Material for assessing monetary policy

2006-2008

SVERIGES RIKSBANK

Introduction

The Riksbank is an authority under the Riksdag, the Swedish Parliament, with responsibility for monetary policy in Sweden. Since 1999 the Riksbank has 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 decide how the Riksbank shall 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. At its own initiative, every year the Riksdag Committee on Finance also examines and assesses the monetary policy conducted by the Riksbank during the previous years. The Riksbank compiles and publishes material for this assessment.

The material for the assessment of monetary policy was previously included in the first Monetary Policy Report every year (formerly the Inflation Report). In accordance with the Riksbank Act, this report was one of the written accounts of monetary policy that the Riksbank shall annually present to the Committee on Finance. As a result of the assessment of Swedish monetary policy carried out in 2006, the Committee on Finance has come to the conclusion that as of 2008 the first written account should be a separate report which contains the material for the assessment of monetary policy.

The material compiled by the Riksbank is 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 material also contains analyses of outcomes, forecasts and sequences of events. The Riksbank considers that those who assess its monetary policy should also have access to the Bank'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 outline of the Report is as follows: Chapter 1 discusses issues of principle regarding assessments of monetary policy. Chapter 2 provides an overall description of general economic developments during 2006-2008 abroad and in Sweden. Chapter 3 describes and analyses in greater detail the outcomes for inflation and real economic developments in Sweden in 2008. Chapter 4 presents the forecasts made by the Riksbank and other forecasters for developments in 2008. In conclusion, Chapter 5 presents the monetary policy decisions made in 2006-2008 and the reasons behind them.

The Material for Assessing Monetary Policy is available on the Riksbank's website 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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2009-02-16

Monetary policy in Sweden

MONETARY POLICY TARGET

According to the Sveriges Riksbank Act, the monetary policy objective is "to maintain price stability". The Riksbank has specified this target as keeping inflation, measured in terms of the annual change in the consumer price index (CPI), at two per cent. The Riksbank has set a tolerance interval around this target of plus/minus one percentage point. This interval draws attention to the fact that it is beyond the powers of monetary policy to exactly attain the target all of the time. It also serves to underline that excessively large deviations are unacceptable if the target is to remain credible.

MONETARY POLICY STRATEGY[1]

- Monetary policy is guided by, in addition to CPI, various measures of "underlying inflation". However, there is no single measure of inflation that at all times indicates the proper stance of monetary policy.
- Monetary policy is normally focused on achieving the inflation target within two years. This is partly because monetary policy has an effect on economic developments after a time lag. The two-year horizon also gives the Riksbank scope to take into account real economic developments (GDP growth, unemployment, employment and so on).
- The Riksbank's monetary policy decisions also take into account changes in asset prices and other financial variables.
- The Riksbank's forecasts are based on the assumption that the repo 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 inflation is close to the inflation target two years ahead without there being excessive fluctuations in inflation and the real economy. At the same time, it is important to point out that long-term levels in production and employment are not affected by monetary policy, but governed by other factors, such as technology and access to labour.
- Openness and clarity in monetary policy are prerequisites for the successful combination of credibility for the inflation target and a flexible application of the target in the short term.

DECISION-MAKING PROCESS

The Executive Board of the Riksbank usually holds six monetary policy meetings during 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 how the different Executive Board members argued and voted.

PRESENTATION OF THE INTEREST RATE DECISION

- The interest rate decision is presented in a press release at 9.30 a.m. on the day following the monetary policy meeting.
- A press conference is held on the day following the monetary policy meeting.

1 A detailed description of the monetary policy strategy is available as a pdf file on the Riksbank's website www.riksbank.se under the heading Monetary policy/Price stability.

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Summary

For the Riksbank, the focal point is the inflation target when monetary policy is formulated. The target is that the annual change in the consumer price index (CPI) should be 2 per cent. There is a tolerance interval of plus/minus 1 percentage point around this target. This is to emphasise that it is not within the power of monetary policy to continuously achieve the target exactly, but also to underline that the Riksbank cannot accept excessively large deviations if the target is to remain credible.

Monetary policy is normally aimed at attaining the inflation target a couple of years ahead, if a deviation has occurred. One reason for this is that the effects of monetary policy appear with a time lag. Another reason is that the Riksbank can thus both attempt to stabilise inflation around the target and contribute to dampening fluctuations in the real economy (growth, unemployment, employment and so on). Normally, a well-balanced monetary policy means that inflation is close to the inflation target a couple of years ahead while inflation and the real economy are not showing excessive fluctuations.

Of necessity, monetary policy is forward-looking and based on forecasts for economic development. An assessment of monetary policy should analyse both the efficiency of the Riksbank in achieving the target and the accuracy of the forecasts. Therefore, the focus in this assessment is on the 2008 outcome and covers the forecasts for 2008 that were made during the period 2006-2008.

During 2006 and 2007 the Riksbank saw a favourable economic climate ahead with high but declining growth and rising inflation. The overall monetary policy consideration during this period concerned the pace at which the repo rate should be raised to ensure inflation was in line with the target a couple of years ahead, given gradually higher cost pressures and resource utilisation. The repo rate was raised in stages from 1.5 per cent at the start of 2006 to 4 per cent at the end of 2007.

From the final quarter of 2007 and for most of 2008 inflation was pushed up, primarily by a large increase in energy and food prices. At the same time, growth had begun to slow down both in Sweden and abroad, not least as a result of increased turbulence in the international financial markets. The monetary policy considerations during the first three quarters of 2008 concerned dealing with these contradictory forces – on the one hand rising inflationary pressures and on the other hand weaker economic activity. To prevent inflation from becoming entrenched, the Riksbank continued to raise the interest rate to 4.75 per cent in September 2008.

In mid-September 2008 the global financial crisis took a dramatic turn for the worse, which changed the conditions for monetary policy. The economic downturn that had already begun rapidly worsened. This, combined with lower oil and other commodity prices, indicated that inflationary pressures would be much lower in future. The earlier

conflict between stabilising the real economy and stabilising inflation thus ceased to exist. To meet the inflation target and to alleviate the effects of the financial crisis on the real economy, the Riksbank cut the repo rate substantially at the end of 2008. The interest rate was cut in three stages, reaching 2 per cent in December.

The average annual inflation rate, measured in terms of the CPI, was 3.4 per cent in 2008. Behind this high average figure is a sequence of events where inflation first rose from just over 3 per cent in January to 4.4 per cent in September, and then fell very rapidly towards the end of the year. Inflation in 2008 was underestimated in the forecasts made by the Riksbank in 2006 and 2007. However, GDP growth in 2008 was overestimated in the forecasts made in 2006 and 2007. The fact that inflation was underestimated is primarily due to the Riksbank failing to predict the rapid increase in energy and food prices. The fact that growth was overestimated is largely explained by the international financial turbulence, which gradually spread further and also affected developments in Sweden.

CHAPTER 1 – The process of assessing monetary policy

Assessments of monetary policy are important for several reasons. The Riksbank has been given an independent position and therefore good insight and regular assessments are necessary to retain the legitimacy of the Riksbank's activities. It is essential for monetary policy to have national support so that it can function well. Assessments of monetary policy are also important in enabling the Riksbank to develop its monetary policy analysis in the best possible manner.

Monetary policy's objective and opportunities

Assessments of monetary policy should have as their starting point what monetary policy can actually achieve. Monetary policy can secure an inflation rate that is in line with the inflation target over a number of years. Monetary policy can also contribute to *stabilising* developments in the real economy (GDP growth, unemployment, employment, and so on). Both earlier experiences and economic theory have shown that monetary policy cannot, however, be used to achieve a more permanent higher level of employment or growth in the economy. This was one of the reasons why it was decided when drawing up the Sveriges Riksbank Act that it would be inappropriate for the Riksbank to have, in addition to the price stability objective, an explicit target regarding, for instance, GDP growth or employment.

The Riksbank has an explicit inflation target according to which the annual change in the consumer price index (CPI) is to be 2 per cent. A natural means of assessing monetary policy is to examine how the inflation outcome relates to the inflation target. There are some factors that should be borne in mind when making such an analysis.

Wise after the event

The Riksbank has set a tolerance interval around the 2 per cent target of plus/minus one percentage point. One of the purposes of this is to point out that monetary policy does not have such precision that it is possible to guarantee that the prices in the economy are always exactly 2 per cent higher than they were one year previously. Monetary policy is conducted under great uncertainty. Firstly, it is difficult to establish from the start what state the economy is in. This is partly because the statistics regarding economic developments are published with some time lag and may be revised later on. Secondly, we do not have perfect knowledge of the economic correlations and how they change over time. For instance, there is uncertainty as to how long it takes for monetary policy to make an impact and how large an effect monetary policy changes will have on the economy. Thirdly, during the time it takes for changes in the policy rate to make a full impact on inflation and production the economy can also have time to be affected by new and unexpected events. The inflation and production that are observed will therefore have been affected by events that could not be predicted when the monetary policy decisions were made.

Assessing monetary policy with hindsight is therefore no easy task. A comparison of the outcomes and the forecasts on which the decisions were based does not show the whole picture. It is important to examine whether the analyses and interest rate decisions were reasonable given the information that was available at the time the decisions were made.

■■ Not just inflation

For the Riksbank, the focal point is the inflation target when monetary policy is formulated, as the Sveriges Riksbank Act stipulates that the objective of the Riksbank's activities is to maintain price stability. But how quickly should the target be attained if inflation has deviated from the target as the result of a shock? Monetary policy is normally directed at attaining the inflation target a couple of years ahead. One reason for this is that the effects of monetary policy appear with a time lag. Another reason is that the Riksbank, by aiming at this horizon, can contribute to dampening fluctuations in the real economy while at the same time maintaining the credibility of the inflation target. Let us assume that a shock, such as a sharp rise in the oil price, has meant that inflation is pushed up while production has slackened significantly. If monetary policy is aimed in this case at raising the interest rate substantially to quickly bring down inflation to the target level, there is a risk that this will be at the expense of production, which will slow down further. By not aiming to restore inflation to target as quickly as possible, scope is created to conduct monetary policy in such a way as to dampen fluctuations in the real economy. The time it should take to bring inflation back on target depends, for instance, on how large and how lasting the oil price shock is. To the Riksbank a well-balanced monetary policy normally means that inflation is close to the inflation target a couple of years ahead while inflation and the real economy are not showing excessive fluctuations.

The type of shock that has affected the economy is a decisive factor in the monetary policy decisions. The increase in the oil price mentioned above is an example of what is known as a supply shock. With this type of shock a conflict may arise between the inflation target and the aim to dampen fluctuations in the real economy. However, if the shock primarily arises in the demand side of the economy, there will be no such conflict. If, for instance, international demand for Swedish products increases, both production and inflation usually rise. In this case, an increase in the policy rate contributes to stabilising both of these variables. A well-balanced monetary policy should therefore not only take into account the size and duration of the shock, but also the type of shock.

It is important to consider these factors if one is to be able to assess the monetary policy conducted during a particular year. The fact that inflation has been allowed to deviate from the target may be because the monetary policy strategy has been ill-considered. But it may also have been part of a deliberate strategy by the Riksbank to be able to balance production and employment. The Riksbank should then have clearly referred to these considerations in its communication.

■■ Monetary policy is based on forecasts

It normally takes time before inflation, production, employment and so on react to changes in the central bank's policy rate. The effects come gradually and it is difficult to measure exactly how long it will take until the full impact of monetary policy has been achieved. A common estimate is that the greatest impact is attained a couple of years ahead. This is one of the reasons why an effective inflation-targeting policy must be based on forecasts of economic developments – including inflation, the repo rate and resource utilisation – despite the fact that such forecasts are always uncertain. In practice, this means that each time a decision is made, a forecast path for the interest rate is chosen in such a way that the forecasts for inflation and the real economy "look good". "Looking good" means that the inflation forecast is close to the inflation target and that resource utilisation is approaching a normal level a couple of years ahead, and that the forecasts for inflation and the real economy entail a reasonable compromise between stabilising inflation around the target and stabilising the real economy.

As monetary policy is based on forecasts, the accuracy of the forecasts becomes an important part of an assessment of monetary policy. A natural starting point for the assessment is therefore to compare the outcome for inflation in the year the assessment refers to with the forecasts for inflation made by the Riksbank up to two years earlier. These forecasts were used as a base for the interest rate decisions made at the time; decisions which affected inflation during the year that is assessed.

■■ What is a good forecast?

What demands can be made of a central bank's forecasts? The answer is not entirely clear. Practical forecasting work is associated with a number of difficulties, many of which stem from the inherent uncertainty of the forecasts. The economy is constantly affected by unexpected shocks which cannot be predicted. This means that the forecasts will always be more or less inaccurate. Analysing the accuracy of a forecast in an individual year thus provides limited information. A large forecasting error can indicate that the forecast was poor, but it can also be a consequence of a shock occurring that could not have been predicted. A reasonable requirement of the forecast's accuracy is that any forecasting errors are due to shocks and other events that could not have been anticipated at the time the forecast was made.

Another reasonable requirement is that a central bank's forecasts do not on average have poorer accuracy than the corresponding forecasts made by other economic analysts. If the central bank's forecasts are systematically inferior, it would evidently have been possible to make better assessments. This also means that there was better information available which the central bank would have been able to use as a base for its decision-making.

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. The closer one comes to the outcome date for the variable being forecast, the more information the forecaster has regarding the way the variable has developed and on any shocks that have occurred. A comparison of the accuracy of the forecasts should therefore make adjustments for the forecasts being made at different times. The forecast comparison made in Chapter 4 uses a method that takes into account such differences in the length of the forecast horizon.

A long period of examination is necessary to be able to say anything more definite about the accuracy of the forecasts. The economy is constantly exposed to random shocks that lead to forecasts being incorrect. Over a long period of time these forecasting errors offset one another and on average good forecasts should therefore not overestimate or underestimate the actual events. For shorter periods it may be more interesting to study individual forecasting errors in detail to try to analyse their causes. Such an analysis is valuable, but it is not possible to use it to draw any conclusions regarding the general forecasting ability. Analyses of shorter periods therefore need to be supplemented with assessments of longer periods.[2]

While accuracy is a very important factor, more than this is required for a forecast to be useful in a monetary policy context. A good forecast for inflation, for instance, should be inherently consistent with the forecasts for other quantities, such as GDP and employment, and the driving forces behind the forecast should be explained in a comprehensible manner. Why does the forecast look the way it does? How is the forecast affected by changes in assumptions regarding, for instance, GDP growth abroad or the oil price? What are the major driving forces behind the development? It is necessary to also examine these questions for a forecast to function well as part of the decision-making base for practical monetary policy.

2 For one such assessment of the Riksbank's forecasts, see M. Andersson, G. Karlsson and J. Svensson "An evaluation of the Riksbank's forecasting performance", *Sveriges Riksbank Economic Review*, No. 3, 2007. See also Chapter 4.

CHAPTER 2 – General economic developments 2006-2008

The period 2006-2008 was characterised initially by strong international economic activity, with the United States and the growth economies in Asia as the primary motors. Inflationary pressures were modest to begin with, but rises in oil prices and other commodity prices gradually began to push inflation upwards. International economic activity slowed down in 2007, partly as a result of the financial turbulence following in the wake of the problems in the US mortgage market. The crisis in the financial markets gradually spread further and took a dramatic turn for the worse in September 2008. The international economic downturn then worsened substantially and inflation fell. Developments in Sweden during this period followed a similar pattern – an initially strong growth that gradually slowed down, rising inflation during the greater part of the period, and later on a rapid fall in both growth and inflation.

International developments

■■ Good economic activity in 2006

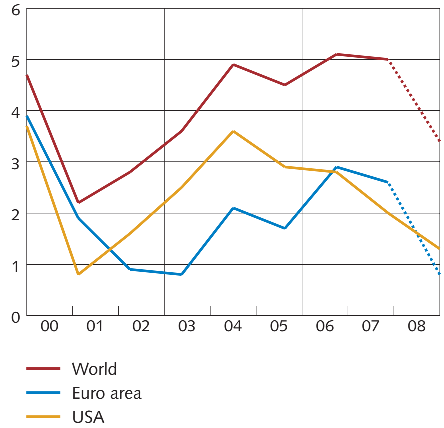
In 2006 the good economic activity of previous years was further reinforced. Even the euro area, which had previously shown a slightly weaker development, was now affected by the strong economic upturn (see Figure 1). Inflation was low in most countries but gradually increased, mainly because energy and oil prices had begun to climb in 2005 and put upward pressure on producer prices. Inflationary pressures were counteracted by the ongoing globalisation and by increased international competition.

Growth in the United States remained relatively strong in 2006. The labour market and household incomes continued to strengthen. Both private consumption and business investment increased sharply. Towards the end of the year, however, there was a weakening and in particular a sharp fall in housing investment. Employment continued to rise during the year, albeit at a slower rate. Growing strain on resource utilisation, rising labour costs and high energy and oil prices led to a rise in inflation. The US central bank, the Federal Reserve, continued to tighten monetary policy and raised the policy rate to 5.25 per cent in the middle of 2006 (see Figure 2).

Growth was strongest in Asia in 2006, particularly in China and India where GDP showed two-figure growth. The economic recovery continued in Japan. Growth was subdued during the second and third quarters but appeared to gather pace again towards the end of the year. After several years of deflation, consumer prices began to rise weakly and the Japanese central bank raised its policy rate to 0.25 per cent in the middle of 2006.

The good economic activity was also more evident in the euro area, where GDP increased by 2.8 per cent in 2006. Investment increased, but household consumption continued to be weak. Inflation amounted to 2.2 per cent and therefore continued to exceed the European Central Bank's, ECB's, target. The ECB raised the policy rate on several occasions and at the end of the year it was 3.5 per cent. In the United Kingdom growth strengthened slightly compared with the previous year. The Bank of England continued to raise its

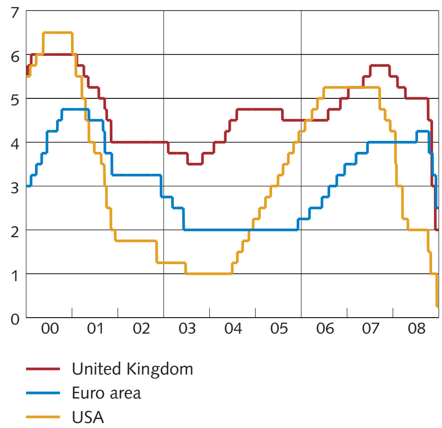
Figure 1. GDP for the United States, the euro area and the world
Annual percentage change



Note. Broken lines represent the Riksbank's forecasts in MPR February 2009.

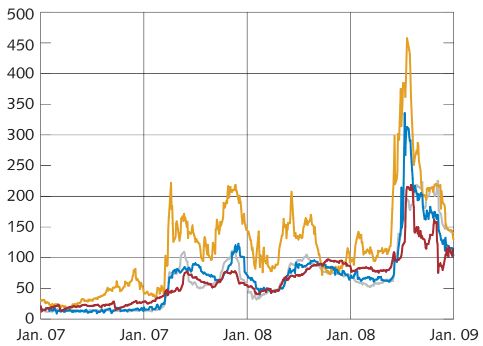
Sources: Eurostat, IMF, US Department of Commerce and the Riksbank

Figure 2. Policy rates in the Unites States, the United Kingdom and the euro area
Per cent



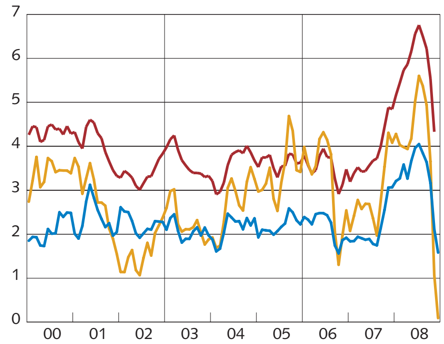
Sources: The Bank of England, the ECB and the Federal Open Market Committee

Figure 3. The difference between interbank rates and government bond rates in 2007 and 2008 (TED spreads)
Basis points



Sources: Reuters EcoWin and the Riksbank

Figure 4. CPI inflation for the United States, the euro area and the world
Annual percentage change



Note. The HICP for the euro area.

Sources: The Bureau of Labor Statistics, Eurostat and the IMF

policy rate as inflation began to rise again during the second half of the year. Therefore, the interest rate was raised to 5.0 per cent (see Figure 2).

■■ Some slowdown in economic activity in 2007

In 2007 the upturn in international economic activity slowed down somewhat, but GDP growth in the world economy as a whole was still high However, economic activity in the United States slowed down considerably, which also had implications for developments in other parts of the world. The background was the financial turmoil that followed in the wake of the crisis in the US mortgage market. Mortgages to US households with poorer credit ratings – subprime loans – had been packaged together with other loans with higher credit ratings into debt instruments known as structured products. These had then been sold on to investors mainly in the United States and Europe. The unrest arose when it became more difficult to assess who actually owned the risk-filled assets, and how large these risks were. The spread between short government securities and interbank rates increased – a clear sign that the banks' credit risk had increased (see Figure 3). A general uncertainty and a reluctance to invest in higher risk assets spread. The Federal Reserve, the ECB and the Bank of England took action to stabilise short-term rates and facilitate the banks' supply of liquidity.

Growth was curbed further in the United States during the second half of the year. House prices fell, private consumption slowed down and investment declined. In September the Federal Reserve cut its policy rate by a half percentage point to 4.75 per cent. Inflation measured according to the implicit price deflator for consumers' household expenditure excluding food and energy was falling and amounted to just over 2 per cent.[3] The Federal Reserve cut the policy rate again by 0.25 percentage points both in October and December to 4.25 per cent.

GDP growth in the euro area also slowed down in 2007. Investment growth slowed down but employment continued to increase at a healthy rate. Growth was high in eastern Europe in 2007 and in Asia the strong development continued although growth in Japan slackened considerably during the second quarter. Growth in the United Kingdom remained strong. Inflation exceeded 3 per cent in the spring but slowed down towards the end of the year when energy prices fell. They had previously been an important factor behind the rise in inflation.

■■ Financial crisis and sharp downturn in economic activity in 2008

Growth in the United States and the rest of the world slowed down further in 2008 in connection with the increase in the financial market

3 This measure of inflation was the only measure the Federal Reserve published forecasts for in 2006. Forecasts are now also published for corresponding inflation measures including food and energy.

turbulence. Interbank rates rose sharply in the United States, the euro area and the United Kingdom, as did funding costs for companies and households. At the same time, inflation continued to rise, largely as a result of a rapid upturn in world market prices for oil and other commodities. However, commodity prices peaked during the summer and then began to fall again. In both the United States and the euro area inflation fell in September (see Figure 4).

In the middle of September the financial crisis deteriorated dramatically in connection with the US investment bank Lehman Brothers filing for bankruptcy (see Figure 3). The confidence crisis among market players regarding their counterparts' credit ratings then became acute. Access to credit declined on the financial markets around the world and some markets more or less ceased functioning. The great uncertainty was among other things reflected in the large fluctuations in stock market rates. Central banks and governments intensified their efforts to improve the functioning of the financial markets and to facilitate the supply of credit. Interest rates were also cut to alleviate the effects of the financial crisis (see Figure 2). On 8 October, for instance, the central banks in the United States, the United Kingdom, the euro area, Canada, Switzerland and Sweden cut their policy rates by 0.5 percentage points in a joint action.

In the United States growth slackened substantially in 2008. GDP actually fell during the third and fourth quarters. Employment fell and unemployment rose by around 2 percentage points, which contributed to dampening household consumption. The decline in the housing market continued. The US government took a number of measures to restore confidence in the financial markets and among the general public. The Federal Reserve cut its policy rate substantially during the year. In December it lay in the range of 0-0.25 per cent.

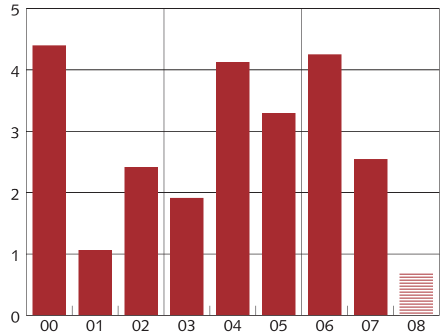
In the euro area and the rest of Europe the financial crisis hit growth hard, and GDP fell during the second and third quarters. The European Central Bank's policy rate was at 2.5 per cent in December. Growth in rapid-growth economies as China and India also slowed down.

Developments in Sweden

■■ Strong growth in 2006

The good international growth in 2006 contributed to strengthening economic activity in Sweden. GDP increased by 4.2 per cent (see Figure 5), a growth figure that has only been exceeded during five years since 1970. Growing international demand contributed to a strong increase in Swedish exports once again. Labour market conditions improved considerably. Employment, measured both in

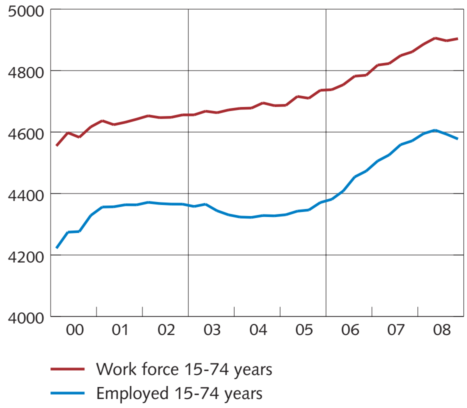
Figure 5. GDP for Sweden
Annual percentage change



Note. The striped bar represents the Riksbank's forecast in MPR February 2009.

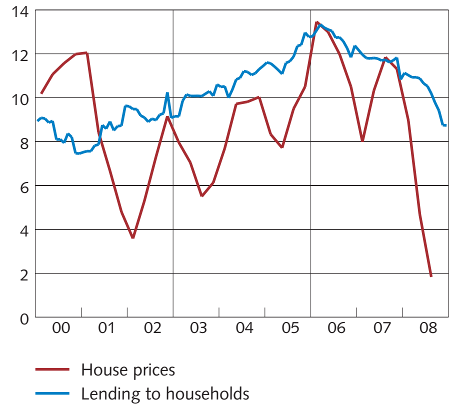
Sources: Statistics Sweden and the Riksbank

Figure 6. Labour force and number of employed
Thousands, seasonally adjusted data



Sources: Statistics Sweden and the Riksbank

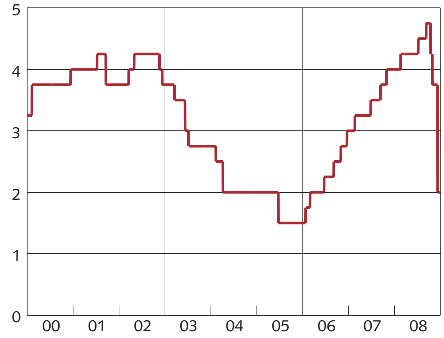
Figure 7. House prices and total lending to Swedish households
Annual percentage change



Note. Quarterly observations of house prices and monthly observations of lending to households.

Sources: Statistics Sweden and the Riksbank

Figure 8. Repo rate
Per cent



Source: The Riksbank

Figure 9. CPI inflation
Annual percentage change

Source: SCB

terms of the number of employees and the number of hours worked, increased sharply. Nonetheless the decrease in open unemployment was relatively slight, since the supply of labour increased at the same time (see Figure 6). Lending to the corporate and household sectors continued to increase and rapidly rising house prices strengthened household wealth (see Figure 7). Household consumption and investment in particular increased substantially. In the light of the strong economic upturn and the forecasts for rising inflation, the Riksbank began to raise the repo rate at the beginning of 2006 (see Figure 8).

Productivity growth continued to be strong which contributed to cost and inflationary pressures remaining low. The CPI rose by 1.4 per cent (see Figure 9). As in 2005, in 2006 inflation was affected by specific shocks, not least from the energy market. Electricity prices rose sharply during the year as a result of low water levels in the electric power companies' reservoirs, among other things. The prices of oil products (fuel, diesel and heating oils) increased rapidly in 2005-2006. However towards the end of 2006 the world market price for oil fell.

■■ Slackening of the economic upturn and rising inflation in 2007

Growth remained good in 2007 although it slowed down compared with the previous years. GDP growth amounted to 2.7 per cent and resource utilisation continued to rise. However, growth in investment and in particular exports slowed down. Exports were affected by subdued international demand in the wake of the weaker international economic activity. The rate of increase in the number of hours worked also began to slow down towards the end of the year.

Labour productivity slowed down sharply in 2007. A combination of high resource utilisation, rising labour shortages and higher wage agreement levels than before led to unit labour costs beginning to rise during the year after having remained largely unchanged during the period 2004-2006 (see Figure 10). Prices of food and commodities, including metals, rose sharply towards the end of the year. This contributed to CPI inflation exceeding 3 per cent during the last two months of the year. However, given the previous low inflation rate, CPI inflation for the whole of 2007 was 2.2 per cent on average. Given the still relatively good economic prospects and the higher cost pressures, the Riksbank continued to gradually raise the repo rate during 2007.

■■ Financial crisis and sharp downturn in economic activity in 2008

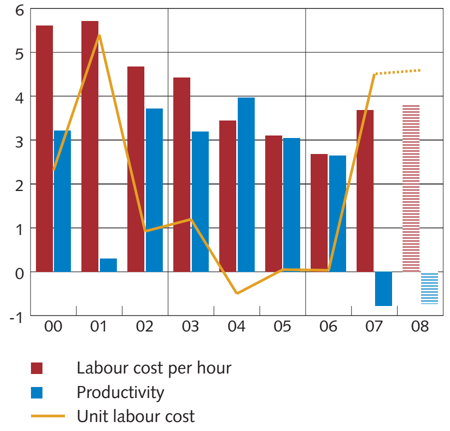
During the first half of 2008 oil prices in the world market continued to rise sharply, which meant that CPI inflation continued to be pushed upwards. Other contributing factors were high world market prices for food, rising mortgage rates and relatively high domestic cost pressures. During summer 2008 inflation reached its highest level since 1993. Both short-term and long-term inflation expectations also rose. Concern that the high inflation would become entrenched contributed to the Riksbank continuing to gradually raise the interest rate up to the beginning of September.

When the global financial crisis worsened drastically in mid-September, the picture changed dramatically. The Swedish financial markets also began to be tangibly affected. The banks' liquidity deteriorated, loan costs for both companies and households rose, and access to credit declined. The financial crisis substantially aggravated the economic downturn that had already begun. GDP growth for 2008 is estimated to have been 0.7 per cent, which is a substantial slowdown compared with the previous year (see Figure 5).[4]

The Riksbank, other Swedish authorities and the Government took a number of measures to safeguard financial stability and to improve the functioning of the financial markets. The Riksbank's measures were aimed to facilitate the banks' slightly longer-term financing, for instance, by offering loans in SEK with three-month and six-month maturities. In cooperation with the Federal Reserve, the Riksbank has also attempted to mitigate the general shortage of financing in US dollars that has affected Swedish market participants. The Federal Reserve has supplied dollars through a mutual currency swap facility. The Riksbank has then auctioned these funds.

To alleviate the fall in production and to meet the inflation target a couple of years ahead the Riksbank cut the repo rate by a total of 2.75 percentage points, to 2 per cent, from the beginning of October to the end of the year (see Figure 8). Oil and other commodity prices continued to fall from the peak levels during the summer, which together with reduced interest costs meant that inflation dropped back quickly (see Figure 9).

Figure 10. Unit labour costs for the economy as a whole
Annual percentage change, seasonally adjusted data



Note. Broken line and striped bar represent the Riksbank's forecasts in MPR February 2009.

Sources: Statistics Sweden and the Riksbank

4 GDP statistics for the fourth quarter of 2008 had not been published at the time this report was compiled. The figure for 2008 is the Riksbank's forecast in MPR February 2009.

■ CHAPTER 3 – Outcomes in 2008

Developments during the greater part of 2008 were characterised by inflation rising at the same time as economic activity weakened. The annual average for CPI inflation was 3.4 per cent in 2008. Behind this high average figure is a sequence of events where inflation first rose from just over 3 per cent in January to 4.4 per cent in September, and then fell very rapidly towards the end of the year. The slowdown in economic activity that had already begun continued during 2008 and the decline was aggravated during the autumn when the global financial crisis became acute.

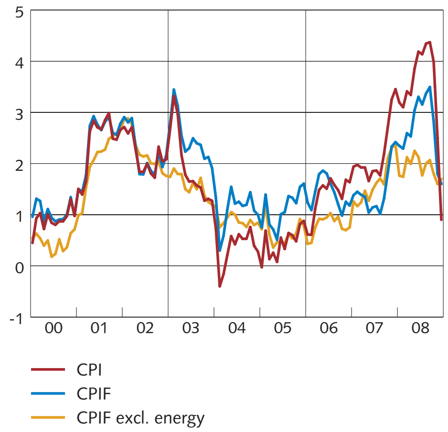
Developments in inflation

The Riksbank's formulation of the inflation target is that the annual change in the consumer price index, the CPI, should be 2 per cent. The CPI measures the price of a basket of goods and services. The prices of the different goods and services are weighted together on the basis of their representative proportions of consumption. Goods that are consumed on a large scale are given a greater weighting in the CPI. This means that large and temporary changes in the prices of individual goods can have major but transitory effects on CPI inflation. Various measures of "underlying" inflation are often used therefore in order to be able to assess the development of the more persistent and long-term rate of inflation. What these measures have in common is that the price components that have varied considerably, but which are not judged to have a strong correlation with the long-term development of inflation, have been excluded from the CPI.

The Riksbank uses different measures to illustrate the driving forces behind inflation at different points in time. This applies in particular to the direct effects of the Riksbank's own interest rate changes, which are now excluded in a better way than in the previously used measure, the CPIX. The new measure that excludes interest rate changes, the CPI with a fixed mortgage rate (the CPIF), was first published in the second Monetary Policy Report of 2008. In 2007 and 2008 energy and food commodity prices rose substantially and contributed to pushing up inflation to unexpectedly high levels around the world. The oil price in particular soared dramatically. It is, therefore, also interesting to look at a measure of underlying inflation where energy price developments have been removed from the CPIF, the CPIF excluding energy.

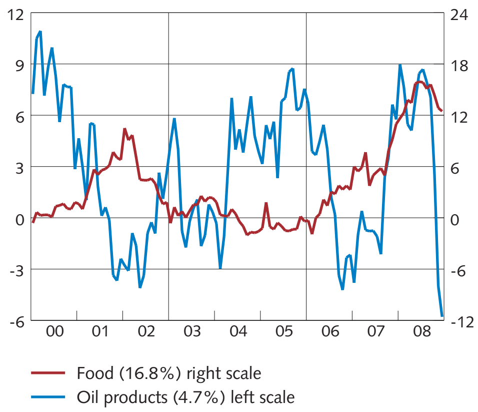
In September 2008 CPI inflation reached its highest level since 1993, 4.4 per cent (see Figure 11). A large part of the rise is explained by the rising energy and food prices (see Figure 12). However, higher mortgage rates also contributed, as did, to some extent, the relatively high cost pressures resulting from continued weak productivity. During the summer energy and food prices began to fall, which gradually had an impact in terms of falling inflation. The fall in inflation was reinforced when the financial crisis worsened in September. The Riksbank cut the repo rate by 2.75 percentage points during a relatively short period of time, which led to lower mortgage rates. In December 2008 CPI inflation was only 0.9 per cent.

Figure 11. CPI, CPIF and CPIF excluding energy
Annual percentage change



Sources: Statistics Sweden and the Riksbank

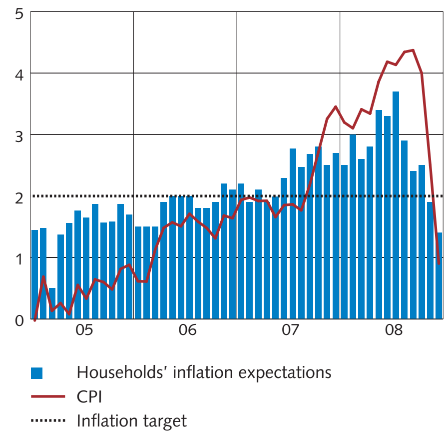
Figure 12. Prices of food and oil products
Annual percentage change



Note. The weight of the respective components in the CPI is given in brackets.

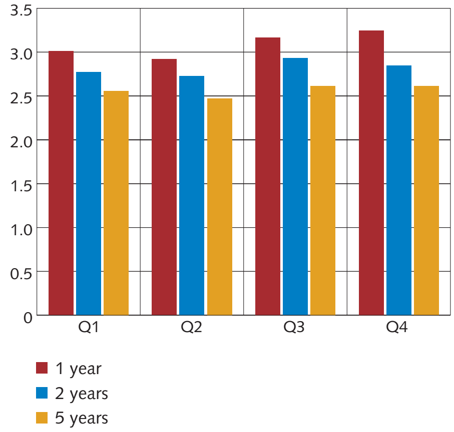
Source: Statistics Sweden

Figure 13. Actual inflation and households' expectations of inflation one year ahead
Annual percentage change and per cent



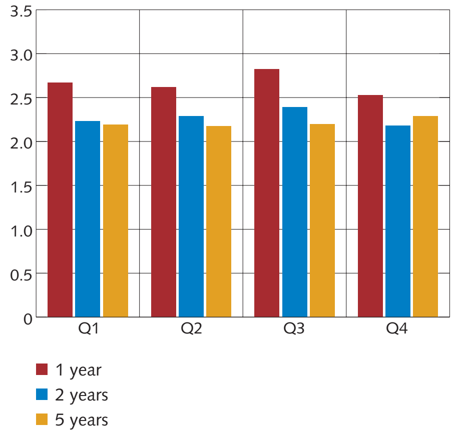
Sources: National Institute of Economic Research, Statistics Sweden and the Riksbank

Figure 14. All participants' inflation expectations during 2008, 1, 2 and 5 years ahead
Annual percentage change



Source: Prospera Research AB

Figure 15. Inflation expectations among money market participants during 2008, 1, 2 and 5 years ahead
Annual percentage change



Source: Prospera Research AB

On average over the year CPI inflation was 3.4 per cent, which can be compared with 2.2 per cent in 2007 (see Table 1). Underlying inflation also rose measured as an annual average. Measured in terms of the CPIF, underlying inflation was 2.7 per cent during the year – almost double the previous year. The fact that CPIF inflation was 2.7 per cent means that with unchanged interest costs for home-owners, all else being equal, the CPI would have been around 0.7 percentage points lower in 2008.

The CPIF excluding energy prices rose by 1.9 per cent in 2008, which can be compared with 1.6 per cent in 2007. The direct effect on the CPI of rising energy prices was approximately 0.8 percentage points in 2008.

Table 1. Comparison of different measures of inflation 2007-2008
Annual percentage change

	Annual average	
	2007	2008
CPI	2.2	3.4
CPIF	1.5	2.7
CPIF excl. energy	1.6	1.9

Sources: Statistics Sweden and the Riksbank

Developments in inflation expectations

Inflation expectations are important for companies' price-setting behaviour and wage formation, and thereby also for inflation. If economic agents are confident that inflation will be kept stable around the inflation target, firms will not feel that they need to change their prices as often when, for instance, they perceive a rise in costs as temporary. In the same way, stable inflation expectations can result in moderate wage increases. This makes it easier for the Riksbank to achieve price stability.

If inflation expectations are stable and close to the inflation target in a couple of years time, this can be interpreted to mean that the public is confident that the Riksbank will achieve its target. A high level of confidence in the inflation target increases the possibilities for monetary policy to stabilise production and employment.

Figure 13 illustrates households' expectations of inflation 12 months ahead and the inflation outcome. It is worth noting that expectations have on the whole been closer to the inflation target than the outcome has. It is also clear that households' expectations of inflation in 2009 were adjusted upwards during the greater part of 2008 as actual inflation rose. Households' inflation expectations then fell heavily in a corresponding manner at the end of the year. Expectations were at 1.4 per cent in December, compared with 3.7 per cent in July 2008.

Figure 14 shows expectations of inflation one, two and five years ahead respectively among all participants in Prospera's survey (money market participants, employer organisations, employee organisations and purchasing managers in the retail and business sectors). Inflation expectations were well above the inflation target both one and two years ahead. Expectations five years ahead also exceeded the target.

Inflation expectations are probably affected by the current level of actual inflation. One group that probably bases its expectations less on current inflation is money market participants, as this group can be assumed to expend greater resources on making inflation forecasts. Expectations among money market participants were relatively well anchored around the inflation target two and five years ahead (see Figure 15).

It should be pointed out that the Prospera survey of inflation expectations in the last quarter took place at the end of September and the beginning of October 2008. The global financial crisis and the weaker inflationary pressures this entailed had not yet had an impact on inflation expectations at that time. This is confirmed by the measurement published on 28 January 2009. In this, inflation expectations two years ahead for all participants had fallen from 2.8 per cent to 1.5 per cent. Expectations of inflation five years ahead fell much less, from 2.6 per cent to 2.3 per cent.

It may also be interesting to compare inflation expectations with the Riksbank's inflation forecasts. The Riksbank's forecasts can deviate from the inflation target, particularly in the short term. If the economic agents share the Riksbank's view of how inflation will approach the target, inflation expectations at different time horizons should be close to the Riksbank's forecasts.

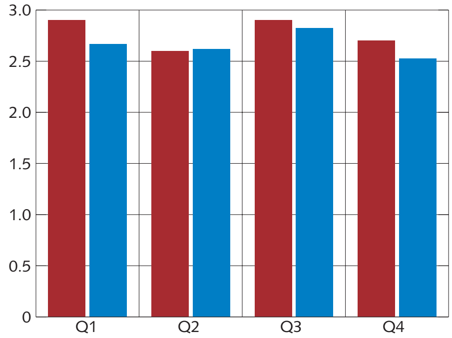
Figures 16 and 17 show the Riksbank's inflation forecasts and inflation expectations among money market participants at one and two years ahead, as they have developed during 2008. The figure shows that expectations lie close to the Riksbank's forecasts.

Developments in production and employment

The slowdown in economic activity that had started earlier worsened in 2008. The statistics for the first three quarters of the year and the business tendency surveys for the fourth quarter point, according to the Riksbank's assessment in February 2009, towards an increase in GDP in 2008 of around 0.7 per cent – a severe slowdown compared with the increase in GDP of 2.7 per cent in 2007 and the average increase of around 3.8 per cent during the period 2004-2006 (see Figure 5 in Chapter 2).

A combination of different factors contributed to the slowdown in domestic demand. High energy and food prices contributed to undermining households' purchasing power. This, combined with falling stock market rates and a decline in confidence in future economic developments (see Figure 18) contributed to dampening household consumption. Falling housing investment also contributed to slowing

Figure 16. The Riksbank's inflation forecasts and inflation expectations among money market participants during 2008, 1 year ahead
Annual percentage change

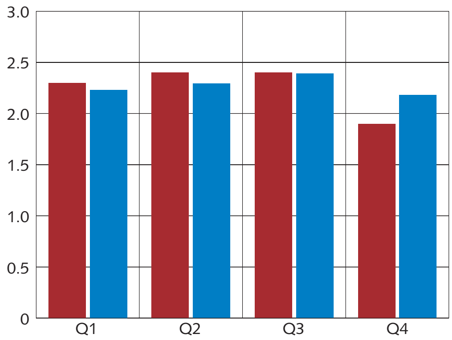


■ The Riksbank's forecast
■ Money market agents

Note. The Riksbank's forecasts refer to the most recent forecasts that had been published at the time of Prospera's surveys.

Sources: Prospera Research AB and the Riksbank

Figure 17. The Riksbank's inflation forecasts and inflation expectations among money market participants during 2008, 2 years ahead
Annual percentage change

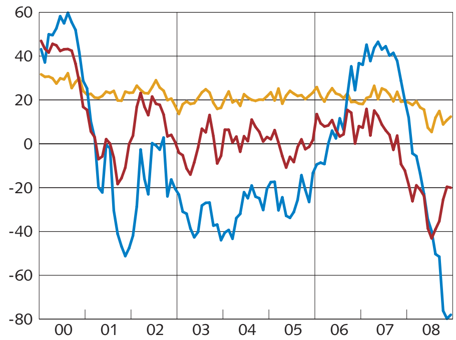


■ The Riksbank's forecast
■ Money market agents

Note. The Riksbank's forecasts refer to the most recent forecasts that had been published at the time of Prospera's surveys.

Sources: Prospera Research AB and the Riksbank

Figure 18. Households' expectations for the future
Net figures

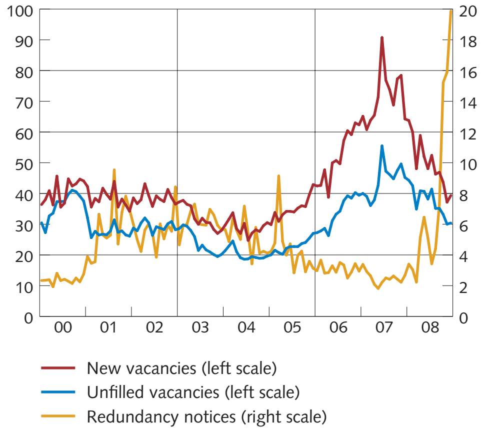


— The Swedish economy
— Labour market
— Own finances

Note. Net figures refer to the percentage of households who believe things will improve minus the percentage who believe things will worsen.

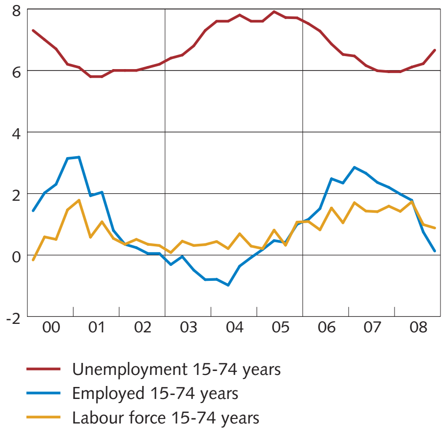
Source: National Institute of Economic Research

Figure 19. New and unfilled job vacancies and redundancy notices
Thousands, seasonally adjusted data



Source: Swedish Employment Service

Figure 20. Employed, labour force and unemployment
Annual percentage change and per cent of the labour force, seasonally adjusted data



Sources: Statistics Sweden and the Riksbank

down growth in investment. The economic downturn worsened during the second half of the year, when the effects of the crisis in the global financial markets began to have a tangible effect on the Swedish financial markets.

Developments in the labour market also weakened during the year. The number of new job vacancies registered fell and the number of redundancy notices increased rapidly, particularly towards the end of the year (see Figure 19). The annual rate of increase in the number of hours worked is estimated to have more than halved between 2007 and 2008. The number of persons employed increased by 1.2 per cent in 2008. The number of persons in the labour force increased by roughly the same amount. This means that unemployment as an annual average remained largely unchanged, amounting to 6.2 per cent in 2008. However, looking at the course of events, unemployment rose from the middle of the year (see Figure 20).

A model-based analysis

The Riksbank has used for some years now what is known as a general equilibrium model of the Swedish economy. The model goes under the name of Ramses. In principle, the model tries to explain the developments and interplay in the entire economy, and not just a particular part, for instance, private consumption or the labour market.[5] Ramses is primarily used to make forecasts and calculations of the effects of monetary policy. The model can also be used to calculate the effects of other changes in the economy. For example, the model can be used to try to discern why inflation and GDP growth have developed in the way that they have. Such calculations can provide an indication of why the forecasts are sometimes wrong.

To be able to provide an explanation for the developments, the model must first extract what have been the major driving forces in recent years. Ramses contains around twenty or so such driving forces, or shocks as they are called by economists. Once Ramses has calculated which shocks explain the historical developments, it is possible to make various "experiments" and allow the model to calculate an alternative development for inflation and GDP growth in the absence of this shock. By carrying out such an analysis for each of the different shocks in the model it is possible to obtain an idea of which shock or shocks have had the greatest significance for inflation (and GDP growth, etc.) developing the way it has.

The shocks the model identifies to be the most important since the beginning of 2006 are weak productivity and high international inflation. The fact that inflation abroad rose was primarily a result of high price increases on, for instance, energy and food commodities. Figures 21 and 22 illustrate the actual outcome and what inflation and GDP growth respectively would have been according to the model if

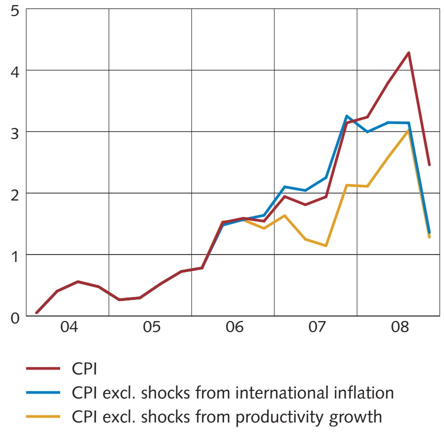
5 For a detailed description of Ramses, see for instance M. Adolfson, S. Laséen, J. Lindé and M. Villani, "RAMSES – a new general equilibrium model for monetary policy analysis", *Sveriges Riksbank Economic Review*, no. 2, 2007.

there had been no new shocks to productivity or to international inflation after the start of 2006. According to the model, the weak growth in productivity contributed to inflation being higher in 2007 and 2008 than it would otherwise have been. In 2008 the high international inflation also contributed to pushing up inflation in Sweden. According to the model, the weak productivity growth has also contributed to GDP growth being slower than it would otherwise have been in 2007 and 2008.

Ramses is an important tool in the Riksbank's analysis work, but it should be emphasised that it is only one of the models used by the Riksbank. When the Riksbank makes its forecasts the results of the models are also supplemented with analyses and assessments by experts in various fields.

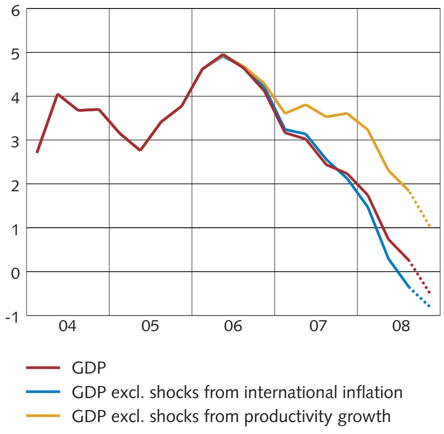
With regard to the effect of the weak productivity on GDP growth in 2008, there may be reason to take a long view of the model's interpretation. Ramses does not yet include the financial markets in a satisfactory manner.[6] The sudden slowdown in economic activity in connection with the financial market turbulence is thus not captured very well by the model. When GDP growth falls, it often takes some time before companies begin to adjust their work force. Put simply, there are as many people working, but as the demand for goods and services declines, they are producing less. Falling GDP growth and unchanged employment are interpreted by the model as a negative shock to productivity.

Figure 21. CPI inflation and alternative CPI outcome – excluding shocks from international inflation and productivity growth
Annual percentage change



Sources: Statistics Sweden and the Riksbank

Figure 22. GDP growth and alternative GDP outcome –excluding shocks from international inflation and productivity growth
Annual percentage change



Note. The broken line refers to the Riksbank's forecast in MPU December 2008.

Sources: Statistics Sweden and the Riksbank

6 Work is currently under way to further develop Ramses, including the financial sector.

CHAPTER 4 – The forecasts made 2006 - 2008

The average annual inflation rate, measured in terms of the CPI, was 3.4 per cent in 2008. This outcome was far above the forecasts made by the Riksbank in 2006 and 2007. A large part of the upturn in inflation was explained by an unexpectedly sharp rise in energy and food prices during the end of 2007 and the first half of 2008, which contributed to pushing up inflation around the world. Rising interest rate costs, as well as continuing weak productivity development in Sweden also contributed to the high inflation. However, GDP growth in 2008 was instead overestimated in the forecasts made in 2006 and 2007. The unexpectedly low growth is largely explained by the international financial crisis that spread further and worsened dramatically in autumn 2008.

When assessing the Riksbank's monetary policy, it is natural to begin by comparing the outcomes for inflation today with the forecasts the Riksbank made up to two years ago. Those forecasts formed a base for the interest rate decisions made in 2006 and 2007 that had consequences for the outcome of inflation and the real economy in 2008. The focus in this assessment is on the outcome in 2008. It is therefore mainly the forecasts for 2008 that were made in 2006-2007 that are analysed in this chapter.

But there is also reason to study the forecasts for 2008 made in 2008. Although it takes time before the full impact of monetary policy is felt, an interest rate decision taken in a particular year may affect developments that same year.

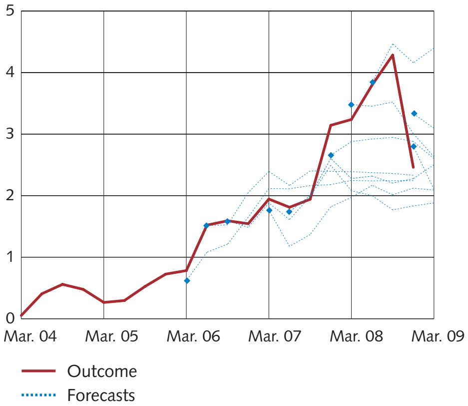
One limitation in the analysis of the forecasts below is that the National Accounts for the fourth quarter of 2008 had not been published when this material for assessing monetary policy was compiled. There was thus no outcome for GDP growth in 2008. The figure for GDP growth in 2008 that is presented here is the Riksbank's forecast from February 2009.

Forecasts in 2006-2008

Figures 23-27 illustrate how the Riksbank's forecasts for the CPI, labour productivity, the oil price, GDP and the number of persons employed have changed during the period 2006-2008. The figures show the actual developments (the unbroken line) and the forecasts for developments between 2006 and 2008 which the Riksbank made in each Inflation Report or Monetary Policy Report/Update during the period (the broken lines).

The first forecast is thus the one presented in Inflation Report 2006:1 and applies to developments from the first quarter of 2006 until the first quarter of 2009, that is to say three years ahead. The last forecast is the one made in the December 2008 Monetary Policy Update and applies correspondingly to developments up to the end of the final quarter of 2011. However, the figures only include the forecasts up to the end of the first quarter of 2009.

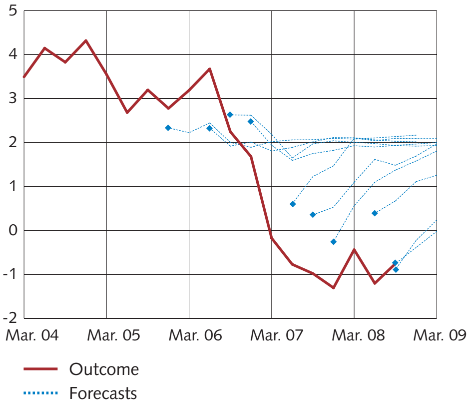
Figure 23. CPI, outcome and forecasts
Annual percentage change



Note. The broken lines represent the Riksbank's forecasts 2006-2008. The blue marks indicate the starting point for the respective forecasts. As the outcome was not known when the forecast was made, the starting point does not necessarily coincide with the outcome.

Sources: Statistics Sweden and the Riksbank

Figure 24. Labour productivity, outcome and forecasts
Annual percentage change



Note. The broken lines represent the Riksbank's forecasts 2006-2008. See also note in Figure 23.

Sources: Statistics Sweden and the Riksbank

It is difficult but not entirely necessary to distinguish individual forecasts in the figures. The figures are primarily aimed at providing an overall picture of how the Riksbank's assessments have changed and how well the forecasts have predicted actual developments. As shown in the figures, it is not easy to make accurate forecasts for individual quarters, particularly in longer time horizons. The forecasting errors for individual quarters may be substantial. These errors may to some extent offset one another, which means that the forecasting error for the average of all forecasts over one year does not necessarily need to be so great.

In the figures the forecasts are compared with actual outcomes. One difficulty is that the outcome for GDP growth in a particular year or quarter may change as the National Accounts figures are revised over time. It is therefore not entirely clear which outcome the Riksbank shall use to compare the forecasts with. Should the National Accounts figures published directly after the forecasts be used, or the National Accounts figures that apply now that the historical account has perhaps been revised? In figures 23-26, and in this assessment as a whole, the Riksbank has used the most recent statistics as comparison.

■■ Inflation forecasts

Figure 23 shows the forecasts for CPI inflation, measured as the percentage change in the CPI one quarter compared with the same quarter in the previous year. As shown in the figure, CPI inflation increased rapidly from the second half of 2007 up to the downswing in autumn 2008. The forecasts made in 2006-2007 underestimated the strength of the upturn (see also Table 2).

At the beginning of 2006 the Riksbank's assessment was that favourable supply conditions – in particular weak import prices and strong productivity growth – would hold back inflation despite strong growth. However, domestic cost pressures were expected to increase as productivity growth slackened and wages began to rise at a faster rate. Inflation was expected to be close to the target in 2008.

During 2007 the labour market situation was expected to be more strained and domestic cost pressures were expected to increase more quickly than expected. Productivity growth proved to be weaker than the Riksbank had earlier believed (see Figure 24). Together with rising energy and food commodity prices, this contributed to a gradual upward revision in the inflation forecast for 2008. The upward revisions were particularly large towards the end of the year, but the rapid upturn in inflation at the end of 2007 and most of 2008 was nevertheless underestimated. Even at the beginning of 2008 the Riksbank underestimated the strength of the upturn in inflation.

In the forecasts made during 2008 the Riksbank was counting on the inflation rate declining at the end of the year, which it did. But the size of the actual fall was not foreseen. The forecast deviation is largely connected with the global financial crisis. The sharp slowdown in economic growth, combined with the fall in oil and other commodity prices led to a rapid fall in inflation. Figure 25 shows the Riksbank's forecasts for the oil price in 2007 and 2008 and also the actual outcome.[7] The figure shows that neither the strong upturn nor the sharp fall was forecast. However, the Riksbank did note in the Monetary Policy Reports that the oil price was a factor of great uncertainty and presented alternative scenarios with higher and lower oil prices.

As the real economy worsened so dramatically, the Riksbank cut the repo rate by 2.75 percentage points within the course of a couple of months. This in turn had an impact in the form of lower mortgage rates. A large part of the explanation for the overestimation of inflation at the end of 2008 was therefore that, as a result of the financial crisis, monetary policy developed in a completely different way than the Riksbank had previously assumed.

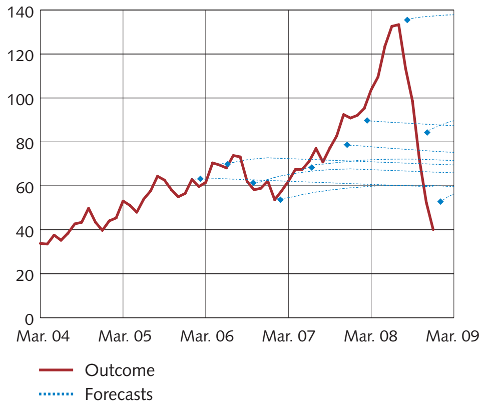
■■ The forecasts for the real economy

Figure 26 shows that the Riksbank's general assessment was that GDP growth would slow down from the middle of 2006. This assessment proved to compare well with the actual outcome. However, the forecasts had an overly optimistic view of how well growth could be maintained, in particular towards the end of the forecast period. The forecasts tended to systematically overestimate the actual outcomes. At the beginning of 2006 the Riksbank's assessment was that the strong GDP growth would continue over the coming period. Later in the forecast period growth was expected to slacken as productivity growth and global economic activity slackened. However, domestic demand was expected to continue to develop strongly throughout the forecast period. Both productivity growth and international economic activity slowed down more than the Riksbank had anticipated, however. And at the same time, domestic demand was weaker than the Riksbank had expected.

Productivity growth slackened substantially during the course of 2006. One explanation for the slowdown is connected to the economic cycle. When the economic cycle has peaked, productivity usually slows down. The Riksbank assumed at the end of 2006 that GDP would increase more quickly than employment during 2007. However, employment proved to increase more quickly than the Riksbank had estimated, at the same time as GDP growth slowed down.

There are also other factors that may have contributed to the severe slowdown in labour productivity. For instance, the Riksbank's company survey indicates that one reason for the downturn could be that newly-engaged staff initially have a lower productivity level than their more experienced colleagues. Another explanation is the

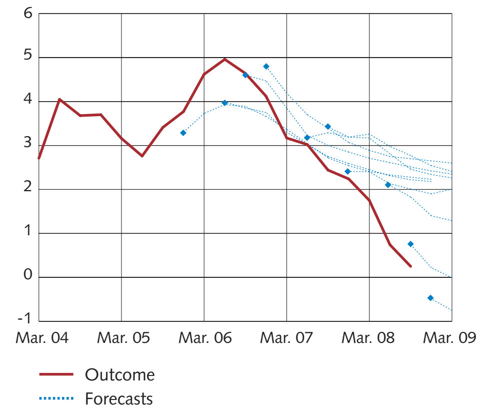
Figure 25. Oil price, outcome and forecasts, Brent crude
USD per barrel



Note. Futures are calculated as a 15-day average. Outcomes represent monthly averages of spot prices. See also note in Figure 23.

Sources: Intercontinental Exchange and the Riksbank

Figure 26. GDP growth, outcome and forecasts
Annual percentage change

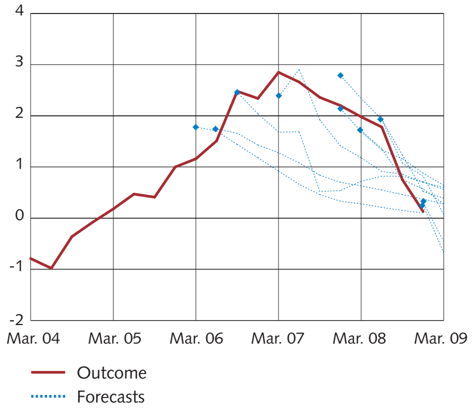


Note. The broken lines represent the Riksbank's forecasts 2006-2008. See also note in Figure 23.

Sources: Statistics Sweden and the Riksbank

7 The Riksbank does not make its own forecasts for the oil price, but uses futures.

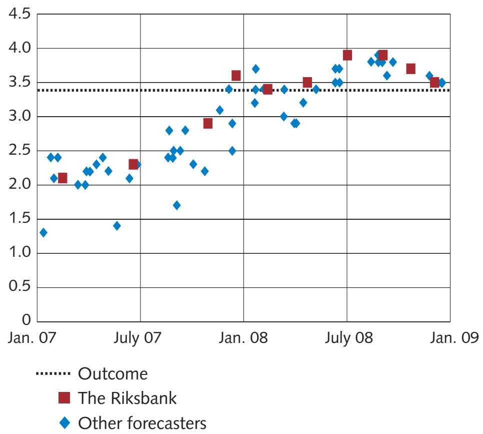
Figure 27. Number of employed, outcome and forecasts
Annual percentage change



Note. The broken lines represent the Riksbank's forecasts 2006-2008. See also note in Figure 23.

Sources: Statistics Sweden and the Riksbank

Figure 28. CPI inflation in 2008, outcome and forecasts
Annual percentage change



Note. Other forecasters refer to those listed in footnote 8.

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

composition of production, for example, that sectors with a low level of productivity are growing more quickly than those with a high level.

During both 2007 and 2008 the Riksbank assumed that productivity would recover and gradually rise, although this would not involve a return to earlier high rates of increase (see Figure 24). However, this was not the case; productivity continued to show surprisingly weak development. Productivity actually fell in 2007 and 2008. International economic activity also gradually began to slow down more than expected as the financial market turbulence increased. Demand from Swedish export markets was thus weaker than the Riksbank had anticipated. When the global financial crisis worsened in autumn 2008 and also gained a foothold in Sweden, domestic demand began to be negatively affected in a more tangible manner. The fall in productivity in 2008 is probably largely connected to the sharp slowdown in economic activity, particularly towards the end of the year. When demand falls more than expected, productivity is low as it takes time for companies to adapt their work forces.

With regard to developments in the labour market, Figure 27 shows that employment increased much more from the middle of 2006 and during the whole of 2007 than the Riksbank had anticipated in the forecasts made in 2006 and up to the beginning of 2007. The declining trend during the remainder of the forecast period was captured relatively well in the forecasts.

Comparison with other forecasters

■■ Development of inflation forecasts

Figure 28 shows the forecasts for average CPI inflation in 2008 made by various forecasters during 2007 and 2008.[8] 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 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 2008.

The fact that forecasts tend to become more accurate the shorter the forecast horizon is, is illustrated by the fact that the further to the right of the figure one comes, that is, the later the forecast was made, the more the forecasts are gathered around the actual outcome (the more concentrated the marks are around the dotted line). During almost the whole of 2007, however, the spread between the inflation

8 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 for the period 1999-2008. The ten 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.

forecasts was relatively large. Even forecasts made at around the same time could differ by up to 1 percentage point.

Figure 28 also shows that although there is a considerable spread in the forecasts, the pattern is roughly the same for all forecasters over time. For the greater part of 2007 most forecasters assumed that inflation in 2008 would be just above the inflation target of 2 per cent, while the actual outcome was 3.4 per cent. One explanation for this underestimation was the surprisingly sharp rise in oil and other commodity prices during the second half of 2007 and at the beginning of 2008. The fact that productivity developed weaker than expected also contributed to inflation being underestimated. At the end of 2007 the forecasters began to revise their inflation forecasts upwards. During the second half of 2008 the inflation forecasts even tended to exceed the final outcome for a period of time. One important explanation for this is that it was difficult to predict that the financial crisis would take such a dramatic turn during the autumn and thus also that inflation would fall so quickly, partly as a result of the Riksbank's own interest rate cuts affecting households' interest rate expenditure.

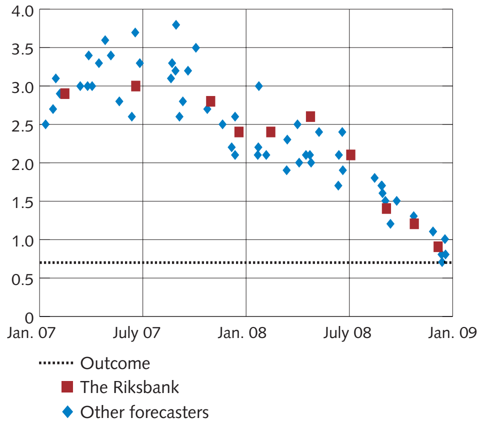
■■ Forecasts for GDP growth

Figure 29 shows the forecasts for GDP growth in 2008 made by various forecasters during 2007 and 2008. In this case, too, it is clear that the forecasts follow a common pattern. Unlike the forecasts for inflation, however, here the forecasters tended to initially overestimate GDP growth. During most of 2007 all forecasters assumed that growth in 2008 would be on average around 2 percentage points higher than it was.[9] At the end of 2007 the forecasts for growth began to be revised down to on average just over 2 per cent. During the second half of 2008 the forecasts were revised down even more, to a growth rate of around 1 per cent. The fact that growth was overestimated was largely due to the turbulence that had prevailed in the financial markets since mid-2007 now beginning to affect the real economy. In Sweden a deterioration in the mood of households and increased uncertainty led to weaker private consumption than expected from the beginning of 2008.

The forecasters who made explicit forecasts of productivity were assuming that it would be much stronger than was the case (see Figure 30). Even after it was noted that productivity growth in 2007 was surprisingly low, most forecasters were assuming there would be a recovery in 2008. However, this did not occur; productivity growth continued to be surprisingly weak. As discussed above, the weak productivity growth in 2008 is to a great extent linked to the decline in demand. Figure 30 can thus be regarded as a reflection of Figure 29.

All in all, one can observe that the Riksbank and other forecasters made roughly the same errors in assessing the outcomes for inflation

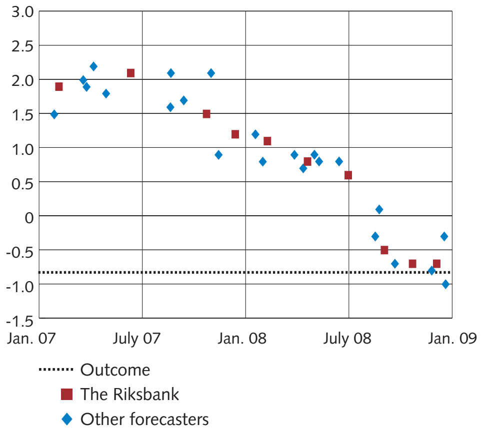
Figure 29. GDP growth in 2008, outcome and forecasts
Annual percentage change



Note. Other forecasters refer to those listed in footnote 8.

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

Figure 30. Labour productivity in 2008, outcome and forecasts
Annual percentage change



Note. Refers to calendar-adjusted productivity for the whole economy. Other forecasters refer to the Swedish Ministry of Finance, the National Institute of Economic Research, the Swedish Trade Union Confederation (LO) and SEB. With the exception of the National Institute of Economic Research, these forecasters are the ones who regularly publish productivity forecasts. The National Institute of Economic Research's productivity forecast is calculated on the basis of the institute's forecasts of GDP and hours worked respectively.

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

9 The data for GDP in the fourth quarter of 2008 had not yet been published when this text was written. The outcome for GDP growth is therefore based on the Riksbank's forecast in MPR February 2009.

and GDP growth in 2008. The main contribution to the forecasting errors came from shocks to demand and energy and food prices. Shocks, that is, surprising changes, are by definition difficult or impossible to predict and can often explain why forecasts are inaccurate.

A new method for calculating the accuracy of the forecasts

It may be difficult to discern from the above figures how well the Riksbank has succeeded in forecasting development in comparison with other forecasters. One means of obtaining a comprehensive measure of a forecaster's accuracy is to calculate the average forecasting error, that is, check how much the forecasts have on average deviated from the final outcome. This comprehensive measure can then be used to compare different forecasters.

One difficulty with this type of comparison is that different forecasters make their forecasts at different points in time. This means that the forecasts are based on different amounts of information. For instance, some forecasters, but not others, may have been able to take into account a recently-published figure for GDP or CPI in their forecasts. A forecaster that regularly publishes its forecasts later than others will on average be able to base its forecasts on a larger amount of information – and on average have a shorter forecast horizon – than the other forecasters.

The Riksbank has worked out a method that takes into account the fact that forecasters have had access to different amounts of information when making their forecasts.[10] This method is based on the assumption that part of a forecaster's average forecasting error can be explained by the length of the forecast horizon. A forecaster that publishes its forecasts later than others – and therefore has a shorter average forecast horizon – can also be expected to have a slightly better accuracy. A direct comparison between different forecasters' average forecasting errors therefore risks being misleading.

The method involves using a statistical method to estimate how much of the forecasting error of each forecaster can be explained by the length of the forecast horizon.[11] The remaining part of the forecasting error, the part that thus does not depend on differences in the length of the forecast horizon, will then be a measure that can be used as a fairer comparison of different forecasters (see the box below for a technical description of the method).[12]

10 M. Andersson and T. Aranki, "A comparison of different forecasters' ability given the publication date effect", article to be published in *Sveriges Riksbank Economic Review*.

11 It is the average *absolute* forecasting error that is used in the calculations, that is, the sign of the individual forecast deviations is irrelevant.

12 As the Riksbank on average publishes its forecasts slightly later than other forecasters (it has a shorter forecast horizon), the method does not adjust to the Riksbank's advantage.

A means of controlling for differences in the amount of information available to different forecasters.

Let y_t be the outcome for variable y year t (for example, GDP growth in 2008) and assume that the forecast for y is $\hat{y}(h)_{it}$, where h shows how many months prior to the outcome the forecast is published. h is thus a measure of the information available at the time of publication (the lower h is, the shorter the forecast horizon is and the more information is available). i is an index of different forecasters.

Forecaster i's different absolute forecasting error (ε_{it}) can thus be defined as

(1) $$\varepsilon_{it} = \left| y_t - y(h)_{it} \right|$$

The mean absolute forecast error (MAF) for forecaster i is calculated as

(2) $$MAF_i = \frac{\sum \varepsilon_{it}}{n_i}$$

where n_i = number of forecasts made by the respective forecaster.

MAF defined as in equation (2) is often used to compare different forecasters.

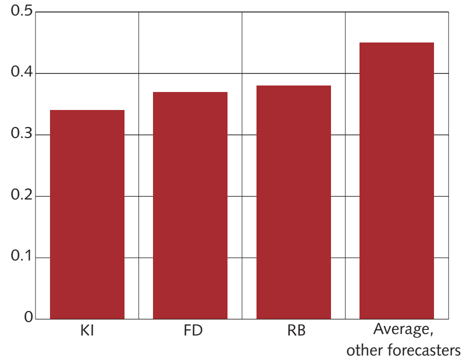
The starting point for the new calculation method is that the absolute forecasting errors in equation (1) can be divided up into different components: a component that is due to the amount of information available at the time of publication (the forecast horizon), a component that reflects the different forecasters' general forecasting ability (μ_i) and a component that captures the fact that different years can be more or less difficult to forecast for all forecasters (λ_t).

The absolute forecasting error can thus be divided up as follows:

(3) $$\varepsilon_{it} = \alpha h_{it} + \mu_i + \lambda_t + e_{it}$$

By estimating equation (3) using a statistical method and comparing the estimate of μ_i for the various forecasters it is possible to make a comparison where one has taken into account the fact that forecasters publish their forecasts at different points in time and thus have access to different amounts of information.

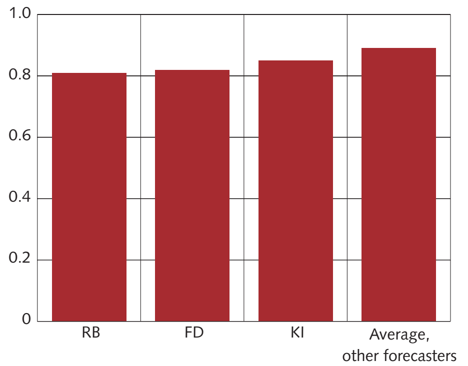
Figure 31. The accuracy of the forecasts for CPI among different forecasters 1999-2008
Adjusted absolute average error in percentage points



Note. KI = National Institute of Economic Research , FD = Ministry of Finance and RB = the Riksbank. The other forecasters are listed in footnote 8.

Sources: National Institute of Economic Research and the Riksbank

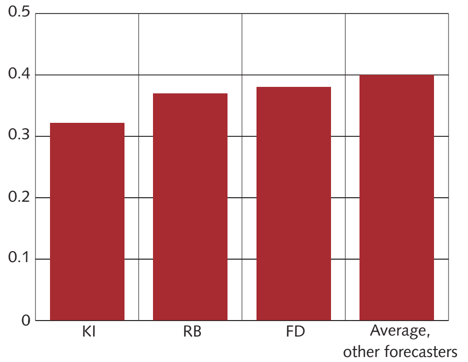
Figure 32. The accuracy of the forecasts for GDP growth among different forecasters 1999-2008
Adjusted absolute average error in percentage points



Note. See the note to Figure 31 for an explanation of the abbreviations.

Sources: National Institute of Economic Research and the Riksbank

Figure 33. The accuracy of the forecasts for unemployment among different forecasters 1999-2008
Adjusted absolute average error in percentage points



Note. See the note to Figure 31 for an explanation of the abbreviations.

Sources: National Institute of Economic Research and the Riksbank

The accuracy of the Riksbank and other forecasters

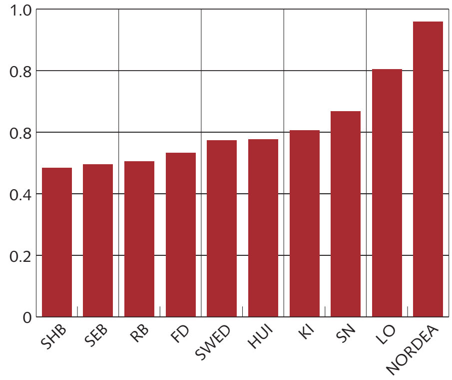
A further circumstance that should be taken into account when comparing forecasts is that it is not possible to draw any conclusions about the general forecasting ability of a forecaster by studying accuracy during a period as short as a year. Even forecasters with a good average accuracy may be less successful in an individual year. A fairer comparison requires a longer observation period.

Figures 31-33 show the measure described above – the forecasting error adjusted for differences in the forecast horizon – applied to the forecasts made over the past ten years, that is, 1999-2008. The shorter the column, the smaller the adjusted forecasting error and the higher the accuracy of the forecast. The larger 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. The figures show that the larger forecasters, which can be assumed to have greater resources, have achieved a comparatively good level of accuracy. 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. This may have hampered the accuracy.

However, it is important to emphasise that there is relatively great uncertainty and it is difficult to find significant differences between the forecasters. One explanation for this is probably that different forecasters' forecasts tend to follow one another relatively well, as indicated by Figures 28-30.

Figures 34-36 show the forecasting error adjusted for differences in the forecast horizon with regard to forecasts only of developments in 2008. The accuracy of the Riksbank's forecasts regarding inflation, unemployment and GDP growth was comparatively good in 2008. However, as noted above, chance may have a large impact in individual years. The figures should therefore be interpreted to show merely a descriptive, summarising measure of how well different forecasters have succeeded in predicting the outcome for 2008. For example, Figure 34 summarises the information implicit in Figure 28.

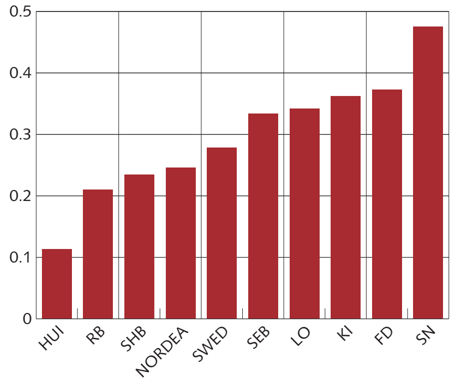
Figure 34. The accuracy of the forecasts for CPI among different forecasters in 2008
Adjusted absolute average error in percentage points



Note. SHB=Svenska Handelsbanken, RB=the Riksbank, FD=Swedish Ministry of Finance, SWED=Swedbank, HUI=the Swedish Retail Institute, KI=National Institute of Economic Research and SN=Confederation of Swedish Enterprise.

Sources: National Institute of Economic Research and the Riksbank

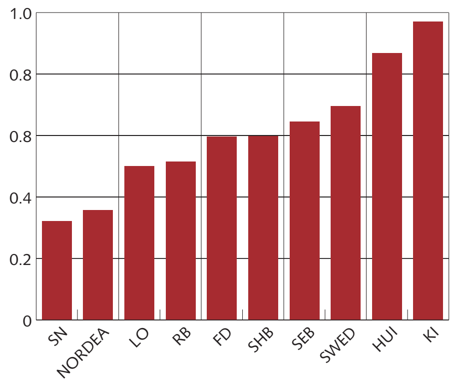
Figure 35. The accuracy of the forecasts for unemployment among different forecasters in 2008
Adjusted absolute average error in percentage points



Note. See the note to Figure 34 for an explanation of the abbreviations.

Sources: National Institute of Economic Research and the Riksbank

Figure 36. The accuracy of the forecasts for GDP growth among different forecasters in 2008
Adjusted absolute average error in percentage points



Note. See the note to Figure 34 for an explanation of the abbreviations.

Sources: National Institute of Economic Research and the Riksbank

CHAPTER 5 – Monetary policy 2006-2008

At the beginning of 2006 the Riksbank raised the interest rate for the first time in almost four years, from the low level of 1.5 per cent at the start of the year. This was the start of a phase of interest rate raises that continued for the greater part of the period 2006-2008. From the final quarter of 2007 and for most of 2008 inflation was pushed up high above the target, primarily by a large increase in energy and food prices. To prevent the high inflation rate from becoming entrenched, the Riksbank continued to raise the interest rate until the beginning of September 2008, when it reached 4.75 per cent. At the same time, growth had begun to slow down both in Sweden and abroad, not least as a result of the turmoil in the international financial markets. The monetary policy considerations during the first three quarters of 2008 concerned dealing with these contradictory forces – on the one hand rising inflationary pressures and on the other hand weaker economic activity. In mid-September 2008 the global financial crisis worsened, which changed the situation dramatically. The economic downturn that had already begun rapidly worsened. This, combined with lower oil and other commodity prices, indicated that inflationary pressures would be much lower in future. There was now no longer any conflict between giving consideration to the real economy and the inflation target. To meet the inflation target and to alleviate the effects of the financial crisis on the real economy, the Riksbank cut the repo rate substantially at the end of 2008, to 2 per cent.

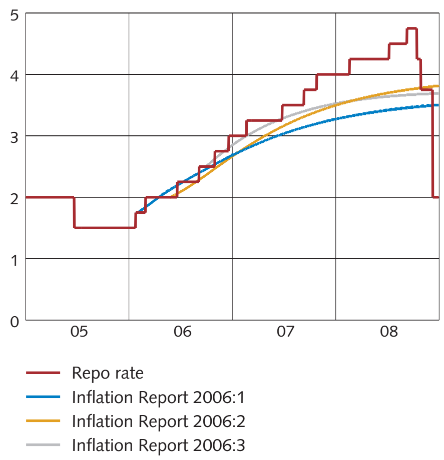
Decisions in 2006

■■ Interest rate raises in January and February

At the beginning of 2006 the Riksbank's assessment was that the economic upswing would continue during the year, but then slow down gradually. The situation in the labour market also appeared to have brightened. But as productivity was increasing rapidly at the same time, the Riksbank's assessment was that cost pressures would nevertheless be subdued. Inflation was low, but was expected to increase and to be close to target level a couple of years ahead. The assessment assumed that the Riksbank raised the repo rate from 1.5 per cent at the beginning of the year and that the increases would then gradually continue in line with the financial markets' expectations. For these reasons the Executive Board decided to raise the repo rate by 0.25 percentage points at the monetary policy meetings in both January and February (see Figure 37). In February the Executive Board noted that inflationary pressures were low and that the repo rate could perhaps be increased at a slightly slower rate in future than the interest rate path on which the forecasts were based.

Both in January and February the Executive Board considered that there were reasons to give consideration to the fact that house prices and lending to households had risen over a number of years in a row at a rate that did not appear sustainable in the long term. This could entail risks of severe fluctuations in the economy further ahead. One way of giving consideration to these risks was to raise the interest rate slightly earlier than would otherwise have appeared to be the most suitable point in time, if consideration was only given to inflation. The purpose was to contribute to slowing down house prices and thereby

Figure 37. Repo rate outcome and implied forward rates in 2006
Per cent



Note. The implied forward rates are the 15-day average that the forecasts for the main scenario in the 2006 Inflation Reports are based on.

Source: The Riksbank

to ensure that the real economy and inflation would also show stable development in a longer term perspective.[13]

In April new information pointed to economic activity abroad being slightly stronger than expected. The view of Swedish economic activity remained largely unchanged, however. Although new statistics showed that developments towards the end of 2005 had been weak, several indicators implied that this had been a temporary slowdown. Inflation had been slightly higher than expected, which was largely explained by energy prices being unexpectedly high. The Executive Board's assessment was that this was a temporary upswing. The repo rate was therefore left unchanged at 2 per cent at the monetary policy meeting in April.

■■ Continued repo rate increases during second half of year

In June 2006, when the second Inflation Report of the year was published, the Executive Board's assessment was that it was time to raise the interest rate again by 0.25 percentage points. New statistics indicated that the upswing in economic activity had continued. Both growth and employment appeared likely to increase a little more quickly in the future. At the same time, energy prices had risen more than expected, which made the Riksbank adjust its inflation forecast for the immediate future upwards. In the long term, the forecasts showed that inflation would rise towards the target level approximately as the Riksbank had assessed earlier, if the Bank gradually raised the repo rate. The Executive Board noted on this occasion that it was possible that there was a need for slightly more interest rate increases over the coming year than the market had recently been expecting. This proved correct.

During the second half of the year new statistics on the National Accounts and labour market showed that the upswing in economic activity was stronger than the Riksbank had expected. The fact that household indebtedness and house prices were continuing to rise rapidly supported the picture of strong demand. The Riksbank also noted that the situation in the labour market had clearly improved, which was reflected in the fact that employment had picked up. Although productivity had increased surprisingly rapidly, the overall assessment was that the Riksbank would need to raise the repo rate further for inflation to be in line with the target. The repo rate was therefore raised by 0.25 percentage points both in August and October 2006. Although the Riksbank's assessment in October was that inflation would be slightly below target two years ahead, it also assumed that this would be partly due to falling energy prices temporarily slowing down the rate of price increase. When this effect

13 The fact that the Riksbank in formulating its monetary policy in this way gave en explicit role to developments in house prices was something criticised by F. Giavazzi and F. Mishkin, "An evaluation of Swedish monetary policy between 1995 and 2005", Reports from the Riksdag 2006/07:RFR 1, Committee on Finance. What role house prices and other asset prices should play when formulating monetary policy is still a controversial issue discussed in both central bank circles and academic research.

had finally abated, the Riksbank believed that inflation would rise again.

In December the Executive Board raised the repo rate by 0.25 percentage points again, as economic activity remained strong and inflation was rising. As before, inflation was expected to be close to the target two years ahead if the repo rate was raised gradually.

■■ Reactions to the riksbank's monetary policy in 2006

In the third Inflation Report of 2005 the Riksbank for the first time based the forecasts on market expectations of the repo rate as reflected in the so-called implied forward rates. Thus, unlike the earlier assumption of a constant repo rate, the forecasts were made under the assumption that the repo rate could vary during the forecast period (see Figure 37).

At the time of the interest rate decision in February 2006 there was little reactions, despite the fact that the Executive Board noted in the press release announcing the decision that the repo rate perhaps could be raised at a somewhat slower rate in future than that which the market was expecting and on which the forecasts were based. Immediately prior to the interest rate decision, however, surprisingly low monthly statistics had been published for the CPI, which had led to the market already adjusting down its expectations of future repo rate developments.

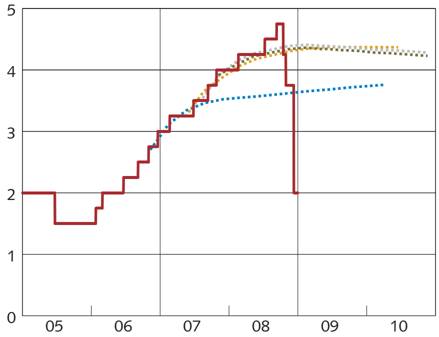
During winter 2005/2006 there was some uncertainty among certain market participants regarding the dating of the implied forward rates that the Executive Board referred to in its interest rate decisions. The Riksbank tried to remedy this lack of clarity during the spring. After a speech and the interest rate decision made in April, the communication from the Riksbank was perceived as clearer. The Executive Board's statement in June that it was possible that there was a need for more interest rate increases over the coming year than the market had recently been expecting caused the long-term rates in particular to rise and market agents adjusted their forecasts for the interest rate upwards. The reports and interest rate decisions taken during the remainder of 2006 did not give rise to any major surprises.

Decisions in 2007

■■ Interest rate raise in february and forecast of a couple more raises forecast

At the beginning of the year the Riksbank foresaw strong economic activity both in Sweden and abroad. Employment and productivity were still expected to continue to increase at a rapid pace, although the Riksbank's assessment was that productivity growth would slacken as the labour market situation improved. It appeared that prices would

Figure 38. Repo rate, outcome and forecasts in 2007
Per cent



Source: The Riksbank

rise at a slower pace than expected as a result of lower energy prices and a stronger krona in 2007, but the Riksbank's assessment was that inflation would rise gradually as resource utilisation increased.

In February the Riksbank presented its own interest rate forecast for the first time. According to this forecast the repo rate would need to be raised a couple of times during the first half of the year so that inflation would be on target and the real economy would develop in a balanced manner. At its monetary policy meeting in February the Executive Board therefore decided to raise the repo rate by 0.25 percentage points to 3.25 per cent.

■■ Unchanged interest rate in the spring but revised assessment of future interest rates

In March the assessment of economic activity and inflation prospects had only changed marginally. Although the new wage agreements beginning to emerge from the bargaining rounds appeared to slightly increase the risks of higher inflationary pressures, the Riksbank considered it was too early to draw any conclusions regarding the effects of the agreements on cost pressures before the wage bargaining rounds were complete. Given this, the repo rate was kept unchanged in accordance with the repo rate path published in February. At the same time, as in February, the assessment was that the repo rate would need to be raised by a further 0.25 percentage points over the coming months and that it would after that probably be possible to pause before making a further increase.

In May the picture of rising cost pressures was reinforced. Although economic activity developed roughly in line with the Riksbank's forecast there were factors that could increase inflationary pressures. Fiscal policy looked to be more expansionary than had been previously assumed and unemployment had been slightly lower. The wage bargaining rounds also looked to result in slightly higher wage increases than had been forecast earlier. However, there were also factors which in the Riksbank's assessment indicated that inflation could be held back, for instance, continued high productivity growth and low import prices. Given this, the Executive Board decided to hold the repo rate unchanged. No new interest rate path was published, but the Executive Board made a qualitative assessment of the forecast published in February. The assessment was that developments in cost pressures probably meant that the repo rate would need to be raised more than implied in the February forecast.

■■ Interest rate raise in June and interest rate forecast adjusted upwards

In June, new statistics showed that GDP growth in Sweden in the first quarter had slowed down surprisingly suddenly. But various indicators implied that the weakening in growth was only temporary. Economic activity abroad was still developing strongly and households' disposable incomes were expected to increase substantially. The picture became increasingly clear that the labour market was tighter and cost pressures were rising. The surprisingly low productivity growth together with high wage increases led to unit labour costs soaring as early as the first quarter after remaining largely unchanged for three years.

The increased cost pressures and the strong economic activity meant that the Riksbank raised the repo rate by 0.25 percentage points to 3.5 per cent (see Figure 38). The decision was in line with the forecast for the interest rate made in February. But at the same time the Executive Board adjusted up its forecast for the interest rate path in the coming years. The Executive Board decided that the repo rate should be around 4 per cent at the end of 2007 and then be followed by a further raise or couple of raises in the coming years.

■■ Increased uncertainty in the autumn but interest rate raises in line with earlier assessment

During the second half of the year there were further signs that reinforced the picture of a tighter labour market and higher cost pressures. Employment increased at approximately the rate expected, but the labour supply showed weaker development. Open unemployment was therefore lower than forecast. Growth in the second quarter remained good and various survey data pointed to economic activity continuing to be strong over the summer. The Riksbank considered that productivity growth was a key factor in the assessment of how inflation would develop over the coming years. Productivity had shown weaker growth than expected during the first quarter. As inflation had increased, companies and households had revised up their inflation expectations for the coming year.

The new information on the Swedish economy thus implied that inflationary pressures were slightly stronger than expected and that the forecast for the repo rate therefore needed to be adjusted slightly upwards. On the other hand, uncertainty regarding the strength of international growth had increased substantially. This was due to the financial turmoil that had broken out in the wake of the crisis in the US mortgage market. The downturn in the housing market and the financial unrest had led to weaker growth in the United States. A general increase in uncertainty and reduced willingness to invest in higher risk assets led to higher risk premiums and falling stock markets in August. The Riksbank's assessment was that the problems in the US economy could also slow down growth in the Swedish economy somewhat.

All in all, the conclusion in September and October was nevertheless that the repo rate would need to be raised at around the same pace as assumed by the Executive Board in June. The repo rate was therefore raised by 0.25 percentage points both in September and October (see Figure 38). During the final quarter the uncertainty regarding international developments increased as a result of the crisis in the US mortgage market. Swedish growth also looked to be slowing down sooner than expected. The financial turmoil meant that the spreads increased between interbank rates and T-bill rates. This led to loan costs rising for companies and households, which was expected to subdue demand. At the same time, inflation was higher than expected. The situation thus remained difficult to assess with different forces pulling in different directions. The repo rate was held unchanged and the interest rate forecast was adjusted down marginally in December.

■■ Reactions to the riksbank's monetary policy and interest rate forecasts in 2007

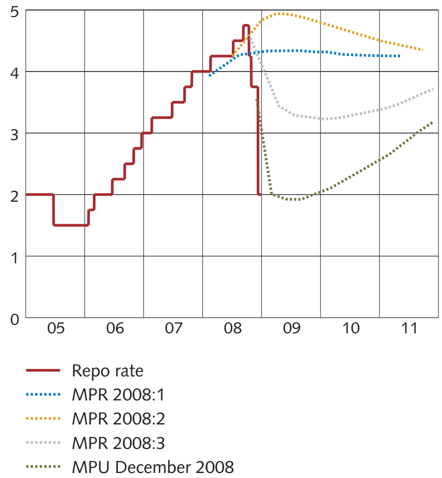
In the first Monetary Policy Report of 2007 the Riksbank for the first time based its forecasts on its own assessment of the future development of the repo rate. The forecast presented pointed to the repo rate path only needing to be raised moderately in the coming years (see Figure 38). This surprised some economic analysts and market agents who had adjusted their own interest rate forecasts upwards in connection with a general upturn in international interest rates. The reactions were therefore relatively strong. Interest rates fell and the krona depreciated. But given the difference that existed between the Riksbank's and other analysts' forecasts, the interest rate decline was nevertheless fairly limited. Even after this the implied forward rates curve was higher than the Riksbank's forecast interest rate path. One reason was that certain market agents had made a different assessment of the economic situation and its effects on inflationary pressures. They believed that the Riksbank would gradually need to revise its assessment of inflationary pressures and raise its forecast for the interest rate. However, there were relatively substantial differences between different analysts and some were close to the Riksbank's view of economic prospects and the need for interest rate increases.

In the second report the Riksbank adjusted its forecast for the repo rate path upwards (see Figure 38). Once again the reactions to the Riksbank's forecast were relatively strong. This time interest rates rose relatively substantially and the krona strengthened considerably. The Riksbank's forecast for the interest rate path in the short term did not differ very much from market expectations. However, the implied forward rates were above the Riksbank's forecast for the interest rate in the longer term. Despite this, both short-term and long-term interest rates rose when the Riksbank published its forecast. The strength of the market reactions can be partly explained by international interest rates rising. Market agents had probably also expected the Riksbank to publish a lower interest rate forecast.

In connection with the publication of the first two interest rate forecasts there was some criticism of the Riksbank, because the forecasts had surprised the market. There was also criticism of the changes in the monetary policy communication implemented by the Executive Board in spring 2007, in particular the publication of an own interest rate forecast and the decision to only give signals regarding future monetary policy in connection with monetary policy meetings.[15] Members of the Riksbank's Executive Board commented on this in speeches and pointed out that the reason behind the changes was to be even more open and clear about how monetary policy is conducted. At the same time, they emphasised that it would take some time for all parties to adapt and that communication between the parties would increasingly improve as they gained more experience of the new system.

The Riksbank's forecast for the repo rate presented in October concurred well with the forecasts made by other analysts and the reactions to the publication of the report were relatively mild. When the interest rate forecast was published in the Monetary Policy Update in December, interest rates fell slightly.

Figure 39. Repo rate, outcome and forecasts in 2008
Per cent



Source: The Riksbank

Monetary policy decisions in 2008

■■ Interest rate raise in february and forecast of unchanged repo rate during remainder of year

At the beginning of the year economic activity in Sweden was good and the labour market was strong. Although the Riksbank's assessment was that GDP growth would slacken during the year and that employment would increase more slowly, this did not indicate any severe weakening in economic activity.

Inflation had risen rapidly in Sweden at the end of 2007, and was expected to also be high in 2008. This was primarily explained by energy and food prices rising. But the Riksbank noted that the underlying inflationary pressures and inflation expectations had also risen, which could threaten the inflation target in the slightly longer term. Production resources were more strained than normal and production costs rose at a rapid rate. Productivity growth was weak and hourly wages were rising at a higher rate than before.

On an international level the financial market turbulence had continued. There was great uncertainty over economic developments in the United States and the contagion effects on the rest of the world. The risk of weaker activity in the world economy was considered to have increased.

The Riksbank's assessment at the monetary policy meeting in February was that the interest rate needed to be raised by 0.25 percentage points to 4.25 per cent and to then be held unchanged during the remainder of the year (see Figure 39). This would contribute to bringing inflation back towards the target of 2 per cent a couple of years ahead. But the assessment was considered to be very uncertain. For example, the Monetary Policy Report contained

15 See Irma Rosenberg, "Changes in the monetary policy communication", press release no. 22, 11 May 2007.

a risk scenario where a higher oil price in the coming three quarters would lead to higher inflation and a higher repo rate and to lower GDP growth. The Riksbank noted that monetary policy must take into account two contradictory forces – on the one hand high inflation and high cost pressures, and on the other hand risks linked to the turbulence in the international financial markets and weaker international economic activity.

At the meeting in April the basic picture from February had not changed to any great extent. The Riksbank held the interest rate unchanged and it was expected to remain at 4.25 per cent during the remainder of 2008.

■■ Interest rate raise in july and upward adjustment to interest rate forecast

In July, too, the monetary policy deliberations to a large degree concerned dealing with on the one had rising inflationary pressures and on the other hand weaker economic activity. Growth was still slowing down both in Sweden and abroad, not least as a result of the unease in the international financial markets. The Riksbank noted that it was still not possible to say when the situation on the financial markets would return to normal. There were signs of a more rapid and more pronounced slowdown in economic activity in Sweden than was expected in February and April. For instance, the Swedish economy had shown slower growth than expected during the first quarter of 2008. Resource utilisation had fallen but was expected to be normal at the end of the forecast period, according to the Riksbank's assessment.

At the same time, inflation had continued to rise and reached just over 4 per cent during the summer, which was the highest level since the mid-1990s. The upturn was largely explained by energy prices rising more than expected during the spring. At the end of May the oil price had risen so much that it was in line with the price in the risk scenario in the previous Monetary Policy Report. The Riksbank emphasised that it is not the task of monetary policy to attempt to influence changes in relative prices; that is, that certain prices increase more than others. However, the Riksbank's assessment was that there was a risk that the sharp rises in food and oil prices would lead to other prices also beginning to rise too quickly.

Given that inflation had risen surprisingly quickly and that the risk of the high inflation rate becoming entrenched was thought to have increased, the Riksbank raised the interest rate by 0.25 percentage points to 4.5 per cent. The assessment was that the repo rate needed to be raised two more times during the year to bring inflation back on target two years ahead.

The fact that the monetary policy deliberations at the July meeting were difficult was clear in that, for instance, three members of the Executive Board entered reservations against the forecast in the Monetary Policy Report, including the future interest rate path. Their assessment was that the slowdown in the economy would dampen inflationary pressures to a greater degree than assumed in the forecast. However, all of the Board members supported the decision to raise the interest rate.

■■ New interest rate raise in september, but downward adjustment to interest rate forecast

The unrest in the international financial markets continued over the summer. The Riksbank noted in September that it was still uncertain what would happen in the financial markets in the future and that the uncertainty would probably remain for some time to come. Economic activity abroad had slowed down more than the Riksbank had expected in July. The oil price in the world market and other commodity prices had fallen from an extremely high level and they were now expected to become lower in the future.

As in other countries, GDP growth in Sweden in the first half of the year had been weaker than expected. Forward-looking indicators pointed to continued weakening and the forecast for GDP growth was revised down.

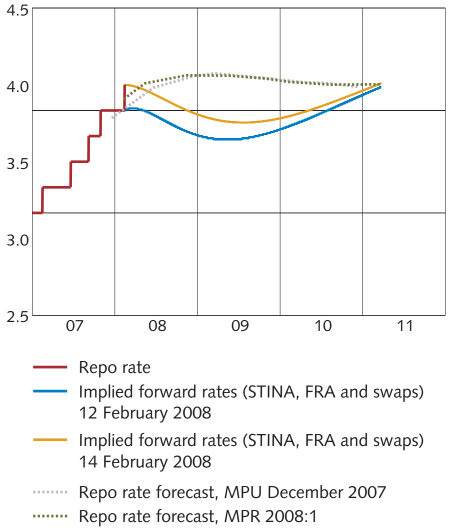
At the same time, inflation was still high. The same applied to inflation expectations (see Figure 14 in Chapter 3). Wage increases were slightly lower than expected, but as a result of slackening production and stable employment labour productivity was much weaker than the assessment made in July. All in all, the effect was that unit labour costs appeared to be increasing more quickly than expected, particularly in the short term. Domestic cost pressures thus remained high.

The Riksbank decided at the beginning of September to raise the repo rate to 4.75 per cent. However, compared with the forecast in July the future repo rate path, which is an important part of monetary policy, was adjusted downwards. The reason was partly that the oil price and other commodity prices had fallen, and partly that growth had slowed down more than expected both in Sweden and abroad. The downward adjustment in the interest rate path could be said to entail an easing of monetary policy compared with the forecast in July.

The fact that the situation was difficult to assess is illustrated by the fact that three of the Executive Board members entered reservations against both the decision to raise the interest rate and the future interest rate path. They expected that the slowdown in the economy would be more pronounced and inflationary pressures would be more subdued than the forecast assumed.

After the monetary policy meeting in September Statistics Sweden published revised figures for CPI inflation for the months January to July 2008. These figures showed that CPI inflation had

Figure 40. Repo rate and monetary policy expectations in Sweden in February 2008
Per cent



Source: The Riksbank

been slightly lower than in the earlier estimates. However, the annual rate of increase in the CPI was still high and amounted to 4.4 per cent in September.

■■ Financial crisis worsens rapidly and interest rate is cut substantially

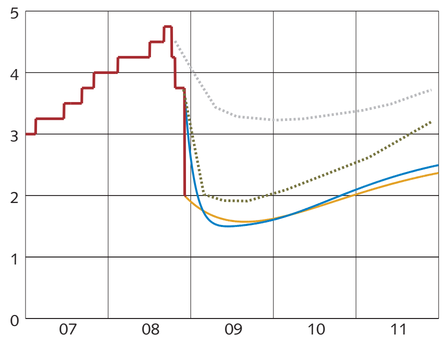
In the middle of September the situation in the international financial markets worsened dramatically. The crisis now also began to tangibly affect the financial markets in Sweden. In a short period of time the central banks in several countries, including the Riksbank, were forced to take measures to support individual banks and to improve the functioning of the financial markets. The unease in the international financial markets had been a component of the Riksbank's analyses during a relatively long period of time. But it was nevertheless unexpected that the situation would deteriorate so rapidly and as tangibly as it did at the beginning of the autumn.

The global financial crisis risked significantly aggravating the international economic downturn. The increased risk of a sharp slowdown in economic growth also meant lower inflation risks, partly as a result of falling oil and commodity prices. Given this, a number of central banks cut their policy rates by 0.5 percentage points in a joint action on 8 October. The banks taking part in the joint action were the Bank of Canada, the Bank of England, the European Central Bank, the Federal Reserve, the Swiss National Bank and the Riksbank. The analyses and forecasts prior to the coming ordinary monetary policy meeting had by then come so far that it was already clear that the interest rate needed to be cut. The Riksbank's assessment was that it would be advantageous to participate in a coordinated joint action with other central banks.

The Riksbank also cut the interest rate at the ordinary monetary policy meeting held on 22 October, by 0.5 percentage points to 3.75 per cent. The Riksbank noted that the financial crisis had worsened and was now clearly affecting developments in Sweden. The crisis had led to higher loan costs for companies and households, lower wealth and generally increased uncertainty. The forecasts for both inflation and GDP growth in 2009 were revised down substantially.

The final monetary policy meeting of the year was brought forward by two weeks to 3 December. Economic activity deteriorated rapidly in November. Several confidence indicators, which summarise the mood in the Swedish economy, fell to historically low levels. The labour market continued to weaken and the number of redundancy notices increased considerably (see Figure 19 in Chapter 3). GDP had fallen in both the second and third quarters. It was primarily household consumption that was weak. The financial crisis led to tighter credit conditions and to short-term market rates losing their normal connection to the repo rate as a result of rising risk premiums. This meant that the interest rates charged to the general public were higher than normal, given the level of the repo rate. The oil price and other commodity prices continued to fall, which pushed down inflation. The forecasts for both inflation and GDP growth were revised down further. The assessment was that a sharp cut in the repo rate and the interest rate path was necessary to dampen the fall in production and at the same time attain the inflation target a couple of years ahead. The Executive Board of the Riksbank therefore decided to cut the repo rate by 1.75 percentage points to 2 per cent (see Figure 39). An unexpectedly rapid and sharp deterioration in the economic situation was thus met by a rapid adjustment in monetary policy during the period October-December. This meant a departure from the gradual changes in the repo rate that characterise monetary policy under more normal conditions. It also meant that the time for the interest rate decision departed from the previously set timetable.

Figure 41. Repo rate and monetary policy expectations in Sweden in December 2008
Per cent



Repo rate
Implied forward rates (STINA, FRA and swaps) 3 December 2008
Implied forward rates (STINA, FRA and swaps) 5 December 2008
Repo rate forecast, MPR 2008:3
Repo rate forecast, MPU December 2008

Source: The Riksbank

■■ Reactions to the riksbank's monetary policy and interest rate forecasts in 2008

The forecast for the repo rate published in the first Monetary Policy Report on 13 February was largely unchanged in relation to the forecast from December 2007. The Riksbank's decision to raise the repo rate by 0.25 percentage points to 4.25 per cent nevertheless came as a surprise to many analysts. The expectation prior to the February meeting, according to pricing in the money market, surveys and market newsletters, was that the repo rate would be held unchanged. After the new year many analysts had also revised down their interest rate forecasts as unease over developments on the international financial markets increased. Expectations were set at the repo rate being cut during the year. However, the Riksbank's forecast was that the interest rate would remain unchanged. The difference in views between the Riksbank and market participants contributed to market reactions being relatively strong. Interest rates rose substantially, particularly for short durations (see Figure 40) and the krona strengthened.

The decision taken in connection with the Monetary Policy Update in April, to hold the repo rate unchanged, was in line with market expectations. However, the fact that the Riksbank had roughly the same view of the future development of the repo rate as it did in February did arouse some attention. Several market analysts had speculated that the Riksbank would revise down its forecast for the repo rate somewhat.

In connection with the second Monetary Policy Report in July, the Riksbank decided to raise the repo rate by 0.25 percentage points to 4.50 per cent. The decision was on the whole expected. At the same time, the Riksbank made the assessment that the repo rate would need to be raised a couple more times during the year. The Riksbank's forecast for the repo rate was adjusted upwards more than the market participants had expected. Interest rates rose and the krona strengthened.

With regard to the Monetary Policy Update in September, market expectations were divided but with the majority leaning towards an increase in the repo rate of 0.25 percentage points. Many economists and analysts were also assuming that the interest rate path would be revised down. The Riksbank's decision to raise the repo rate by 0.25 percentage points to 4.75 per cent led to interest rates on securities with shorter maturities being adjusted upwards. At the same time, the Riksbank's downward revision of the future interest rate path appears to have been greater than expected, which led to interest rates at longer maturities falling slightly. The media reporting, which focussed more on the interest rate raise than the downward revision to the interest rate path, was mostly critical.

The cut in the interest rate of 0.5 percentage points to 4.25 per cent at the extraordinary meeting on 8 October contributed to a fall in interest rates with shorter maturities. Both market pricing and various analysts' forecasts indicated that the repo rate cut was expected, but not that it would be so large and come so early. The repo rate was cut by a further 0.50 percentage points at the ordinary meeting at the end of October, when the third Monetary Policy Report was published. The interest rate cut was larger than expected and the interest rate path published implied more and larger cuts than market participants had estimated.

The fact that the cut on 3 December was as large as 1.75 percentage points was also perceived as surprising. Several interest rate analysts pointed to the possibility that the Riksbank might cut the rate by up to 150 basis points, but no one had this as their main scenario. The fact that the decision did not come as even more of a surprise was due to market participants to some extent revising their expectations of the interest rate decision when the Riksbank announced on 1 December that the ordinary meeting on 16 December would be brought forward to 3 December. The forecast for the repo rate published by the Riksbank the day after the monetary policy meeting, that is on 4 December, indicated that the repo rate would remain at 2 per cent in 2009. Despite the fact that pricing in the market was slightly below this level, it was nevertheless not affected by the publication as the market participants assumed that the Riksbank would need to cut the interest rate further (see Figure 41).

The Riksbank's view of monetary policy and the outcome in 2008

The fact that the average inflation rate was far above the target level in 2008 raises the question of whether the repo rate should have been higher in 2006-2007. But assessing monetary policy after the fact requires careful consideration. The economy is constantly subjected to shocks that are difficult, or even impossible, to predict. The relevant question is therefore whether monetary policy was reasonable, given the information that was available on the occasions when the repo rate decisions were made.

One example of a shock in 2007 and 2008 was that energy and food commodity prices rose substantially and contributed to pushing up inflation to unexpectedly high levels around the world. The oil price in particular rose dramatically (see Figure 25). This development was not foreseen when the Riksbank made its forecasts in 2006 and 2007. Once the Riksbank could note that energy and food prices had begun to rise rapidly there was no reason, and hardly any opportunity, to do other than allow this to have a short-term impact in the form of higher inflation. Trying to keep down inflation even in a short-term perspective through large interest rate raises would result in an unnecessary further weakening of economic activity that has already begun to slacken. The important thing in these situations is that monetary policy ensures that inflationary impulses in the form of price increases on energy and food do not result in secondary effects in the form of demands for higher wages, prices increases on other goods and permanently higher inflation expectations. It was fear of such contagion effects that contributed to the increases in the repo rate during 2008.

Given the more moderate increases in the repo rate that were included in the Riksbank's forecast, the assessment was that while inflation would overshoot the target relatively substantially in the short term, it would soon begin to drop back. For example, in the forecast made in July 2008 the Riksbank's assessment was that CPI inflation one year ahead would amount to 3 per cent, while CPI two years ahead would be marginally above the target. The fact that inflation overshot the target in 2008 was thus mainly due to unexpected shocks occurring.

From summer 2008 energy and food prices fell unexpectedly quickly, which led to a fall in inflation. The crisis in the international financial markets which worsened dramatically in September then reinforced the fall. The increase in inflation was thus temporary as the Riksbank had assumed, but the speed of the downturn was underestimated in the same way as the speed of the upturn had been.

The global financial crisis is of course another important shock. The unrest in the international financial markets had existed for some time and had also affected the Riksbank's forecasts. But the fact that the situation worsened so dramatically as it did in autumn 2008 was nevertheless a surprise.

The rapid fall in inflation and the rapid decline in economic activity at the end of the year raise the question of whether monetary policy should instead have been more expansionary earlier on. Developments in 2008 were thus special in that it is reasonable both to ask – with reference to the high average inflation rate – whether monetary policy should have been tighter earlier on – and with reference to developments at the end of the year – whether monetary policy should have been more expansionary earlier on.

However, the important point is that both the rapid upturn in inflation and the even more rapid downturn in inflation and economic activity in connection with the financial crisis represent shocks that were difficult to predict when the monetary policy decisions were taken. Once the shocks had occurred the Riksbank tried to adapt its policy to them. In the first case it was a question of finding an appropriate balance between weaker economic activity and rising inflation. In the second case, when there was no longer a conflict of interests, it was a question of acting as quickly as possible to counteract the fall in both economic activity and inflation.

Repo rate decisions in 2006

19 January:	The repo rate was raised by 0.25 percentage points to 1.75 per cent.
22 February:	The repo rate was raised by 0.25 percentage points to 2.0 per cent.
27 April:	The repo rate was held unchanged at 2.0 per cent.
19 June:	The repo rate was raised by 0.25 percentage points to 2.25 per cent.
29 August:	The repo rate was raised by 0.25 percentage points to 2.5 per cent.
25 October:	The repo rate was raised by 0.25 percentage points to 2.75 per cent.
14 December:	The repo rate was raised by 0.25 percentage points to 3.0 per cent.

Repo rate decisions in 2007

14 February:	The repo rate was raised by 0.25 percentage points to 3.25 per cent.
29 March:	The repo rate was held unchanged at 3.25 per cent Executive Board member Svante Öberg entered a reservation against the decision and considered that the repo rate should be raised by 0.25 percentage points and that the interest rate path should be revised upwards. He stated that the risks of higher inflation had increased significantly since the monetary policy meeting in February. Developments in the real economy had been stronger than forecast, the labour market had continued to improve more quickly than anticipated and the wage bargaining rounds appeared to be resulting in higher wages than expected.
3 May:	The repo rate was held unchanged at 3.25 per cent Executive Board members Svante Öberg and Lars Nyberg entered a reservation against the decision and considered that the repo rate should be raised by 0.25 percentage points and that the interest rate path should be revised upwards. They both considered that the risks of higher inflation had increased significantly since the monetary policy meeting in February. Economic developments were stronger, the wage bargaining rounds appeared to be resulting in higher wages, fiscal policy was more expansionary and credit expansion remained high.
19 June:	The repo rate was raised by 0.25 percentage points to 3.5 per cent. Executive Board member Svante Öberg entered a reservation against the Monetary Policy Report. He considered that the report in itself provided a good base for the Executive Board meeting and he agreed on the whole with its description of economic developments in recent years. But Mr Öberg's own assessment was that inflationary pressures would become stronger over the coming years than described in the main scenario in the report. He therefore considered that the policy rate would probably need to be raised more than in the main scenario.
6 September:	The repo rate was raised by 0.25 percentage points to 3.75 per cent.
29 October:	The repo rate was raised by 0.25 percentage points to 4 per cent. Executive Board member Svante Öberg entered a reservation against the Monetary Policy Report. His assessment was that developments in the labour market would be stronger and wage increases would be higher than assumed in the Report. This meant that inflationary pressures would be higher and there would be a greater need to raise the repo rate. Mr Öberg was therefore more inclined to support the interest rate path reported in the alternative scenario where wages rose more and productivity was lower than in the interest rate path in the main scenario of the Report.
18 December:	The repo rate was held unchanged at 4 per cent.

Repo rate decisions in 2008

12 February:	The repo rate was raised by 0.25 percentage points to 4.25 per cent and was expected to remain at this level over the coming year. Executive Board members Lars Nyberg and First Deputy Governor Irma Rosenberg entered reservations against the decision to raise the repo rate and against Monetary Policy Report 2008:1 and the main scenario presented in the Report. They noted that although domestic factors were certainly in favour of raising the interest rate, the uncertainty over developments in the international financial markets had increased since December 2007. Giving consideration to the risk this entailed of much weaker developments abroad and thereby also in the Swedish economy, they felt there was reason to wait before raising the interest rate.
22 April:	The repo rate was held unchanged at 4.25 per cent The view of the interest rate path was unchanged.
2 July:	The repo rate was raised by 0.25 percentage points to 4.5 per cent and the interest rate path was adjusted upwards. Executive Board members Lars Nyberg, Irma Rosenberg and Barbro Wickman-Parak supported the decision to raise the interest rate by 0.25 percentage points but entered a reservation against the main scenario's forecasts for the repo rate, inflation and growth in the period ahead. They advocated a lower interest rate path with the motivation that the slowdown in the economy would dampen inflationary pressures to a greater extent than was assumed in the main scenario.
3 September:	The repo rate was raised by 0.25 percentage points to 4.75 per cent but the interest rate path was adjusted downwards. Executive Board members Lars Nyberg, Irma Rosenberg and Barbro Wickman-Parak entered reservations against the decision to raise the repo rate by 0.25 percentage points and considered that the repo rate should be held unchanged. They also entered reservations against the repo rate path included in the Monetary Policy Update and advocated a lower repo rate path. Their assessment was that the slowdown in the economy risked being more pronounced than the forecasts in the Update and that inflationary pressures would slow down to a greater extent than was forecast in the Update.
8 October:	The repo rate was cut by 0.5 percentage points to 4.25 per cent.
22 October:	The repo rate was cut by 0.5 percentage points to 3.75 per cent and the repo rate path was adjusted downwards substantially compared with September.
3 December:	The repo rate was cut by 1.75 percentage points to 2.0 per cent and the repo rate path was adjusted downwards substantially compared with the assessment in October.

Table 2. Outcome and forecasts made for different variables 2008 during 2006, 2007 and 2008
Annual percentage change and annual average, unless otherwise specified

	IR 2006:1	IR 2006:2	IR 2006:3	MPR 2007:1	MPR 2007:2	MPR 2007:3	MPU Dec. 07
GDP 2008	2.4	2.4	2.7	2.9	3	2.8	2.4
GDP OECD 2008	2.6 [1]	2.5 [1]	2.6 [1]	2.7	2.8	2.3	2.1
TCW exchange rate 2008 [2]	122.9	125.3	124.1	123.2	123	122.4	–
Productivity 2008	2.5 [3]	2.5 [3]	2.4 [3]	1.9	2.1	1.5	–
Wages in the whole economy, 2008 (Hourly wages NMO) [4]	4.1	4.1	3.9	3.9	4.5	4.5	–
Unit labour costs in the whole economy 2008	2.0 [3]	2.0 [3]	1.9 [3]	2.1	2.3	3.1	–
Persons employed 2008	0.2	0.5	0.8	0.9	1	1.5	1.4
Unemployment 2008 [5]	4.6	4.9	5.1	4.8	4.5	4.3	–
CPI 2008	2.2	2.4	1.9	2.1	2.3	2.9	3.6
CPIF 2008	–	–	–	–	–	–	–

	MPR 2008:1	MPU Apr. 2008	MPR 2008:2	MPU Sept. 2008	MPR 2008:3	MPU Dec. 2008	OUTCOME
GDP 2008	2.4	2.6	2.1	1.4	1.2	0.8	**0.7** [7]
GDP OECD 2008	2.1	1.6	1.8	1.7	1.5	1.3	**1.1** [7]
Exchange rate TCW 2008 [2]	124.1	123.3	122.8	123.4	125.5	127.2	**127.2**
Productivity 2008	1.1	–	0.6	-0.5	-0.7	-0.7	**-0.8** [7]
Wages in the whole economy, 2008 (Hourly wages NMO) [4]	4.2	4.5	4.4	4.2	4.2	4.2	**4.3** [7]
Unit labour costs in the whole economy 2008	3.3	–	2.9	3.7	4.1	4.5	**4.7** [7]
Persons employed 2008 [5]	1.1	1.1	1.4	1.4	1.2	1.2	**1.2**
Unemployment 2008 [5][6]	5.9	6.0	5.9	6.2	6.2	6.2	**6.2**
CPI 2008	3.4	3.5	3.9	3.9	3.7	3.5	**3.4**
CPIF 2008	–	–	3.1	3.1	2.8	2.7	**2.7**

1) OECD-19
2) TCW index 18 November 1992 = 100
3) in the business sector
4) NMO refers to the National Mediation Office's short-term wage statistics.
5) per cent of labour force
6) With effect from MPR 2008:1 the Riksbank publishes forecasts for employment and unemployment in accordance with the EU definition, which refers to the age group 15-74 years.
7) Statistics for Q4 2008 were not available when this material was compiled The figure refers to the Riksbank's forecast in MPR February 2009.
Sources: National Mediation Office, the OECD Statistics Sweden and the Riksbank

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PRODUCTION: SVERIGES RIKSBANK. PRINTING: JERNSTRÖM OFFSET AB
ISBN 978-91-89612-34-1