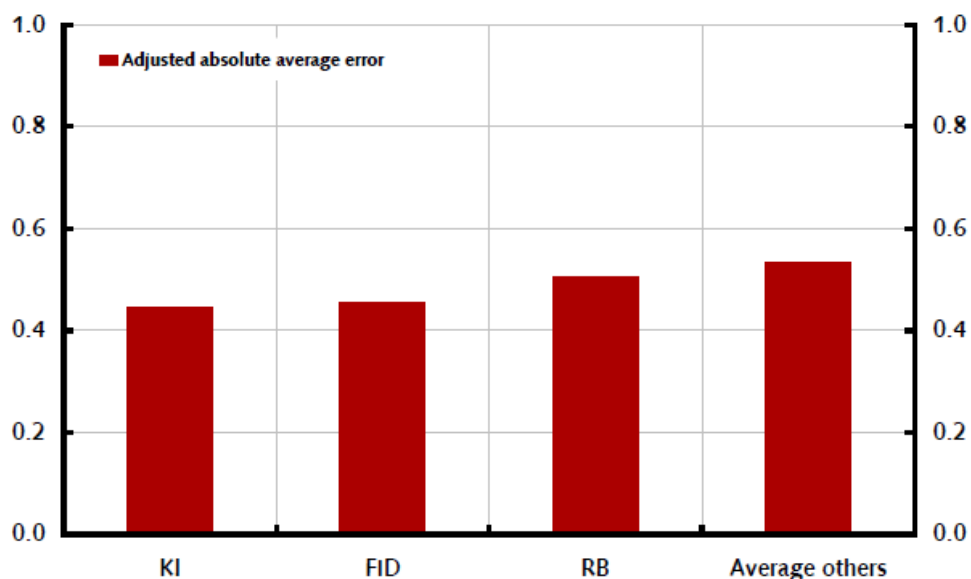
Figure 10 shows an adjusted absolute average error for the inflation forecasts for the period 1999–2009, that is the absolute forecasting error for CPI inflation adjusting for differences in the forecast horizon.<sup>10</sup> The shorter the bar, the smaller the forecasting error and the higher the accuracy of the forecast.

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<sup>9</sup> See M. Andersson and T. Aranki, "A comparison of different forecasters' ability given the publication date effect", *Sveriges Riksbank Economic Review*, No.1, 2009.

<sup>10</sup> The average error is calculated as the mean value of the forecaster's forecasting errors during the forecast period. The absolute average error means that the sign of the individual forecast deviations is not taken into account.

Figure 10. Accuracy of the forecasts for CPI of various forecasters 1999-2009  
Adjusted absolute average error and average error in percentage points

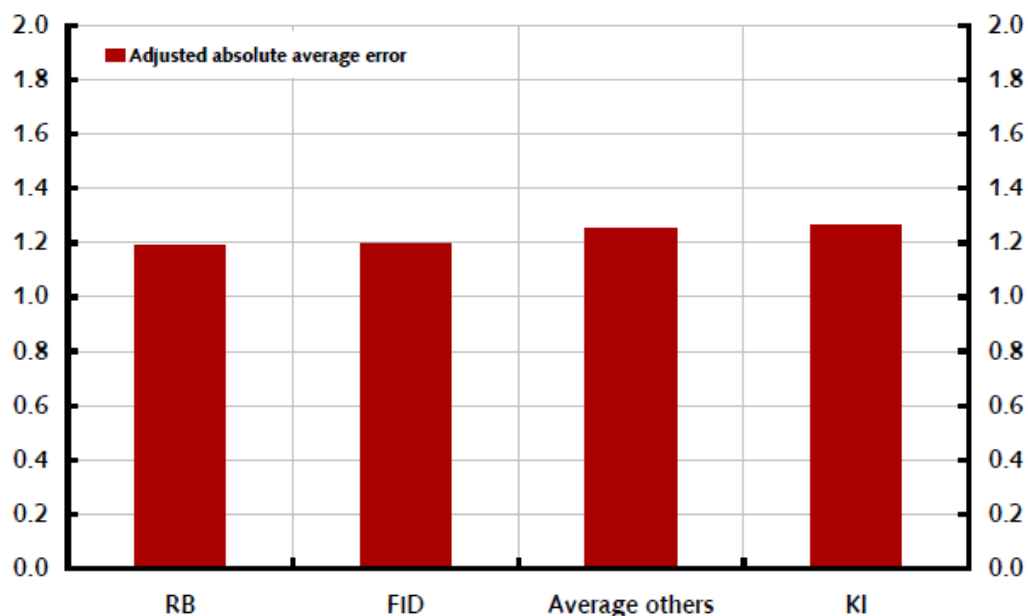


Note. KI=National Institute of Economic Research, FiD=Ministry of Finance and RB=Riksbank. Average others= the Swedish Retail Institute, the Swedish Trade Union Confederation (LO), Nordea, SEB, Svenska Handelsbanken, the Confederation of Swedish Enterprise and Swedbank. Sources: National Institute of Economic Research and the Riksbank

The major forecasters – the Swedish Ministry of Finance, the National Institute of Economic Research and the Riksbank – are reported individually, while the others are reported as an average. It may be worth noting that the Riksbank's forecasts up to the third Inflation Report of 2005 were based on the assumption of an unchanged repo rate during the forecasting period. This may have hampered the accuracy.

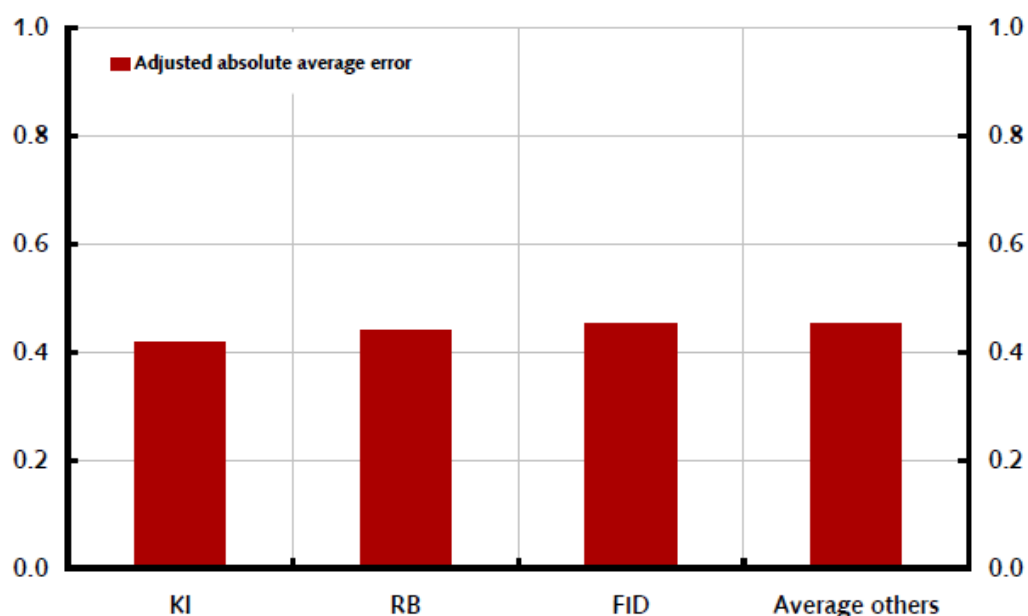
The differences between different forecasters are small and it is hard to find significant variations. The forecasts of different forecasters tend to follow each other relatively closely, as indicated in Figure 8. In the material for the assessment of monetary policy there are similar figures for the forecasts for GDP growth and unemployment (see Figure 11 and Figure 12). Taken together, these figures show that the Riksbank, just like other forecasters, tended to overestimate CPI inflation and GDP growth and to underestimate unemployment during the period 1999–2009.

Figure 11. Accuracy of the forecasts for GDP growth of various forecasters 1999-2009  
Adjusted absolute average error and average error in percentage points



Sources: National Institute of Economic Research and the Riksbank.

Figure 12. Accuracy of the forecasts for unemployment of various forecasters 1999-2009  
Adjusted absolute average error and average error in percentage points

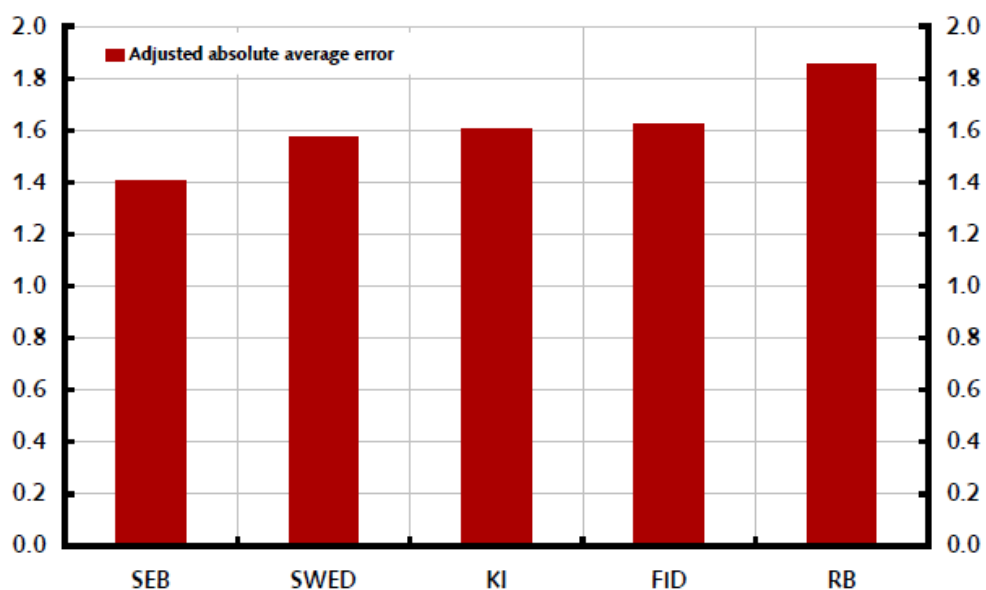


Sources: National Institute of Economic Research and the Riksbank

With regard to forecasts of the repo rate it is still too soon to compare the forecasting performance of various forecasters as the Riksbank has only published repo rate forecasts for three years. With such a short assessment period, chance plays too large a role to make it meaningful to draw any general conclusions about forecasting performance. Figure 13 nevertheless shows the accuracy of the forecasts for the repo rate in the period 2007–2009 for those forecasters that publish such forecasts.



Figure 13. Accuracy of the forecasts for the repo rate of various forecasters 2007-2009  
Adjusted absolute average error and average error in percentage points



Sources: National Institute of Economic Research, Ministry of Finance, SEB, Swedbank and the Riksbank

On average for the three years, all of the forecasters have tended to overestimate the repo rate, but the Riksbank has the largest forecasting error of the five forecasters. The main reason for the Riksbank's relatively larger forecasting error during this period is the previously mentioned overestimation in the forecasts for CPI inflation in July and September 2008. On these occasions, the Riksbank's forecasts overestimated the prospects for inflation to a greater degree than those of other forecasters. As I said earlier, the overestimations were due to concern on the part of the Riksbank that significant increases in the prices of oil and food during the spring, in combination with unusually high inflation expectations, would lead to an increase in inflation.

### The credibility of the inflation target

Confidence in the inflation target in the form of stable inflation expectations close to the target is fundamental to the Riksbank's efforts to achieve price stability and stable resource utilisation. This is because inflation expectations affect wage formation and pricing. Stable inflation expectations thus contribute to stable inflation.

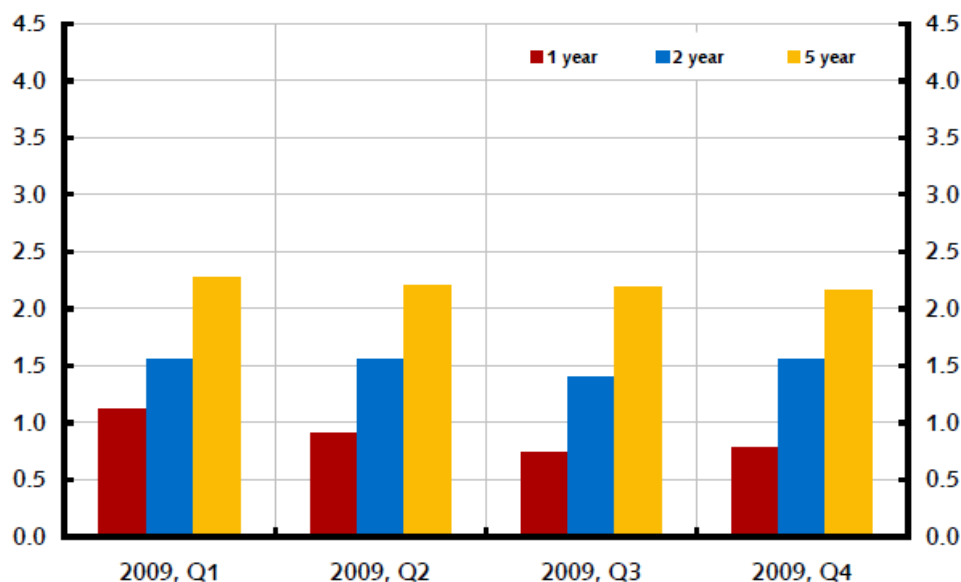
A high level of credibility for the inflation target also increases the possibility of the Riksbank to stabilise resource utilisation. If an increase in inflation was rapidly reflected in higher inflation expectations, the Riksbank would be forced to act more quickly and more forcefully than would otherwise have been necessary to dampen demand and prevent the inflationary impulse gaining a lasting foothold. The fluctuations in the real economy would thereby be greater than if inflation expectations were better anchored. Establishing credibility for the belief that inflation will be kept low and stable is therefore important in the effort to increase macroeconomic stability.

If inflation expectations as indicated in various surveys are stable and close to the inflation target a few years ahead, this can be interpreted to mean that the public is confident that the Riksbank will achieve its target. The surveys that TNS Sifo Prospera has carried out of inflation expectations among money market agents, employer and employee organisations and purchasing managers in the retail sector and the manufacturing industry show that this is the case. Figure 14 shows average expectations regarding CPI inflation for one, two and five

years ahead among all of the participants in the Prospera survey. Inflation expectations five years ahead are close to 2 per cent, which shows that the credibility of the inflation target is high.

Figure 14. All participants' average inflation expectations (CPI) in 2009 1, 2 and 5 years ahead

Annual percentage change



Source: TNS SIFO Prospera

Inflation expectations for shorter horizons are based to a greater degree on current actual inflation.<sup>11</sup> The exceptional circumstances for monetary policy that have followed in the wake of the financial crisis, with substantial and rapid cuts in the repo rate, have pushed down CPI inflation to unusually low levels. This, together with the severe downturn and the uncertainty that prevails concerning the recovery of the economy, means that it is hardly surprising that short-term inflation expectations are now below the target.

### How well did the market's expectations regarding the repo rate match the Riksbank's repo-rate path?

Since February 2007, the Riksbank has published its own forecast of the development of the repo rate in the period ahead. A published repo-rate path makes it easier to explain the Riksbank's view of developments and its reasoning to the public and the financial markets when the monetary policy decisions are made. The aim is to improve the Riksbank's ability to steer expectations regarding the monetary policy that will be conducted in the future. Expectations regarding the repo rate influence the more long-term interest rates which in turn are important to the economic decisions of the households and companies.

The Riksbank updates its repo rate paths at the monetary policy meetings, which are held approximately every other month. During this two-month period, new information on the development of the economy may emerge. If the Riksbank is successful in communicating the principles for monetary policy, the market participants should be able to predict rather

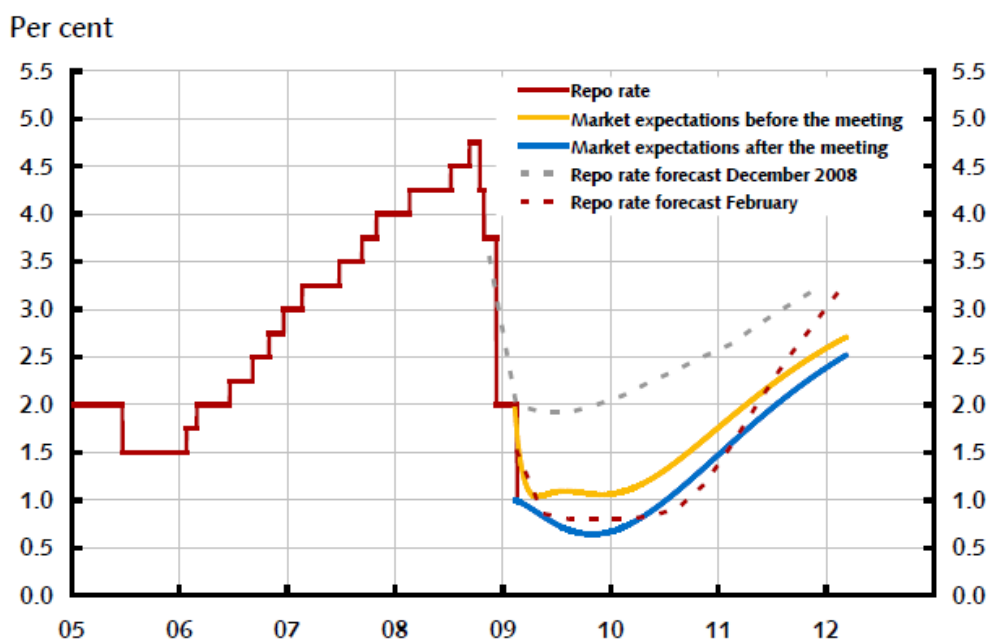
<sup>11</sup> See T. Jonsson and P. Österholm, "The Properties of Survey-Based Inflation Expectations in Sweden", Working paper no. 114, 2009, National Institute of Economic Research.

well how new information will affect the Riksbank's repo rate path. This should then help to ensure that there will be only small deviations between the market's expectations on the day before the publication of a repo-rate path and the repo-rate path that the Riksbank actually publishes.

The Riksbank's repo-rate paths in 2007 and 2008 were, by and large, well predicted by the market. In four cases out of six, expectations were already in line with the Riksbank's repo-rate path before publication, which can be interpreted as indicating that the market's ability to predict and understand monetary policy was strong. When there were significant deviations, the market in most cases adjusted its expectations towards the repo-rate path after publication, which also indicates that in general it has not been so difficult to understand the Riksbank's reasoning.

Despite the fact that the economic situation was highly uncertain in February 2009 and that the repo-rate path was significantly lowered, the new repo-rate path was predicted relatively well by the market and the market's expectations also shifted closer to the new repo-rate path after publication (see Figure 15). From April 2009, however, relatively large differences between the market's expectations and the Riksbank's repo-rate path appeared. In advance of the monetary policy meeting in April, the market expected that the forecast for the repo rate over the next year would be lowered again. However, the Riksbank's new forecast entailed a considerably lower repo rate in 2010 and 2011 than the market had expected. Even so, the Riksbank's new forecast did not significantly affect market expectations (see Figure 16).

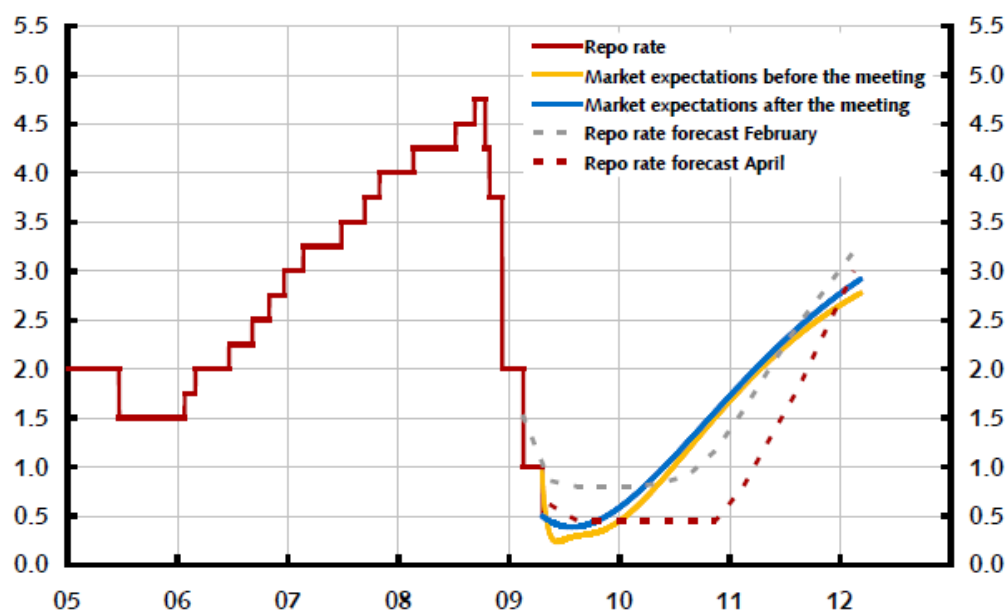
Figure 15. The repo rate, the repo rate path and monetary policy expectations in February 2009



Sources: Reuters EcoWin and the Riksbank

Figure 16. The repo rate, the repo rate path and monetary policy expectations in April 2009

Per cent



Sources: Reuters EcoWin and the Riksbank

In the period leading up to December, market expectations of the development of the repo rate changed relatively little, even though the Riksbank cut its repo rate forecast further in July and then held to this forecast during the entire autumn. However, from December, market expectations have approached the Riksbank's forecasts (see Figure 4).

So how can the gap between market expectations and the Riksbank's repo rate forecasts in 2009 be explained? Some of the deviations may be explained, for example, by the possibility that statements on the lower bound of the repo rate were interpreted to mean that there were only upside risks for the repo rate, but this does not explain them all. A major part of the deviations thus remain to be explained.

One possible explanation may be that money market participants have taken a more positive view of economic development. For example, they may have expected GDP growth and inflation to be higher in the future than stated in the Riksbank's forecasts, and thus require a tighter monetary policy. However, this hypothesis is not supported by surveys of the expected economic development. These show that the money market participants expected both lower inflation and lower GDP growth in the period ahead than the Riksbank.<sup>12</sup> The market participants seem to have believed in a different reaction pattern from the Riksbank than that expressed in the repo-rate path. The disagreement among the members of the Executive Board may have contributed to this. At the monetary policy meetings in July, September, October and December, reservations against the published repo rate path were entered by members who considered that the repo rate path in 2010 should be slightly higher.

<sup>12</sup> See TNS SIFO Prospera's surveys of expectations of inflation and GDP growth among money market participants in 2009. See also Lars E.O. Svensson (2010), "Policy expectations and policy evaluations: the role of transparency and communication" Sveriges Riksbank Economic Review, No. 1, 2010.

## **Monetary policy has mitigated the effects of the crisis**

The Riksbank has reacted forcefully and successfully to the major shocks that have occurred since the autumn of 2008 – even if I personally, as revealed by my reservations during the course of 2009, would have liked to have seen the Riksbank react even more forcefully and thus stabilise inflation and resource utilisation even better. The global recession that followed in the wake of the financial crisis surprised us all and was met by a marked shift in monetary policy that entailed rapid and repeated cuts in the repo rate up to the summer of 2009. The repo-rate cuts led to lower mortgage rates, which in turn pushed down CPI inflation. However, the cuts helped to keep CPI inflation close to the target. The series of repo-rate cuts that began in the autumn of 2008 was necessary in order to mitigate the effects of the financial crisis on the real economy and to achieve a better attainment of the inflation target. Without these substantial reductions in the repo rate, GDP would have fallen even more. Monetary policy was also complemented by extensive lending to the banks. These complementary measures have helped the financial markets to function more effectively, eased the supply of credit and increased the impact of monetary policy.