



Monetary Policy Report

2007:1

Monetary Policy Report

The Riksbank's Monetary Policy Report is published three times per year. The report describes the deliberations made by the Riksbank when deciding what would be an appropriate monetary policy to conduct.¹ The report contains a description of the future prospects for inflation and economic activity based on the interest rate path that the Riksbank currently considers will provide a well-balanced monetary policy. Each report also contains a description of the new information received since the previous report and an assessment of how the Riksbank views the current economic situation.

The purpose of the Monetary Policy Report is to produce background material for monetary policy decisions, and to spread knowledge about the Riksbank's assessments. By publishing the reports, the Riksbank aims to make it easier for external parties to follow, understand and assess its monetary policy.

The Riksbank must submit a written report on monetary policy to the Riksdag (Swedish Parliament) Committee on Finance at least twice a year (see Chapter 6, Article 4 of the Sveriges Riksbank Act (1988:1385)). The Riksbank has chosen to use two of the year's three monetary policy reports for this purpose. This report constitutes one such account to the Riksdag. As is customary, the first report of the year contains an assessment of monetary policy.

The Monetary Policy Report is available on the Riksbank's website, www.riksbank.se. From this address a printed version of the report can be ordered free of charge or the report can be downloaded as a PDF file.

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¹ See *Monetary policy in Sweden* on the following page for a review of monetary policy strategy and of what can be regarded as a desirable monetary policy.

Monetary policy in Sweden

MONETARY POLICY TARGET

According to the Sveriges Riksbank Act, the statutory objective of monetary policy is “to maintain price stability”. The Riksbank has specified this objective in terms of an inflation target according to which the annual change in the consumer price index (CPI) is to be two per cent. The Riksbank has set a tolerance band around the target of plus/minus one percentage point. This band 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 STRATEGY²

- Monetary policy is guided by, in addition to CPI, various measures of “underlying inflation”. One such measure is UND1X. This measures inflation adjusted for the direct effects of changes in indirect taxes and subsidies and mortgage interest expenditure. 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 routinely 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 the level of output and employment in the long term is not affected by monetary policy but is 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 seven 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. 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 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 usually held if a monetary policy report is presented and on those occasions when the repo rate is changed. The time for the press conference is then announced in the press release.

² A detailed description of the monetary policy strategy is available as a PDF file and as a printed publication that may be ordered from the Riksbank’s website www.riksbank.se under the heading Monetary policy/Price stability.

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■ Monetary policy considerations

– a summary

At its meeting on 14 February, the Executive Board of the Riksbank decided to raise the repo rate by 0.25 percentage points to 3.25 per cent. At the same time, its assessment was that the repo rate needs to be raised by a further 0.25 percentage points over the coming six months. After that it will probably be possible to pause before making a further increase. The interest rate increases are expected to contribute to inflation being on target a couple of years ahead and to a balanced development of the real economy.

Inflation is currently low. At the same time, there has been strong growth in economic activity, both in Sweden and abroad. Capacity utilisation in Sweden is increasing, but is not currently considered to be strained. The high GDP growth in recent years has been driven by strong advances in productivity and high international demand. The strong economic growth has led to lending and house prices continuing to increase at a rapid rate, although some slowdown took place during the second half of 2006. Moreover, stock market rates have risen substantially since summer 2006.

The Riksbank's assessment is that GDP growth in Sweden will slow down during the period 2007-2009, when the international business cycle enters a calmer phase and productivity growth declines. GDP growth will nevertheless be relatively high in 2007 as a result of rising employment and a rapid increase in consumption. Cost pressures will rise as employment increases and wages rise more quickly. Productivity growth will not hold back costs to the same extent as before. Inflation is therefore expected to rise.

However, several factors will contribute to keeping inflation at a relatively moderate level. Abroad, the price pressures of recent years are expected to remain. Combined with the stronger krona exchange rate, this will contribute to low import prices. Moreover, cost pressures are expected to be comparatively modest, although they will rise. One reason is that not only employment, but also the labour supply will increase. Falling energy prices will also lead to a temporary fall in inflation during 2007.

Last year, monetary policy gradually became less expansionary. The Riksbank's current assessment is that a well-balanced monetary policy involves raising the repo rate by a further 0.25 percentage points now and then by a further 0.25 percentage points during the coming six months. After that it will probably be possible to pause before making a further increase. This contributes to inflation being expected to be close to target from autumn 2008 and onwards. At the same time, the real economic development is considered to be balanced. The reason why the Riksbank does not consider it necessary to raise the repo rate more, despite strong growth, is that inflation is subdued by a number of factors, including a rapid increase in the labour supply.

However, it is important to point out that, as always, there is great uncertainty over future economic developments. It is therefore also uncertain how the repo rate will develop in the future. If, for instance, the wage bargaining rounds were to lead to a higher rate of increase in wages, or if domestic demand were to grow faster than expected, it might be necessary to conduct a tighter monetary policy. On the other hand, if international developments turned out weaker than expected, or if the labour supply increased more than anticipated, it might be necessary to conduct more expansionary monetary policy. The future direction for monetary policy will depend as usual on new information concerning economic developments in Sweden and abroad and the effects this may have on the prospects for inflation and economic activity.

The minutes from the Executive Board meeting held on 14 February will be published on 28 February. The next monetary policy meeting will be held on 29 March. The next Monetary Policy Report will be published on 20 June.

CHAPTER 1 – The economic outlook and inflation prospects

The high GDP growth in Sweden in recent years stems mainly from high international demand and strong increases in productivity. During 2007-2009, economic growth will be subdued by a slowdown in international growth and these increases in productivity, among other factors. GDP growth will nevertheless remain relatively high in 2007, driven by an increase in employment and a rapid rise in consumption. As employment rises and the rate of wage increase picks up production costs are expected to rise at a faster rate. Inflation is therefore expected to rise during the forecast period. However, several factors will contribute to keeping inflation at a relatively moderate level. Outside Sweden, the price pressures of recent years are expected to remain, which, combined with the appreciation of the krona, will contribute to low import prices. Moreover, cost pressures, although they will rise, are expected to be comparatively moderate. One reason for this is that not only employment, but also labour supply will increase. Falling energy prices will also lead to inflation falling back temporarily in 2007.

As employment has risen, the economy's production resources have been utilised to an ever increasing extent. Monetary policy has therefore gradually become less expansionary to achieve an inflation path in line with the target and to achieve balanced growth in output and employment. The Riksbank's current assessment is that the repo rate needs to be raised by a further 0.25 percentage points in February and by another 0.25 percentage points during the coming six months. There could then be a pause before it is time for a further increase. GDP growth will gradually slacken, from 3.5 per cent this year to 2.5 per cent in 2009. Looking two years ahead, inflation, measured using CPI and UND1X, is expected to amount to 2.1 and 1.9 per cent respectively.³

Figure 1. Repo rate with uncertainty bands
Per cent

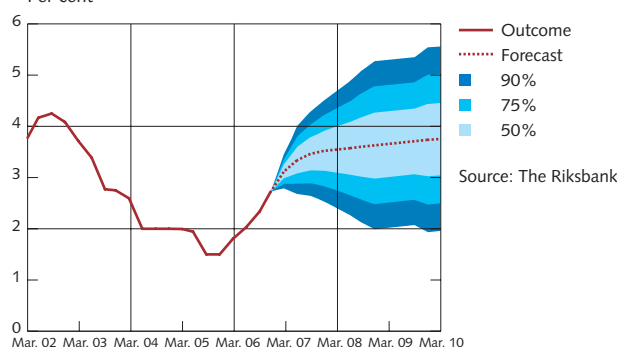


Figure 2. GDP with uncertainty bands
Annual percentage change

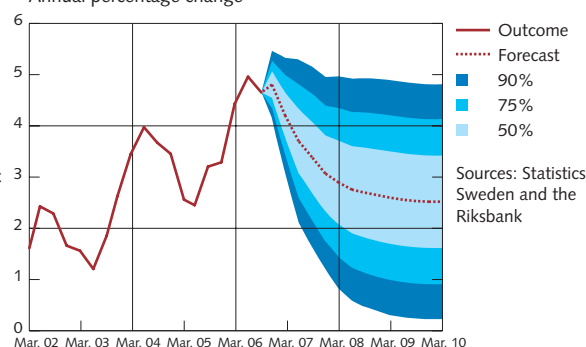


Figure 3. CPI with uncertainty bands
Annual percentage change

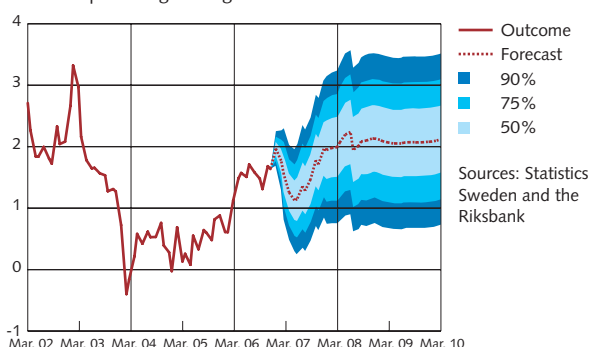
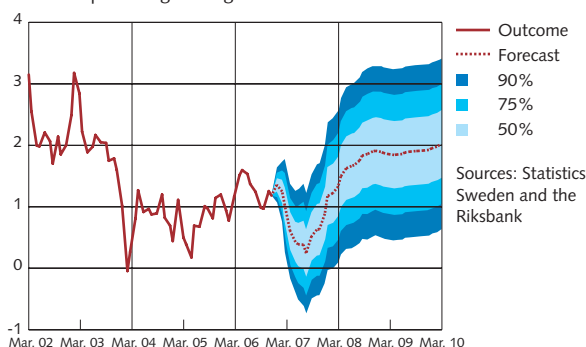
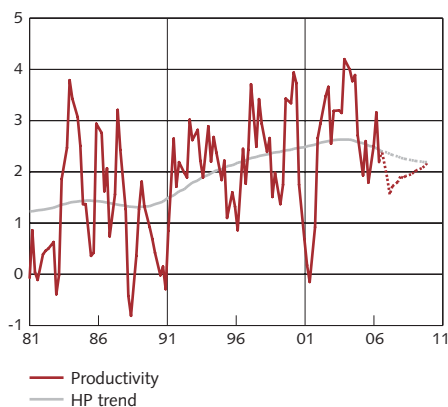


Figure 4. UND1X with uncertainty bands
Annual percentage change



3 The uncertainty bands in the figures are based on historical forecast errors. See the box entitled "Calculation method for uncertainty bands" in this report.

Figure 5. Actual and trend labour productivity for the economy as a whole
Annual percentage change, seasonally adjusted data



Note. Trend calculated using a Hodrick-Prescott filter.
Broken lines represent the Riksbank's forecast.

Sources: Statistics Sweden and the Riksbank

■ ■ Strong growth and low inflation at present

Inflation is currently low, as is the rate of wage increase and cost pressure. At the same time there has been strong growth in economic activity, both in Sweden and abroad. Resource utilisation is rising and is considered to be about normal at present. The high GDP growth in Sweden in recent years has been driven by strong advances in productivity and high international demand. The strong economic growth in Sweden is also reflected in the credit and asset markets. Equity prices have risen sharply since the summer of 2006, and companies and households have continued to increase their borrowing by a relatively large amount seen from a historical perspective. At the same time, house prices have continued to rise and household wealth has been boosted further. The growth rates for both borrowing and house prices have been subdued slightly during the second half of 2006 but remain high.

■ ■ Productivity growth strong but lower than in recent years

Since 2002, labour productivity, measured as GDP per hour worked, has increased at a fast pace (see Figure 5). One of the most important and, as it has turned out, most difficult assessments for Swedish forecasters has been to determine how long this high rate of increase will prevail.

The beginnings of an economic upturn are normally associated with high productivity growth. The explanation for this is that, at the beginning of an upturn, firms have the capacity to increase their production using existing production resources. With time, in response to the increasing need for more production resources, companies start hiring staff. The rate of increase in productivity will then decline.

This phenomenon probably explains to some extent the strong productivity growth in 2002-2004, even if other factors also played a part. During this period, output increased by more than 2.5 per cent a year on average, even though the number of hours worked and the number of employed fell on average during the same period. Looking back over the past 25 years, the combination of high growth and falling employment has been unusual, particularly for such a long and uninterrupted period.

In 2005, the tide turned and a slackening of productivity growth was coupled with rising employment. Even if productivity growth in 2006 was slightly higher than in 2005, there is still much to indicate that productivity growth has now slowed to a more normal level, seen from a long-term perspective. The Riksbank's assessment is that productivity growth will temporarily be curtailed in 2007 and will then edge up towards its long-term level during the rest of the forecast period (see Figure 5 and Table A6). The fact that employment is primarily expected to rise in the service sectors also suggests that productivity growth will be slightly lower in the years to come compared with recent years, since productivity levels are on average lower for service sectors than for industry.

The strong productivity growth has enabled production to rise at a fast rate without a similar rate of increase in production costs. This has

accordingly also kept price increases down. The fact that the productivity increases have now stabilised at a lower level, relatively speaking, means that this dampening effect on companies' unit labour costs – and ultimately on inflation – will to a certain extent tail off.

At the same time, it should be borne in mind that the assessment of the magnitude of long-term productivity growth has been raised over the past decade. For instance, it is clear that trend productivity growth, i.e. not arising from cyclical effects, has been higher over the past 15 years than previously (see Figure 5). The driving forces behind this could be the shift in stabilisation policy at the beginning of the 1990s, structural factors such as increased international and domestic competition and a greater use of information and communications technology. To increase output by one unit now requires, on average, less work, and accordingly a lower labour cost, compared with the past two decades. This will contribute to a relatively moderate, albeit rising, cost pressure in the future.

The developments in productivity are thus of considerable importance for growth and cost pressures in the future. The Riksbank's assessment is that the productivity increases in the coming years will on average be lower than the average growth noted in the past five years. However, as pointed out above, productivity growth has generated surprises before and there is considerable uncertainty regarding the current assessment. There are arguments to suggest that productivity growth could be both higher and lower than in the main scenario.

■ Rise in employment and strong demand drive GDP growth

Despite a dampening of productivity, GDP growth is expected to be relatively high in the future (see Figure 6). This year, GDP growth is estimated at 3.5 per cent. During the rest of the forecast period, growth will gradually become more subdued and the view is that it will reach a more long-term and sustainable level of 2.5 per cent in 2009 (see Table 2).

The relatively strong GDP growth this year can be explained by a rise in employment and a continued increase in household consumption. Demand will be stimulated by a number of factors, including the "job deduction", which will boost household income. The level of interest rates has been and remains comparatively low. Another factor that will contribute to GDP growth in 2007 is a relatively strong international economic performance.

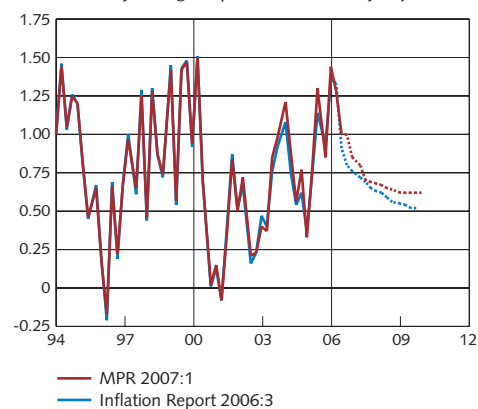
The international economic upturn will gradually slacken. At the same time, monetary policy in Sweden will become less expansionary to prevent inflationary pressures rising too rapidly and to contribute to a more balanced growth in output and employment. There will therefore be a gradual slowdown in GDP growth during 2008 and 2009.

■ Continued rapid growth in employment and the labour force

During the second half of 2006, there was a rapid increase in the number of employed and it appears as if this development will continue. As a result, the increase in employment, measured both as the number

Figure 6. GDP

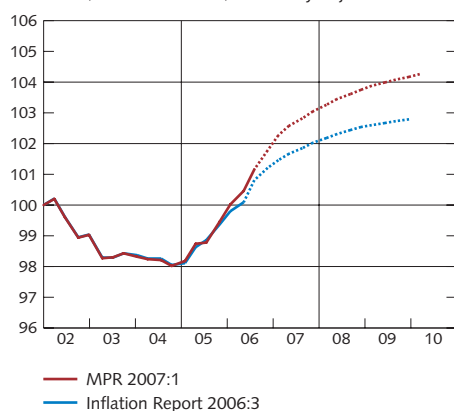
Quarterly change in per cent, seasonally adjusted data



Note. Broken lines represent the Riksbank's forecast.

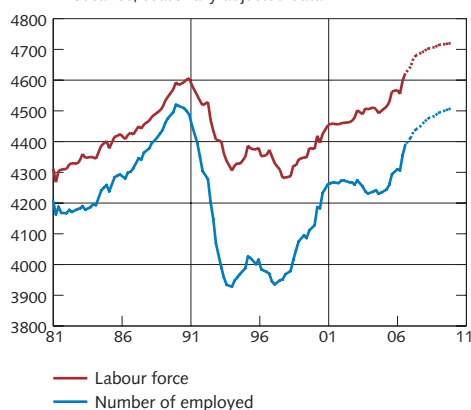
Sources: Statistics Sweden and the Riksbank

Figure 7. Number of hours worked
Index, 2002 Q1 = 100, seasonally adjusted data



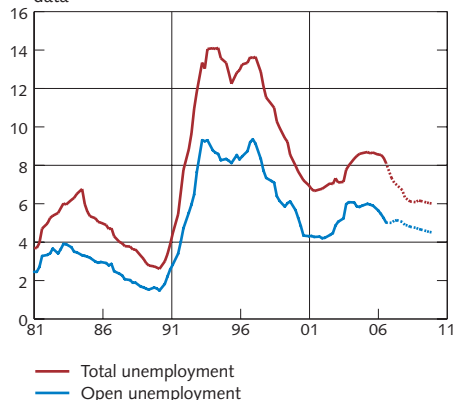
Note. Broken lines represent the Riksbank's forecast.
Sources: Statistics Sweden and the Riksbank

Figure 8. Number of employed and number of people in the labour force
Thousands, seasonally adjusted data



Note. Broken lines represent the Riksbank's forecast.
Sources: Statistics Sweden and the Riksbank

Figure 9. Proportion of open unemployed and total unemployed
Percentage of the labour force, seasonally adjusted data



Note. Broken lines represent the Riksbank's forecast.
Sources: National Labour Market Board, Statistics Sweden and the Riksbank

of people and the number of hours worked, is expected to be high in 2007 – around 2 per cent in both cases (see Figures 7-8 and Table A5). Employment is also expected to rise during the rest of the forecast period, albeit at a slowing rate. The number of people in labour market policy measures will admittedly fall gradually during 2007-2009, but the overall effect of those measures and stimuli to work introduced by the government is expected to be an increase in employment.

The Riksbank's assessment is that the labour force will also continue to grow at a rapid pace in 2007 (see Figure 8 and Table A5). Cutbacks in the number of people in training programmes will spur such a development as early as the first half of 2007. During the rest of the forecast period, the government's policy is expected to lead to a gradual increase in the labour supply, meaning that more people will make themselves available to the labour market. But the increase in the labour force will taper off slightly in 2008-2009, as there are increasingly fewer people outside the labour force and in line with a slackening in economic activity. There are also factors that will contribute to curtailing the increase in the labour supply during the forecast period. The percentage of people in the age groups with the highest participation in the labour force, that is, those aged between 35 and 55, will decline, while the percentage of younger and older people will increase.

There is considerable uncertainty in the assessment regarding how much the labour force will increase in the future, partly because the effects of the government's policy are uncertain. Chapter 2 provides an account of an alternative scenario in which the labour supply increases more than it does in the main scenario.

Since employment is expected to rise slightly more than the labour force, the proportion of open unemployed will gradually decline during the forecast period (see Figure 9 and Table 2). However, the relatively rapid increase in the number of people in the labour force (see above) will hold back any decline in 2007. The labour supply will also rise relatively rapidly during the rest of the forecast period, which will keep unemployment up despite the increase in employment.⁴ One effect of this is that the strong rise in employment will probably not drive the degree of resource utilisation and cost pressures upwards to the same extent. The Riksbank's current assessment is therefore that unemployment can probably fall to a relatively low level without resource utilisation being overly strained.

■ ■ Strong finances and high consumption growth in the public sector

A strong economic performance and improved labour market conditions will result in continued healthy public finances and a continuing strong increase in public consumption in 2007, particularly in the local

⁴ Statistics Sweden will shortly start to publish a measure of open unemployment in accordance with a new EU-harmonised definition that is similar to the ILO definition. The main difference compared to the old definition is that it includes full-time students who have looked for work. The EU definition produces an open unemployment figure that in 2006 was around 1.5 percentage points higher than according to the old definition for the age group 16-64 years. The Riksbank's forecast for unemployment in the future based on the new definition is also just under 1.5 percentage points higher than the forecast based on the old definition.

government sector. Higher employment will lead to greater tax incomes, which, it is assumed, will lead to an increase in public consumption. The government's decision to terminate several labour market policy programmes is expected to reduce public consumption. Overall, however, public consumption is only expected to be marginally affected by the government's measures, since the Budget Bill also included measures that will increase consumption in the local and central government sectors, e.g. more police officers, an increase in integration/equality activities and additional contributions to health and medical care.

The target for general government net lending is that it should on average correspond to 2 per cent of GDP over a business cycle. The Riksbank's assessment is that actual net lending will remain above target during the entire forecast period (see Table 2). The cyclically adjusted balance can be used as an indication of deviations from the target in individual years. The Riksbank's assessment is that the cyclically adjusted balance will remain above target during the entire forecast period.⁵ It is estimated that public sector income and expenditure, seen as a proportion of GDP, will both fall during the forecast period. The decline in income is primarily attributable to the fact that direct taxes from households are falling as a proportion of GDP as a result of the "job deduction" which entails lower taxes on earned income. The reduction on the expenditure side can primarily be explained by a decline in transfers to households, partly as a result of the government's reforms, partly as a result of increased employment.

■ Household consumption rising fast

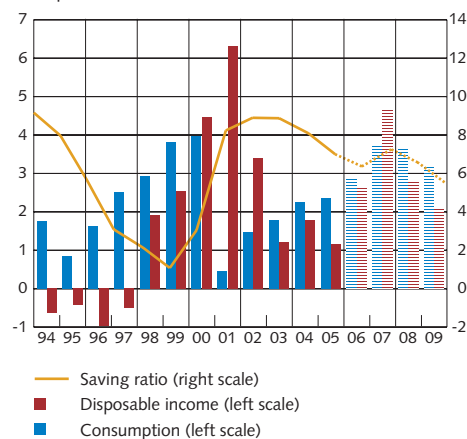
The strong developments in the labour market in the future is expected to bring about continued increases in household disposable income. The rise in employment in combination with tax cuts on earned income means that the increase will be particularly large in 2007. The raising of dues for unemployment benefit funds will admittedly reduce disposable incomes somewhat, but the Riksbank's assessment is nevertheless that households' real disposable incomes will rise by just under 5 per cent in 2007. During the rest of the forecast period, this rate of increase will taper off slightly as the rise in employment is subdued and the magnitude of tax cuts is reduced (see Figure 10).

According to surveys, households are optimistic in their assessments of their own finances and of developments in the Swedish economy on the whole. As employment is continuing to rise and there is less risk of unemployment, it is reasonable to assume that households will also reduce their precautionary saving in the future. The saving ratio, however, will rise temporarily in 2007 as a result of the unusually large increase in income, but will subsequently fall gradually during the forecast period (see Figure 10).

Household holdings of liquid assets (bank deposits) and the value of their assets in the form of shares and housing have both risen rapidly

Figure 10. Household consumption, disposable income and saving ratio

Annual percentage change and percentage of disposable income

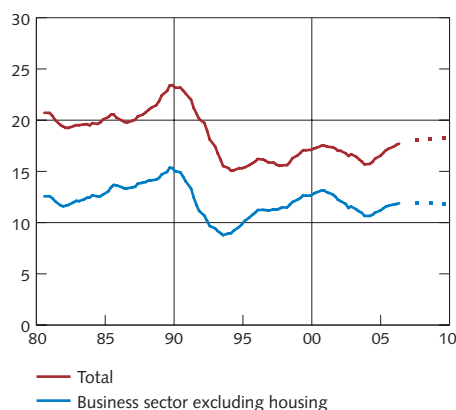


Note. Broken lines and striped bars represent the Riksbank's forecast.

Sources: Statistics Sweden and the Riksbank

⁵ This assessment includes savings in the premium pension scheme (PPM). In 2007, the reporting of this data will change and these savings, which account for around 1.1 per cent of GDP, will be reported as household savings in accordance with a decision by Eurostat.

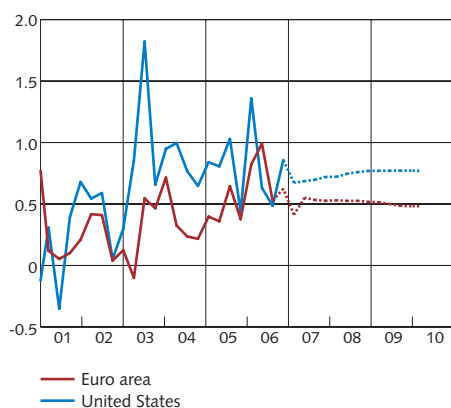
Figure 11. Investments
Per cent of GDP



Note. Four-quarter moving average. Dots represent the Riksbank's forecast for the full year.

Sources: Statistics Sweden and the Riksbank

Figure 12. GDP for the United States and the euro area
Quarterly change in per cent



Note. Broken lines represent the Riksbank's forecast.

Sources: Eurostat, US Department of Commerce and the Riksbank

in recent years. Household wealth is expected to remain strong. House prices are expected to continue to rise during the forecast period, although one consequence of the gradual rise in interest rates is that the rate of increase will probably be lower than in recent years. This also means that the rate of increase in household borrowing will be subdued. Rising interest rates will lead to a rise in household interest expenditure, but this will be offset by a simultaneous rise in household disposable income. The interest ratio, i.e. interest expenditure expressed as a proportion of disposable income, will therefore probably rise moderately during the forecast period.⁶

The Riksbank's overall assessment is that household consumption will rise rapidly during the forecast period. In 2007 and 2008, consumption will rise by 3.7 per cent (see Figure 10 and Table A4). The increase in consumption will then taper off slightly during 2009, to just over three per cent.

■ ■ Clear slowdown in investment

In recent years, investment growth has been comparatively strong and the level of investment has risen. In the coming years, one can expect to see a pronounced slowdown in the rate of increase in investments (see Figure 11 and Table A4).

Housing construction has recently entered a calmer phase and this trend is expected to continue in the future. This means that there will be a clear slowdown in the rate of increase in housing investment in 2007. Gently rising interest rates will mean that the increase in housing investment will be further subdued somewhat during 2008-2009. Other investments in the business sector are expected to continue to rise in the period ahead, but here too, the rate of growth will be slower than the rapid growth noted in recent years.

Public sector investment is expected to increase in the coming years following, among other things, central government investment in infrastructure and greater investment scope at local government level. However, the rate of increase will be moderate and will also slow somewhat during the forecast period.

■ ■ Slowing international economic upturn curbs Swedish exports

Abroad, economic performance has developed favourably for a number of years. In recent years, the growth rates have edged back slightly in many countries, but have still remained relatively high.

Compared to developments in recent years, GDP growth in the United States is expected to be lower during the forecast period (see Figure 12). The Riksbank's overall assessment is that GDP growth in the United States during the forecast period will be 2.8 per cent in 2007 and will subsequently rise gradually to just over 3 per cent in 2009 (see Table A2).

Last year, a subdued housing market was one of the factors that contributed to a slowdown in the U.S. economic upturn. The fact that

⁶ The Financial Stability Report 2006:2 contains a detailed analysis of house price trends in the future and of households' margins against rising costs.

employment is continuing to rise at a healthy rate is one of several factors that nevertheless indicates a comparatively gentle slowdown in the future. Falling oil prices and strong stock market growth are also expected to keep household consumption up in the future, despite a more subdued housing market. However, growth in the U.S. market could slacken even more if, for example, the decline in house prices were to have a greater impact on household consumption than has been the case so far (see Figure 13). Chapter 2 provides an account of a scenario in which international growth is weaker than in the main scenario. One possible driving force behind such a scenario could be a more severe slowdown in U.S. economic growth.

In the euro area, GDP growth is expected to remain close to 2 per cent in 2007-2009, but will slacken somewhat during the forecast period (see Figure 12 and Table A2). The reasons for this include lower demand growth abroad and tighter fiscal and monetary policy. Even in our Nordic neighbouring countries, indicators of economic activity suggest lower GDP growth. However, the development being forecast is a slow and gradual adjustment towards more long-term, sustainable growth rates.

Aggregated with Swedish export weights, growth abroad will slacken during the forecast period. Export market growth is expected to gradually decline from a peak of almost ten per cent growth in 2006 to around six per cent in 2009 (see Table A2). In addition, the forecast strengthening of the exchange rate will to a certain extent contribute to dampening Swedish exports in the future. Overall, there are thus expectations of slackening export growth in the coming years (see Figure 14 and Table A4).

■ ■ Krona exchange rate strengthens

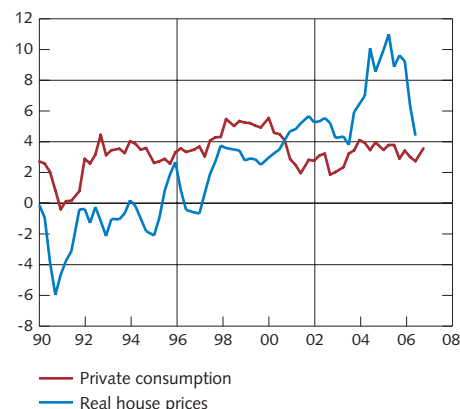
The trade-weighted exchange rate appreciated in 2006. The strengthening is expected to continue during 2007-2009, albeit at a slower rate (see Figure 15).

The Swedish economy has had large current account surpluses in recent years. This has strengthened Sweden's international investment position, even if the valuation effects complicate the picture somewhat.⁷ GDP growth in Sweden is expected to continue to be high in relation to GDP growth abroad. Both these factors suggest that there will be a continued appreciation of the real exchange rate, i.e. the exchange rate adjusted for the relative price level in Sweden compared with abroad. Given that the developments in inflation in both Sweden and abroad will be broadly the same, it is likely that the nominal exchange rate will strengthen.

■ ■ Resource utilisation in the economy rises initially before subsequently stabilising

Resource utilisation can be measured in a number of ways and different measures can produce different indications regarding the amount of

Figure 13. Real house prices and private consumption in the United States
Annual percentage change



Note. House prices have been deflated by CPI.

Sources: Office of Federal Housing Enterprise Oversight and the US Department of Commerce

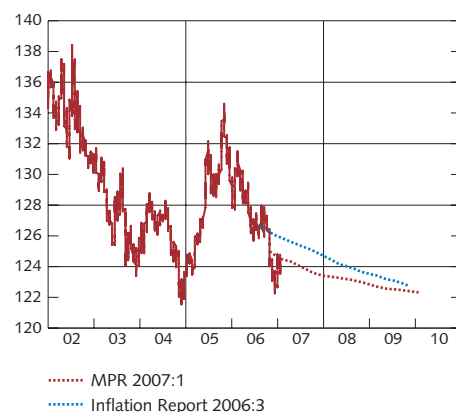
Figure 14. Swedish exports and export market index for goods
Annual percentage change



Note. Dots represent the Riksbank's forecast for the full year.

Sources: Statistics Sweden and the Riksbank

Figure 15. TCW exchange rate Index, 18 November 1992 = 100

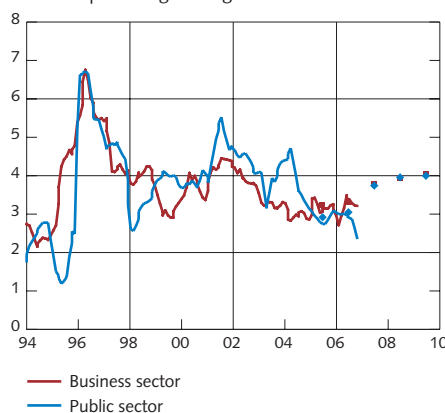


Note. Outcomes represent daily rates and forecasts refer to quarterly averages. Broken lines represent the Riksbank's forecast.

Source: The Riksbank

⁷ See P. R. Lane, "The Swedish External Position and the Krona", Sveriges Riksbank Working Paper Series No. 200 and G. Blomberg, and M. Falk, "How do large current-account surpluses co-exist with a weak international investment position?", *Sveriges Riksbank Economic Review*, No. 1:2006.

Figure 16. Nominal hourly wages
Annual percentage change



Note. Three-month moving average. Preliminary outcomes as of December 2005. Dots represent the Riksbank's forecast.

Sources: National Mediation Office and the Riksbank

available resources. The Riksbank's overall assessment is that the current level of resource utilisation in the economy is more or less normal (see also Chapter 3). In 2007 the degree of resource utilisation is expected to rise.

As pointed out above, the government's reforms will have consequences for the labour supply in both the short term and the long term. Therefore, more people are expected to enter the labour market in the period ahead. This is expected to have a restraining effect on wage trends at the same time as it also means that sustainable growth in the economy will probably edge upwards. This reduces the risk of "overheating" in the economy, caused by the rise in employment and growth in demand and characterised by rapidly rising cost pressure and inflation.

During the rest of the forecast period, the degree of resource utilisation will stabilise as economic growth slackens and is expected to return to more or less normal levels at the end of the forecast period (see also the section on alternative interest rate scenarios in Chapter 2).

■ ■ Wages will increase more rapidly

Wage increases are expected to more or less follow a historical pattern during the forecast period, given the developments on the labour market. The Riksbank's overall assessment is that wages across the entire economy will rise by just under 4 per cent in 2007. During the first half of the year, the level of wage increases will probably be increased by around half a percentage point compared with the previous year as many of the new wage agreements are reached. In 2008 and 2009, the wage increases are expected to be around 4 per cent respectively (see Figure 16 and Table 2).

The Riksbank's forecast for future wage trends must be based on an overall assessment of many factors. Some of these suggest that the wage increases, both in stipulated wage rates and wage drift, can be relatively large. Other factors indicate a more restrained development.

One of the factors suggesting high wage increases is the utilisation of resources in the labour market, which is currently higher than during the wage bargaining rounds in 2004. The shortage of labour has risen slightly in all sectors (see Chapter 3) and a strong upturn in employment is expected in the period ahead. Moreover, the overall demands of the Swedish Trade Union Confederation (LO) are now slightly higher than in previous wage bargaining rounds with co-ordinated wage demands at the same time as corporate profits are, on average, higher. Surveys also indicate that the expectations of the social partners regarding future wage increases are higher now than the corresponding expectations at the beginning of the previous wage bargaining rounds.

Factors that suggest relatively moderate wage increases include the fact that industry faces considerable international competitive pressure. Another factor is the government's tax cuts on earned income, known as the "job deduction", which could feasibly be expected to have a dampening effect on demands for wage increases. The job deduction also makes it more profitable to work, which will probably have the effect

of increasing the labour supply, i.e. the number of people in the labour market will increase. An increase in the supply should have a dampening effect on wage drift.

Future wage trends will thus be affected both by factors that indicate higher wage increases, e.g. the rise in employment and the shortage of labour, and by factors that indicate a more moderate wage inflation, e.g. an increase in the labour supply. There is considerable uncertainty in the assessment with regard to the magnitude of these effects. Chapter 2 provides an analysis of two alternative scenarios in which wage increases are either higher than in the main scenario or lower. In the one scenario, the assumption is that the wage bargaining rounds produce a higher wage outcome than in the main scenario, whereas in the other scenario, the assumption is that the government's policy has a greater impact on the labour supply.

■ ■ Higher wage increases and lower productivity growth leads to higher cost pressure

A rising rate of wage increase, coupled with productivity increases that stabilise at more normal levels will mean that firms' cost pressures will rise during the forecast period. This is expected to contribute to greater price increases. The Riksbank's assessment is that the unit labour costs throughout the economy will rise by 2.8 per cent this year and by about 2 per cent during the rest of the forecast period (see Figure 17 and Table A6). The sharp increase in unit labour costs this year can in part be explained by the assumption that the reduction in collective charges that reduced unit labour costs last year will cease to apply this year. One effect of this will be that the year-on-year change in unit labour costs between 2006 and 2007 will be particularly large (see Table A6).

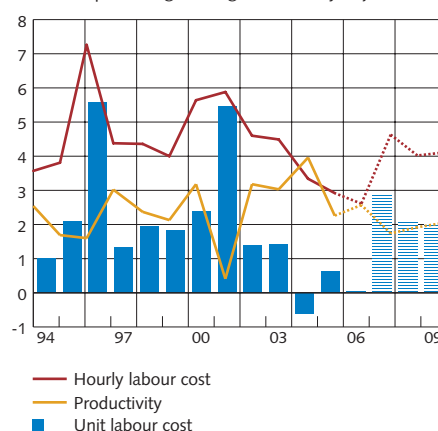
During the forecast period, labour costs are also expected to be affected by the various changes in employers' contributions announced by the government (see also Chapter 3). Some of these measures will increase firms' labour costs, whereas others will contribute to a reduction. The effects of these measures are expected to cancel one another out during 2007. In 2008 and 2009, the overall estimate for these measures is that they will contribute to reducing the rate of increase for labour costs by 0.2 percentage points per year.

■ ■ Sharp fluctuations in energy prices make inflation assessment uncertain in the short term

Energy prices have fluctuated sharply over the past year. Last year, the oil price rose rapidly up to October, but has since fallen back to a lower level. Electricity prices have also fluctuated considerably in the past year (read more about the current situation in Chapter 3).

The recent decline in both spot prices and forward prices for electricity suggests that consumer prices will fall in the period ahead. At the same time, last year's sharp increases in the prices of oil products (petrol, diesel and domestic heating oil) and electricity will disappear

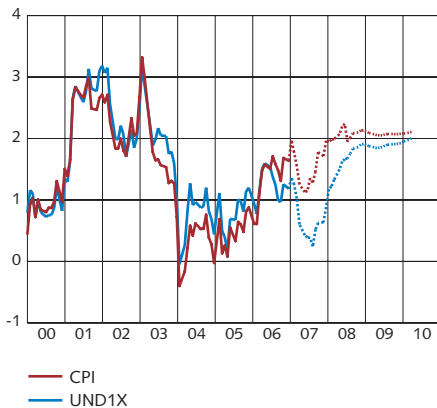
Figure 17. Unit labour costs for the economy as a whole
Annual percentage change, seasonally adjusted data



Note. Broken lines and striped bars represent the Riksbank's forecast.

Sources: Statistics Sweden and the Riksbank

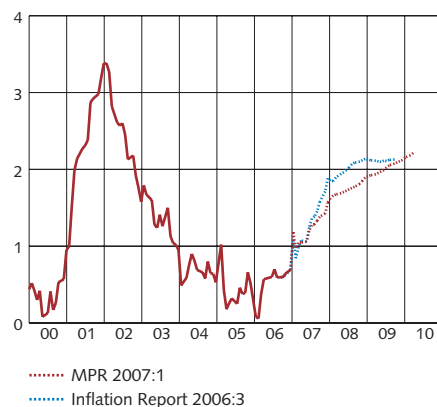
Figure 18. UND1X and CPI
Annual percentage change



Note. Broken lines represent the Riksbank's forecast.

Sources: Statistics Sweden and the Riksbank

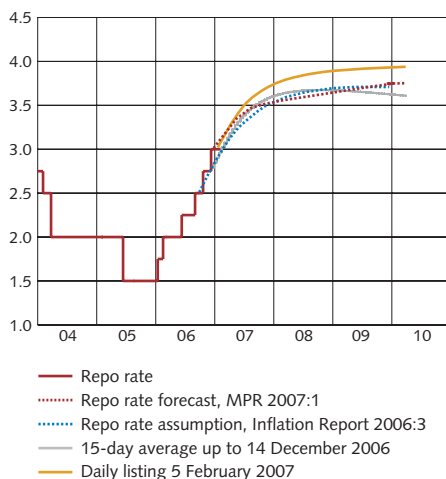
Figure 19. UND1X excluding energy
Annual percentage change



Note. Broken lines represent the Riksbank's forecast.

Sources: Statistics Sweden and the Riksbank

Figure 20. Repo rate forecast and implied forward rates based on government securities on different occasions
Per cent



Note. The repo rate assumption in Inflation Report 2006:3 is based on forward rates calculated as an average for 15 days up to and including 12 October 2006.

Source: The Riksbank

from the 12-month comparisons. The overall implications of this are that energy prices, according to the assumption, will contribute to bringing inflation down by around one percentage point in mid-2007. However, given the sharp fluctuations in electricity and oil prices, it is difficult to predict how energy prices will perform in the immediate future. This means that there is a considerable element of uncertainty in the assessment of inflation developments, even in the short term.

■ ■ Inflation to rise eventually, but will initially be held back by energy prices

Underlying inflation, measured as UND1X, is expected to fall relatively sharply from current levels before hovering temporarily around zero by the summer. The low inflation is primarily a result of falling energy prices (see Figures 18-19).

However, from the end of 2007 onwards, inflation will once again rise, when energy prices have normalised and cost pressures in the economy start to pick up. Adjusted for the effects of energy prices, underlying inflation will gradually rise throughout the forecast period, from the current level of around 0.7 per cent to just over 2 per cent at the end of 2009 (see Figure 19).

The Riksbank's overall assessment is that inflation measured as UND1X will be 1.3 per cent one year ahead, 1.9 per cent two years ahead and 2.0 per cent three years ahead. The corresponding figures for CPI inflation are 2.0 per cent, 2.1 per cent and 2.1 per cent (see Table 1). Rising interest rates will mean that CPI inflation will be higher than UND1X inflation for most of the forecast period (see Figure 18).

■ ■ Repo rate expected to rise slowly

Even though inflation is expected to rise during the forecast period, favourable supply conditions will contribute to a relatively moderate level of inflation, despite a strong rise in employment and comparatively high GDP growth. The number of people in the labour force is expected to rise rapidly. This will probably have a restraining effect on the rate of wage increase. Productivity growth has admittedly declined slightly, but is nevertheless expected to remain at a comparatively high level. The krona appreciation and the international price pressure that has curbed price increases on imported goods will probably persist in the future. Moreover, energy prices will hold back inflation in the short term.

In view of the continued favourable supply conditions the Riksbank currently expects that the repo rate will be raised at a relatively slow rate in the future. The forecast for the repo rate presented by the Riksbank in this report does not differ much from the implied forward rate path on which the forecasts in the October Inflation Report were based (see Figure 20). Nor does it differ markedly from the market's expectations of the future repo rate that prevailed around the time of the Riksbank's monetary policy decision in December. However, the market's expectations recently have on the whole disposed towards faster interest rate increases than in the main scenario in this report. This could

be because they believe in stronger economic activity than the Riksbank foresees, but it could also be due to a different assessment of supply conditions.

Main forecast revisions

The fact that the Riksbank's assessment of how fast the repo rate needs to be raised has not changed much since the end of 2006 does not mean that the bank's forecasts regarding other aspects of economic development are unchanged. On the contrary, a considerable amount of new information has been received to alter the picture, but the overall consequences for the repo rate have ultimately been small when partly counterbalancing factors have been weighed against one another.

The forecast for the number of people in the labour force has been revised upwards since the October Inflation Report (see Table A5). The upward revision of the forecast in the short term is due to the surprisingly strong outcomes at the end of 2006. The revision of the forecast in the longer term is primarily due to a revised assessment of the effects of the government's economic policy.

The forecast for employment, expressed both as the number of people and the number of hours (see Figure 7 and Table A5), has been revised upwards for the same reasons as the labour force forecast. Overall, these adjustments have meant that the unemployment forecast has been revised downwards slightly (see Table 2).

Compared with the October Inflation Report, the forecast for GDP growth has been revised upwards (see Figure 6 and Table 2). The upward revision is due to unexpectedly strong outcomes at the end of 2006 and the revised assessment regarding the development of the labour force.

In connection with the publication of the latest outcome of the National Accounts, the historical statistics have also been revised slightly. For 2004 and 2005, productivity growth was revised upwards and labour costs were revised downwards in both the goods and service sectors. This means that unit labour costs during these years did not rise as much as indicated by earlier statistics. The picture with regard to cost pressures for these years has therefore been revised downwards.

The calculations published in the October Inflation Report to illustrate what effects the new government's proposed measures would have on labour costs did not include the effects of the proposal to reduce employers' contributions and national insurance contributions for certain service companies. The effects of this proposal have now been included and are estimated to dampen unit labour costs slightly in 2008 and 2009.

Energy prices have fallen faster than expected recently. Forward prices have fallen more in the short term than in the longer term. This means that the inflation forecast has been revised downwards in 2007 and revised upwards in 2008 (see Table 2).

The forecast for the rate of wage increase at the end of the forecast period has been revised upwards marginally since the labour market situation is judged to be slightly more strained than in the previous forecast (see Table 2).

The view regarding the path for the exchange rate in the long term is unchanged. However, movements in the nominal exchange rate in the coming year are slightly stronger, which is mainly due to the strong development at the end of 2006.

The forecast for inflation excluding energy has been revised downwards slightly for the entire forecast period (see Table 1). This is due to several different factors which have a dampening effect on cost pressures. A noticeably lower level of oil prices, lower global producer prices and a stronger exchange rate contribute to reducing inflation, either directly or indirectly, through lower costs for firms' intermediate goods. Moreover, the picture regarding the trend for unit labour costs in 2004-2005 has been revised downwards, which will affect inflation with a time lag.

Table 1. Inflation
Annual percentage change

	Annual average					12-month rate			
	2005	2006	2007	2008	2009	Mar. 07	Mar. 08	Mar. 09	Mar. 10
CPI	0.5	1.4 (1.3)	1.5 (2.0)	2.1 (1.9)	2.1	1.5 (1.7)	2.0 (2.1)	2.1 (1.9)	2.1
UND1X	0.8	1.2 (1.2)	0.7 (1.3)	1.6 (1.6)	1.9	1.0 (1.3)	1.3 (1.4)	1.9 (1.9)	2.0
UND1X excl. energy	0.5	0.5 (0.5)	1.2 (1.3)	1.7 (2.0)	2.0	1.0 (1.0)	1.7 (1.9)	1.9 (2.1)	2.2

Note. The assessment in the October Inflation Report is stated in parentheses.

Sources: Statistics Sweden and the Riksbank

Table 2. Key figures
Annual percentage change unless otherwise specified

	2005	2006	2007	2008	2009
GDP, the world	4.9	5.0 (5.1)	4.7 (4.7)	4.4 (4.4)	4.2 (4.2)
Crude oil price, Brent, USD/barrel, annual average	54	65 (65)	57 (65)	60 (66)	59 (65)
Exchange rate, TCW index, annual average	128.3	127.4 (127.7)	124.0 (125.4)	123.2 (124.1)	122.6 (123.1)
Repo rate, per cent annual average	1.7	2.2 (2.2)	3.4 (3.2)	3.6 (3.6)	3.7 (3.7)
General government net lending, percentage of GDP	2.7	2.9 (2.8)	2.7 (2.3)	2.6 (2.2)	2.4 (2.0)
GDP, Sweden	2.9	4.5 (4.3)	3.5 (3.1)	2.9 (2.7)	2.5 (2.2)
Numbers employed	0.5	1.9 (1.9)	2.1 (1.1)	0.9 (0.8)	0.5 (0.4)
Open unemployment, per cent of labour force	5.9	5.4 (5.4)	5.1 (5.4)	4.8 (5.1)	4.6 (4.9)
Hourly wage in economy as a whole	3.1	3.2 (3.4)	3.8 (3.8)	3.9 (3.9)	4.0 (3.9)

Note. The assessment in the October Inflation Report is stated in parentheses. For the repo rate, the figure in parentheses refers to the implied forward rate used as the interest rate assumption in the previous report.

Sources: IMF, Intercontinental Exchange, National Mediation Office, Statistics Sweden and the Riksbank

■ Riksbank to publish its own forecast for the repo rate

The Riksbank's decision to begin publishing its own forecasts for the repo rate is a further step towards greater openness and clarity in communication. This change will not affect how monetary policy is conducted, but will have certain consequences for the forecasting process. The background to the changes the Riksbank is now making in its monetary policy analysis and communications is described below.⁸

Why is the Riksbank to publish its own forecast for the repo rate?

Up to the autumn of 2005, the Riksbank based its forecasts in the main scenario on the assumption that the repo rate remained constant during the forecast period. This made it easy for the Riksbank to communicate, which was particularly important when establishing the new monetary policy regime and building up credibility for the inflation target. At the same time, it was mostly an unrealistic assumption that made it difficult to make good forecasts. Moreover, it gave no clear guidance as to how the Riksbank viewed future interest rate developments. This was a disadvantage since the general public's and the markets' expectations of the future interest rate path are just as important for the way monetary policy influences the economy as the expectations regarding the decision on the current level of the interest rate.

These problems diminished when the Riksbank began making forecasts based on market expectations, as reflected in implied forward rates.⁹ In most cases, market expectations provide a much more realistic path for the future development of the repo rate than the assumption of a constant repo rate. At that time, the Riksbank also began talking more systematically about future interest rate developments by commenting on the plausibility of the interest rate path given by market expectations. By doing so, the Riksbank took a major step forwards towards greater clarity in terms of making known its view on the future development of the repo rate.

The Riksbank's decision to publish its own forecasts for the repo rate is a further step towards greater clarity. Market expectations do not necessarily reflect the considerations that form the basis for monetary policy decisions. By making its own forecasts for the repo rate, the Riksbank can explain more clearly to the general public and the financial markets how it envisages future interest rate developments and how it reasons when making monetary policy decisions. It is also natural in forecasting work to treat the repo rate as one forecast variable among others.

Basing forecasts on market expectations can give rise to problems if the market's view differs from the central bank's view of a reasonable future development for the policy rate. The forecast regarding developments in the real economy and inflation that is published will not

⁸ A more detailed account with references can be found in Irma Rosenberg's speech, "Riksbank to introduce own path for the repo rate", 17 January 2007.

⁹ Between 1999 and 2003, the Riksbank published alternative inflation forecasts based on repo rate expectations in market surveys.

then be that which the central bank believes most likely. The value of the published forecast is therefore diminished.

An additional clarity offered by the Bank's own interest rate forecast is also related to the fact that the interpretation of implied forward rates as the market's expectations of the repo rate's development is not clear-cut. The reason is that forward rates include premiums that can be regarded as compensation for differences between securities with regard to maturity, credit risk and degree of liquidity. Estimating the size of these premiums is complicated and can be done in different ways. This risks creating confusion in the Riksbank's communication.

Potential problems with own forecasts for the repo rate

In order to make a forecast for the repo rate, the Executive Board of the Riksbank must together make an assessment of what would be a desirable path for the repo rate during the forecast period, even though the interest rate decisions only refer to the level of the repo rate applying until the next monetary policy meeting. The different members of the Executive Board may have differing opinions on, for instance, the current situation in the economy and at what rate inflation should be brought back on target, giving consideration also to the real economy and various risks. It goes without saying that it is far from easy to summarise the view of the Executive Board in terms of an expected path for the repo rate. However, the Executive Board of the Riksbank has come to the conclusion that these problems should in practice not be so great as to prevent agreement being reached on a path that at least a majority of Executive Board members can support. The Executive Board has on previous occasions delivered interest rate messages with some information on how it views future interest rate developments.

One of the arguments put forward against the idea of the central bank presenting its own interest rate forecast is that communication with the general public can be made more difficult rather than simplified when the forecast is revised. If the central bank first announces a particular interest rate path and then new information is received which leads to an interest rate decision that differs from the path published earlier, this

could be perceived as a failure on the part of the central bank and it could damage the bank's credibility. The view of the Riksbank, however, is that this is not going to be a major problem. The Riksbank has always carefully emphasised that, regardless of what assumption for the repo rate has formed the basis for the forecasts, there is considerable uncertainty in the assessments and has also explained that there is a constant flow of new information coming in which can radically change the conditions for monetary policy assessments. The interest rate forecast, just like the inflation forecast, is inherently uncertain and needs to be adjusted over time. The Riksbank's forecast for the development of the repo rate is not therefore a commitment from the Riksbank that the repo rate will actually follow this path.

Consequences for the Riksbank's way of working

The new assumption for the repo rate will not affect the Riksbank's way of conducting monetary policy. The principles that guide monetary policy decisions, described in the document "Monetary policy in Sweden" and summarised briefly at the beginning of this report, still apply.¹⁰ However, the new approach does have some significance for the internal forecasting work. It may sometimes be necessary to make major adjustments to the forecasts at a later stage in the forecasting process than previously. This is one of the reasons why the printing of the Monetary Policy Report has been put back to a later date and why it will initially be published in electronic format on the Riksbank's website. The monetary policy meetings have also been scheduled for mornings. This provides scope to revise the report after the decision of the Executive Board. However, it should be emphasised that there have been previous occasions when relatively major revisions have been made to the forecast at a late stage owing to important new information coming in. As usual, the Executive Board makes its decision about the repo rate's current level at the monetary policy meeting. As before, this is also when a decision is taken regarding the content of the monetary policy report, including the interest rate forecast.

¹⁰ See *Monetary policy in Sweden*, which can be downloaded from the Riksbank's website, www.riksbank.se

■ Calculation method for uncertainty bands

As usual, the forecasts in the main scenario are uncertain, which is illustrated by the uncertainty bands for the inflation, GDP and repo rate forecasts in Figures 1–4. The forecasts in the main scenario show the path which the Riksbank expects the economy to take and is a weighted consideration of various conceivable development paths (scenarios) and risks.¹¹ Chapter 2 discusses some specific alternative scenarios and what consequences they would have for inflation, the repo rate, etc. if realised.

In this report, uncertainty bands have not only been calculated for the inflation forecast, but also for the forecasts for GDP growth and the repo rate. The uncertainty bands for the forecasts for inflation and GDP growth are based on the Riksbank's historical forecast errors.¹² In the case of the repo rate, the uncertainty bands are based on the historical forecast errors for implied forward rates and – as explained below – are adjusted slightly to take into account the existence of risk premiums.¹³

The Riksbank's historical forecast errors can be used to illustrate the uncertainty in the forecasts on condition that the forecast errors in the future are as large as the historical forecast errors. Given normal distribution of the forecast errors, different uncertainty bands can be calculated with the help of the mean square error (or rather the root mean square error), which is the method used by the Riksbank in this report. For example, in these conditions, it is possible to design an uncertainty band which will show the interval in which the variable in question will lie with a probability of 90 per cent.

The root mean square error (RMSE) is a common statistical measure used to describe and compare the precision of forecasts. For instance, the RMSE for forecasts one period ahead are calculated as

$$\sqrt{\sum_{t=1}^n (y_{t+1} - y_{t+1}^{forc})^2 / n}$$

where y designates the outcome and y^{forc} the forecast. If, for instance, RMSE one quarter ahead is 0.4, then a 90 per cent uncertainty band is produced by

$$y_{t+1}^{forc} \pm 1.64 \times 0.4$$

where the figure 1.64 is taken from the normal distribution.

One complication when using this method to calculate uncertainty bands for the repo rate is that the implied forward rates not only reflect forecasts for the repo rate, but also include risk premiums. This give rise to a systematic forecast error in the implied forward rates, which cannot be regarded as representative for repo rate forecasts. To make the calculated uncertainty bands more representative for the repo rate forecast, the systematic forecast error is eliminated. However, the possibility that this systematic forecast error is to a certain extent due to other factors than the existence of risk premiums cannot be excluded.

11 There are therefore no grounds to revise the main scenario afterwards in light of a certain specific risk. This approach was adopted previously in the Inflation Report.

12 This entails a change in the method used for designing the fan chart for inflation, which has previously been calculated using a weighted average of underlying risks. With the new method, the uncertainty bands are symmetrical.

13 T-bills and government bonds have been used in the calculation of implied forward rates.

On this occasion, the Riksbank considers that a well-balanced monetary policy is to continue to raise the repo rate by 0.25 percentage points in February and then once more by the same amount in the next six months. There should then probably be a pause before a further increase. One consequence of this kind of monetary policy is that inflation is expected to be close to target from the autumn of 2008 onwards. At the same time, the view held is that real economic development is balanced. An interest rate lower than that in the main scenario would admittedly mean that inflation reaches the target more quickly. The disadvantage is that inflation could exceed the target by a relatively large amount in the latter part of the forecast period. An interest rate higher than that in the main scenario could, however, result in inflation remaining below the target throughout the forecast period.¹⁴

A tighter monetary policy could be justified if, for instance, the wage bargaining rounds were to lead to a higher rate of wage increase or if domestic demand were to be higher than the assessment made in the main scenario. Justification for a lower repo rate path could be if developments abroad prove to be weaker or if wages increase at a slower rate, for instance, as an effect of the labour supply growing by more than assumed in the main scenario. With the development of house prices and credit volumes, there is also the risk that developments in inflation and the real economy will be less stable than in the main scenario.

This chapter presents two different types of alternative scenario, i.e. scenarios that differ from the main scenario. First, a description is given of what would happen to, for instance, inflation and GDP growth, if the Riksbank conducted a different monetary policy than that proposed in the main scenario. This answers such questions as "What would happen to inflation and GDP growth if the Riksbank were to raise the interest rate at a faster pace than in the main scenario?" These scenarios are intended to highlight the considerations the Riksbank needs to make to be able to conclude what a reasonable development of the repo rate would be in the future.

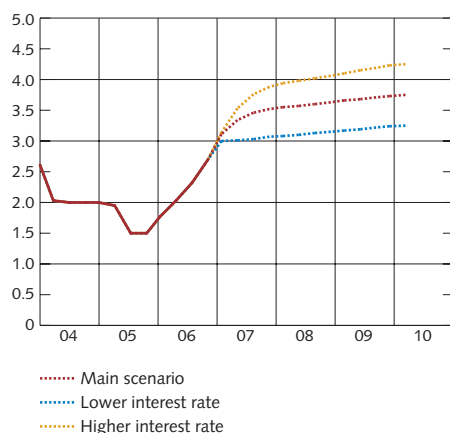
The other type of scenario is based on a different economic development to that presented in the main scenario and answers questions such as "How would monetary policy react if wages increased more than in the main scenario?"

In the first scenarios, it is assumed that the conditions in the main scenario still apply but that the Riksbank decides to conduct a different monetary policy than in the main scenario. In the second type of scenario, it is assumed that some condition in the main scenario changes, with consequences for the development of the repo rate, among other things.

Among other tools, the Riksbank uses a general equilibrium model to shed light upon these questions. This model is described in the box "RAMSES – a tool for monetary policy analysis" in this report. It should be emphasised that the effects of monetary policy on, for instance, inflation and GDP which are reported here are the result both of simulations in an economic model and of judgements and that these effects are, of course, uncertain.

¹⁴ This chapter does not include a complete account of the monetary policy considerations discussed on this occasion. These are instead presented in the minutes of the Riksbank Executive Board's monetary policy meeting.

Figure 21. Repo rate assumptions
Per cent



Note. Broken lines represent the Riksbank's forecast.

Source: The Riksbank

Alternative scenarios for the repo rate

■ ■ A well-balanced monetary policy

A well-balanced monetary policy usually means that inflation is close to the inflation target within two years without there being excessive fluctuations in inflation and the real economy. The fact that monetary policy is normally aimed at achieving the inflation target within two years is partly because monetary policy affects economic developments with a time lag. The two-year perspective also gives the Riksbank scope to take into account real economic developments (GDP growth, employment, etc.).

Exactly how quickly inflation should be brought back towards the target will depend on why inflation is diverging from the target. If the economy has been exposed to unexpected changes which hold back inflation at the same time as growth is high (as might occur, for instance, in the event of productivity improvements), it may take longer than two years to bring inflation back to target. To bring inflation quickly back to target in this case could lead to the economy overheating. Similarly, a longer period of time than two years may be needed to bring inflation back to target if inflation has been pushed up at a time when growth is weak (which, for instance, could occur as a result of sudden energy price rises).

In this context, it is important to underline that it is neither the task nor the purpose of monetary policy to achieve persistently higher employment or to increase long-term sustainable growth in the economy. Monetary policy can, however, help moderate the fluctuations in the real economy. Nor can monetary policy be used to fine-tune economic growth. Changes in the repo rate are far too blunt an instrument for the detailed control of economic developments in the short term.

The choice of interest rate path thus means striking a balance between bringing inflation closer to the target and stabilising fluctuations in inflation and the real economy. To highlight these considerations, a couple of alternative interest rate scenarios have been calculated and they are illustrated below together with the main scenario. It is important to be aware that, in every situation, there may be more than one interest rate path leading to a well-balanced monetary policy.

■ ■ Higher interest rate scenario leads to lower inflation

The interest rate path in the first alternative scenario (referred to as Higher interest rate) entails a less expansionary monetary policy than in the main scenario. On average, the interest rate is approximately 0.2 percentage points higher during 2007 and approximately 0.4 and 0.5 percentage points higher during 2008 and 2009 respectively (see Figure 21 and Table A8).

The effect of the interest rate being raised more than in the main scenario is that private consumption and thus demand do not rise as much, since a higher interest rate makes saving more worthwhile than

consumption.¹⁵ Nor does the supply of labour increase as much, which can be attributed to lower consumer demand. Firms' output increases at a slower pace, which at the same time means that the rise in employment will be smaller. Since the firms' increase in output is lower, prices will also rise more slowly.

The higher interest rate in the alternative scenario will also have consequences for the exchange rate. Among other things, higher interest rates in Sweden in relation to other countries will lead to a stronger krona than in the main scenario. The stronger exchange rate has a direct effect on inflation as import prices measured in Swedish krona do not rise as quickly. The exchange rate also has an indirect effect on inflation in the sense that Swedish export goods become more expensive abroad. Swedish exports will then be dampened and accordingly GDP growth will not be as large.

All in all, the weaker demand growth and lower import prices will lead to lower inflation than in the main scenario (see Figure 22 and Table A9). In 2008 and 2009, inflation will be 1.3 per cent on average.

■ ■ Lower interest rate scenario produces higher inflation

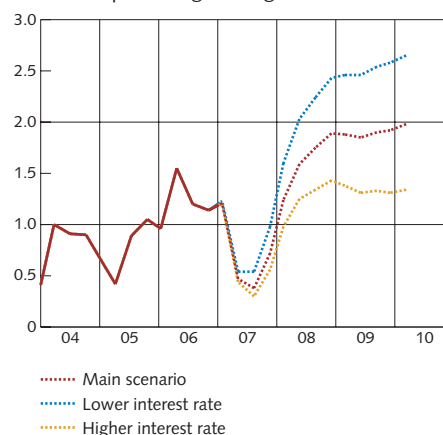
The interest rate path in the second alternative scenario (called Lower interest rate) is more expansive than in the main scenario and entails a repo rate of 3 per cent from the first quarter of 2007 until some time towards the end of the forecast period. During 2007, the repo rate is on average 0.4 percentage points lower than in the main scenario and in 2008 and 2009 it is 0.5 percentage points lower (see Figure 21 and Table A8).

Assuming the same mechanisms as in the first alternative scenario described earlier, the growth in GDP and hours worked will be higher with this interest rate path than in the main scenario (see Figures 23-24 and Tables A10-A11). This means that UND1X inflation will also be higher than in the main scenario throughout the forecast period. Inflation rises rapidly to the target and stands at 2 per cent in mid-2008 and then continues to rise for the rest of the forecast period. At the beginning of 2010, inflation is 2.6 per cent (see Figure 22).

■ ■ Inflation's deviation from the target is lowest in the main scenario

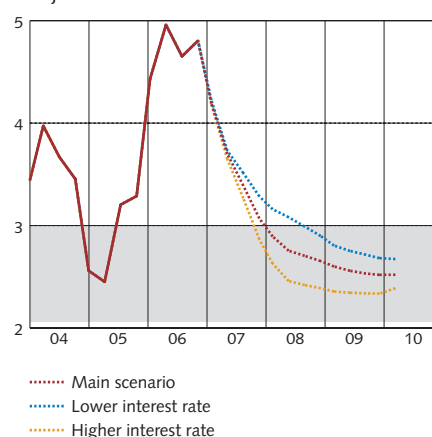
A well-balanced monetary policy normally means that inflation is in line with the inflation target within two years. Figure 22 illustrates how inflation in the main scenario stabilises around the target as of the autumn of 2008. In the scenario where the interest rate is not raised as much, the target is reached earlier but inflation then continues to rise to around 2.6 per cent at the end of the forecast period. In the scenario where the interest rate is raised more, inflation does not reach the target during the forecast period (see Figure 22 and Table A9).

Figure 22. UND1X
Annual percentage change



Note. Broken lines represent the Riksbank's forecast.
Sources: Statistics Sweden and the Riksbank

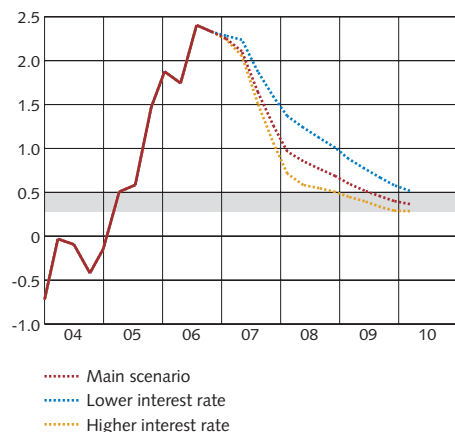
Figure 23. GDP
Annual percentage change, seasonally adjusted data



Note. The grey area shows annual GDP growth of between 2.1 per cent and 3.0 per cent. GDP has grown by an average of 2.1 per cent per year between 1980 and 2005 and by 3.0 per cent between 1998 and 2005. Broken lines represent the Riksbank's forecast.
Sources: Statistics Sweden and the Riksbank

¹⁵ See the box entitled "Ramses – a tool for monetary policy analysis" for a more detailed review of the monetary policy transmission mechanism.

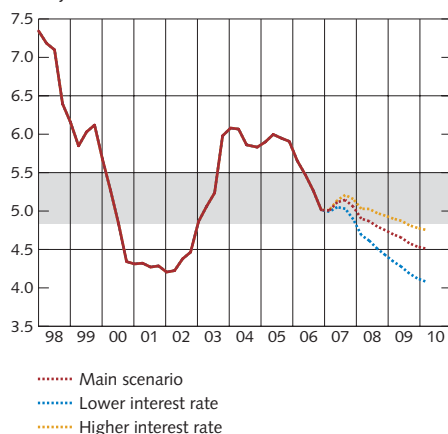
Figure 24. Number of hours worked
Annual percentage change, seasonally adjusted data



Note. The grey area represents an increase in the number of hours worked by an average of between 0.3 per cent and 0.5 per cent per year. The number of hours worked has grown by an average of 0.3 per cent per year between 1980 and 2005 and by 0.5 per cent between 1998 and 2005. Broken lines represent the Riksbank's forecast.

Sources: Statistics Sweden and the Riksbank

Figure 25. Open unemployment
Percentage of the labour force, seasonally adjusted data



Note. The grey area represents an open unemployment of between 4.8 per cent and 5.5 per cent. Open unemployment has on average stood at 4.8 per cent between 1980 and 2005 and at 5.5 per cent between 1998 and 2005, according to the Riksbank's chain-linking of old LFS data to the new LFS. Broken lines represent the Riksbank's forecast.

Sources: Statistics Sweden and the Riksbank

The deviation of inflation from the target is thus least in the main scenario. Inflation rises relatively quickly in the Lower interest rate scenario, while in the Higher interest rate scenario, it remains relatively far from the target throughout the forecast period.

■ ■ All three scenarios give a balanced real economic development

One effect of a well-balanced monetary policy is also that it should be possible to avoid excessively large fluctuations in the real economy in favour of long-term, sustainable development. One of the difficulties in this context, however, is how to measure this. For instance, it is difficult to specify exactly what sustainable development is in terms of output, employment, etc. in the long term. It is therefore also difficult to define undesirable fluctuations in these quantities. As such, it is more difficult to determine a desirable real economic development than a desirable development of inflation, given that there is a set inflation target.

A rough estimate of what can be regarded as long-term sustainable development can be obtained by studying averages over longer periods. One problem with historical averages, however, is that they describe the past and not necessarily how the future will unfold. A further difficulty concerns the view of resource utilisation. There is no generally accepted measure of the degree of resource utilisation and different indicators and econometric estimates can produce different answers. The view is also influenced by which part of the economy is studied.

There are in other words several different ways of assessing whether an interest rate path leads to balanced real economic development, as illustrated below. The considerable uncertainty about resource utilisation makes it difficult to rank the different interest rate paths precisely in terms of the real economic development they entail. The overall assessment is that all three interest rate scenarios give a relatively balanced real economic development.

■ ■ Real development in line with historical averages

A first step in the evaluation of the real economic development is to compare the development of GDP growth, hours worked and open unemployment given the different interest rate paths (see Figures 23-25). To consider the forecasts in the different scenarios in relation to long-term development, a shaded band is shown, the limits of which are determined by the average development during longer periods.¹⁶ The growth in GDP and in hours worked is highest in the scenario with a lower interest rate and lowest in the scenario with a higher interest rate. The converse applies to unemployment. All forecasts for GDP growth and hours worked are essentially at the level of the historical average at

¹⁶ These averages should not be interpreted as any definitive upper or lower limit for long-term sustainable development. The band depends on the periods selected for the calculations.

the end of the forecast period. However, the scenarios differ concerning the length of time that it takes before these levels are reached during the forecast period. Unemployment is below its historical average in the forecast period. However, these averages are largely characterised by the crisis in the early 1990s. The Riksbank's current assessment is therefore that unemployment can probably be slightly lower than these historical averages without resource utilisation coming under too much strain.

Another way to study the number of hours worked is to place them in relation to population growth and calculate the average number of hours worked per year per capita (see Figure 26). As in the earlier figures, the grey area in Figure 26 illustrates growth during two earlier periods. The level is partly due to the composition of the workforce. In future, Sweden will have a large proportion of young and elderly people in the workforce who usually have lower average working hours. If a long-term sustainable level is between 1,210 and 1,240 hours per inhabitant, both the main scenario and the Lower interest rate scenario would seem to lead to a reasonable development.

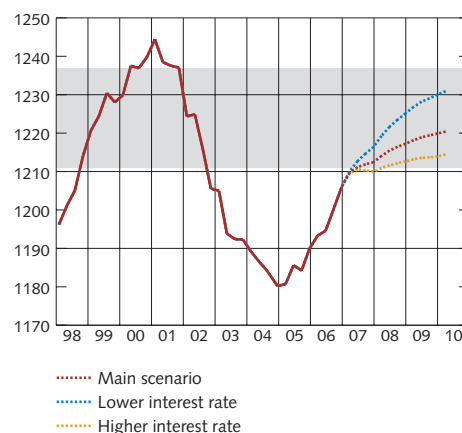
Another measure which may be of interest to study is the employment rate, calculated here as the number of employed in relation to the population aged 16-64 (see Figure 27). According to the main scenario, the employment rate will rise to the 2001 level while it will be slightly higher with the lower interest rate path and the converse with the higher interest rate path. Compared with development about ten years back in time, the Lower interest rate scenario means that the employment rate will rise to uncommonly high levels at the end of the forecast period. However, bearing in mind the expected increase in the labour supply, it should be possible for the employment level to rise above its most recent peak in 2001 without the economy overheating.

■ ■ Resource utilisation seems reasonable in all scenarios

To be able to form an opinion as to whether development is sustainable in the long term, it is necessary to have some idea of the quantity of unutilised resources in the economy in the initial situation. The assessment made by the Riksbank in this report is that resource utilisation is currently more or less normal (see Chapter 3 for a review of different measures of the quantity of unutilised resources). However, there is a considerable amount of uncertainty.

Based on the view of the amount of unutilised resources at present, the degree of resource utilisation in the economy in the future can be calculated for the different interest rate alternatives (see Figures 28-29). The quantity of unutilised resources is measured by both labour market gaps and output gaps, i.e. the percentage deviation of worked hours and GDP from their long-term trend development. The trend in both gaps has

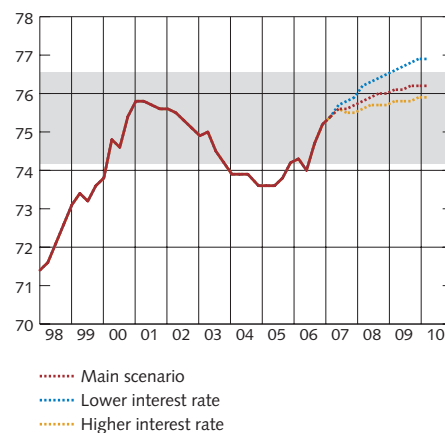
Figure 26. Average number of hours worked per year 27
Hours per inhabitant, aged 16-64



Note. The grey area represents an average number of hours worked per year of between 1,211 and 1,236 hours. The average number of hours worked per year was 1,236 hours per capita in 1980-2005 and 1,211 hours per capita in 1998-2005. Broken lines represent the Riksbank's forecast.

Sources: Statistics Sweden and the Riksbank

Figure 27. Employment rate
Per cent



Note. Number of employed in relation to the population aged 16-64. The grey area represents an employment rate of between 74.2 per cent and 76.5 per cent. The average employment rate was 76.5 per cent in 1980-2005 and 74.2 per cent in 1998-2005. Broken lines represent the Riksbank's forecast.

Sources: Statistics Sweden and the Riksbank

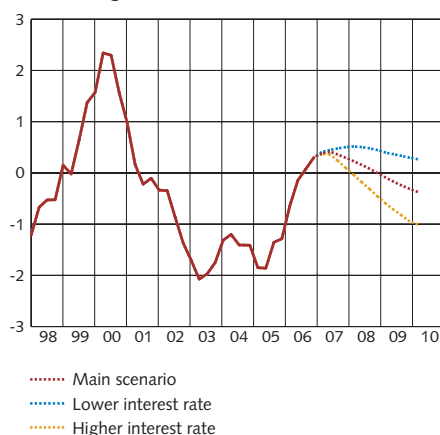
Figure 28. Estimated labour market gaps
Percentage deviation from the HP trend



Note. The HP gap has been adjusted downwards by 0.5 percentage points to be adapted to the Riksbank's assessment of the initial situation. Broken lines represent the Riksbank's forecast.

Sources: Statistics Sweden and the Riksbank

Figure 29. Estimated output gaps
Percentage deviation from the HP trend



Note. The HP gap has been adjusted downwards by 0.5 percentage points to be adapted to the Riksbank's assessment of the initial situation. Broken lines represent the Riksbank's forecast.

Sources: Statistics Sweden and the Riksbank

been measured using a Hodrick-Prescott filter.¹⁷ In the main scenario, resource utilisation increases slightly to start with (see Figures 28-29). During 2008 and onwards, it will slacken and is estimated to return to a relatively normal level at the end of the forecast period. The development is largely the same if resource utilisation during the forecast period calculated by the number of hours worked and GDP are compared.

With a lower interest rate, resource utilisation remains at a higher level during the entire forecast period. In the scenario with a more stringent monetary policy, resource utilisation rises for a short period at the beginning of 2007 before falling back from mid-2008 onwards.

The hardly surprising conclusion is that the Higher interest rate scenario will produce a lower resource utilisation and the Lower interest rate scenario a slightly higher resource utilisation. However, there is no great difference in development between the different scenarios. In all three scenarios, resource utilisation appears on the whole to remain relatively close to a normal level throughout the forecast period. However, as these results are based largely on the underlying assumptions about resource utilisation at present and the development of long-term growth, there is an inherent and considerable uncertainty in these conclusions. This makes it difficult in the current situation to rank the different scenarios with any degree of precision as regards the real development.

■ ■ What is a normal repo rate?

According to the repo rate path assumed in this report, the repo rate is at 3.75 per cent in the first quarter of 2010. However, this should not be interpreted as meaning that the Riksbank's view of a normal repo rate, i.e. what can be regarded as an average level of interest rate over a longer period, is exactly 3.75 per cent. In the box entitled "What is a normal level for the repo rate?" in Inflation Report 2006:2, the Riksbank has previously noted that a normal repo rate would probably be in the range of 3.5 to 5 per cent and that it varies over time. The conclusion is also that the repo rate can fall outside of this rather broad range for fairly long periods of time.

The fact that the repo rate in this report is expected to be in the lower end of the range at the end of the forecast period is in part related to inflation being low – albeit rising – for a considerable part of the forecast period. This is in turn due to favourable supply factors, as described in Chapter 1.

¹⁷ The Hodrick-Prescott filter is a statistical method for breaking down the movements of a variable into trend and cyclical components. The method can be described as a weighted double-sided moving average where greater weight is placed on observations close at hand and gradually decreasing weight on more distant observations. The fact that the filter is double-sided means that the trend value at any given point in time is calculated on the basis of both historical and future values. The smoothness of the trend is determined by a parameter usually designated by the average λ . In these calculations, λ has been set as equal to 6,400. For a more detailed description of the method, see, for instance, R.J., Hodrick and E. Prescott, "Postwar U.S. Business Cycles: An empirical investigation", *Journal of Money, Credit and Banking*, Vol. 29, No. 1, 1997. Quarterly data from the first quarter of 1980 to the third quarter of 2006 have been used to calculate the long-term trend in GDP and hours worked. As of the fourth quarter of 2006, quarterly forecasts from the main scenario have been used. The gap for the alternative scenarios is based on the same trend as in the main scenario. The deviation calculations for the different scenarios come from the Riksbank's general equilibrium model (see the box entitled "RAMSES – a tool for monetary policy analysis" in this report). Furthermore, the level of the HP gap has been adjusted downwards by 0.5 percentage points to comply with the Riksbank's assessment that resource utilisation is currently more or less normal.

Alternative scenarios for economic developments

The forecasts made for the repo rate, UND1X and GDP growth, like the forecasts for other variables, are inherently uncertain. This is illustrated by the uncertainty bands for the main scenario (see Figures 1-4). The broader the band, the greater the uncertainty in the forecast. The main scenario is based on an assessment where various conceivable scenarios are weighed against one another. The forecasts for growth, inflation and the repo rate are illustrated below in some special alternative scenarios for economic developments.

It is important in this context to emphasise that the repo rate paths presented here are mainly based on how the repo rate usually changes when disruptions occur. The exact formulation of monetary policy should one of these alternative scenarios be realised in future may differ from the description below since the Riksbank's considerations in the future do not necessarily follow an average historical pattern. The actual formulation of monetary policy will also depend on circumstances in general.

■ Higher repo rate if wages rise more

In the main scenario, the upswing in economic activity is expected to lead to the labour force continuing to expand and to a rise in the rate of wage increase. In this assessment, consideration has been given to the fact that many agreements on the labour market will be renegotiated in 2007. There is a risk that the recent rapid rise in employment will lead to collective bargaining rounds generating higher wage increases than assumed in the main scenario.

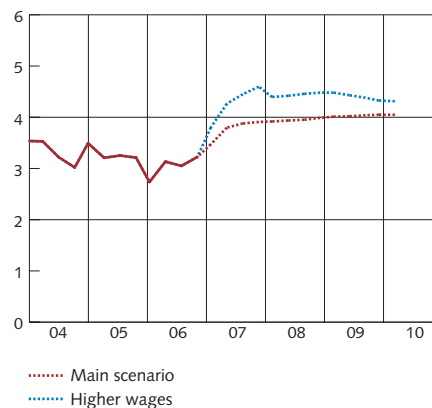
To illustrate how inflation, the interest rate and GDP could develop in a situation of higher wage increases, an alternative scenario is presented where the nominal wage increases on average 0.5 percentage points more quickly than in the main scenario in the coming two years (see Figure 30). The real wage increases in the coming two years are on average 0.2 percentage points higher than in the main scenario.

The higher wage increases lead to a fall in the demand for labour, with the result that GDP and employment rise at a slower rate. GDP growth will be 0.5 percentage points lower than in the main scenario (see Figure 31). A higher rate of wage increase also leads to increased costs for firms. This leads to rising prices and increasing inflationary pressures.

Rising inflationary pressure will in turn lead to a higher interest rate. The repo rate will on average be 0.3 percentage points higher during the forecast period than in the main scenario (see Figure 32). The higher interest rate partly offsets the inflationary pressure caused by higher wage inflation. Inflation will be on average 0.2 percentage points higher than in the main scenario (see Figure 33).

Figure 30. Nominal wages, scenario with higher wages

Annual percentage change

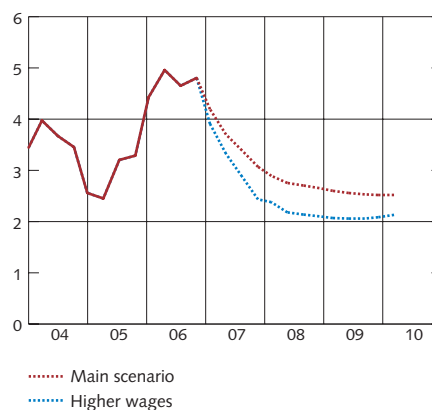


Note. Broken lines represent the Riksbank's forecast.

Sources: National Mediation Office and the Riksbank

Figure 31. GDP, scenario with higher wages

Annual percentage change

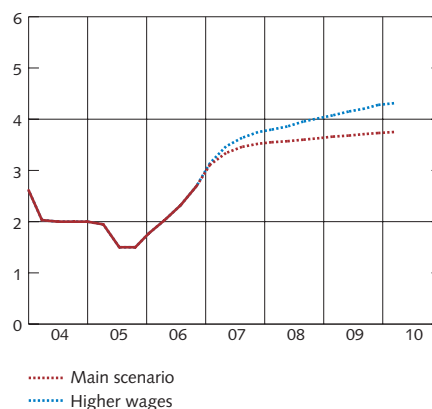


Note. Broken lines represent the Riksbank's forecast.

Sources: Statistics Sweden and the Riksbank

Figure 32. Repo rate, scenario with higher wages

Per cent

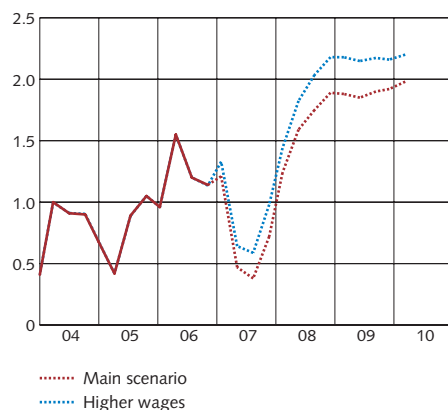


Note. Broken lines represent the Riksbank's forecast.

Source: The Riksbank

Figure 33. UND1X, scenario with higher wages

Annual percentage change

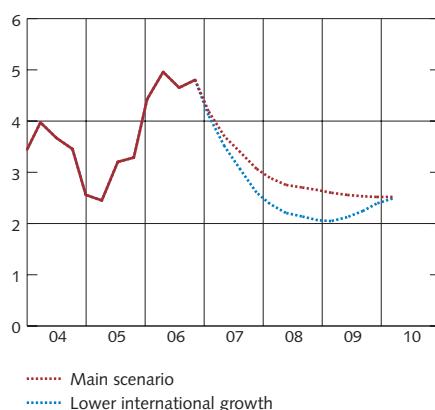


Note. Broken lines represent the Riksbank's forecast.

Sources: Statistics Sweden and the Riksbank

Figure 34. GDP, scenario with lower international growth

Annual percentage change



Note. Broken lines represent the Riksbank's forecast.

Sources: Statistics Sweden and the Riksbank

■ ■ Lower repo rate if the labour supply increases more

It is also possible that the opposite scenario could occur. If, for instance, the supply of labour were even greater than assumed in the overall assessment, inflation would be lower.

An increased supply of labour would lead to higher employment and lower wage inflation than in the main scenario. More people enter the labour market, leading to a downward pressure on the rate of wage increase. The lower growth in real wages means that firms are prepared to increase the number of employees. At the same time, lower wage costs mean that firms raise their prices to a lesser extent than in the main scenario.

A higher rate of employment also means that private consumption rises and that firms are willing to invest in more production capital, to better adapt production operations to the increased labour supply. This leads to increased investment. Since the domestic cost level develops more slowly than in the main scenario, export companies will become more competitive, which will also increase exports, leading to higher GDP growth.

The lower rate of inflation means that the Riksbank can allow the repo rate to follow a somewhat lower path than in the main scenario. However, the higher GDP growth means that the Riksbank does not reduce the repo rate to the full extent that could be justified by the lower inflation rate.

■ ■ Lower repo rate if growth abroad weakens

Another possible scenario is that development abroad is weaker than assumed in the collective assessment in Chapter 1. In previous reports, attention has been drawn to global imbalances as a threat to international growth. It is also possible that US growth slackens more than assumed in the main scenario, which could be the case if, for instance, the decline in house prices were to have a greater impact on household consumption.

To illustrate the effects of a weaker development abroad, an alternative scenario is presented where, for two years, growth abroad is on average approximately 0.8 percentage points lower. A decline in demand for Swedish exports means that domestic GDP growth in 2008 will be 0.6 percentage points lower than in the main scenario (see Figure 34). Since GDP growth abroad increases in 2009, Swedish GDP growth also recovers.

Weaker economic activity means that inflation will be lower. Moreover, the exchange rate appreciates due to international interest rates being reduced more than Swedish interest rates. This also contributes to lower inflation. In 2008 and 2009, inflation will on average

be 0.7 percentage points lower than the overall collective assessment in Chapter 1 (see Figure 35). The weaker growth and inflationary pressure mean that the repo rate in Sweden is lower than in the main scenario (see Figure 36).

■ ■ Higher repo rate if growth is stronger

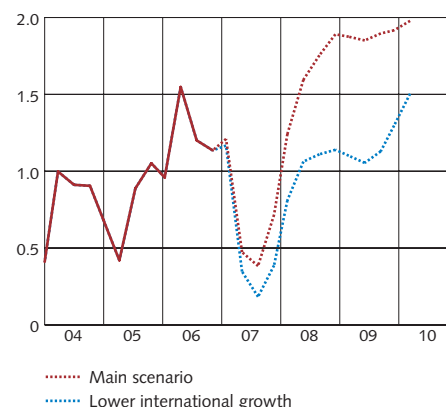
In the main scenario, it is assumed that GDP growth in Sweden will slacken in the future. There are factors that argue in favour of an even greater slackening. However, there are also arguments to suggest that growth will be higher. In recent years, GDP growth has increased more rapidly than expected. It is possible that the strength of the upswing is once again being underestimated. For instance, households are expected to continue to save a comparatively high proportion of their income and interest rates are still relatively low even after the increases that have taken place. If growth is stronger than in the main scenario, then inflation, like the repo rate, would be higher, in other words, the opposite would occur compared with the alternative scenario described above with lower growth abroad.

■ ■ Consideration given to the development of house prices and loans

Developments in the financial markets affect, and are affected by, variations in inflation and the real economy. Changes in asset prices and other financial variables (exchange rates, house prices, share prices, household and corporate indebtedness, etc.) are therefore routinely taken into consideration in monetary policy decisions.¹⁸

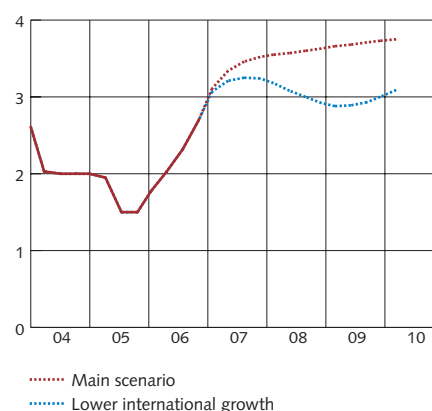
The rates of increase for house prices, lending and household indebtedness have been at high levels in recent years. Some dampening has taken place in the second half of 2006, but the rates of increase remain high. This supports the picture of strong demand growth, underpinned by an expansionary monetary policy. If house prices and loans continue to increase rapidly, there is a danger that imbalances will build up which will eventually compel an adjustment with considerable consequences for both inflation and the real economy. As the Riksbank has already emphasised, these risks are difficult to express numerically with available forecasting methods. For this reason, no forecasts for growth, inflation or the repo rate are made in such a scenario. However, in this context it is important to stress that these risks should none the less be taken into consideration in the formulation of monetary policy.

Figure 35. UND1X, scenario with lower international growth
Annual percentage change



Note. Broken lines represent the Riksbank's forecast.
Sources: Statistics Sweden and the Riksbank

Figure 36. Repo rate, scenario with lower international growth
Per cent



Note. Broken lines represent the Riksbank's forecast.
Source: The Riksbank

¹⁸ See the publication *Monetary Policy in Sweden* for a review of this.

■ RAMSES – a tool for monetary policy analysis

This article provides a short description of a general equilibrium model developed at the Riksbank in recent years which is used when making forecasts, interpreting developments in the Swedish economy and calculating the effects of monetary policy. The model has been used, for instance, to produce the various alternatives to the main scenario presented in Chapter 2.

The role of models in the forecasting process

Forecasts of how the economy will develop can be made in many different ways. There are considerable benefits in using formal models which make use of the teachings of economic theory and the lessons of practical experience (empirical studies) on the nature of various correlations in the economy. Models make it easier to explain forecasts and also to evaluate them. They also make it possible to produce new forecasts relatively quickly when new data on developments becomes available, and to highlight the effects of different assumptions on, for instance, international developments or the stance of economic policy. However, since no models are exact descriptions of reality but merely simplified models, the results must be combined with common sense and with insights into important aspects of reality that the models are unable to capture.

The Riksbank thus makes forecasts with the aid of both formal models and expert assessments. At the Riksbank, every new round of forecasts starts with a review of the new statistics received since the previous repo rate decision. Different indicator models are used to summarise and interpret information in numerous indicators of economic development, for instance, survey data.¹⁹ Assessments are made of the current state of the economy and developments in the coming quarters. These assessments serve as the starting point for model forecasts extending a few years into the future. Both models which are based on economic theory and more statistically oriented models are used in this work. The model forecasts are then examined by the sector experts who possess expertise on many important details that the models are unable to capture. The experts' assessments and the results of the models then serve as the basis for the main scenario which is eventually established.

General equilibrium

For a couple of years now, the Riksbank has used a new general equilibrium model of the Swedish economy called RAMSES.²⁰ "General" means that the model attempts in principle to explain the

¹⁹ More information about the Riksbank's indicator models can be found in boxes about GDP indicators and inflation indicators in Inflation Report 2005:3 and Inflation Report 2006:3.

²⁰ RAMSES stands for the Riksbank's Aggregated Macro model for Studies of the Economy in Sweden. A detailed description of the model's theoretical structure is given in the paper by M. Adolfson, S. Laséen, J. Lindé and M. Villani, "Bayesian Estimation of an Open Economy DSGE Model with Incomplete Exchange Rate Pass-Through", Sveriges Riksbank Working Paper Series No. 179, 2005, which is forthcoming in the *Journal of International Economics*. A detailed empirical evaluation of the model based on Swedish data is given in the article by M. Adolfson, S. Laséen, J. Lindé and M. Villani, "Evaluating an Estimated New Keynesian Small Open Economy Model", Sveriges Riksbank Working Paper Series No. 203, 2005, which is forthcoming in the *Journal of Economic Dynamics and Control*. The computer programs used in these papers can be obtained from the authors upon request.

“whole economy” and not just a particular component such as private consumption or the labour market. This does not mean that RAMSES describes every important part of the Swedish economy equally well. The modelling of fiscal policy and the credit market are, for example, not particularly sophisticated in RAMSES. Therefore, “partial models” are also used which focus on an individual variable or sector in forecasting work – both economic models and those mainly based on statistical correlations. However, the “partial” models cannot capture the correlations between the different parts of the economy which are important to take into consideration when one wants to make forecasts in different conditions, for instance, different assumptions on the stance of monetary policy.

The fact that a model is called an “equilibrium model” usually means that it is based on a well-established economic theory and that the results obtained by using it assume that market mechanisms create a balance between supply and demand in the different markets of the economy. There are forecast models that are “general” in the sense that they describe the correlations between a number of sectors of the economy, without being “equilibrium models” as such. This applies, for instance, to models consisting of a system of statistical correlations largely unsupported by economic theory, for instance, VAR models, which the Riksbank also uses. Modern general equilibrium models are, however, normally based on particular assumptions about the economic motives underlying the behaviour of individuals and organisations. Individuals and households are assumed to attempt to maximise “utility” over their life cycle and firms are assumed to maximise the discounted present value of all their future profits. This rational behaviour also means that individuals and firms base their conduct on the best possible forecasts of the future which they are able to produce. They have what are referred to as rational expectations. When the Riksbank uses RAMSES to make forecasts of the behaviour of the private sector, it is assumed at the same time that, for instance, the effects of monetary policy are partly governed by the private sector’s forecasts of the Riksbank’s conduct of monetary policy.

New-Keynesian models

Before the 1980s, general equilibrium models were not the predominant approach used for analysing and forecasting the development of inflation and the level of economic activity. The models used in economic analyses at this time were referred to as Keynesian models. In this type of model, participants in the economy were assumed to be governed by various rules of thumb. Further, expectations about the future were not usually assumed to arise rationally but were instead simple projections of earlier patterns in the data. The fact that one chose to describe the economy in this way was partly due to not having the technical tools (theories and computers) needed to be able to solve complicated systems of equations with forward-looking expectations. However, it was also due to the apparent poor fit of early versions of general equilibrium models with the data. The economy seemed to be affected by a much greater degree of inertia than one might expect if developments were governed

by market mechanisms and rational households and firms. Extensive academic research using the new technical tools available has developed a new generation of general equilibrium models in the past decade. These “second generation” general equilibrium models are usually referred to as New-Keynesian models and have good empirical qualities that are well-documented.²¹ The Riksbank’s new model RAMSES falls within this category.

In RAMSES, as in many other New-Keynesian general equilibrium models of a more modern type, it is not assumed that there is perfect competition in the markets for goods and services or the labour market. This means that firms and employees do not take prices and wages on the market as given factors but are aware that they can influence these by their behaviour. When a change has taken place in the economy, prices and wages are not immediately adjusted to a new long-term stable equilibrium but there is rather a gradual adaptation when conditions change. Private sector consumption and investment decisions are also characterised by rigidities. Households do not want to change their consumption pattern quickly and it takes time for firms before new investment can be exploited to their full extent in production. In this way, models take into consideration the rigidities that seem to exist in the data, while still assuming that rational behaviour and market mechanisms govern the economy in the long run.

Effects of monetary policy in RAMSES

Among economists, the widespread view for many years has been that the level of output and employment in the long term is not affected by monetary policy but is governed by developments in the labour force and technology.²² This approach is also a feature of RAMSES. If the Riksbank were to decide to conduct a permanent more expansionary policy, it would, according to this view, only lead to higher inflation in the long-term. However, there is equally widespread agreement that the economy’s short-term “cyclical” development is not only governed by changes in, for instance, the supply of labour or production technology, but also by monetary policy.

Due to the rigidity of prices and wages, a temporary rise in the repo rate in RAMSES leads to a fall in the demand for goods and services. It is rational for households to reduce their demand for consumer goods since a higher interest rate would make it more profitable to save and postpone consumption to the future. The higher interest rate also makes it more expensive to borrow money to invest, and thus investment also falls. The lower demand leads to a fall in output and to firms reducing their demand for labour and capital. When demand for labour and capital drops, the price of these production factors will also fall, leading to a reduction in firms’ marginal costs.

21 See, for example, L., Christiano, M., Eichenbaum and C. Evans, “Nominal Rigidities and the Dynamic Effects of a Shock to Monetary Policy”, *Journal of Political Economy*, Vol. 113 No. 1, 2005; F., Smets and R. Wouters, “An Estimated Dynamic Stochastic General Equilibrium Model of the Euro Area”, *Journal of the European Economic Association*, Vol. 1 No. 5, 2003.

22 See, for example, F., Giavazzi and F. Mishkin, “An evaluation of Swedish monetary policy 1995-2005”, Reports from the Riksdag 2006/07:RFR I.

Since RAMSES is a model for an open economy, a rise in interest rates will also lead to an increase in the value of the krona in relation to other currencies, which in turn leads to a deterioration in the trade balance (exports decrease and imports are stimulated). This reinforces the fall in demand to some extent. The rate of inflation is also affected since the higher value of the krona leads to lower prices on imported goods at the same time as reduced net exports lead to a reduction in domestic demand, thus contributing to a slowdown of domestic price development.

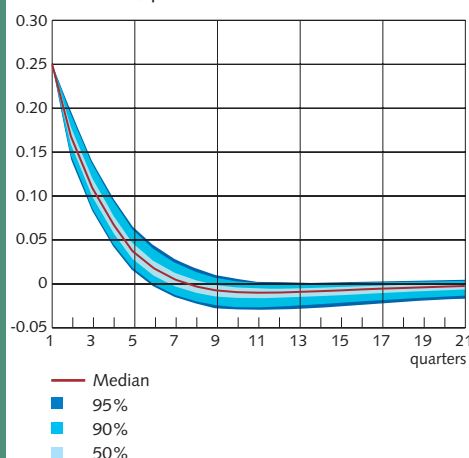
In the course of time, both households and firms adjust their prices and nominal wages downwards to an increasing extent as a result of the reduced demand in the economy, thus reducing the impact of monetary policy on the level of economic activity. Eventually, all firms and households have completely adapted prices and wages and the economy returns to its initial position.

Effects of an unexpected repo rate increase

In RAMSES, it is assumed that the Riksbank determines the level of the repo rate in response to the development of inflation and GDP, approximately in line with a Taylor rule. This is a common way of describing monetary policy in economic models, but is naturally a highly simplified view of reality. However, the monetary policy rule is chosen so as to provide a relatively good description of the repo rate path over the years. Deviations between the interest rate decisions actually made and the decisions which would have been made had the model's interest rate rule been complied with exactly can be viewed as a measure of monetary policy "surprises". Figures B2-B4 show the impact on the underlying inflation rate (UND1X), GDP growth and the level of GDP of such an unexpected rise in the repo rate (see Figure B1) according to the present version of RAMSES.²³ The thought experiment is accordingly that an unexpected tightening of monetary policy takes place not in response to a change in inflation or the economic activity which monetary policy normally reacts to. Figures B1-B4 thus show RAMSES' estimates of what would happen if the repo rate were raised by 0.25 percentage points given the economic prerequisites ("ceteris paribus"). As we see, the impact on the rate of inflation is calculated as being at its greatest after one year, when the rate of inflation has fallen by around 0.13 percentage points. The level of GDP falls at most by just over 0.10 percentage points after three to four quarters. As described above, monetary policy cannot have a sustained impact on resource utilisation and the effect on the level of GDP therefore becomes more subdued and the economy returns to its long-term growth path that applied before the unexpected and temporary rise in interest rates.

²³ The model is constantly being developed and is re-estimated 1-2 times a year, which means that the impulse responses shown in Figures B1-B4 may vary slightly.

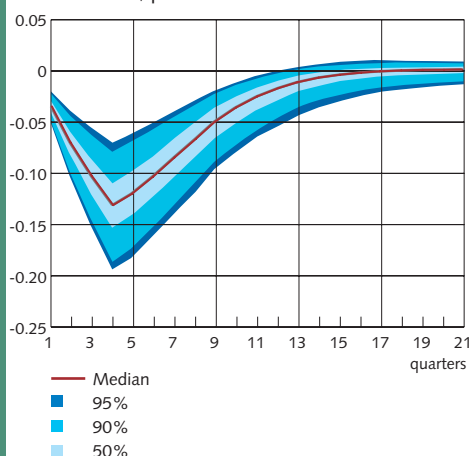
Figure B1. Repo rate
Deviation, per cent



Note. Deviation calculations, also known as impulse responses, from RAMSES.

Source: The Riksbank

Figure B2. UND1X
Deviation, per cent



Note. Deviation calculations, also known as impulse responses, from RAMSES.

Source: The Riksbank

Alternative scenarios are based on monetary policy surprises

It is these types of calculations that serve as the basis for the alternative scenarios presented in Chapter 2 of this Monetary Policy Report. The differences between alternative scenarios with a higher and lower repo rate and the main scenario correspond approximately to the effects obtained when RAMSES is subjected to a series of monetary policy surprises. Similar analyses can be made to produce other scenarios, for instance, where the development of wages or developments abroad differ to those in the main scenario (alternatives which are also presented in Chapter 2). It should be emphasised that these types of calculations must be interpreted with care. This is partly because the model's descriptions of the correlations in the economy are uncertain, which leads to uncertainty about the effects of different shocks. This uncertainty is described in the form of uncertainty bands ("fan charts") in Figures B1-B4.²⁴ However, the calculations should also be interpreted with caution for the reason that it is far from self-evident how an experiment with "a different monetary policy" is to be defined.²⁵ In this case, it takes place by analysing the effects of unexpected deviations from a simple rule of thumb for monetary policy. Another way could have been to investigate the effects of expected deviations from the rule or changes in the rule itself (for instance, how much the repo rate is affected by inflation or a change in the inflation target). The extent to which such changes are temporary or permanent and expected or unexpected will also affect the calculations of the effects of monetary policy. Opinions will therefore differ as to the design and interpretation of these types of model exercises, and the answers will change over time as economic research leads to new findings.

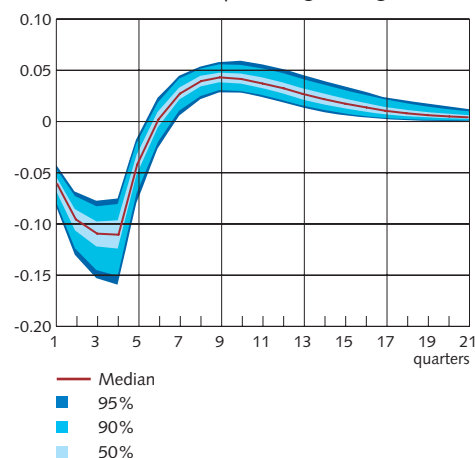
²⁴ The coloured areas in Figures B1-B4 show the lower and upper 50th, 90th and 95th percentiles in the distribution, which gives an idea of the uncertainty in the calculation of the impact of monetary policy intervention. The unbroken line represents the median in the distribution. The uncertainty bands in Figures B1-B4 are of an entirely different character to those presented in Figures 1-4 in Chapter 1. The latter depend both on uncertainty regarding future economic developments (poorer/better international economic growth, reduced/increased productivity growth, etc.) and the functioning of the economy, whereas the uncertainty bands in Figures B1-B4 are only intended to reflect the uncertainty regarding the functioning of the economy.

²⁵ Robert E. Lucas highlighted this problem in an influential article ("Econometric Policy Evaluation: A Critique", *Carnegie-Rochester Conference Series on Public Policy*, Vol. 1, 1976), spurring extensive academic literature on what has become known as the Lucas critique.

The effects of monetary policy in RAMSES as they are described in Figures B1-B4 may accordingly differ from calculations presented earlier for a number of different reasons. In addition to differences in the model specification, differences in results can be related to the monetary policy experiment being designed in different ways. The results in Figures B1-B4 are none the less in line with those reported for similar models in other countries.²⁶ Academic writings can therefore be said to provide good support for the reasonableness of RAMSES characteristics. The evaluation of forecasts made with different variants of RAMSES also indicates that the model has good forecasting performance, fully on a par with the statistical forecast models and forecasts previously published by the Riksbank over the years (which were a result of the assessments both of models and experts).²⁷

One advantage of RAMSES is that it can be used to calculate the effects of many other changes in the economy besides forecasts and calculations of the effects of monetary policy. For instance, the model can be used to try to distinguish after the event the underlying reasons why forecasts have been incorrect. Depending on the nature of the forecast errors, RAMSES will suggest which sources of forecast error are most probable, given the theoretical and historical correlations on which RAMSES is based. Examples of such calculations are given in the evaluation of the monetary policy conducted, which is presented in this Monetary Policy Report.

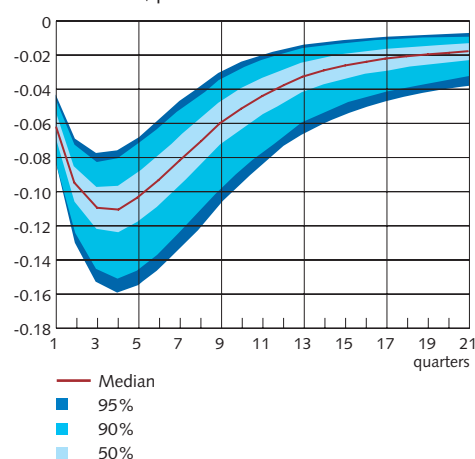
Figure B3. GDP growth
Deviation, annual percentage change



Note. Deviation calculations, also known as impulse responses, from RAMSES.

Source: The Riksbank

Figure B4. Level of GDP
Deviation, per cent



Note. Deviation calculations, also known as impulse responses, from RAMSES.

Source: The Riksbank

26 See, for example, F. Smets and R. Wouters, "An Estimated Dynamic Stochastic General Equilibrium Model of the Euro Area", *Journal of the European Economic Association*, Vol. 1 No. 5, 2003; M., Del Negro, F. Schorfheide, F. Smets and R. Wouters, "On the Fit and Forecasting Performance of New Keynesian Models", Federal Reserve Bank of Atlanta Working Paper No. 2004-37, forthcoming in the *Journal of Business and Economic Statistics*; M., Adolfson, S., Laséen, J., Lindé and M. Villani, "Bayesian Estimation of an Open Economy DSGE Model with Incomplete Exchange Rate Pass-Through", Sveriges Riksbank Working Paper Series No. 179, 2005, forthcoming in the *Journal of International Economics*.

27 For further reading on the evaluations, see M., Adolfson, M.K., Andersson, J., Lindé, M., Villani and A. Vredin, "Modern Forecasting Models in Action: Improving Macroeconomic Analyses at Central Banks", Sveriges Riksbank Working Paper Series No. 188, 2005.

■ CHAPTER 3 – The current economic situation

The Swedish economy and, by and large, the world economy, are in a strong expansionary phase. GDP growth in Sweden in 2006 is estimated at 4.5 per cent, at the same time as employment rose by 1.9 per cent. Strong international demand and productivity growth have been important driving forces underlying high GDP growth in recent years. In 2006, household consumption has started to rise more quickly as has employment. Resource utilisation has risen and is considered to be about normal at present.

Inflation is currently low and in the near future is estimated to remain lower than the assessment in the October Inflation Report. This is largely due to energy prices which have fallen and which are expected to be lower than previously assumed.

The strong economic growth in Sweden is also reflected in the credit, housing and stock markets. Stock prices have continued to rise in 2006. Firms and households have continued to increase their borrowing at a relatively fast pace. At the same time, house prices have risen rapidly and household wealth has continued to increase. Growth rates of both borrowing and house prices have possibly slackened off slightly during the second half of 2006. Viewed in a historical perspective, interest rates are still relatively low.

■■ Continued strong demand from households in the United States

Preliminary outcomes show that GDP in the United States increased by 3.4 per cent in 2006, which was in line with the forecast in the October Inflation Report (see Table A2). While investments in housing developed surprisingly weakly, according to preliminary outcomes, they fell by 4.2 per cent last year, this has been offset by other components such as exports being higher than expected. However, household consumption developed as forecast.

The labour market and household income have continued to strengthen in the United States in recent months (see Figure 38). At the same time, households' scope for consumption has increased due to lower oil and petrol prices. Household demand continues to be high therefore, despite the considerable dampening that has taken place in the housing market and despite a more stringent fiscal and monetary policy in recent years.

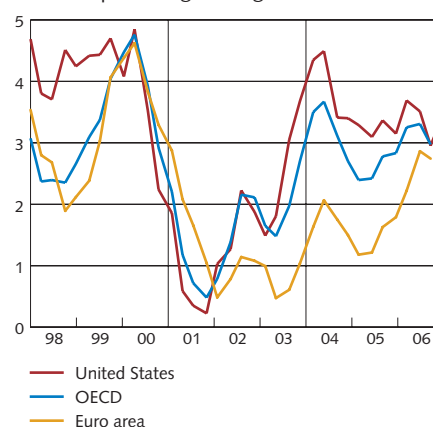
Corporate profits continued to rise considerably in the third quarter of last year and expressed as a share of GDP are at their highest since 1950. In the service sector, the mood remains positive, while in manufacturing industry it has become subdued (see Figure 39).

■■ Strong growth in the euro area in 2006

The level of economic activity in the euro area continues to develop favourably. During the third quarter, GDP increased in line with the assessment in the October Inflation Report.

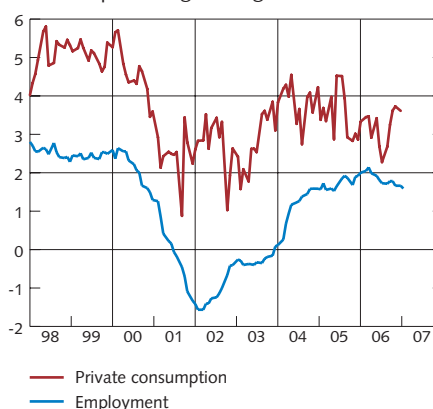
At the same time, growth has been revised upwards slightly in the first two quarters of 2006 compared with previously published information. There was broad-based growth in the first three quarters

Figure 37. GDP
Annual percentage change



Sources: Eurostat, OECD and the US Department of Commerce

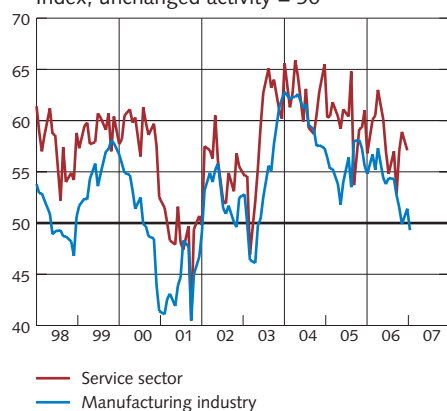
Figure 38. Employment and private consumption in the United States
Annual percentage change



Note: Employment according to employer survey (non-farm payrolls).

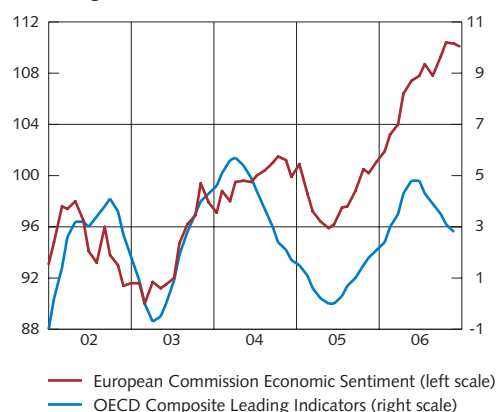
Sources: Bureau of Labor Statistics and US Department of Commerce

Figure 39. Purchasing managers index in the U.S.
Index, unchanged activity = 50



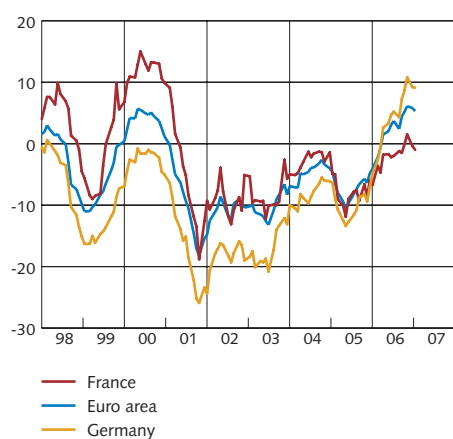
Source: Institute for Supply Management

Figure 40. Economic indicators for the euro area
Index, 2000 = 100, and annual percentage change



Sources: European Commission and OECD

Figure 41. Confidence indicators for the manufacturing industry in the euro area, France and Germany
Balance



Source: European Commission

last year, with increases for all demand components. Growth was also widespread from a geographical perspective.

Statistics and indicators show that development remained strong in the fourth quarter (see Figure 40). There was a further improvement in the labour market situation. Unemployment continued to fall, reaching 7.5 per cent in December. In the third quarter, employment was 1.4 per cent up on the previous year. Households have become more optimistic and the confidence indicator is at a historically high level. The mood in industry is good and the European Commission's barometer for industry is high in a historical perspective, even though it has fallen back marginally since November (see Figure 41).

Housing prices have risen rapidly in certain euro area countries. In France, for instance, housing prices have risen by 15 per cent per year since 2004 compared with the euro area average of about 7 per cent. Household borrowing has risen slightly more although it also differs greatly from country to country.

The increase in value-added tax in Germany at the beginning of the year should to some extent have stimulated consumption growth in the euro area in the fourth quarter since it can be assumed that German households brought forward purchases of durable goods. However, the statistics for the retail trade and newly-registered cars in Germany indicate that this effect has not been so large.

GDP growth in the euro area is estimated to have been 2.7 per cent in 2006, which is higher than in 2005 and is also higher than the historical average since 1980, of around 2.3 per cent. The assessment has been revised upwards slightly since the previous report (see Table A2).

■ Robust growth in the Nordic countries and the United Kingdom

Growth was high in the Nordic countries in 2006 and the forecasts in the October Inflation Report have been surpassed. Norway, Denmark and France all experienced strong growth in household consumption in the first three quarters of 2006. Monetary policy has been conducted in a less expansionary direction and different indicators of economic activity suggest that growth in Finland and Denmark gradually slowed down towards the end of 2006.

In Norway, economic indicators show continued high activity in the economy. Growth in investment is strong, particularly in the oil-producing sector. House prices in Norway are rising comparatively sharply, by more than 15 per cent, and lending and the money supply have also been increasing rapidly. Employment is rising quickly and unemployment is low, between 2 and 3 per cent depending on which measure is used. Resource utilisation in Norway has been high for a number of years and there are now indications that an increasing number of firms are experiencing a shortage of labour. Wages are also rising more quickly than before. Norges Bank has continued to raise the policy rate, most recently to 3.75 per cent for this reason.

Growth in the UK has been stable and relatively good in 2006. Investment and consumption have both contributed to the increase in demand although consumption growth has been more moderate than in the Nordic countries. Survey data indicate that resource utilisation has increased in both the manufacturing industry and the service sector in recent months. The rise in house prices has once again picked up after having previously slackened. Credits and the money supply are also increasing at a relatively rapid rate. Inflation has been gradually rising and reached 3 per cent in December. The retail trade has given notification of future price rises. This has led to concerns about increasing inflationary expectations and the Bank of England has continued to raise the policy rate, most recently to 5.25 per cent.

■ ■ Growth moderate in Japan but high in China and India

There is some uncertainty in Japan about the strength of economic activity. Growth was subdued during the second and third quarters of 2006. Business investment and exports continued as before to grow at a good pace. Growth in household consumption, on the other hand, was weak. However, indicators of economic activity point to some recovery taking place during the fourth quarter. Unemployment fell in November to 4.0 per cent, which is the lowest level since 1998. All in all, growth is considered to have been considerably lower in 2006 compared with the assessment in October (see Table A2). This is largely related to a change in the method used to calculate the Japanese national accounts, which has led to a downward adjustment of the level of GDP.

In the third quarter, GDP growth in China continued at an annual rate of over 10 per cent. Just as before, exports developed very strongly. At the same time, retail trade statistics, especially for durable goods, indicate that household demand is high. Credit growth has fallen off slightly, partly due to more stringent monetary policy and increased requirements on the levels of bank reserves. During the autumn, growth in industry slackened to some extent.

India has also continued to grow strongly in 2006. GDP growth was just over 9 per cent for the first three quarters compared with the same period in 2005. This is considerably higher than the average of around 6.5 per cent in the past six years.

■ ■ Export market growth dampened in the course of 2006

Aggregated with Swedish export weights, imports of goods by other countries, have risen by an average of 6 per cent per year since the mid-1980s. Development accelerated at the end of 2005 and in early 2006. During the first half of 2006, export market growth was around 12 per cent compared with the corresponding period the previous year. It slowed down considerably in the third quarter of 2006.

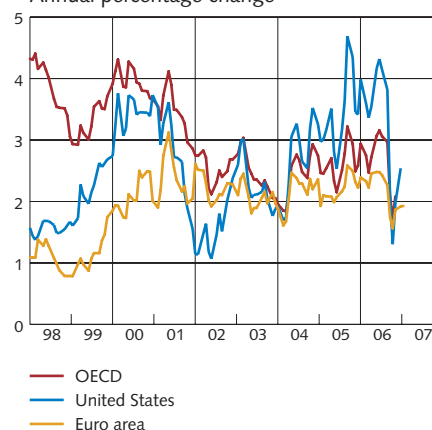
In Norway, Denmark and the United Kingdom, the rate of growth of imports was very high during the first half of the year, although it

Figure 42. Oil price, Brent crude
USD per barrel



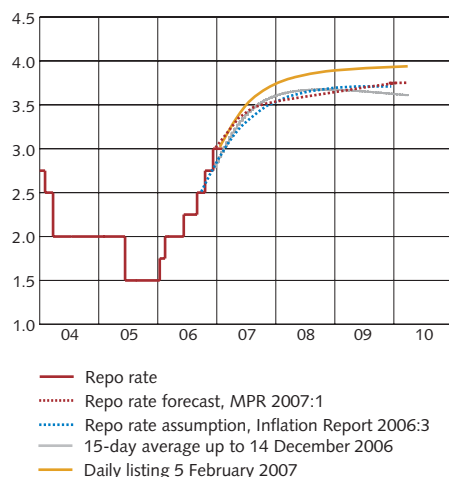
Note. Forward rates are calculated as a 15-day average.
Note. Broken lines represent the Riksbank's forecast.
Sources: Intercontinental Exchange and the Riksbank

Figure 43. CPI
Annual percentage change



Source: OECD

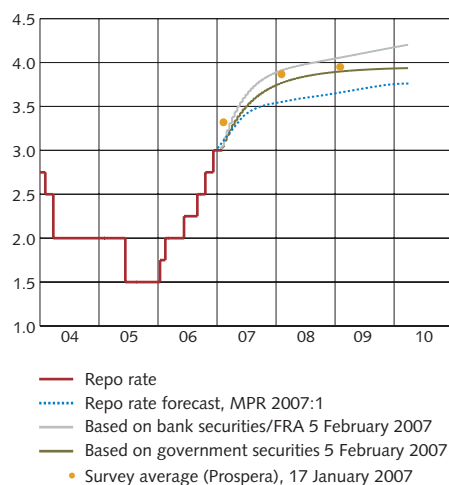
Figure 44. Repo rate forecast and implied forward rates based on government securities on different occasions
Per cent



Note. The repo rate assumption in Inflation Report 2006:3 is based on forward rates calculated as an average for 15 days up to and including 12 October 2006.

Source: The Riksbank

Figure 45. Repo rate forecast, current implied forward rates based on government securities and bank securities and also expectations regarding the repo rate according to surveys
Per cent



Note. Forward rates calculated on the basis of bank securities are adjusted downwards by 10 basis points since the bank securities with the shortest maturities (overnight rate) were listed at 10 basis points over the repo rate. These 10 basis points do not reflect expectations of future monetary policy.

Sources: Prospera Research AB and the Riksbank

subsequently tailed off considerably. The slowdown of British imports was most pronounced. Swedish export market growth has therefore been revised downwards for 2006 (see Table A2).

■ ■ Falling oil price has curbed inflation

There were sharp fluctuations in the oil price last year. At the beginning of the year, the price of oil was around 60 dollars per barrel. During the summer, the oil price occasionally rose to over 70 dollars per barrel. Since the October Inflation Report the oil price has fallen but rose again in January to an average of around 54 dollars per barrel (see Figure 42). This is around 10 dollars per barrel lower than forecast in October. Forward prices have also fallen. A slightly lower level of geopolitical unrest and a relatively high supply of oil are probably significant factors behind the fall in oil prices despite continued high demand. Since mid-January, oil prices have started to rise again.

The fall in the oil price contributed to a global decline in consumer prices at the end of last year (see Figure 43). The fall in inflation was greater than expected, particularly in the United States (see Table A2).

■ ■ Forward rates are higher in the long term than in the Riksbank's repo rate forecast

One important change since the Inflation Report in October 2006 is that the inflation assessment in the main scenario is now based on the development of the repo rate, which the Riksbank currently considers to provide a well-balanced monetary policy (see Chapter 2). This means that the repo rate forecast may deviate from expectations according to the implied forward rate curve. However, the implied forward rate curve remains of considerable analytical interest since it reflects the future development of the repo rate expected by the market.

Since the October Inflation Report, the implied forward rate curve has shifted upwards slightly in the longer term, partly related to rising interest rates abroad (see Figure 44). It has also shifted upwards compared with the previous monetary policy meeting in December. The most recent surveys of the money market's repo rate expectations are in line with the forward rate curve (see Figure 45). Market expectations based on government securities are slightly higher than the Riksbank's repo rate forecast.

■ ■ Monetary policy expectations have shifted upwards slightly in the United States and more in the euro area

In the United States, the policy rate has been kept unchanged at 5.25 per cent while the ECB increased its rate by 25 basis points in December to 3.5 per cent. Pricing in the money and bond market

suggests that the ECB is expected to continue to raise the interest rate during the year (see Figure 46). Compared with October, the market participants' expectations have been revised upwards slightly mainly due to unexpectedly positive statistics. The forward rate curve indicates that the policy rate will be between 3.75 and 4.0 per cent in the latter part of 2007.

In the United States as well, pricing in the money and bond market indicates that monetary policy expectations have shifted upwards slightly in the coming year compared with October (see Figure 46). According to market pricing, a reduction of the policy rate is expected to take place in the first quarter of 2008.

■ ■ Low but rising long-term interest rates

Since the beginning of December, long-term interest rates have risen (see Figure 47). This primarily reflects the changes that have taken place in monetary policy expectations and expectations of growth in the United States and the euro area respectively. However, long-term interest rates are still relatively low, particularly in Sweden and the euro area.

■ ■ Stronger krona and weaker dollar

Since the Inflation Report, the US dollar has weakened against the euro from around 1.25 to around 1.30 dollars per euro. The weakening of the dollar can to some extent be related to changes in monetary policy expectations.

The krona has strengthened slightly more than the assessment made in October. At the end of 2006, the krona strengthened markedly, both against the euro and the dollar (see Figure 48). The outcome for the fourth quarter for the SEK/TCW exchange rate was around 1 per cent stronger than the forecast in the October Inflation Report (see Figure 49). However, at the beginning of 2007, the krona weakened against both the euro and the dollar. In TCW terms, the krona is at present slightly stronger than the assessment for the first quarter reported in the October Inflation Report.

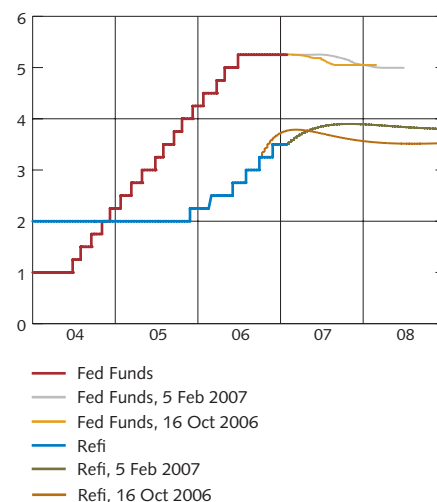
■ ■ Strong stock market growth in Sweden since the summer

In recent years, stock markets in the United States, the euro area and Sweden have developed favourably. A weakening took place in the spring of 2006 although equity prices have since risen again (see Figure 50). The rise is clearly largest in Sweden. OMX has risen by over 30 per cent since the summer, while the rise in the United States has been more modest.

■ ■ The rate of growth of the money supply remains high

The growth of M0, i.e. the public's holdings of notes and coin, have been close to zero for the past year (see Figure 51). Money supply

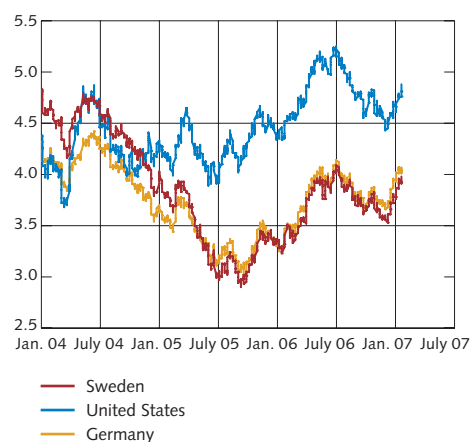
Figure 46. Monetary policy expectations in the euro area and the United States
Per cent



Note. Expectations calculated on the basis of implied forward rates for the euro area and Fed Funds contracts for the United States.

Source: The Riksbank

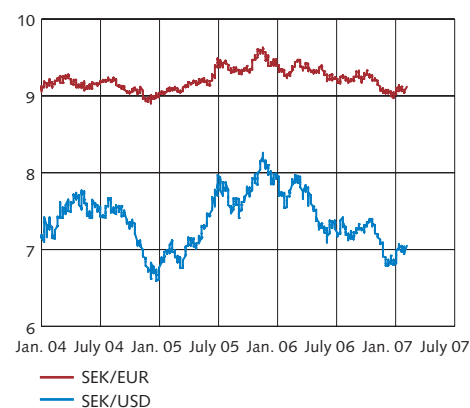
Figure 47. Long-term interest rates
Per cent



Note. Government bonds with approximately 10 years left to maturity.

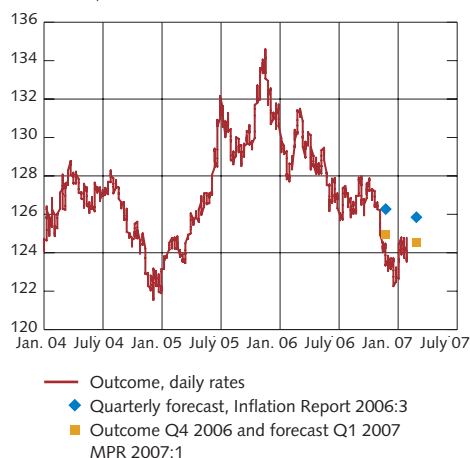
Source: The Riksbank

Figure 48. Exchange rate movements
SEK/EUR and SEK/USD



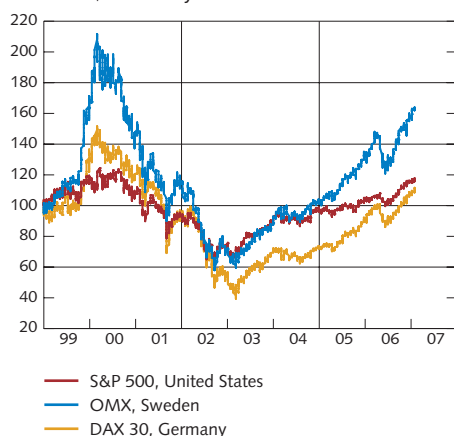
Source: The Riksbank

Figure 49. TCW exchange rate
Index, 18 November 1992 = 100



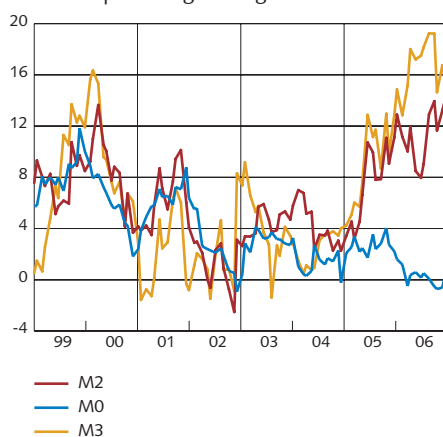
Source: The Riksbank

Figure 50. Share indexes in Sweden, the United States and the Germany
Index, 1 January 1999 = 100



Source: Reuters Ecowin

Figure 51. The money supply
Annual percentage change



Sources: Statistics Sweden and the Riksbank

measured as M2 is growing more quickly, however, the rate of increase being around 14 per cent at the end of 2006. M2 includes household and corporate bank deposits, which is the largest single component of the money supply.

Deposits have risen very rapidly in the past two years. One explanation may be that the return on alternative financial investments such as bonds, has been low, which has reduced the alternative cost for holding on to liquid funds. Deposit rates on these accounts have also tended to rise recently which has reinforced this effect.

M3 is the measure of money supply that has risen most quickly. M3 includes the public's holdings of highly volatile financial instruments plus M2.²⁸ During the past year, the development of M3 has been appreciably affected by this type of investments.

■■ Borrowing also continues to rise rapidly

Firms and households have increased their borrowing sharply in recent years. Households have to a great extent used loans to buy housing, which has contributed to rapidly rising property prices. During the second and third quarters of 2006, the rate of increase of household borrowing and the rise in house prices tapered off slightly, but remained high seen from a historical perspective (see Figure 52).

Monthly data for the fourth quarter last year show that the rate of increase of lending remained high although there was a further slight decrease compared with the third quarter. Indicators also suggest that the rise in house prices slowed in the fourth quarter of last year.

■■ Swedish GDP growth stronger than expected

Important new information received since the previous report includes the National Accounts for the third quarter of 2006, as well as various indicators, including the business tendency surveys for October to January, the activity index up to and including December and the retail trade index for December.

GDP growth has been high in recent years. Important causes of this high growth have been the strong development of productivity coupled with strong international demand. Domestic demand in the form of household and public sector consumption has increased in 2006.

In connection with publication of the National Accounts for the third quarter of 2006, GDP growth was also revised upwards for the full years of 2004 and 2005 by 0.4 and 0.2 percentage points respectively. The outcomes for the first three quarters of 2006 have also proven stronger than expected. GDP grew by 4.6 per cent during

²⁸ These financial instruments include public holdings in money market funds and interest-bearing securities with a maturity of up to two years issued by Swedish monetary financial institutions and certain types of short-term loans against collateral, i.e. repo agreements.

the first three quarters of 2006 compared with the same period in 2005. This was 0.2 percentage points more than forecast in the previous report.

Calendar-adjusted GDP rose by 4.4 per cent during the third quarter of 2006 compared with the same quarter the previous year. The quarterly growth rate was 1.0 per cent which was marginally higher than forecast in the October Inflation Report (see Figure 53). Growth was somewhat stronger than expected mainly due to a larger than expected contribution from inventory investment. Exports also grew more than forecast. However, household and public sector consumption and investments grew less than expected.

Among investments, business sector investment (excluding housing) rose rather more weakly than expected, while other investment was in line with the assessment.

Household consumption has been difficult to forecast in 2006. In the third quarter, consumption of retail goods was less than expected according to the National Accounts. The correlation between the sales statistics for retail goods and household consumption of retail goods has been somewhat difficult to interpret, in particular for the first quarter of 2006 (see Figure 54). The retail sales statistics include some industries, such as building supplies stores, white goods stores, and pharmacies. Only a small proportion of these sales in the national statistical calculations are assumed to be household consumption. The turnover of these industries increased sharply during the first quarter. Other difficulties are due to the fact that the seasonal pattern of household consumption has probably been affected by changes in payment of tax refunds, which since 2005 mainly take place in the second quarter instead of the third quarter. Besides this, a number of revisions in the outcomes for household consumption were made, in particular for the first quarter of 2006.

■ Continued strong GDP growth expected in the fourth quarter of 2006

To assess the development of GDP in the short term, the Riksbank applies statistical models which use information from a large number of cyclical indicators. According to these models, growth in the last quarter of last year is now expected to be slightly stronger than the forecast in the October Inflation Report (see Figure 53). This picture is supported by assessments of monthly statistics for areas such as manufacturing production and retail sales, as well as survey data.

All in all, GDP growth in 2006 has been revised upwards compared with the assessment in the October Inflation Report. GDP is now expected to have grown by 4.5 per cent in 2006.

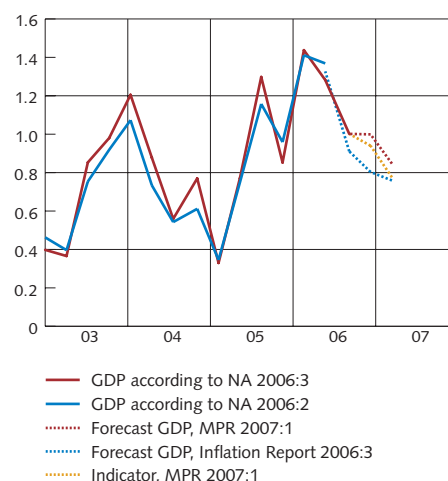
GDP growth is expected to slacken in the immediate future. This assessment is primarily related to expectations of a calmer phase of growth for investment and exports.

Figure 52. House prices and total lending to Swedish households
Annual percentage change



Sources: Statistics Sweden and the Riksbank

Figure 53. GDP: outcomes and the Riksbank's forecast, and forecasts based on indicator models
Quarterly change in per cent, seasonally adjusted data

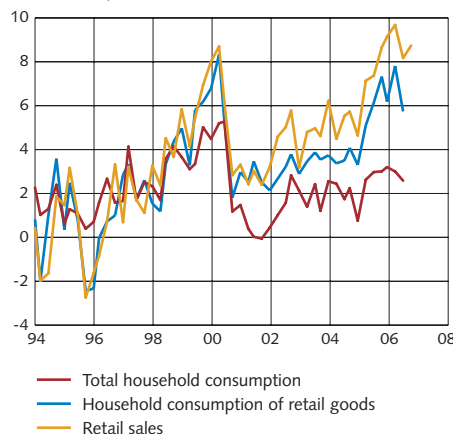


Note. "Indicator" refers to the mean value of those indicator forecasts described in the box entitled "GDP indicators", Inflation Report 2005:3.

Sources: Statistics Sweden and the Riksbank

Figure 54. Retail sales and household consumption

Annual percentage change

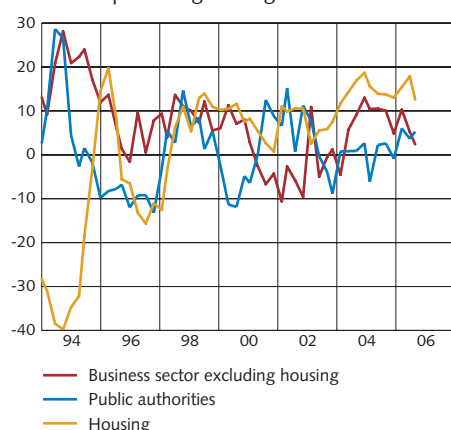


Note. Non-calendar-adjusted data.

Sources: National Institute of Economic Research and Statistics Sweden

Figure 55. Gross fixed capital formation

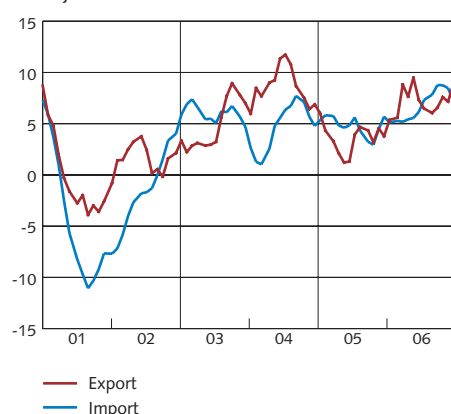
Annual percentage change



Sources: Statistics Sweden and the Riksbank

Figure 56. Foreign trade with goods at fixed prices

Annual percentage change, seasonally adjusted data



Note. Three-month moving average.

Sources: Statistics Sweden and the Riksbank

■■ Investment growth slackens

Gross fixed capital formation has increased since the end of 2003 by a total of approximately 25 per cent. This increase is of the same magnitude as that experienced during two most recent upswings in the mid and late 1990s. Investment in housing, in particular, has increased sharply (see Figure 55). Investment has also clearly expanded for the rest of the business sector, while the upswing has been relatively modest in the public sector.

The investment survey for October showed slightly weaker investment plans for 2006 compared with the corresponding survey from May. This is confirmed by the outcome for the third quarter, which was weaker than expected. The surveys also contain information about investment plans for 2007, although these are vaguely specified. The surveys indicate a positive volume growth this year but a clear slowdown compared with the strong increases in recent years.

The most recent statistics on apartment starts indicate some slowdown which will subsequently have a dampening effect on housing investment. The number of planning permission approvals continues to increase at a relatively good rate. This indicates that the rise in housing construction will continue, although probably at a slower pace than before.

All in all, the forecasts for fixed gross fixed capital formation will be revised downwards slightly in the short term due to the weak development in the third quarter.

■■ Continued strong but decreasing export growth

The monthly statistics for export of goods which are available up to the end of December 2006 indicate a continued good development at the end of last year (see Figure 56). Growth is expected to taper off slightly in the immediate future although the strong outcome from the third quarter has entailed that the overall forecast for exports being revised upwards in the short term. The monthly statistics for import of goods also indicate some dampening in the recent period, which supports the assessment that import growth will gradually slow in the future.

■■ Robust growth in consumption

The development of the retail trade index and the outcomes for household's purchase plans indicate that household consumption grew strongly during the fourth quarter of 2006 and was approximately in line with the forecast in the October Inflation Report.

The National Institute of Economic Research's business tendency survey shows that companies in the retail trade sector remain optimistic even though the confidence indicators have fallen slightly

in recent months. Retail sales continue to rise at a comparatively high rate. In 2006, retail sales expressed in fixed prices rose by 9.1 per cent at a calendar-adjusted annual rate. The corresponding figure for 2005 was 7.4 per cent. Household purchasing plans for January showed a continued positive mood among households, as regards unemployment, the Swedish economy and personal finances (see Figure 57).

According to the National Accounts, household disposable income only rose by 0.9 per cent during the first three quarters of 2006 compared with the same quarter of 2005, despite good rates of increase for wage and company incomes (see Figure 58). This may be regarded as low, bearing in mind the strong development of economic activity and the labour market. One explanation is that households have paid a relatively large amount of tax due to capital gains on shares and real estate. These profits are not included in disposable income, but the tax paid affects disposable income.

The outcome for the first three quarters indicates that public sector consumption rose relatively sharply in 2006 (see Table A4). This is partly a result of the increase in labour market policy measures which has benefited the local government sector. Central government consumption has also risen slightly after having fallen for two consecutive years.

The forecast for growth in public and household consumption has been adjusted downwards slightly due to the downward revision of the outcome for the first half of 2006.

■ ■ Strong public finances

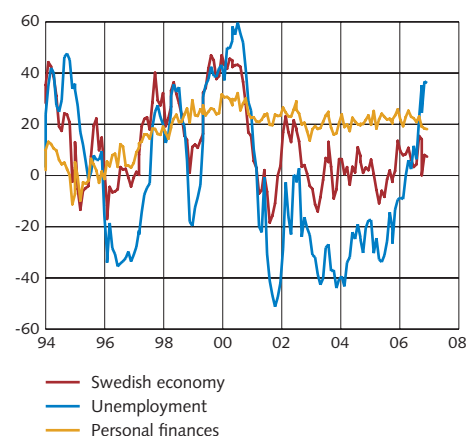
The outcome for general government net lending in the first three quarters of 2006 was stronger than the forecast in the October Inflation Report. In particular, income and wealth taxes from households were higher than expected. However, the outcomes for general government net lending in 2004 and 2005 were revised downwards slightly in the most recently published National Accounts.

The strong development of the state of the economy and an improved labour market situation are contributing to a continued high level of general government net lending. Net lending is estimated to have totalled 2.9 per cent of GDP in 2006. The cyclically-adjusted net lending is estimated to be above the government's target of 2 per cent of GDP (see Figure 59).

■ ■ Unexpectedly fast growth in employment in the second half of 2006

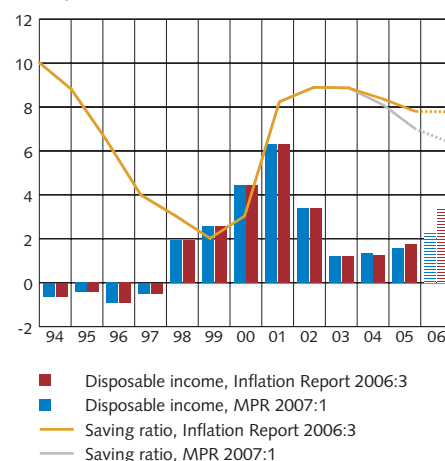
Among the important new information which has been received since the October Inflation Report is the outcome for employment according to the Labour Force Surveys (LFS) for September to December, statistics on newly notified vacancies for September to

Figure 57. Household expectations of the future
Balance



Source: National Institute of Economic Research

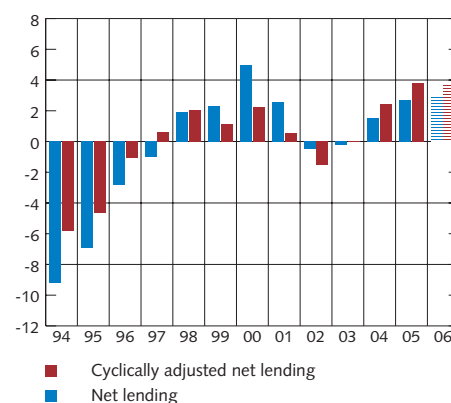
Figure 58. Household disposable income and saving ratio
Annual percentage change and percentage of disposable income



Note. Broken lines and striped bars represent the Riksbank's forecast.

Sources: Statistics Sweden and the Riksbank

Figure 59. General government net lending
Per cent of GDP



Note. Cyclically adjusted net lending is calculated using the ESCB method. Striped bars represent the Riksbank's forecast.

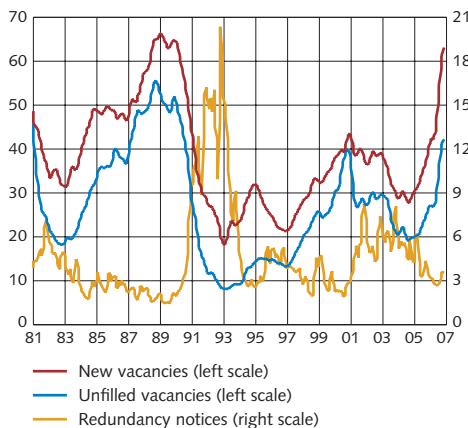
Sources: Statistics Sweden and the Riksbank

Figure 60. Number of employed and number of people in the labour force
Thousands, seasonally adjusted data



Sources: Statistics Sweden and the Riksbank

Figure 61. Vacancies and redundancy notices
Thousands, seasonally adjusted data



Note. Three-month moving average. Vacancies refers to positions with a duration of more than ten days.

Source: National Labour Market Board

Figure 62. Hiring plans and number of employed in the business sector
Balance and annual percentage change



Note. Hiring plans weighted by the Riksbank. The balance is defined as the difference between the proportion of firms that have reported a wish to increase the number of employees and the proportion of firms that have reported a wish to reduce numbers.

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

December and the business tendency surveys for October to January.

Since the start of 2005, the number of people in the labour force has risen at an increasingly fast rate. This is partly due to an increase in the number of people of working age (16-64) although the improved labour market situation has also contributed to this development. Employment started to rise in 2005 after having developed weakly since 2001 (see Figure 60). The number of employed continued to rise at an increasingly rapidly pace in 2006. The fast rise in employment, expressed in both hours and people, in the most recent quarters, is due to strong demand coupled with an increase in labour market programme measures. In 2006, employment rose by 97,000. Of these, 26,000 are attributable to an increase in the number of people in labour market policy measures.

The rise in employment has been particularly large in the construction and service industries in 2006. In the service sector, it is primarily business services, including IT consultants, technical consultants, architect and lawyers' services, which have contributed to the rise in employment. During the third quarter, the number of employed in the local government sector also contributed strongly to the overall rise, which can primarily be explained by the increase in "plus" jobs. They have increased by around 10,000 in the past six months.

Indicators point to a continued improvement in the labour market situation (see Figure 61). According to the National Institute of Economic Research's business tendency survey, firms' hiring plans also show a continued rise in the number of employed in the current quarter (see Figure 62).

Employment rose more in the fourth quarter than the assessment made in the October Inflation Report. Open unemployment fell by around 0.5 percentage points to 5.4 per cent on average in 2006. This was in line with the assessment in the October inflation report.

■ ■ The rate of productivity growth is slowing

Productivity growth has been very high in recent years. In connection with the most recently published National Accounts, productivity growth was moreover revised upwards by 0.4 and 0.1 percentage points for 2004 and 2005 respectively (see Figure 63). Productivity growth was high in the first six months of 2006. It was expected in the October Inflation Report that productivity growth would tail off in the second half of 2006 as the upturn matured. During the third quarter, productivity also rose more slowly than earlier in the year. Indicators for employment and output during the fourth quarter indicate that productivity growth in the immediate future will remain lower than in the first half of 2006.

All in all, productivity growth is expected to have been marginally lower in 2006 than in the assessment in the October Inflation Report.

■ Normal but rising resource utilisation

The use of the economy's production resources has increased since the beginning of 2005. Last year, resource utilisation was considered as being approximately in line with the assessment in the October Inflation Report.

There are different ways of measuring resource utilisation. Different indicators and econometric estimates can produce a varying picture of the level of resource utilisation depending on the method used and the part of the economy described. Common to all of these measures of resource utilisation, however, is that they are all rising at present.

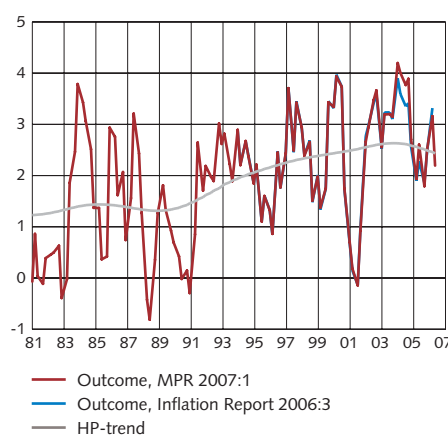
One way of evaluating resource utilisation is to study how much different measures of output and resource utilisation deviate from the trend. These deviations or "gaps" are greatly affected by the method used to calculate the trend. Common to all these estimates is that they are uncertain, especially at the end of the period, which, from an analysis perspective is the time of greatest interest. Resource utilisation in Sweden, measured using three different gaps where the trend is calculated with a Hodrick-Prescott filter, has risen clearly since the beginning of 2005 and it is at present close to or just above zero (see Figure 64).²⁹ Another way of measuring resource utilisation is capacity utilisation in industry. This continues to be high (see Figure 65), although there is no great shortage of labour in the manufacturing industry (see Figure 66).

Another way of evaluating resource utilisation is to study the shortage of labour in different sectors, the shortage rates. In the construction industry, the shortage rate has continued to rise and is now very high. However, the considerable shortage of labour has not yet resulted in any high rate of wage increase in the construction sector (see Figure 67). This could be interpreted to mean that the construction sector is also exposed to increasing international competition and thus cannot raise wages despite strong demand. The shortage of labour has increased in both the private service industries and trade in recent years although not to remarkably high levels.

Utilisation of labour can also be measured by the total employment rate, i.e. the number of employed in proportion to the population of working age. The employment rate has risen in recent years and is now approaching the level of the last cyclical peak in 2000 (see Figure 68). However, it is still well below the high level seen in the 1980s and it is unlikely that the employment rate will reach a sustainable level on a par with that witnessed in the 1980s, partly due to the higher numbers studying at university. However, there is reason to believe that the long-term sustainable employment rate has risen slightly since the 1990s and can be expected to continue to do so. The reasons for this include the fact that an increasing number of older people in employment are retiring at a later point in time.

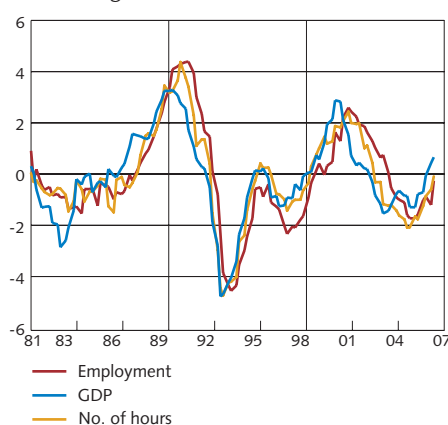
Figure 63. Labour productivity for the economy as a whole

Annual percentage change, seasonally adjusted data



Sources: Statistics Sweden and the Riksbank

Figure 64. Estimated HP gaps
Percentage deviation from HP trend



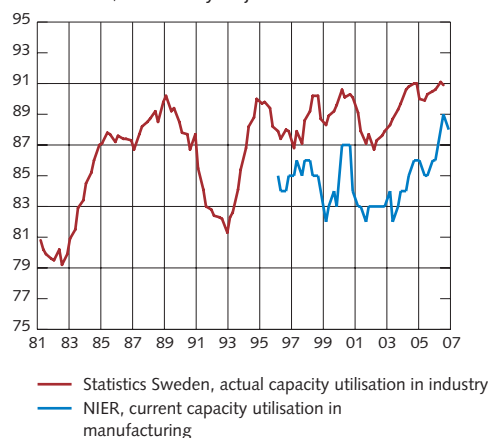
Note. The trends have been calculated using the Hodrick-Prescott filter. The forecasts have been included in the calculations.

Sources: Statistics Sweden and the Riksbank

²⁹ See footnote in Chapter 2 for a description of the Hodrick-Prescott filter.

Figure 65. Capacity utilisation in industry according to Statistics Sweden and the NIER

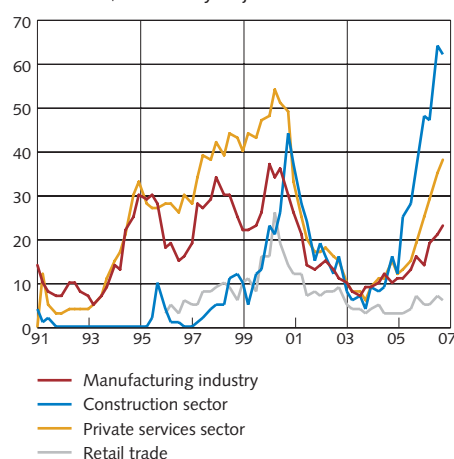
Per cent, seasonally adjusted data



Sources: National Institute of Economic Research and Statistics Sweden

Figure 66. Proportion of firms reporting a shortage of labour

Per cent, seasonally adjusted data



Note. Shortage of labour in the retail trade and private services sector weighted by the Riksbank.

Source: National Institute of Economic Research

The supply of labour is moreover growing quite rapidly at present, and is expected to continue to do so in future, partly as a result of the government's income tax cuts for those in work. This means that employment may increase comparatively quickly in future without resource utilisation rising to an unsustainably high level.

The Riksbank's overall assessment is that resource utilisation has risen recently and is now quite normal seen from a historical perspective.

■ Continued low rate of wage increase in 2006

According to the National Accounts, wages increased in the whole economy during the first three quarters of 2006 by 3.3 per cent, which is slightly less than expected. In accordance with this statistic, wage development was revised downwards slightly for 2005 and the first half of 2006 in the most recently published National Accounts.

According to the short-term wage statistics from the National Mediation Office, wages have increased by 3.0 per cent in the economy as a whole in the first 11 months of 2006. This is slightly more than during the corresponding period in 2005. With new outcomes of, among other things, retroactive payments, the published rate of wage increase will probably be revised upwards slightly. However, the rate of wage increase is low in relation to the state of economic activity. During the upturn in 1999-2000, wages rose by 3.6 per cent. Wages in the business sector and the public sector have risen by 3.2 and 2.8 per cent respectively, while wages in the construction sector have risen by 3.3 per cent in the first 11 months of 2006 (see Figure 67).

All in all, wages in the whole economy have increased by 3.2 per cent in 2006 according to short-term wage statistics and by 3.4 per cent according to the National Accounts. Both assessments are slightly lower than in the October Inflation Report.³⁰

■ Low rate of increase of unit labour costs

Unit labour costs have developed weakly for a number of years. This is primarily attributable to strong productivity growth coupled with a moderate rate of wage increase. In connection with the latest publication of the National Accounts, the rate of increase of unit labour costs was revised downwards sharply in 2004 and 2005 (see Figure 69). In 2004, this mainly depended on the upward adjustment of productivity growth. The foremost cause in 2005 was that unit

³⁰ Hourly wages according to short-term wage statistics normally increase slightly more slowly than hourly wages according to the National Accounts due to differences of method and definitions. The purpose of the short-term wage statistics is primarily to measure wages for hours worked while the purpose of statistics in the National Accounts is to report on the total income and expenditure in the economy. The hourly wage in the National Accounts therefore includes all additions to wages and other expenditure that affects wage costs.

labour costs according to the National Accounts were revised downwards quite considerably. However, a higher outcome for productivity growth also contributed.

Unit labour costs for the economy as a whole are estimated to have remained low in 2006. During the first three quarters of 2006, they fell by 0.1 per cent compared with the same period in 2005. The low rate of increase in 2006 is partly due to a temporary discount on the pension premiums included in the agreed collective charges. Since the discount is assumed to end this year, there will be a temporary rise in the rate of increase of labour costs.

In the future, labour costs will be affected by a number of proposals on changed employer's contributions announced by the new government.³¹ All in all, these measures are not expected to affect labour costs in 2007 although they will reduce the rate of increase of wage costs by 0.2 percentage points in both 2008 and 2009.

■ High profits in the business sector

The profitability of the business sector has developed well in recent years. The "profit share" which measures the profits in the domestic part of firms' business activities, has risen markedly since 2001 (see Figure 70). This is primarily due to rationalisation which has led to strong productivity growth and moderately rising wage costs. The profitability assessments of industrial and retail trade businesses are now also at a comparatively high level according to the National Institute of Economic Research's business tendency survey. The high profitability is considered to mean that some margins now exist to deal with rising production costs without raising prices in the short term.

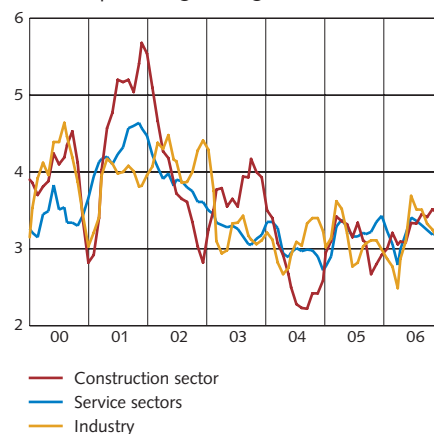
■ Inflation expectations remain stable at around 2 per cent

Among the important new information received since the October Inflation Report are surveys in November and January and the business tendency surveys and household purchasing plans in October-January.

Household expectations of inflation in the coming year were adjusted upwards by 0.1 percentage points to 2.2 per cent from December to January according to the survey of household purchasing plans. The National Institute of Economic Research's quarterly business tendency surveys show that firms' expectations of the rate of price increases for the same period were 1.9 per cent in January, which is 0.2 percentage points higher than in the survey in October (see Table A7).

³¹ The special deduction for employer and individual contributions will be halved in 2007 and abolished in 2008. The special wage tax will be abolished for older employees. The reduction in employer contribution for one-person businesses that hire someone will be abolished. The employer and individual contributions for persons aged 19-24 are being halved. Employer and individual contributions for certain service companies will be abolished in July 2008. The effect of the last measure was not included in the forecast in the previous report.

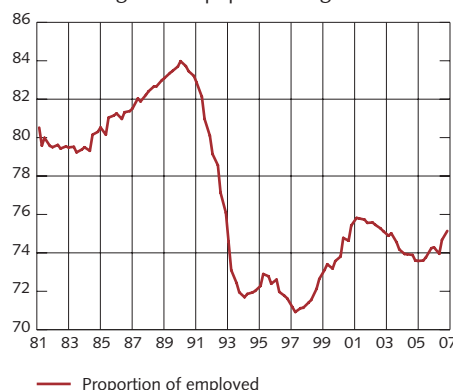
Figure 67. Wages in the construction, service and manufacturing sectors
Annual percentage change



Note. Three-month moving average.

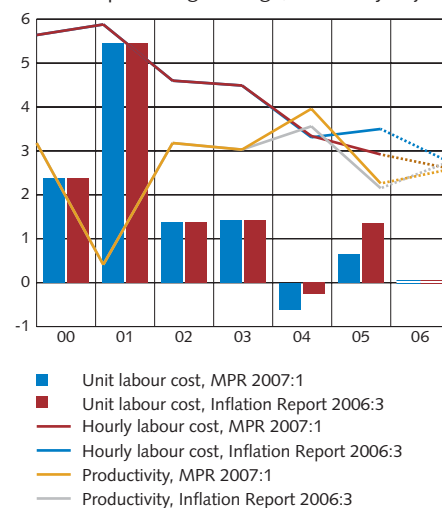
Sources: National Mediation Office, Statistics Sweden and the Riksbank

Figure 68. Employment rate
Percentage of the population aged 16-64



Sources: Statistics Sweden and the Riksbank

Figure 69. Unit labour costs
Annual percentage change, seasonally adjusted data



Note. For the economy as a whole. Broken lines and striped bars for 2006 represent the Riksbank's forecast.

Sources: Statistics Sweden and the Riksbank

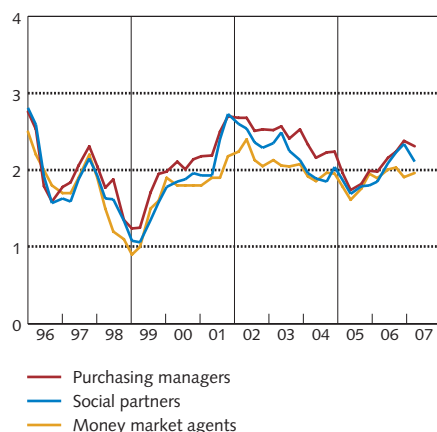
Figure 70. Profits in the business sector according to the National Accounts
Percentage of value added



Note. Operating surplus (gross) expressed as a percentage of the value added at factor prices. Broken lines represent the Riksbank's forecast.

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

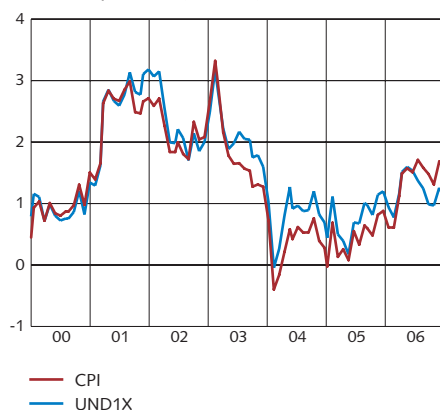
Figure 71. Different agents' expectations of inflation two years ahead
Annual percentage change



Note. The horizontal lines at 2, 1 and 3 per cent respectively are the Riksbank's inflation target and the tolerance limits for the annual change in the CPI.

Source: Prospera Research AB

Figure 72. CPI and UND1X
Annual percentage change



Source: Statistics Sweden

Surveys of inflation expectations among the social partners, purchasing managers and the money market shows that these have not continued to rise but remain at or just over two per cent in two years time (see Figure 71). In the January survey, the inflation expectations of the employer and employee organisations concur in the medium-long and long term. Purchasing managers in industry have the same picture of expectations as in the November survey, while the purchasing managers in trade have adjusted their inflation expectations downwards slightly over the whole time period. The money market participants expect inflation of 1.8 per cent one year ahead, 2.0 per cent two years ahead and 1.9 per cent five years ahead (see Table A7).

All in all, the inflationary expectations of all groups were well in line with the Riksbank's forecast according to which CPI inflation in the coming two years will average 2.1 per cent per year.

■ ■ Fluctuating energy prices affect inflation

Since the October Inflation Report, the inflation outcomes for October, November and December have been published. The annual rate of increase of CPI and UND1X was 1.6 per cent and 1.2 per cent respectively in December (see Figure 72).

Energy prices have fluctuated sharply in the past few years (see Figure 73). Electricity prices, which account for approximately 5 per cent of CPI, have risen sharply for domestic consumers in the past six months. After the dry summer, the water levels of both Swedish and Norwegian reservoirs for hydroelectric power production were extremely low during the autumn. This is an important cause of the rise in electricity prices. At the end of 2006, mild weather and abundant precipitation has led to a sharp fall in electricity prices on the power exchange Nordpool. However, this has so far only partly impacted on consumer electricity prices (see Figure 73). The annual rate of increase of electricity prices in CPI totalled over 17 per cent in December. However, consumer electricity prices are also expected to fall in the next few months.

The prices of oil products (petrol, diesel and domestic heating oil), which account for 5 per cent of CPI, have risen rapidly in the past two years and contributed to pulling up inflation. At the end of last year, the world market price for oil fell and this, together with a strengthening of the krona, has contributed to pulling down inflation. The prices of oil products fell by an annual rate of just under 4 per cent in December.

■ Inflation adjusted for energy prices is low and stable

Figure 74 shows how other components of UND1X have developed during the past six years. Goods prices have increased very slowly or even fallen at an annual rate over the past three years. One important cause of this is probably an increasing share of imports from low-cost countries, which has contributed to reducing the prices of certain goods. The exchange rate for the krona, which gradually strengthened between 2002 and 2004, is also assumed to have curbed inflation with some time lag. Import prices for producers on consumer goods have also decreased at an annual rate since the middle of last year (see Figure 75).

Since early 2002, the rate of increase for the price of services has fallen. In 2006, the rate of increase seems to have flattened out. Cost pressures in the economy have been low for several years due to moderate wage increases and strong productivity growth. This is probably one important cause of prices for services rising relatively slowly at present. The services whose prices are increasing more slowly than before are, for instance, municipal charges, rents, medical care charges, household services and postal services. Prices for services normally increase more quickly than prices for goods, which is partly due to productivity growth on average being slower in companies that produce services. Another important cause is that the production of services is less exposed to international competition.

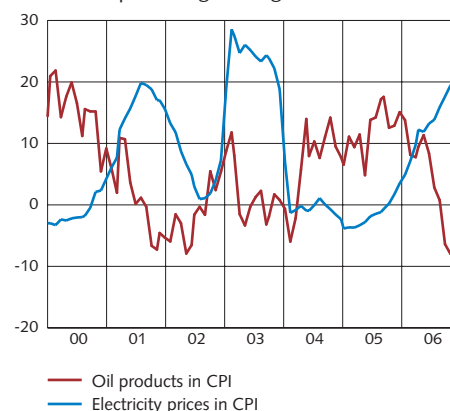
The rate of increase of food prices has accelerated in the past year after having been very low in 2004 and 2005. This picture is confirmed by the business tendency survey data from the National Institute of Economic Research. Increased competition in the food industry contributed to keeping food prices down. The fact that food prices are now rising again is partly due to rising raw material prices, but probably also to the fact that competition from low price chains is no longer increasing at the same rate.

Adjusted for energy prices, UND1X inflation has thus been low and stable in recent years (see Figure 76). The rate of increase of UND1X excluding energy amounted to an annual rate of 0.7 per cent in December, as forecast in the October Inflation Report.

■ Underlying inflation has increased slightly

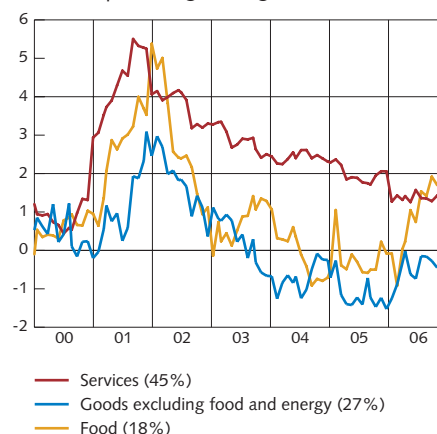
To analyse how inflation has developed adjusted for various temporary factors, the Riksbank studies a number of measures of underlying inflation. The aim of the different measures is to try and distinguish the common trend change in the general level of prices. A common method is to remove a number of goods and services from CPI, whose prices fluctuate sharply due to temporary factors, such as

Figure 73. Energy prices in CPI
Annual percentage change



Source: The Riksbank

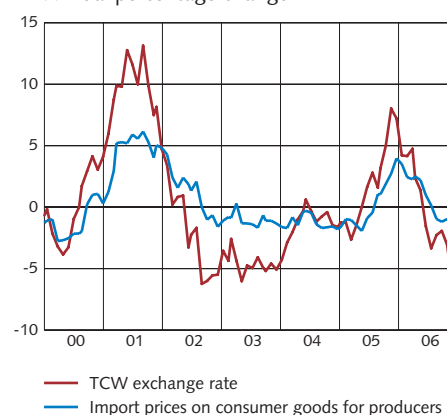
Figure 74. UND1X excluding energy, broken down into goods, services and food
Annual percentage change



Note. The figures in parentheses show the percentage share of UND1X.

Source: The Riksbank

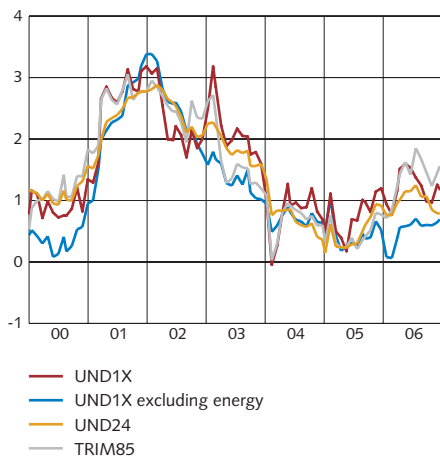
Figure 75. Import prices on consumer goods for producers and trade currency weighted (TCW) exchange rate
Annual percentage change



Sources: Statistics Sweden and the Riksbank

Figure 76. Different measures of underlying inflation

Annual percentage change



Note. The alternative measures are calculated on the basis of CPI divided into around 70 subgroups. UND24 is weighted and adjusted for the historical standard deviation. In TRIM85 the 7.5 per cent most positive and negative yearly price changes each month have been excluded.

Sources: Statistics Sweden and the Riksbank

oil products, electricity and vegetables. It is also common to calculate underlying inflation by using various statistical methods that eliminate or reduce the significance of certain categories of goods and services whose prices vary the most. Figure 76 presents different measures of underlying inflation. The trend in these measures seems to be weakly rising since the latter half of 2005, although this increase tapered off around mid-2006.

All in all, inflation is currently low. Falling energy prices are expected to contribute to a further dampening of inflation in the immediate future.

■ Material for assessing monetary policy 2004-2006

This box analyses inflation in 2006 and the monetary policy conducted in the period 2004-2005. Its purpose is to provide a basis for the Riksdag Committee on Finance's annual assessment of the Bank's monetary policy. Similar material is also included in the Riksbank's Annual Report for 2006.

In 2006, inflation was within the tolerance band of 1-3 per cent although it was below the target of 2 per cent. Inflation has been held back by favourable changes on the supply side of the economy, particularly rapid productivity growth. Inflation was lower than the Riksbank expected in the forecasts made in 2004, although well in line with the forecasts made in 2005.

Outcome and target fulfilment in 2006

Inflation was higher in 2006 than in 2005 and was within the tolerance bands of 1-3 per cent although still below the target of 2 per cent. CPI rose by an average of 1.4 per cent. Inflation was marginally lower measured by UND1X, 1.2 per cent on average over the year (see Table B1). CPI inflation was slightly higher than UND1X inflation partly because interest rates rose during the year. This led to higher interest expenditure for homeowners, which affects CPI inflation but not UND1X inflation. The limit on property tax introduced in 2006 worked in the opposite direction. This contributed to restraining the rate of inflation in CPI in relation to UND1X.

Table B1. Comparison of different inflation measures
Annual percentage change and standard deviation

	Annual average			Standard deviation		
	2006	1995-2006	1995-2006*	2006	1995-2006	1995-2006*
CPI	1.4	1.1	1.3	1.2	1.0	1.0
UND1X	1.2	1.5	1.7	0.3	0.8	0.8
UNDIMPX	-0.2	0.2	0.5	1.2	1.3	1.3
UNDIMPX excl. oil	-0.8	-0.2	0.2	0.5	1.5	1.5
UNDINHX	1.8	2.1	2.3	0.5	1.0	1.0

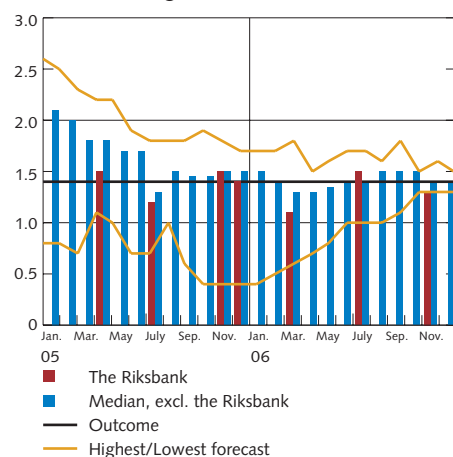
Note. Measure of inflation calculated according to the new definition that has been applied since January 2005. *Measures of inflation which for the period 1995-2004 were calculated according to the method used up to 1 January 2005 and which for 2005-2006 were calculated according to the new method. The standard deviation is calculated using monthly data for inflation (12-month change).

Sources: Statistics Sweden and the Riksbank

Like previous years, imported inflation was considerably lower than domestic inflation. UNDINHX, which is intended to measure prices of domestically produced goods and services, rose by an average of 1.8 per cent. UNDIMPX, which is intended to measure prices of imported goods and services, fell slightly, however.

An important reason why inflation was higher on average in 2006 than in 2005 was the sharp increase in energy prices. Excluding energy prices, UNDIX inflation was 0.5 per cent on average during the year, which was unchanged compared with 2005.

Figure B5. Forecasts for inflation (CPI) at different points of time in 2006, the Riksbank and other forecasters.
Annual average



Note. In comparison with other forecasters, forecasts are included from forecasters appearing in the list compiled by Consensus Economics Inc. (which includes, among others, the National Institute of Economic Research as well as Swedish and foreign banks), the Ministry of Finance, the Swedish Trade Union Confederation and some international organisations. The median is the forecast among other forecasters that in terms of its size lies closest to the middle. Compared to the mean value, the median is affected less by individual extreme values.

Sources: Consensus Economics Inc., the Ministry of Finance, the Swedish Trade Union Confederation, Statistics Sweden and the Riksbank

Relatively good level of accuracy in forecasts for 2006

A natural starting point when monetary policy is to be evaluated is to compare the outcome for inflation with the Riksbank's forecasts, since they serve as a basis for interest rate decisions.

One difficulty in a comparison of this kind is that the Riksbank's forecasts up to and including the second Inflation Report in 2005 were based on the assumption that the repo rate would not change during the forecast period. The forecasts were subsequently based on the assumption that the repo rate follows market expectations as these are reflected in the implied forward rates. This assumption facilitates an evaluation of the forecasts since it is normally more realistic.

The repo rate is normally changed during the forecast period and thus the outcome for inflation is affected. For this reason, it is difficult to obtain an exact view of the accuracy of the forecasts made on the assumption of a constant repo rate. However, some guidance can be obtained for the forecasts made in the first half of 2005. Alternative forecasts made with a repo rate that developed in line with implied forward rates were presented in boxes in the first two Inflation Reports in 2005. According to these, the difference for CPI inflation between the two ways of making forecasts on these occasions was considered quite small.

Monetary policy operates with a time lag and must therefore be forward-looking. It is therefore primarily the forecasts made in 2004 and 2005 which are relevant for an evaluation of target fulfilment in 2006.

In 2004, the Riksbank expected that inflation would rise gradually along with increasing resource utilisation in the economy. Inflation was expected to be close to 2 per cent at the end of 2006, which proved to be an overestimate. At the beginning of 2005, the inflation forecasts were adjusted downwards, however, over the whole forecast period. This was due, among other things, to a reassessment of price pressure in the economy. Different structural factors, such as intensified competition in several sectors, were considered to hold back inflation more than had previously been assumed. After this downward adjustment, the forecasts for inflation for 2006 were relatively accurate (see Figure B5).

The fact that inflation remained weak in 2006 was not due to an unexpectedly weak development of the economy. GDP growth in 2005, which can be assumed to have affected the inflation outcome in 2006, was, if anything, stronger than the Riksbank had expected (see Figure B6). It is notable that the forecasts at the end of 2004 and the beginning of 2005 were closer to the outcome than the forecasts later in 2005. This was partly due to the National Accounts statistics pointing initially to an unexpectedly weak growth at the end of 2004 and the beginning of 2005. The Riksbank's assessment was that the dip in economic activity was temporary although the forecast for growth was none the less adjusted downwards relatively sharply. In retrospect the dip in the level of activity proved to be more short-lived than expected and the outcome in the first quarter according to revised statistics was moreover not as weak as initially indicated. The result was that the

GDP forecasts for the whole year of 2005 produced during the rest of the year underestimated growth by a relatively large amount.

Figures B5 and B6 also show the forecasts for inflation in 2006 and GDP growth in 2006 made by other analysts. A comparison with a weighing together (the median) of inflation forecasts by others shows that the deviations in relation to the Riksbank's forecasts were generally small. Inflation in 2006 tended to be overestimated in the forecasts made at the beginning of 2005 (see Figure B5). In the course of 2005, other forecasters also adjusted their inflation forecasts downwards.

If a comparison is instead made between the Riksbank and individual forecasters, the Riksbank was among those with, on average, the smallest forecast errors for inflation in 2006 (see Figure B7).

Other forecasters also underestimated the strength of the upturn in a similar way as the Riksbank (see Figure B6). When comparing the size of forecast errors for GDP growth in 2005 made by different forecasters in 2004 and 2005, the Riksbank was below average (see Figure B8). The clearly largest forecast error for the Riksbank was the large downward revision made in the spring of 2005.

However, it is difficult to draw any general conclusions about the forecasting ability of different forecasters from these calculations of forecast errors, partly because of the shortness of the period (seven forecasting occasions for the Riksbank).

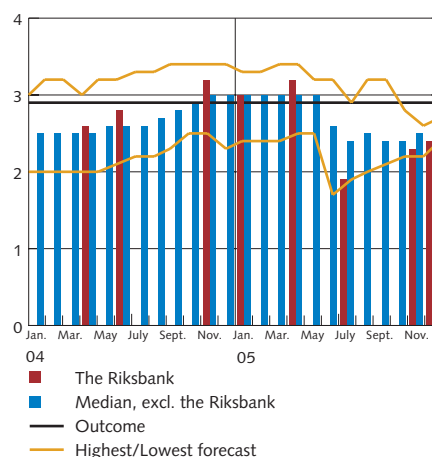
To sum up, inflation in 2006 was lower than the Riksbank expected in 2004, although the level of accuracy in the forecasts made in 2005 was satisfactory. The components of inflation developed in a different way than expected, however. Energy prices were considerably higher than the Riksbank expected while inflation excluding energy rose less than expected. At the same time, GDP growth in 2005 was stronger than the Riksbank and other forecasters generally assumed in the forecasts made in 2004 and 2005. The combination of low inflation and strong growth indicates that changes on the economy's supply side have continued to hold back inflation.

Higher productivity and low import prices

One main explanation for low inflation is that productivity growth has been surprisingly high in the economy in recent years. This has meant that it has been possible to increase output quickly without firms' unit labour costs increasing especially much. Costs even fell for a couple of years. In 2005, productivity growth slowed down which meant that unit labour costs then increased slightly. However, all in all, unit labour costs have none the less developed very favourably for firms recently (see Figure B9). The low cost increases have meant that there has been a limited need to raise prices.

The causes of the fast increase in productivity are not fully known. It is possible that the investments in information technology made at the end of the 1990s have started to generate results in recent years. It is also conceivable that the higher productivity growth is a result of firms in many sectors experiencing increased competition, not least

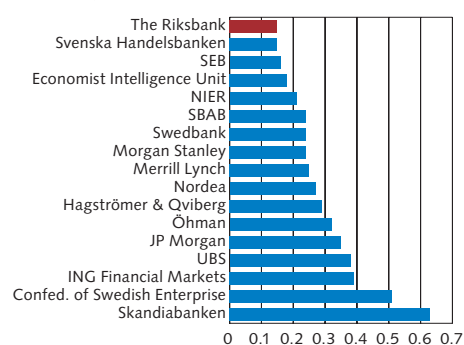
Figure B6. Forecasts for GDP growth at different points of time in 2005, the Riksbank and other forecasters
Annual average



Note. In comparison with other forecasters, forecasts are included from forecasters appearing in the list compiled by Consensus Economics Inc. (which includes, among others, the National Institute of Economic Research as well as Swedish and foreign banks), the Ministry of Finance, the Swedish Trade Union Confederation and some international organisations. The median is the forecast among other forecasters that in terms of its size lies closest to the middle. Compared to the mean value, the median is affected less by individual extreme values.

Sources: Consensus Economics Inc., the Ministry of Finance, the Swedish Trade Union Confederation, Statistics Sweden and the Riksbank

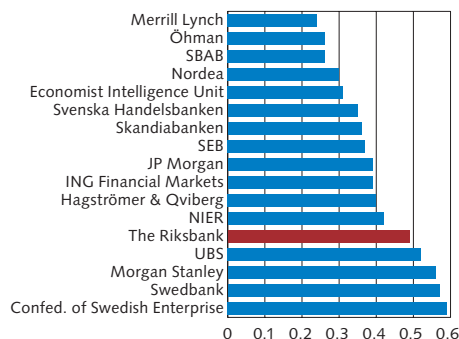
Figure B7. A comparison of forecast errors, the Riksbank and other forecasters
Average forecast error CPI inflation 2006



Note. The forecast error is calculated using the RMSE (root mean square error) and refers to errors made by each of the forecasters on average in their forecasts in 2005 and 2006 for inflation in 2006. The other forecasters included in the comparison are those appearing in the list compiled by Consensus Economics Inc.

Sources: Consensus Economics Inc. and the Riksbank

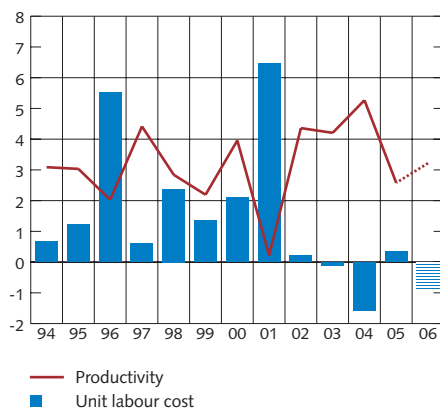
Figure B8. A comparison of forecast errors, the Riksbank and other forecasters
Average forecast error GDP growth 2005



Note. The forecast error is calculated using the RMSE (root mean square error) and refers to errors made by each of the forecasters on average in their forecasts in 2004 and 2005 for GDP growth in 2005. The other forecasters included in the comparison are those appearing in the list compiled by Consensus Economics Inc.

Sources: Consensus Economics Inc. and the Riksbank

Figure B9. Unit labour cost and productivity in the business sector
Annual percentage change



Note. Broken lines and striped bars represent the Riksbank's forecast. Calendar-adjusted data.

Sources: Statistics Sweden and the Riksbank

as a result of globalisation. Consequently, they have felt obliged to rationalise operations. With more efficient production processes, companies have then been able to meet higher demand without having to hire new employees to the same extent as in other upturns. Employment has therefore developed relatively weakly viewed in relation to the fast growth of output.

It is genuinely difficult to assess the sustainability of this type of change in the production conditions in the economy. The Riksbank's assessment in the forecasts made during 2004 and 2005 have been that productivity growth would gradually tail off in coming years, although it would none the less continue to be considerably higher than, for instance, in the 1980s. When productivity growth decreased in 2005, this reduction was approximately of the size expected by the Riksbank. However, during the first three quarters of 2006, productivity growth rose again.

The assessments are further complicated by revisions of data which can sometimes change the description of past events. For instance, productivity growth for 2004 was revised upwards considerably in connection with Statistics Sweden publishing the definitive national accounts for 2004 in November 2006.

Another supply factor that has contributed to low inflation is low increases in imported goods prices. Since early 2003, consumer prices for imported goods and services, excluding oil products, have fallen. The strong growth in productivity has contributed to the weak price development for imported goods as well since they are processed and distributed within Sweden before being sold to consumers. However, an illustration of the fact that other explanations exist is provided by producer prices for imported consumer goods, i.e. the prices in Swedish kronor when the goods enter Sweden, falling for a large part of recent years. At the same time, producer prices in the domestic market have risen, although moderately (see Figure B10).

The development of import prices is partly due to the exchange rate. The strengthening of the exchange rate since 2002 has contributed to the low prices for imported goods. The rise in the rate of price increases for imported goods in the second half of 2005 also coincided with a weakening of the Swedish krona. Another reason for falling import prices would seem to be a changed pattern of imports. A growing proportion of imports come from low-cost countries. Imports from China, for instance, have risen steadily in recent years. This shift in imports from low-cost countries is contributing to reducing the prices paid by Swedish importers. It is difficult to estimate the importance of this effect on the prices paid by Swedish consumers. In recent years, the Riksbank has gradually adjusted the forecast for the rate of consumer price increases downwards for imported goods and services (excluding oil products), but despite this it continued to be surprisingly weak in 2006.

Why inflation was below target – an analysis made using the Riksbank's macroeconomic model.

The Riksbank's macroeconomic model, RAMSES, can be used in the analysis of why the actual development of inflation differed from that forecast by the Riksbank.³² The model describes the development of a dozen economic quantities such as GDP, consumption, investment, hours worked and inflation. The parameters in the model are determined by an econometric method intended to obtain as good a description as possible of the historical development of the Swedish economy.

To be able to study why inflation has been so low in recent years, the model must first clarify the type of shocks that have affected the economy in recent years, i.e. which driving forces there have been in the model. Thereafter, one driving force is excluded at a time and the model then shows how consumption, investment, GDP growth, inflation etc. would have developed in recent years in the absence of these driving forces. By making this analysis for each driving force and comparing the inflation outcome in each experiment, an idea can be obtained of which driving force or forces has or have been most important for low inflation.

An analysis of this kind shows that it is primarily high productivity growth through the rapid development of technology that has been the cause of low inflation in recent years. Figure B11 illustrates the actual inflation outcome and what inflation, according to the model, would have been in the absence of the driving force behind strong productivity. If productivity growth had not been unusually high from 2002, inflation would instead have been around 2 per cent in recent years, according to the model.

The results of this model analysis thus support the conclusions from the previous section, i.e. that unusually fast productivity improvements have contributed to holding back inflation in recent years.

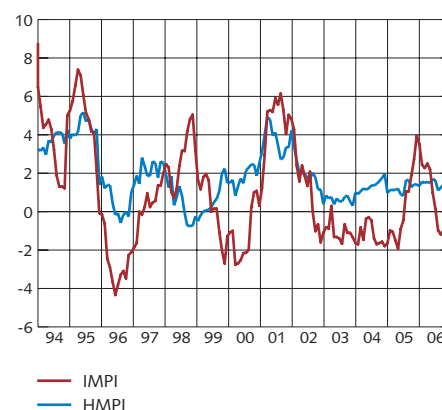
The monetary policy decisions of the Executive Board 2004-2005

The forecasts and assessments made in 2004 and 2005 served as the basis for the Executive Board's decisions to reduce the repo rate from 2.75 to 1.5 per cent on three occasions.

In February and March 2004, the repo rate was reduced by 0.25 and 0.5 percentage points respectively to 2 per cent. Inflation had fallen at the beginning of 2004. This was anticipated to some extent and related to the fast rise in the electricity price one year earlier no longer being included in the inflation figures. However, inflation was even lower than expected. The Riksbank made the assessment that the underlying inflationary pressure was probably even lower than previously assumed despite the international and domestic upturn becoming clearer. Lower import prices, a weaker labour market and higher productivity growth than previously forecast indicated more subdued wage and price pressures.

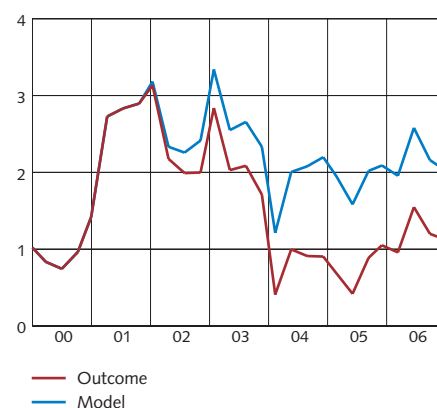
The repo rate was unchanged for the rest of 2004. The Riksbank's view of the development of economic activity in Sweden became more and more optimistic in the summer and autumn, when new

Figure B10. Producer prices for consumer goods according to the home market price index (HMPI) and import price index (IMPI)
Annual percentage change



Source: Statistics Sweden

Figure B11. The inflation outcome and inflation in the absence of shocks to productivity growth according to the Riksbank's macroeconomic model
Annual percentage change



Note. UND1X inflation.

Sources: Statistics Sweden and the Riksbank

information indicated an increasingly strong international and domestic development. It was considered that there were reasons to expect that the economy would continue to strengthen in the future and the growth forecast was adjusted upwards for both 2004 and 2005. Inflationary pressure was then also expected to increase apace with rising resource utilisation. This indicated that monetary policy would eventually have to be less expansionary. Low cost increases, partly due to continued high productivity growth, contributed to the rise in inflation being considered as moderate.

At the beginning of 2005, the available information indicated that growth had slackened somewhat. It was still considered that the Swedish economy would develop well, even if it was assumed that it would enter a calmer phase in the future. Resource utilisation was expected to gradually increase and entail rising inflation. However, the rise in inflation was expected to take place more slowly than the Riksbank had previously forecast. Various structural factors, such as stiffer competition, were considered to dampen inflation more than had previously been forecast.

During spring 2005, there was increased uncertainty about the strength of the upturn. A number of indicators of the level of activity

Repo rate decisions 2004

5 February: The repo rate was lowered by 0.25 percentage points to 2.5 per cent. Kristina Persson entered a reservation against the decision. She recommended instead that the repo rate be cut by 0.5 percentage points with reference to the fact that the inflation forecast in December 2003 had already pointed to room for a rate cut and that developments thereafter were indicating even weaker price pressures, partly because productivity growth had continued to improve.

31 March: The repo rate was lowered by 0.5 percentage points to 2.0 per cent. Villy Bergström and Eva Srejber entered a reservation against the decision, believing instead that the repo rate should be cut by only 0.25 percentage points. They recommended greater caution with monetary policy stimulation, partly to avoid encouraging increased household indebtedness. Another reason was uncertainty about the strength and duration of the productivity development and the growing international competition which held inflation back despite an expansionary economic policy in a number of places around the world.

28 April: The repo rate was left unchanged at 2.0 per cent.

27 May: The repo rate was left unchanged at 2.0 per cent.

23 June: The repo rate was left unchanged at 2.0 per cent.

19 August: The repo rate was left unchanged at 2.0 per cent.

13 October: The repo rate was left unchanged at 2.0 per cent.

8 December: The repo rate was left unchanged at 2.0 per cent.

Repo rate decisions 2005

27 January: The repo rate was left unchanged at 2.0 per cent.

14 March: The repo rate was left unchanged at 2.0 per cent.

28 April: The repo rate was left unchanged at 2.0 per cent.

20 June: The repo rate was lowered by 0.5 percentage points to 1.5 per cent.

23 August: The repo rate was left unchanged at 1.5 per cent.

19 October: The repo rate was left unchanged at 1.5 per cent.

1 December: The repo rate was left unchanged at 1.5 per cent.

Villy Bergström, Lars Nyberg and Eva Srejber entered a reservation against the decision, believing instead that the repo rate should be raised by 0.25 percentage points. They considered that there were more indications of a stable and sustainable upturn in economic activity and that it was now desirable to initiate the gradual tightening of monetary policy that they anticipated. This in order to reduce the risk of a further weakening of the krona due to rising interest rates in Europe and so that increased interest rates would send a signal to the housing market that the present price rises were unsustainable.

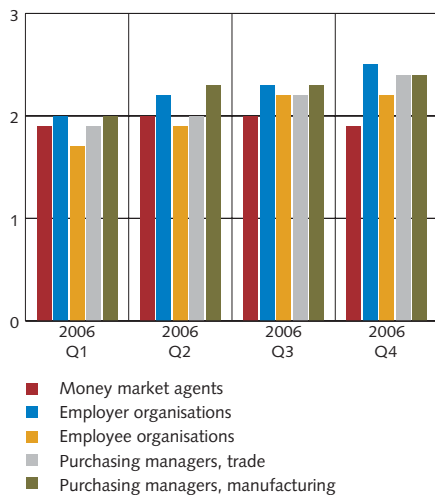
in the economy pointed to a weaker development than expected. In June, the repo rate was reduced by 0.5 percentage points to 1.5 per cent. The foremost reason was that newly received national accounts statistics showed that the economy had grown considerably more slowly than expected at the end of 2004 and the beginning of 2005. The growth forecast was therefore adjusted downwards relatively sharply in the short term. However, the assessment was that it concerned a temporary slowdown and that most indicators pointed to relatively good growth in the future.

The repo rate remained unchanged for the rest of 2005. The view that the weak growth was only temporary received increasing support and revised statistics showed moreover that the level of economic activity at the end of 2004 and beginning of 2005 had been stronger than it had at first appeared. The more expansionary monetary policy contributed to some upward adjustment of the forecasts for growth and inflation. However, the assessment was that inflation would increase in the future albeit at a rather moderate rate. It was increasingly clear that the economy approached a position where monetary policy needed to be rearranged in a less expansive direction.

Inflation expectations

If inflation expectations are stable and close to the inflation target in a couple of years time, this is an indication that the public is confident that the Riksbank will achieve its target. A high level of confidence in the inflation target increases the ability to take other factors into consideration in the conduct of monetary policy, such as growth and employment. Figure B12 shows inflation expectations for 2008 among the money

Figure B12. Different agents' expectations of inflation for 2008 in 2006
Per cent



Source: Prospera Research AB

market participants, employer and employee organisations and purchasing managers in trade and industry. Even if inflationary expectations have increased slightly during 2006 among most of these actors, confidence in the inflation target continues to be strong. Inflation expectations in two years time are gathered well around the 2 per cent target.

Summary

Inflation was higher in 2006 than in 2005 and within the tolerance band of 1-3 per cent but it was none the less below the target. Inflation in 2006 was lower than the Riksbank expected in the forecasts made in 2004, although well in line with the forecasts made in 2005. However, the components of inflation developed differently than expected. Energy prices contributed to pushing up inflation more than anticipated. At the same time, inflation adjusted for energy prices was lower than expected.

The low inflation was not a result of weak growth in the economy. GDP growth in 2005, which can be assumed to have affected the inflation outcome in 2006, was, on the contrary, robust and underestimated in the Riksbank's forecasts.

The combination of low inflation and high growth indicates that the economy was affected by changes on the supply side of the economy. Above all, it related to productivity growth, which was again surprisingly high. High productivity growth contributes to keeping down firms' costs and demand can then increase without pressure being created to raise prices at an excessively fast pace. Fundamentally, the changes affecting the Swedish economy in recent years have been beneficial.

As a consequence of the low inflationary pressure in the economy, the Riksbank has conducted a highly expansionary monetary policy despite robust growth. The period of repo rate cuts initiated at the end of 2002 continued in 2004 and 2005. The repo rate was reduced on two occasions in the spring of 2004 and once in mid-2005. The reduction in 2004 was motivated by inflation falling more than expected and by the fact that underlying inflationary pressure was probably lower than previously expected. The reason for the repo rate cut in 2005 was that there were indications of a sharp weakening in economic activity, albeit temporary.

With these cuts, the repo rate had been reduced to a historically low level of 1.5 per cent. During 2005, the Riksbank none the less expected that inflation would be low in 2006, albeit rising. This assessment was based on the assumption that various structural changes, including high productivity growth, would continue to have a restraining effect on inflation. At the same time, demand was expected to show strong growth, partly due to the expansionary monetary policy. The low interest rates had also led to a rapid rise in household borrowing and house prices. It was therefore not considered reasonable to push up inflation at a faster pace through further cuts in the repo rate. During the autumn of 2005, it appeared instead increasingly clear that the repo rate would have to be gradually increased to ensure that inflation was on target in a couple of years time.

■ Appendix

- Tables
- Earlier interest rate decisions
- Outline of boxes published 2004–2006
- Glossary

Tables

The figures in parentheses show the forecast stated in the previous report.

Table A1. Inflation

Annual percentage change

	Annual average					12-month rate			
	2005	2006	2007	2008	2009	Mar. 07	Mar. 08	Mar. 09	Mar. 10
CPI	0.5	1.4 (1.3)	1.5 (2.0)	2.1 (1.9)	2.1	1.5 (1.7)	2.0 (2.1)	2.1 (1.9)	2.1
UND1X	0.8	1.2 (1.2)	0.7 (1.3)	1.6 (1.6)	1.9	1.0 (1.3)	1.3 (1.4)	1.9 (1.9)	2.0
					2005	2006	2007	2008	2009
UND1X					0.8	1.2 (1.2)	0.7 (1.3)	1.6 (1.6)	1.9
Changes in mortgage interest expenditure*					-0.4	0.1 (0.1)	0.8 (0.7)	0.5 (0.4)	0.3
Changes in indirect taxes and subsidies*					0.2	0.1 (0.1)	0.1 (0.1)	0.1 (0.1)	-0.1
=CPI					0.5	1.4 (1.3)	1.5 (2.0)	2.1 (1.9)	2.1

*Contribution to CPI inflation, percentage points

Sources: Statistics Sweden and the Riksbank

Table A2. International conditions

Annual percentage change

GDP	2005	2006	2007	2008	2009
United States	3.2	3.4 (3.4)	2.8 (2.7)	2.9 (2.9)	3.1 (3.1)
Japan	1.9	2.2 (2.8)	2.0 (2.2)	1.8 (1.8)	1.5 (1.5)
Euro area	1.5	2.7 (2.6)	2.2 (2.0)	2.1 (2.0)	2.0 (1.9)
OECD	2.6	3.2 (3.2)	2.7 (2.6)	2.7 (2.6)	2.6 (2.6)
World	4.9	5.0 (5.1)	4.7 (4.7)	4.4 (4.4)	4.2 (4.2)
CPI					
USA	3.4	3.2 (3.5)	2.1 (2.6)	2.5 (2.5)	2.5 (2.5)
Japan	-0.6	0.2 (0.6)	0.4 (0.6)	0.7 (0.7)	0.7 (0.7)
Euro area (HICP)	2.2	2.2 (2.3)	2.0 (2.2)	1.9 (1.9)	1.9 (1.9)
OECD	2.6	2.6 (2.7)	2.2 (2.4)	2.3 (2.2)	2.1 (2.1)
Swedish export market growth	6.9	9.7 (11.0)	7.0 (7.0)	6.5 (6.3)	6.1 (6.0)
International producer prices	3.4	3.8 (4.0)	2.8 (3.4)	2.0 (2.2)	1.9 (2.0)
Crude oil price, USD/barrel Brent	54	65 (65)	57 (65)	60 (66)	59 (65)

Note. Swedish export market growth refers to growth in imports of goods for around 70 per cent of the countries that are recipients of Swedish exports. The forecast is weighed together on the basis of each country's share of Swedish exports of goods. International producer prices in national currencies are a weighted average of national PPI series for manufactured goods. The weighted average is arrived at using a TCW index. The TCW weighting includes 11 countries, which together account for 85 per cent of the weighting.

Sources: IMF, Intercontinental Exchange, OECD and the Riksbank

Table A3. Interest rates, exchange rates and public finances

Per cent, annual average

	2005	2006	2007	2008	2009
Repo rate	1.7	2.2 (2.2)	3.4 (3.2)	3.6 (3.6)	3.7 (3.7)
10-year rate	3.4	3.7 (3.8)	4.2 (4.3)	4.6 (4.7)	4.9 (4.9)
Exchange rate, TCW index, 19 November 1992=100	128.3	127.4 (127.7)	124.0 (125.4)	123.2 (124.1)	122.6 (123.1)
General government net lending*	2.7	2.9 (2.8)	2.7 (2.3)	2.6 (2.2)	2.4 (2.0)

*Per cent of GDP

Sources: Statistics Sweden and the Riksbank

Table A4. GDP and GDP by expenditure

Annual percentage change

	2005	2006	2007	2008	2009
Private consumption	2.4	2.9 (3.3)	3.7 (3.6)	3.7 (3.5)	3.2 (2.9)
Public consumption	0.3	1.5 (1.8)	1.4 (1.4)	0.8 (0.8)	0.8 (0.6)
Gross fixed capital formation	8.1	7.6 (8.6)	3.5 (3.6)	3.5 (3.3)	2.9 (2.2)
Inventory investments*	-0.1	0.2 (-0.3)	0.4 (0.3)	0.1 (0.1)	0.0 (0.0)
Exports	6.6	8.6 (8.2)	6.9 (6.5)	6.2 (6.0)	5.7 (5.5)
Imports	6.9	7.2 (7.1)	7.6 (7.5)	7.0 (6.9)	6.2 (6.0)
GDP	2.9	4.5 (4.3)	3.5 (3.1)	2.9 (2.7)	2.5 (2.2)

*Change in per cent of GDP

Sources: Statistics Sweden and the Riksbank

Table A5. Output, employment and unemployment

Annual percentage change

	2005	2006	2007	2008	2009
Population, aged 16-64	0.6	1.0 (0.7)	0.7 (0.7)	0.4 (0.4)	0.2 (0.2)
GDP, calendar-adjusted	2.9	4.7 (4.5)	3.6 (3.2)	2.8 (2.6)	2.6 (2.2)
Number of hours worked, calendar-adjusted	0.6	2.1 (1.8)	1.8 (1.3)	0.8 (0.6)	0.5 (0.3)
Number of employed	0.5	1.9 (1.9)	2.1 (1.1)	0.9 (0.8)	0.5 (0.4)
Labour force	0.5	1.3 (1.3)	1.9 (1.1)	0.6 (0.5)	0.3 (0.1)
Open unemployment*	5.9	5.4 (5.4)	5.1 (5.4)	4.8 (5.1)	4.6 (4.9)
Labour market programmes*	2.7	3.1 (3.1)	2.0 (2.2)	1.4 (1.6)	1.5 (1.6)

*Per cent of labour force

Sources: National Labour Market Board, Statistics Sweden and the Riksbank

Table A6. Wages, productivity and unit labour costs for the economy as a whole

Annual percentage change

	2005	2006	2007	2008	2009
Hourly wage, short-term wage statistics, NMO	3.1	3.2 (3.4)	3.8 (3.8)	3.9 (3.9)	4.0 (3.9)
Hourly wage, National Accounts	3.1	3.4 (3.6)	4.0 (4.1)	4.2 (4.2)	4.3 (4.2)
Employer contributions *	-0.1	-0.7 (-0.8)	0.6 (0.8)	-0.2 (0.0)	-0.2 (0.0)
Hourly labour costs, NA	2.9	2.6 (2.8)	4.6 (4.9)	4.0 (4.2)	4.1 (4.2)
Productivity	2.3	2.6 (2.7)	1.7 (1.9)	1.9 (1.9)	2.0 (1.9)
Unit labour cost	0.6	0.0 (0.0)	2.8 (2.9)	2.1 (2.2)	2.0 (2.2)

* Contribution to the increase in labour costs, percentage points

Note. NMO refers to the National Mediation Office's short-term wage statistics and NA refers to the National Accounts. Labour cost per hour is defined as the sum of actual wages, collective charges and wage taxes divided by the seasonally adjusted total number of hours worked. Unit labour cost is defined as labour cost divided by the seasonally adjusted value added for the whole economy, i.e. GDP at market prices.

Sources: National Mediation Office, Statistics Sweden and the Riksbank

Table A7. Expected inflation according to various surveys

Per cent, average

Expected inflation rate in	1 year	2 years	5 years
Money market agents	1.8 (1.9)	2.0 (1.9)	1.9 (2.0)
Employer organisations	1.9 (2.4)	2.1 (2.5)	2.2 (2.5)
Employee organisations	2.0 (1.9)	2.1 (2.2)	2.2 (2.3)
Purchasing managers, trade	2.1 (2.2)	2.2 (2.4)	2.2 (2.3)
Purchasing managers, manufacturing	2.3 (2.3)	2.4 (2.4)	2.4 (2.4)
Households (HIP) in January (December)	2.2 (2.1)		
Firms (Business Tendency Survey) in January (October)	1.9 (1.7)		

Note. Results from the previous survey in November 2006 are given in parentheses unless otherwise stated.

Sources: National Institute of Economic Research and Prospera Research AB

Table A8. Repo rate

Per cent

	2005	2006	2007	2008	2009
The main scenario	1.7	2.2	3.4	3.6	3.7
Higher interest rates	1.7	2.2	3.6	4.0	4.2
Lower interest rates	1.7	2.2	3.0	3.1	3.2
Higher wages	1.7	2.2	3.5	3.9	4.2
Lower international growth	1.7	2.2	3.2	3.0	2.9

Source: The Riksbank

Table A9. UND1X

Annual percentage change

	2005	2006	2007	2008	2009
The main scenario	0.8	1.2	0.7	1.6	1.9
Higher interest rates	0.8	1.2	0.6	1.3	1.3
Lower interest rates	0.8	1.2	0.8	2.1	2.5
Higher wages	0.8	1.2	0.9	1.9	2.2
Lower international growth	0.8	1.2	0.5	1.0	1.1

Sources: Statistics Sweden and the Riksbank

Table A10. GDP

Annual percentage change, calendar-adjusted data

	2005	2006	2007	2008	2009
The main scenario	2.9	4.7	3.6	2.8	2.6
Higher interest rates	2.9	4.7	3.5	2.5	2.3
Lower interest rates	2.9	4.7	3.7	3.0	2.7
Higher wages	2.9	4.7	3.1	2.2	2.1
Lower international growth	2.9	4.7	3.3	2.2	2.2

Sources: Statistics Sweden and the Riksbank

Table A11. Number of hours worked

Annual percentage change, calendar-adjusted data

	2005	2006	2007	2008	2009
The main scenario	0.6	2.1	1.8	0.8	0.5
Higher interest rates	0.6	2.1	1.7	0.6	0.4
Lower interest rates	0.6	2.1	2.0	1.2	0.7

Sources: Statistics Sweden and the Riksbank

Table A12. Open unemployment

Per cent of labour force

	2005	2006	2007	2008	2009
The main scenario	5.9	5.4	5.1	4.8	4.6
Higher interest rates	5.9	5.4	5.1	5.0	4.8
Lower interest rates	5.9	5.4	5.0	4.6	4.2

Sources: Statistics Sweden and the Riksbank

Earlier interest rate decisions³³

Date of meeting	Repo rate (per cent)	Decision (percentage points)	Inflation Report
2003			
6 February	3.75	0	no report
17 March	3.50	-0.25	2003:1
24 April	3.50	0	no report
4 June	3.00	-0.5	2003:2
3 July	2.75	-0.25	no report
14 August	2.75	0	no report
15 October	2.75	0	2003:3
4 December	2.75	0	2003:4
2004			
5 February	2.50	-0.25	no report
31 March	2.00	-0.50	2004:1
28 April	2.00	0	no report
27 May	2.00	0	2004:2
23 June	2.00	0	no report
19 August	2.00	0	no report
13 October	2.00	0	2004:3
8 December	2.00	0	2004:4
2005			
27 January	2.00	0	no report
14 March	2.00	0	2005:1
28 April	2.00	0	no report
20 June	1.50	-0.50	2005:2
23 August	1.50	0	no report
19 October	1.50	0	2005:3
1 December	1.50	0	2005:4
2006			
19 January	1.75	+0.25	no report
22 February	2.00	+0.25	2006:1
27 April	2.00	0	no report
19 June	2.25	+0.25	2006:2
29 August	2.50	+0.25	no report
25 October	2.75	+0.25	2006:3
14 December	3.00	+0.25	no report

33 A list of the historical interest rate decisions with effect from 1999 onwards can be found on the Riksbank's website www.riksbank.se.

Outline of boxes published 2004-2006³⁴

Inflation and prices

- 2004:1 Recent developments in inflation
- 2004:2 The exchange rate and imported inflation
- 2004:2 Recent developments in inflation
- 2004:2 Changes in calculation methods for the inflation rate
- 2004:3 Oil prices and monetary policy
- 2004:3 Recent developments in inflation
- 2004:4 Recent developments in inflation
- 2005:1 Recent developments in inflation
- 2005:2 Why are Swedish import prices so low?
- 2006:1 The path of the krona and inflation

Monetary policy

- 2004:1 Material for assessing monetary policy 2001-2003
- 2004:3 Oil prices and monetary policy
- 2004:4 The significance of fiscal policy for monetary policy
- 2005:1 Material for assessing monetary policy, 2002-2004
- 2006:1 Material for assessing monetary policy 2003-2005
- 2006:1 Uncertainty regarding future interest rate movements
- 2006:2 Monetary policy in Sweden
- 2006:2 What is a normal level for the repo rate?
- 2006:3 Monetary policy in Sweden

Fiscal policy

- 2004:4 The significance of fiscal policy for monetary policy
- 2005:4 The stance of fiscal policy

³⁴ A list of the boxes published since 1993 can be found on our website www.riksbank.se.

Labour market, wage agreements, productivity, resource utilisation

2004:1 Calendar effects on production, hours and costs

2004:1 Economic activity and the labour market

2004:1 How persistent is the recent rise in productivity?

2004:2 Indicators of resource utilisation

2005:2 Future labour market developments – experiences in other countries and the significance of growth composition

2006:2 Resource utilisation, costs and inflation

2006:3 The 2007 wage bargaining round

2006:3 Perspectives on the quantity of unutilised resources in the labour market

Forecasts and the Riksbank's forecasting work

2004:3 Developments in the longer term

2005:1 Changes in the Riksbank's forecasting methods

2005:1 Longer-term forecasts under the assumption that the repo rate evolves in line with implied forward rates

2005:2 Longer-term forecasts under the assumption that the repo rate evolves in line with implied forward rates

2005:3 Forecasts up to 2007 under the assumption that the repo rate is held constant for two years

2005:3 GDP indicators

2006:3 Inflation indicators

GDP and its components

2005:3 Household consumption, debt and saving

Glossary

Asset prices: The prices of bonds, shares and property.

Business tendency survey: A survey in which firms respond to questions about their sales, output, hiring plans, etc.

Capacity utilisation: The degree to which production capacity is utilised, i.e. the maximum output that can be achieved with the existing workforce, machinery and premises.

CPI: The consumer price index is a measure of the price level and is calculated on a monthly basis by Statistics Sweden. The Riksbank's inflation target is expressed in the annual percentage change of the CPI.

ECB: The European Central Bank.

Econometric estimates: Usually a statistical calculation made on the basis of historical data.

ESCB: European System of Central Banks. Institutional framework for co-operation between the central banks of EU Member States.

Executive Board of the Riksbank: The Executive Board governs the Riksbank and takes decisions concerning areas such as monetary policy.

Export market growth: Intended as a measure of the growth in those markets (countries) to which Swedish goods and services are exported. See also the note to Table A2.

FED: The Federal Reserve Bank of the United States.

Financial markets: The financial markets comprise the equity market, the money market, the bond market and the foreign exchange market, complete with derivative markets.

Forward prices: The price for buying or selling an asset for future delivery.

Forward rate: The interest rate on an agreement that entails a liability for the contracting parties to complete the purchase or sale of an interest rate asset at a predetermined rate, the forward rate, and at a predetermined point in time.

Hodrick-Prescott filter (HP filter): A statistical method for breaking down the movements of a variable into trend and cyclical components. The method can be described as a weighted double-sided moving average where greater weight is placed on observations close at hand and gradually decreasing weight on observations further removed.

Implied forward rate: The forward rates that can be implied by basing calculations on the yield curve.

Inflation: General price rises that cause a reduction in the value of money. The opposite is known as deflation.

Labour costs: The total cost of labour per hours worked according to the National Accounts, i.e. the sum of wages, bonuses, employers' contributions, agreed collective charges and payroll-based taxes on output.

LFS: Labour Force Surveys. Monthly surveys conducted by Statistics Sweden to measure the size of the labour force, employment and unemployment.

Money market: The market for interest bearing securities with a time to maturity less than one year.

Money market instruments: Securities traded in the money market.

MPR: Monetary Policy Report.

Net lending (general government): General government income minus expenditure.

P/E ratio: Price/earnings ratio. This is used to measure how cheap or expensive a share is in relation to profits.

Productivity: The amount of goods and services produced in relation to the resources utilised in the form of labour and capital. The most common measure is labour productivity, which measures the output per the number of hours worked.

Repo rate: The Riksbank's policy rate. The interest rate that banks pay when they borrow money from the Riksbank.

Resource utilisation: The utilisation of the production resources labour and capital.

Risk premium: An extra return on a high-risk investment that an investor wants in order to be able to feel that an investment that involves risk and one that entails no risk are equivalent.

Shortage rates: The proportion of firms reporting a shortage of staff.

Spot market price: The price of a commodity for its immediate delivery.

Statistics Sweden: The Swedish office of national statistics, Statistics Sweden. The central government authority for official statistics.

Sveriges Riksbank Act: The Act stipulating the tasks of the Riksbank.

TCW-weighted exchange rate, TCW index: An index for the Swedish krona's exchange rate, based on competitive weighting.

Trade currency weighted (TCW) exchange rate: The Swedish krona's exchange rate measured against a basket of other currencies, where the weighting is determined primarily by the amount of trade we have with each of the respective countries.

UND1X: A measure of underlying inflation. Calculated on a monthly basis by Statistics Sweden as the CPI excluding household mortgage interest expenditure and the direct effects of changes in indirect taxes and subsidies.

Underlying inflation: A measure of inflation that in some way excludes or attributes a different weighting to those goods and services included in the CPI. Underlying inflation can be calculated by excluding changes in the prices of certain goods and services for which the price tends to fluctuate sharply. Underlying inflation can also be calculated with the aid of econometric methods.

UNDIMPX: Underlying imported inflation related to price changes on mainly imported goods and services in UND1X.

UNDINHX: Underlying domestic inflation related to price changes on mainly domestically produced goods and services in UND1X.

Unit labour cost: Labour cost per unit produced.

Yield curve: The yield curve shows the relationship between yield and maturity dates.

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