



Inflation Report

2005:3

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■ Foreword

The objective of the Riksbank's monetary policy is to keep inflation at 2 per cent, with a tolerance for deviations from this level of +/- 1 percentage point. The Riksbank gives its collective view of the inflation outlook in the Inflation Report. The Executive Board's monetary policy decisions and discussions are presented in separate press releases. Executive Board members may differ in their opinions on inflation prospects. The Board members' assessments and individual stances on monetary policy decisions are presented in the minutes of the Executive Board's monetary policy meetings. Any differences of opinion regarding the inflation outlook will thus be recorded in the separate minutes of the Board meeting on 19 October, to be published on 31 October 2005.

This Inflation Report reproduces the main features of the presentations and discussions at the Executive Board meetings on 4 October and 12 October, 2005. The purpose of the Inflation Report is not merely to produce background material for monetary policy decisions, but also to spread knowledge about the Riksbank's assessments. The Bank aims to make it easier for external parties to follow, understand and assess its monetary policy.

According to Chapter 6, Article 4 of the Sveriges Riksbank Act (1988:1385), the Riksbank is to provide a written report on monetary policy to the Riksdag Committee on Finance at least twice a year. The Riksbank has chosen to use two of the year's four Inflation Reports for this purpose. This report constitutes one such account to the Riksdag.

The analyses in the Report's main scenario to date have been based on the assumption that the repo rate is held unchanged for the coming two years. In this Report the forecasts in the main scenario are based instead on the assumption that the repo rate evolves in line with financial market expectations, as reflected in implied forward interest rates. These forecasts extend three years ahead. One advantage of such an assumption is that it normally provides a more realistic picture of future monetary policy. Another benefit is that it makes it easier to compare the Riksbank's forecasts with those of other forecasters. Moreover, it facilitates evaluations of the forecasts. One advantage of extending the forecast horizon is that it gives a clearer idea of how inflation is being influenced by various temporary shocks.¹

Thus, the reasons for the changed assumptions in the main scenario are that they give a more comprehensive set of data for monetary policy and that they improve the pedagogical aspect of the monetary policy message. It is important to point out that the assumption that the repo rate evolves in line with implied forward interest rates should not be interpreted as a standpoint regarding which interest rate path the Executive Board considers most desirable. Nor do the changed methods entail any fundamental change to the Bank's monetary policy strategy. Our interest rate decisions will continue to be guided by the ambition that inflation normally

¹ For a more detailed explanation of the new forecasting conditions, see the box "Changes in the Riksbank's forecasting methods" in Inflation Report 2005:1.

should be returned to target within two years. Previously, it has been common to formulate this in terms of a policy rule whereby the repo rate normally is to be lowered (raised) if inflation is expected to undershoot (overshoot) the target two years ahead. This formulation of the policy rule has directly assumed that the forecasts are based on the assumption of a constant repo rate, and the formulation will of course not be applicable when the forecasts are predicated on market expectations.

In connection with monetary policy meetings the Riksbank will, as before, explain its monetary policy conclusions by reference to the inflation assessment. If there are reasons to depart from the ambition to meet the inflation target within two years these will also, as before, be given.

One consequence of the changed assumption for the repo rate in the main scenario is that it makes a more detailed comparison of the forecasts in this Report and the previous Report more difficult. However, the box "Longer-term forecasts under the assumption that the repo rate evolves in line with implied forward rates" in the previous Inflation Report and the box "Forecasts up to 2007 under the assumption that the repo rate is held constant for two years" in this Report, do enable direct comparisons of the forecasts for inflation and GDP. As regards the other variables, it is only possible to make more qualitative comparisons. The summary of revised forecasts that comes at the end of each chapter refers to forecasts based on implied forward rates. In most cases, however, the direction of the revisions would have been the same in spite of the fact that they would have been based on a constant repo rate.

The Inflation Report begins with a summary. That is followed by a discussion of the key determinants of inflation. Finally, the Riksbank gives its collective assessment of inflation prospects in the main scenario and the key risks surrounding this assessment. As usual the Report contains a number of boxes, which aim to provide more in-depth knowledge about matters of importance for the inflation assessment.

Stockholm, October 2005

Lars Heikensten

GOVERNOR OF SVERIGES RIKSBANK

■ Summary

Most indications are now that the slowdown in growth at the beginning of the year was temporary both in Sweden and abroad. A future strengthening of economic activity is implied by the expansionary economic policy conducted. Factors giving cause for concern are the high oil price and global imbalances. Inflation in Sweden is low, which can be explained by favourable supply conditions and low capacity pressures. During the forecast period the price-dampening effects of these factors will subside somewhat, which means that inflation will rise. The forecasts in this report are based on the assumption that over the coming three years the repo rate will develop in line with implied forward rates.

Some upward revision has been made to the inflation forecast published in June. The assessment has been affected by, for instance, the assumption of a higher oil price. Moreover, economic policy is expected to become more expansionary, compared with the assessment made in June. It is therefore reasonable to assume higher capacity pressures and thereby a higher inflation rate in future.

■ ■ Rising capacity pressures around the world.

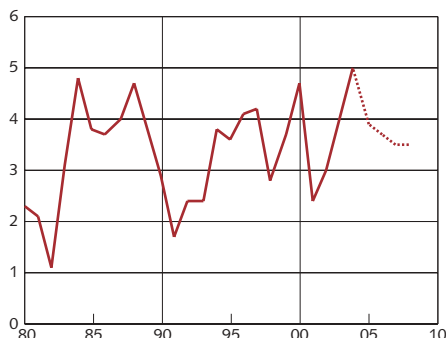
International GDP growth was strong last year. The Riksbank's assessment in the June Inflation Report was that growth this year and during the coming years would be good but would decrease slightly. Global capacity pressures were expected to rise as a result of continued expansionary economic policy, together with increased production and demand in Asia. At the same time, it was estimated that there is a risk of weaker international growth both in the short term and the slightly longer term. In the short term, the concern was linked to the tendencies towards slackening in international economic activity noted during the spring.

Most indications are that the slowdown at the beginning of the year was temporary. In line with the earlier assessment, growth in the United States remained high during 2005 Q2. Economic growth has also been strong in Asia. However, in the euro area economic activity remains relatively weak, particularly in the larger countries.

The oil price remains a cause for concern with regard to developments in the world economy, and has risen much higher than was forecast in June. Even the expected future oil prices, the forward rates, have risen. The Riksbank's assessment is still that the oil price will fall back somewhat over the coming years, as supply increases and growth in demand slows down. However, compared with the June forecast, the current oil price forecast entails an upward revision of just over 25 per cent, measured as an average over the forecast period.

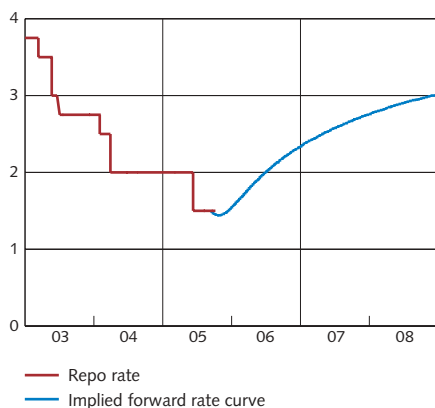
It is uncertain how much the oil price affects growth and inflation in the world economy. It appears as though the upturn in the oil price since the beginning of 2002, by around 40 dollars a barrel, has not

Figure 1. World GDP: outcome and forecast.
Annual percentage change



Note. The broken line represents the Riksbank's forecast.
Sources: The IMF and the Riksbank.

Figure 2. Implied forward rate curve, 15-day average as of 3 October.
Per cent



Source: The Riksbank.

yet significantly dampened global growth. This can be explained to some extent by economic policy having become more expansionary, the upturn in oil prices largely having been demand-driven and by oil dependency having declined slightly in the industrialised nations in particular.

These factors are also expected to affect future developments. The higher oil price is therefore expected to only marginally dampen international growth this year and over the coming year. At the same time, international inflation is expected to be slightly higher than was assumed in June. The assessment now, as then, is that there is a risk that the effects of the high oil price will be greater than is currently being forecast. At the same time, it is possible that the oil price will fall further than anticipated.

With regard to growth in the United States, there is reason to make some downward revision in the short term as a result of the effects of the hurricanes in the Gulf of Mexico. Above all, these are expected to dampen growth somewhat during the remainder of the year. The ensuing rebuilding work is then expected to contribute to slightly higher growth. No lasting effects are expected. However, attempting to calculate the effects of a catastrophe like this is very difficult.

All in all, world GDP growth is expected to be approximately 4 per cent this year. In 2008, growth is expected to have fallen to around 3.5 per cent.

It is still assumed that there is uncertainty regarding international economic developments, particularly in the slightly longer term, linked to the oil price and to global imbalances. With regard to the latter, it is mainly the resolution of the large deficit in the US current account and the corresponding surplus in, for instance certain countries in Asia, that causes concern.

■ ■ Lower interest rates.

The forecast for Sweden in the main scenario is based this time on the assumption that the repo rate will develop in line with implied forward rates over the next three years (see Figure 2). According to this assumption, the repo rate will remain at 1.5 per cent until around 2006 Q2. After that there will be a gradual process of raising the repo rate. A forecast based on the corresponding interest rate assumption was presented in a box in the June Inflation Report. The current interest rate path is on average around 0.2 percentage points lower during the forecast period than market expectations last spring and than the assessment made in June.

Developments in the financial markets since June have been characterised by continuing low interest rates and a weak krona.

■ ■ Growth in Sweden expected to improve.

GDP growth in Sweden, as in the rest of the world, was at a high

rate last year. A slowdown occurred at the beginning of this year. The assessment made in June was that this was a temporary slowdown and that growth would improve once again, becoming relatively good. Revised statistics then showed that developments at the beginning of the year were not quite as weak as was first indicated. During Q2 GDP growth and in particular household consumption increased at a faster rate.

The high productivity growth in recent years has partly laid the foundation for continued good growth in the Swedish economy. It has meant that companies have been able to increase their production with the existing work force. This has improved the cost situation for companies and held back price increases. The low inflation rate has made it possible to conduct an expansionary monetary policy for a comparatively long period. At the same time, the high productivity and relatively good profitability in firms are expected to lead to a relatively favourable development in real wages in future. Altogether, these conditions favour good growth in domestic demand and employment over the coming years. An expansionary fiscal policy will also contribute to increasing domestic demand over the coming years.

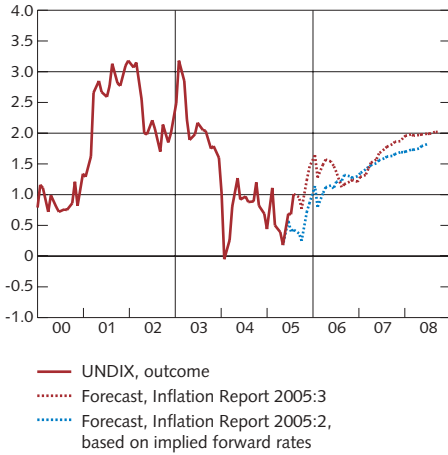
Stronger growth in Swedish export markets in future should also contribute to a more rapid growth in exports than has been seen this year. All in all, GDP growth in Sweden is expected to be 2.3 per cent this year, 3.0 per cent in 2006, 2.5 per cent in 2007 and 2.2 per cent in 2008. Capacity pressures in the economy are thus expected to increase, particularly over the coming year. Growth is expected to gradually slow down somewhat, which is in line with the normal cyclical pattern when investment and productivity growth normalise and economic policy becomes less expansionary.

Compared with the assessment in the June Inflation Report, GDP growth is expected to be slightly higher, particularly this year and next year. This year the forecast is affected by the results during Q1 being somewhat stronger than was first indicated. After then the slightly more expansionary monetary policy than that the June forecast was based on is expected to stimulate demand. The Budget Bill presented in September also indicates that fiscal policy during 2006 in particular will have slightly greater effects on demand and production than the Riksbank assumed in the June Inflation Report.

■ ■ Slightly rising cost pressures.

Strong productivity growth, combined with a relatively slow increase in total unit labour costs, led to a fall in companies' production costs last year. The labour market is expected to improve, which it is assumed will lead to a more rapid increase in wages. During the later part of the forecast period productivity growth is expected to subside. All in all, this means that companies' costs are expected to begin to rise at a faster rate. However, the upturn will be relatively slow and cost pressures will remain moderate throughout the entire forecast period.

Figure 3. UND1X: outcome and forecasts. Annual percentage change



Sources: Statistics Sweden and the Riksbank.

It is reasonable to believe that productivity will increase at a slower rate in future as growth is expected to be linked to a greater extent to strong domestic demand and increased production in the private services sector. However, it is difficult to determine how much it will slow down. It is possible that the rate of increase in productivity has risen more permanently as a result of the large investments in information technology made by companies at the end of the 1990s or of the rapid changes now taking place in the international labour distribution. However, it is also possible that the continued economic upturn will be followed by a rapid decline in productivity growth. The assessment in this Inflation Report is that the high productivity growth is slightly more permanent than was assumed in the June Inflation Report. Productivity growth has been revised upwards by a few tenths of a percentage point on average during the forecast period.

Inflation assessment

Inflation has been low since the end of 2003, which can be explained by both favourable supply conditions and low capacity pressures. In August this year, CPI and UND1X inflation were at 0.6 per cent and 1.0 per cent respectively. Compared with the assessment in the June Inflation Report, the inflation rate has been slightly higher than was forecast, largely due to the unexpectedly high oil price.

The assessment now, as in June, is that inflation will rise in future. Increased cost pressures and rising capacity pressures are expected to contribute to an upturn in domestic inflation. The factors that have been dampening the rate over the past year – a rapid upswing in productivity, increased competition and low capacity pressures – will continue to have some subduing effect. Domestic inflation is therefore expected to rise only slowly during the forecast period.

Imported inflation has been kept down in recent years by the krona appreciation and by the fact that there has been a substitution for cheaper imported goods. During the forecast period, however, the effects of these price-dampening factors are expected to diminish somewhat. Although it can be assumed that the substitution for cheaper goods in imports will continue, rising global capacity pressures are expected to lead to higher international price pressures. At the same time, the krona is expected to appreciate only slightly. The fact that cost pressures and capacity pressures will rise in Sweden is also judged to affect consumer prices of imported products since these are processed and distributed before being sold on in the Swedish market. All in all, imported inflation excluding oil is therefore expected to rise gradually during the forecast period, but to remain relatively low.

The assessment is thus that inflation will rise over the coming years, but at a relatively moderate rate. Inflation is expected to fall short of 2 per cent for the greater part of the forecast period (see Figure 3).

The inflation forecast has been revised upwards, compared with the June figures (see Table 1). In the short term, this is primarily due to the higher oil price. Towards the end of the forecast period the inflation forecast is mainly affected by the assumption that capacity pressures will be higher than was assumed in June. The upturn in inflation will be counteracted to some extent by the upward revision in the forecast for productivity growth.

■ ■ Inflation risks balanced.

The assessment in the June Inflation Report was that the risks of inflation being lower than in the main scenario were somewhat larger than the risks of inflation being higher. The risks were mainly connected with the uncertainty over developments in economic activity, both internationally and in Sweden. Most indications are now that the slowdown at the beginning of the year was a temporary phenomenon.

There is still considered to be uncertainty over international economic activity in the slightly longer term, which is connected to the oil price, global imbalances and the depressed long-term interest rates, and could lead to lower inflation. At the same time, the high oil price risks leading to higher inflationary pressures.

There is also judged to be considerable uncertainty as to how the factors that have recently subdued inflation in Sweden will develop in future. These factors include international price pressures and productivity growth.

To summarise, the Riksbank's assessment is that the risk outlook for inflation is balanced.

Table 1. Inflation forecasts in the main scenario.
Annual percentage change

	Annual average			12-month rate			
	2005	2006	2007	Sept.-05	Sept.-06	Sept.-07	Sept.-08
CPI	0.5 (0.3)	1.5 (1.4)	2.1 (1.9)	0.6 (0.2)	1.5 (1.6)	2.2 (2.0)	2.4
UND1X	0.8 (0.5)	1.4 (1.2)	1.6 (1.6)	1.0 (0.4)	1.2 (1.3)	1.8 (1.6)	2.0
UNDINHX	1.0	1.5	2.3	1.0	1.6	2.5	2.8
UNDIMPX	0.2	0.9	0.2	0.8	0.0	0.2	0.2

Note. The figures in parentheses are the forecasts in the previous Inflation Report, under the assumption that the repo rate would follow implied forward rates. However, no forecasts for UNDINHX and UNDIMPX were published in the previous Inflation Report under the assumption that the repo rate would follow implied forward rates. UND1X is CPI inflation excluding household mortgage interest expenditure and the effects of changes in indirect taxes and subsidies. UNDINHX refers to prices of mainly domestically produced goods and services in UND1X. UNDIMPX refers to prices of mainly imported goods and services in UND1X.

Sources: Statistics Sweden and the Riksbank.

**Table 2. Key figures.
Annual percentage change**

Key figures	2004	2005	2006	2007	2008
GDP OECD 19	3.1	2.4 (2.5)	2.4 (2.6)	2.6 (2.7)	2.6
CPI OECD 19	2.0	2.3 (1.9)	2.1 (1.9)	2.1 (2.1)	2.1
Crude oil price, USD/barrel, annual average	38	55 (48)	58 (46)	57 (44)	55
Market growth for Swedish goods exports	8.2	4.6	5.5	5.7	5.7
SEK/TCW, index 1992-11-18=100, annual average	126.0	127.6	127.1	124.4	122.7
GDP at market prices	3.6	2.3 (1.9)	3.0 (2.6)	2.5 (2.4)	2.2
Hours worked, whole economy*	-0.3	0.6	1.4	0.7	0.2
Hourly wage, in business sector, NA*	3.0	3.7	3.8	4.2	4.4
Labour productivity in business sector*	4.6	2.3	2.7	2.5	2.3
Unit labour costs in business sector*	-1.5	1.1	1.1	1.8	2.1
Persons in employment**	-0.5	0.4	1.1	0.6	0.2
Open unemployment, per cent**	5.9	5.9	5.0	4.6	4.6
Public financial saving, percentage of GDP	1.4	1.6	1.1	0.7	1.2

Note. The figures in parentheses are the forecasts in the previous Inflation Report. However, for some variables no forecasts were published in the previous Inflation Report under the assumption that the repo rate would follow implied forward rates. NA is the National Accounts.

* Calendar-adjusted data.

** Historical data have been spliced by the Riksbank.

Sources: International Petroleum Exchange, OECD, Statistics Sweden, Swedish National Labour Market Board and the Riksbank.

■ Determinants of inflation

The financial markets

Since the June Inflation Report, developments in the financial markets have been characterised by continuing low long-term interest rates and a weak krona. In Sweden, the repo rate was cut by 0.5 percentage points at the end of June. At the same time, monetary policy in the United States is still being tightened, while the key rate in the euro area has remained unchanged. The stock market upturn in Sweden, the euro area and the United States continued over the summer. Compared with the June forecast, long-term interest rates are now expected to rise more slowly and the forecast for the trade-weighted krona exchange rate has been revised down, particularly in the short term.

■ Assumption of repo rate changes in forecast.

The forecasts in the main scenario depicted in this Inflation Report are based on the assumption that the repo rate will develop in line with implied forward rates.

To reduce the effects on implied forward rates of temporary fluctuations in pricing on the financial markets, a 15-day average is calculated for implied forward rates as of 3 October. Figure 4 shows the repo rate path that forms the basis for the forecasts in the main scenario described in this report. According to implied forward rates, raises in the repo rate are expected to begin some time during Q2 next year. After that, the repo rate is expected to be raised gradually to around 3 per cent towards the end of the forecast period. This path is in line with the expectations of money market agents, according to Prospera's most recent survey (see Figure 5).

Compared with the corresponding calculations in the June Inflation Report, the forward rates are on average approximately 0.2 percentage points lower during the forecast period.

■ Continued interest rate raises in USA.

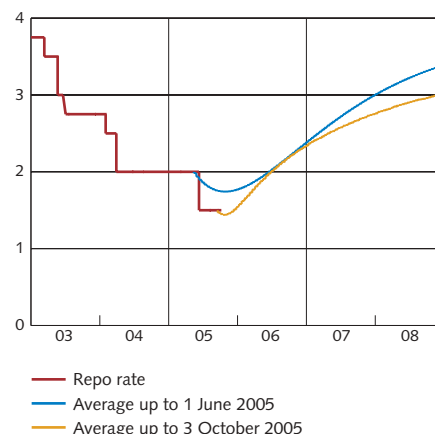
In the United States the monetary policy tightening has continued. All in all, the US central bank, the Federal Reserve, has now raised its key rate by 2.75 percentage points since June 2004. During the summer the rate was raised from 3 to 3.75 per cent and pricing in the financial markets indicates expectations of continued raises. The US key rate is expected to amount to around 4.25 per cent at the beginning of next year (see Figure 6).

Unlike the US central bank, the European Central Bank, ECB, has held its key rate unchanged since summer 2003. However, during the summer expectations of future interest rate raises have been brought forward somewhat.

■ Continuing low long-term rates.

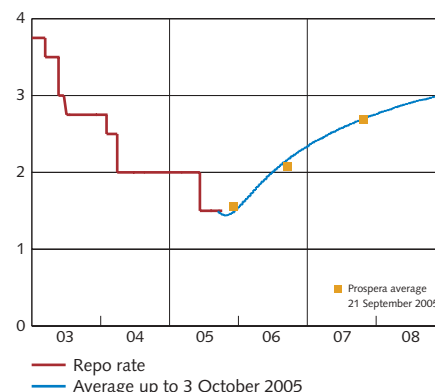
During the year the gap between long-term interest rates in the United States and those in the euro area has broadened considerably.

Figure 4. Implied forward rates, 15-day average. Per cent



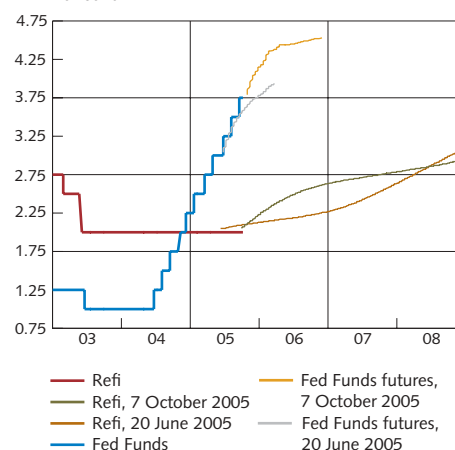
Source: The Riksbank.

Figure 5. Implied forward rates and repo rate expectations according to Prospera's most recent survey. Per cent



Source: Prospera Research AB and the Riksbank.

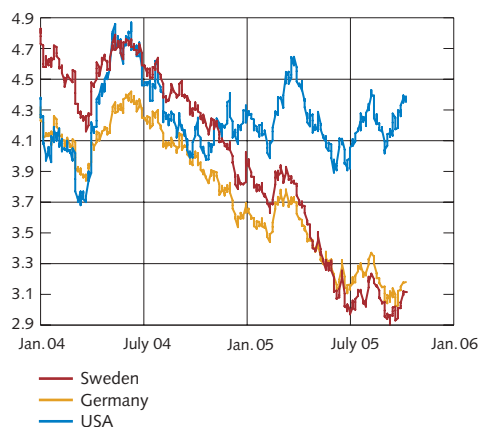
Figure 6. Monetary policy expectations in the euro area and the USA according to implied forward rates and Fed Funds futures. Per cent



Note. Fed Funds futures are priced in terms of the average key rate during the respective month.

Source: The Riksbank.

Figure 7. Yields on 10-year government bonds in Sweden, Germany and the United States. Per cent



Source: The Riksbank.

The US 10-year rate, which was around the same level as the euro area last autumn, is now approximately one percentage point higher (see Figure 7). What has surprised many analysts is that long-term interest rates have remained largely unchanged in the United States, while they have fallen substantially in the euro area. Given the historical pattern, it would have been more natural for long-term rates to rise in the United States, but to remain relatively still in the euro area. Bearing in mind the continuing monetary policy restraint exercised during the summer, the US 10-year rate has risen very moderately, from levels just above 4 per cent at the end of June to around 4.35 per cent at the beginning of October. The corresponding rate in the euro area has remained largely unchanged.

The low bond rates are due to real interest rates having fallen and to the fact that inflation is low, and thereby nominal interest rates. In addition, risk premiums have fallen. The fall in interest rates is partly transitory and probably partly of a more permanent nature.

Real interest rates have been depressed by global savings being relatively high in total and by companies making severe cuts in investments following the stock market fall at the beginning of the 2000s. Although corporate investment has begun to increase in some areas, the level remains low. However, investment will sooner or later rise to more normal levels and thereby probably cause real interest rates to rise. The factors contributing to the depression of nominal long-term rates on a more permanent basis include the fact that monetary policy in many parts of the world has in recent years been clearly aimed at price stability. As this policy has gained increasing credibility, inflation expectations and the compensation capital investors wish to receive for the uncertainty regarding inflation have declined.

There are also other factors that have contributed to pushing down bond rates in recent years and which are probably of a more transitory nature. These include the fact that demand for government securities has been strong among central banks in some Asian countries and oil-exporting countries, which have large current account surpluses and thereby large and increasing foreign currency reserves. Demand for government securities has also increased from pension funds and life insurance companies, which will need to increase their holdings of longer-term securities when long-term interest rates fall. Interest rates on higher-risk lending are also historically low. The risk premium usually varies in accordance with the economic cycle and is lower in times of prosperity and higher in less prosperous times, as the risk of companies going bankrupt and being unable to repay their bond loans varies. At the same time, borrowers are more cautious during less prosperous times when the prospects of a good return on investment appear less favourable. The fact that risk premiums are nevertheless low could be explained by the fact that they have been depressed by the low interest rates on treasury

bonds with a good credit rating causing many investors to chase higher earnings by investing in more risky assets without requiring full compensation for the increased risks.

■ ■ Lower forecast for Swedish long-term rates.

In Sweden the 10-year bond rate has lain around 3 per cent following the repo rate cut in June. The negative interest rate margin of 10 points against the 10-year German bond rate that was established at the end of June remains.

The same factors that have contributed to holding down international interest rates can also be expected to have affected Swedish rates. Moreover, in Sweden interest rates have been affected by the repo rate cut.

As discussed in the June Inflation Report, one factor behind the low bond rates is probably the changeover in the pension system. This is an international process, as observed above, and has in several countries led to increased demand for instruments with a longer duration, which has contributed to depressing bond rates. At the same time, many countries have adapted their supply and extended the duration for public sector borrowing. In Sweden, too, the demand for bonds with a long duration has increased. However, at present there are no plans to extend the duration for public borrowing.

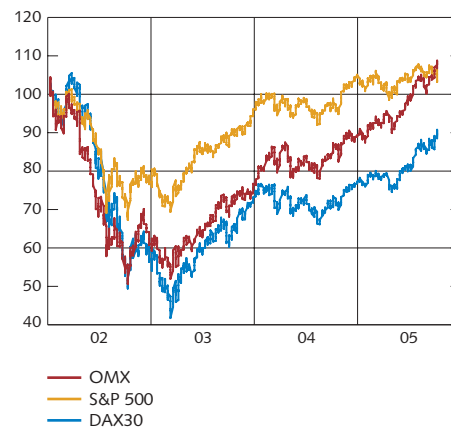
In Sweden Finansinspektionen (the Swedish Financial Supervisory Authority) has produced what is known as the traffic light system, which will be implemented in connection with the occupational pension directive coming into force on 1 January 2006. It appears as though these plans have had some impact on interest rates. However, it is difficult to foresee how the new regulations will affect interest rates in future.

The main scenario in the Inflation Report is based on the repo rate developing in line with implied forward rates. A rising repo rate, together with a continuing gradual recovery in economic activity, is expected to lead to an upturn in the long-term bond rate as well. On average, the 10-year government bond rate is expected to amount to 3.4 per cent in 2005 and to 3.6 per cent in 2006. It is expected to reach 4.5 per cent in 2008. This is lower than the assessment in the previous Inflation Report. One reason for the downward revision is that the repo rate has been cut by 0.5 percentage points and is expected to be lower during the greater part of the forecast period than was expected at the beginning of June. The outcome for bond rates has also been surprisingly low, even taking into account the repo rate cut.

■ ■ Strong stock market growth.

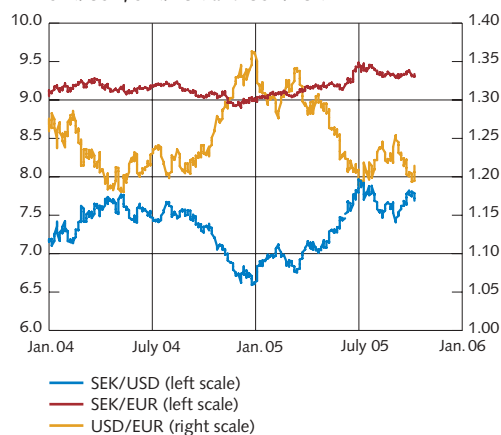
Since the trough at the beginning of 2003, stock markets in the United States, Germany and Sweden have shown strong growth (see Figure 8). The Swedish OMX index has risen most during this

Figure 8. Stock market index in Sweden, USA and Germany.
Index, 1 January 2002=100



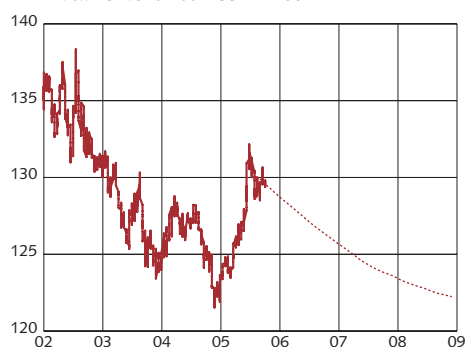
Source: The Riksbank.

Figure 9. Exchange rate developments for SEK/USD, SEK/EUR and USD/EUR



Source: The Riksbank.

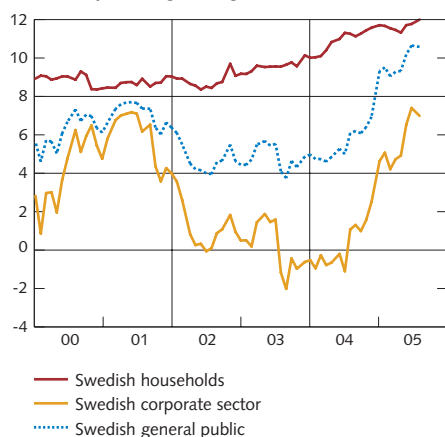
Figure 10. SEK/TCW exchange rate forecast.
Index 18 November 1992 = 100



Note. The broken lines represent the Riksbank's forecasts. Outcome represents daily rates and forecasts refer to quarterly averages.

Source: The Riksbank.

Figure 11. All credit institutions' lending to the general public in Sweden, sector breakdown. Annual percentage change



Note. Owing to a change in the reporting system, some adjustment has been made to the figures from Statistics Sweden.

Sources: Statistics Sweden and the Riksbank.

period. The upturn has continued during the summer, and at the end of September the OMX index had risen just over 5 per cent since the end of June.

The upturn on the stock markets has continued as total profits during Q2 this year exceeded expectations for listed companies in Sweden, the United States and Europe. Increased costs in the form of higher oil prices and continuing global price pressure from low-cost countries have so far not been visible in profit and loss accounts. Forecasts for earnings have been gradually revised upwards over the year, in both the United States and Europe.

In Sweden, earnings growth for the 30 largest companies on the Stockholm Stock Exchange has been strong, with an upturn during the first half of the year of almost 20 per cent, compared with the corresponding period last year. Earnings growth for the Swedish stock market companies has also been relatively evenly divided between various sectors. The stock market upturn has largely corresponded to earnings growth, which means that P/E ratios have remained relatively stable during the first half of the year. In terms of P/E ratios, the stock markets in the United States and Sweden are currently valued at levels corresponding to the historical average, that is to say around 15.

■ ■ Krona expected to strengthen somewhat.

The large appreciation of the dollar against the euro that has taken place since the beginning of the year, came to a halt in July. Since the June Inflation Report the USD/EUR rate has fluctuated between 1.2 and 1.25. In connection with the Swedish repo rate cut in June, the krona weakened against both the euro and the dollar. During the summer the krona strengthened again and is now at the same level, in terms of the TCW index, as at the end of June (see Figure 10).

With regard to the TCW index, the Swedish krona has shown weaker development than was assessed in the June Inflation Report. However, this has not affected to any great extent the Riksbank's view of what constitutes a reasonable long-term assessment of the krona. On the other hand, the krona is expected to become weaker over the coming years than was assumed in June, as the appreciation is now expected to take longer. On average, the TCW index is expected to amount to 122.7 in 2008 (see Table 2).

■ ■ Lending increasing substantially among both household and corporate sectors.

Lending to households has increased substantially over a number of years, while corporate lending has remained largely unchanged. However, this year lending to the corporate sector has shown a marked increase. Compared with the same month last year, lending to the corporate sector increased by 7 per cent in August. This contributed to an increase in total lending to the Swedish general public of almost 11 per cent during the same period (see Figure 11).

The very low interest rates, together with rising house prices, have contributed to the high growth in lending during the year. House prices have gone up by between 5 and 10 per cent on an annual rate over the past three years (see Figure 26). During Q2 this year, the property price index rose by more than 7 per cent compared with the same period last year. Property prices are thus continuing to increase at a rapid rate, although they have been subdued somewhat over the year.

In recent months the rate of increase in the broad money aggregate M3 has also risen (see Figure 12). Growth in the money supply reinforces the picture of continued expansion in liquidity and credit in the economy.

■ ■ Expansionary financial conditions

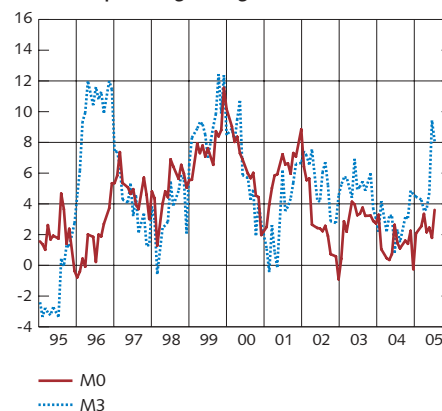
At present, financial conditions are relatively expansionary in the sense that both the short-term and long-term real interest rates are very low in relation to the most recent five-year period (see Figure 13). Together with the very strong stock market growth so far, this should have a stimulating effect on consumption and investment during the coming period.

The real exchange rate has weakened recently (see Figure 13), which should also have an expansionary effect on the economy.

Revised forecasts since the June Inflation Report (forecasts based on implied forward rates)

- The forecast for Swedish long-term interest rates has been revised down.
- The krona is expected to be weaker during the entire forecast period in terms of the TCW index.

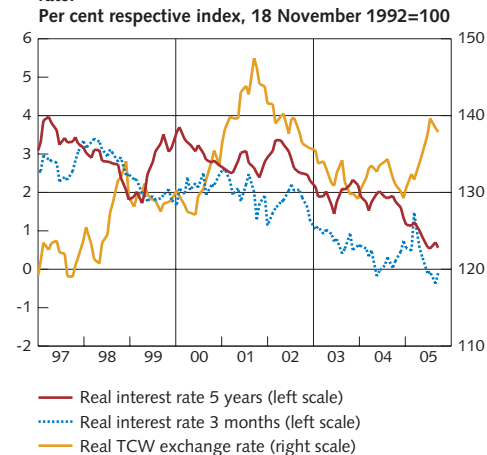
Figure 12. Money supply measured as M0 and M3. Annual percentage change



Note. The narrow money aggregate M0 consists of the general public's holdings of banknotes and coins. The broad money aggregate M3 also contains the Swedish general public's deposits in banks and holdings of bank certificates.

Source: Statistics Sweden.

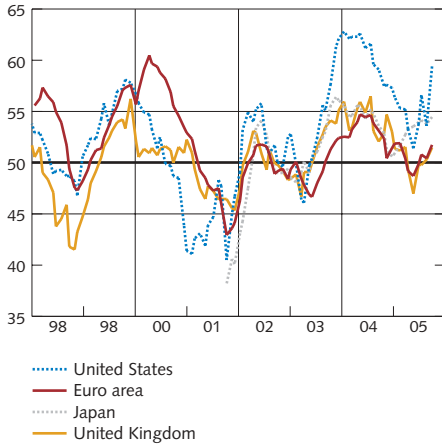
Figure 13. Real interest rate with 5-year and 3-month maturity respectively and real TCW-weighted exchange rate. Per cent respective index, 18 November 1992=100



Note. When calculating real interest rates, inflation expectations have been taken from the National Institute of Economic Research's HIP surveys for the three-month rate, and from Prospera for the five-year rate. The interest rates refer to treasury bills with 3 months to maturity and treasury bonds with 5 years to maturity.

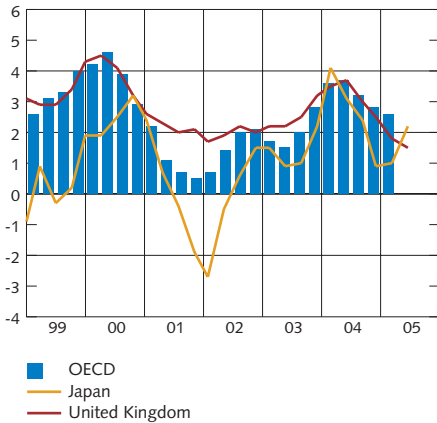
Sources: The National Institute of Economic Research, Prospera Research AB and the Riksbank.

Figure 14. PMI in manufacturing: United States, euro area, Japan and United Kingdom. Index



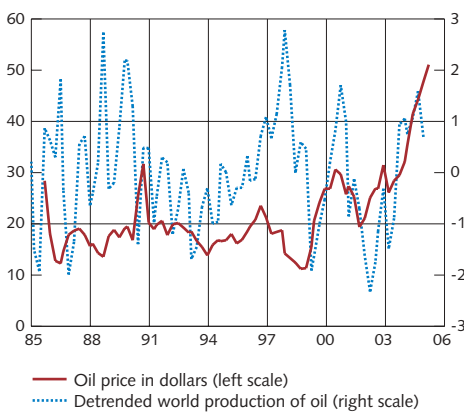
Sources: Institute for Supply Management and NTC Research Ltd.

Figure 15. GDP growth in OECD, Japan and United Kingdom. Annual percentage change



Sources: OECD and Office For National Statistics.

Figure 16. Oil price and oil production. USD per barrel and million barrels per day



Note. The detrended world production of oil is calculated as the difference between world production of oil and an HP-filtered value of this.

Sources: The International Petroleum Exchange and the OECD.

International economic activity and inflation

The slackening in international economic activity earlier this year appears to have been temporary. International economic activity has recently been particularly marked by rapid economic expansion in China and the rest of Asia, but also in the United States. Next year global economic activity is expected to enter a calmer phase with a slightly lower growth rate. Growth in the euro area has been weaker than expected this year, but economic activity is expected to accelerate next year. It is assumed that Swedish export market growth will maintain a good rate over the coming three years. The substantially higher crude oil price is expected to have a marginally dampening effect on world growth. A higher oil price means that global price pressures are expected to be slightly higher this year and in 2006 compared with the assessment made in the June Inflation Report. International CPI inflation is now also expected to be slightly higher.

■ ■ International economic activity strengthening.

The slowdown in international economic activity appears to have been temporary. Both macro statistics and company confidence indicators have shown a recent upturn (see Figure 14). Continuing strong economic activity in the United States and continued rapid economic expansion in China and the rest of Asia have provided the growth engine for the global business cycle. In Japan, the growth outlook is looking better than it has done for a long time. However, growth in the euro area has so far been weak, although there have been some signs recently of a turnaround in manufacturing activity there, too.

The oil price rise has continued and the price is now expected to be just over 25 per cent higher during the forecast period than was predicted in the June Inflation Report. It is likely that both supply and demand factors have contributed to the higher price level. The high oil price is expected to have a marginally dampening effect on growth. Despite the assumption that the oil price will fall from the current high levels, it still remains a cause for concern in the international economic outlook.

Global economic activity will enter a calmer phase over the coming years. World growth is expected to be around 4 per cent this year and then to fall to around 3.5 per cent during the remainder of the forecast period.

■ ■ Higher oil price during forecast period.

The oil price has been much higher than the Riksbank had predicted in June. The oil price amounted to an average of around 63 dollars per barrel in September, which can be compared with the Riksbank's forecast of just under 50 dollars a barrel in the June Inflation Report.

The price increase has taken place despite stocks of crude oil remaining relatively stable while forecasts of demand for oil have been revised down since the spring. However, in the slightly longer term perspective the oil price upturn appears to be primarily caused by rising demand. This is implied by Figure 16, which shows that world oil production has increased since the beginning of 2004 and that the oil price has nevertheless risen. Part of the reason for the high price is a high level of capacity utilisation. The most recent upturn in the oil price is explained by the hurricanes in the Gulf of Mexico increasing investors' concerns over the energy supply. OPEC has increased its supply for a limited period to compensate the production loss that arose due to the hurricanes. Several industrial nations have also contributed to increasing the supply of oil by temporarily phasing out some of their strategic oil stocks. However, it is uncertain whether this will be sufficient to dampen the price increase to any great extent.

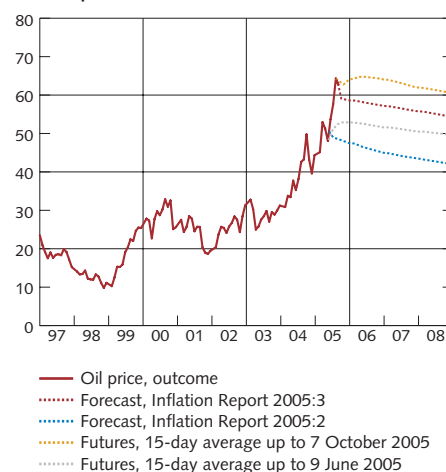
Forward rates in the oil market are also higher now than at the time the June Inflation Report was compiled. The forward rate curve indicates that the oil price is only expected to fall to a modest extent from the current high levels. If forward pricing reflects market expectations of the future price, the upturn must mean that the oil price is expected to become established at a higher level than before over the coming years. Forward prices in October thus indicate that the oil price is not expected to fall back as quickly as the Riksbank assumed in the June Inflation Report. Given these factors, the oil price forecast was revised up for the whole forecast period. The oil price is expected to be just over 54 dollars per barrel towards the end of 2008 (see Figure 17).

■ ■ US growth will gradually slacken during forecast period.

Growth in the United States remained high during the first half of 2005. GDP increased by 0.9 and 0.8 per cent respectively during Q1 and Q2 (see Figure 18).

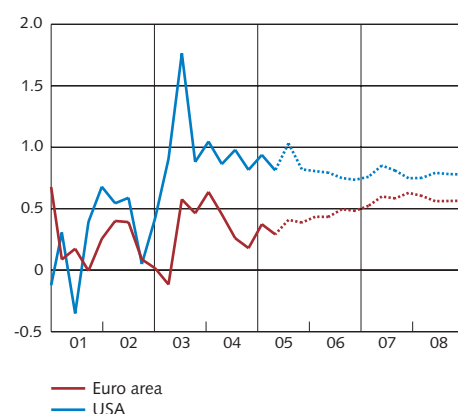
Employment has continued to rise and is contributing to a continued increase in household consumption. As yet, consumption growth has shown no sign of slackening and the retail trade has so far developed very strongly, although turnover fell significantly in August (see Figure 19). High earnings in US companies and rising price in the asset markets are contributing to a build-up of wealth that has an expansionary effect on demand in the US economy, so that the US households' savings ratios are close to zero. Despite higher interest rates and a higher oil price, private demand does not yet seem to have been curbed to any great extent. However, consumption and production are expected to be dampened as a result of the recent hurricanes, which may affect growth during the autumn. During the rebuilding phase – which is expected to take place mainly next year – demand and production are expected to increase again. Investment growth was very strong last year and at the beginning of this year.

Figure 17. The oil price: outcome and forecasts. USD per barrel



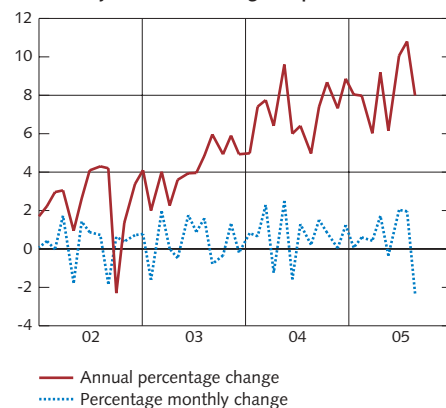
Sources: International Petroleum Exchange and the Riksbank.

Figure 18. GDP in United States and euro area: outcome and forecasts. Per cent



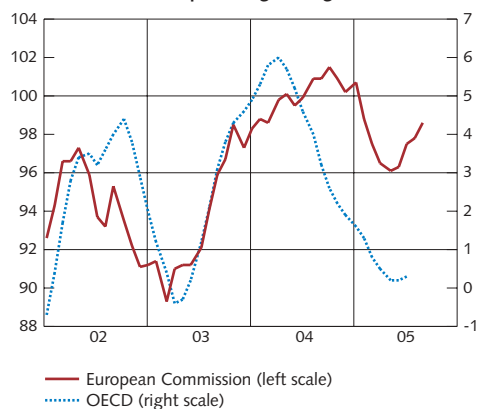
Note. The broken line represents the Riksbank's forecast.
Sources: Bureau of Economic Analysis, Eurostat and the Riksbank.

Figure 19. Retail trade in United States. Monthly and annual changes in per cent



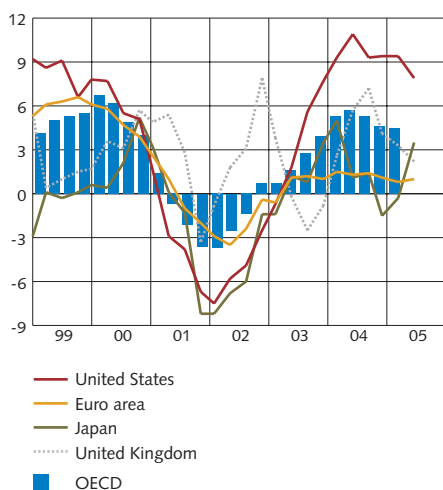
Source: US Department of Commerce.

Figure 20. Economic indicators for the euro area. Index and annual percentage change



Sources: European Commission and OECD.

Figure 21. Investment in the United States, euro area, Japan and United Kingdom plus OECD total. Annual percentage change



Sources: Bureau of Economic Analysis, Eurostat, OECD and Office For National Statistics.

The rate of investment is expected to be slightly subdued in future. All in all, the GDP growth forecast is being revised down by 0.1 percentage point this year and next year, which is primarily due to the effects of the higher oil price.

US consumer prices have been higher than was anticipated in the June Inflation Report, partly as a result of developments in oil prices. During the current year inflation is expected to rise further. Productivity growth, which had already slowed down during Q2 this year, is expected to weaken over the coming years. At the same time, US capacity pressures are expected to become increasingly strained. Unit labour costs are thus expected to increase at a faster rate over the coming years. Monetary policy tightening is therefore expected to continue, in order to suppress further inflationary tendencies.

■ ■ **Developments in euro area remain weak.**

Following the decline in growth at the end of last year, it has been possible to detect some sign of a recovery in manufacturing activity in the euro area over the summer. As in other countries, the purchasing managers' index has shown an upturn (see Figure 14). Other indicators have also shown an upturn since the summer (see Figure 20). German indicators such as IFO and ZEW have signalled some improvement in economic activity.

Companies' investment propensity remains low, which is probably due to a high oil price and lingering effects of the euro appreciation. Household consumption showed weak growth while public sector consumption actually declined in the euro area. Despite relatively weak domestic demand, imports increased more rapidly than exports during Q2.

However, developments in the various countries within the euro area differed. While the German manufacturing industry is increasing production to meet a relatively good growth in demand from abroad, manufacturing output in, for instance, Italy has been falling since 2000. Manufacturing activity in France appears to be continuing to improve, but there are evident signs of weakness in the economy. Household consumption in particular appears to have been dampened, which is visible for instance in the retail trade statistics.

Capacity pressures in the euro area as a whole are estimated to be low, and the relatively high unemployment rate is expected to continue to have a dampening effect on consumption. A large part of the increase in income goes to increased private savings. Inflation is still being kept up at around 2 per cent, partly as a result of the high oil price. However, the euro appreciation in recent years and low unit labour costs have meant that underlying inflation has shown a falling trend. These forces are expected to gradually recede during the forecast period. As a result of the oil price, inflation in the euro area is expected to be higher than was forecast in June.

Growth in the euro area is expected to rise during the second half of 2005 and in 2006 as manufacturing activity around the

world improves. Increased domestic demand resulting from greater investment activity and increased propensity to consume is also expected to become an increasingly important factor for growth. GDP growth in 2006 is expected to be slightly lower, compared with the assessment made in the June Inflation Report. This downward revision is mainly due to the effects of a higher oil price, but also to a change in the assessment of the speed of the recovery in the euro area.

■ ■ UK consumption growth slowing down.

Growth in the UK economy has slowed down more than expected over the year. This is mainly due to a marked slowdown in household consumption. The explanations for this are probably weaker developments in the labour market but also the fact that households' propensity to consume may have declined as a result of the increase in house prices coming to a halt. Growth prospects for the United Kingdom have been revised for the coming years, mainly due to the expectation of a slower increase in household consumption.

■ ■ Stable development in the Nordic countries.

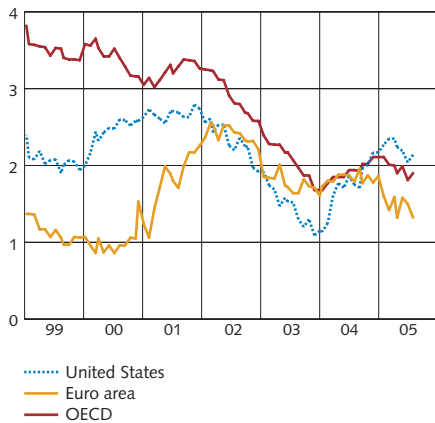
The economic outlook for the Nordic countries remains largely unchanged from the June Inflation Report, but the higher oil price is expected to dampen growth in all of these countries, with the exception of Norway. In Denmark, Finland and Norway, household consumption acted as an important driving force for growth in demand last year and consumption growth is expected to remain good over the coming years. However, in Norway growth is expected to be subdued next year. A stronger Norwegian krona is expected to contribute to subduing export growth and somewhat stricter fiscal policy is expected to subdue consumption growth. In Denmark, growth is expected to be relatively stable even for some time to come, and closely linked to developments in the euro area. Growth in the Finnish economy weakened during the spring due to a labour market conflict, but GDP is nevertheless expected to show an increase of around 2 per cent this year and afterwards growth is expected to accelerate further, although the higher oil price is expected to have a restrictive effect on the growth rate.

■ ■ Growth in Asia remains high.

The Japanese economy grew by 2.2 per cent during Q2 this year, compared with the corresponding period last year (see Figure 15). This corresponds to a recovery. The growth composition shows that domestic demand is increasing at a faster rate than foreign trade. Household consumption has increased markedly following the slowdown last year. An improvement in the labour market lies behind this upturn.

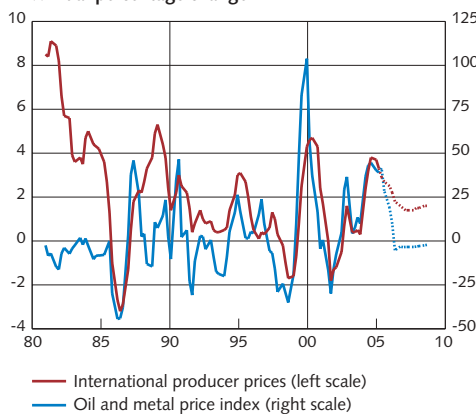
The increase in employment is in turn due to a clear improvement in the financial situation for Japanese companies. Strong balance sheets, continued high corporate earnings and generally greater

Figure 22. CPI excluding energy and food in the USA, the euro area and the OECD. Annual percentage change



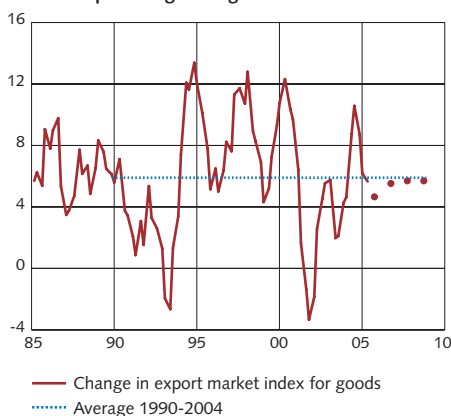
Source: OECD.

Figure 23. International producer prices of manufactured products and oil and metal price index: outcome and forecasts. Annual percentage change



Note. The broken line represents the Riksbank's forecast. Sources: IMF, OECD and the Riksbank.

Figure 24. Swedish export market growth. Annual percentage change



Note. The results series is an aggregate of the real goods imports for the countries that make up the Swedish export market. The broken red line represents the Riksbank's forecasts. Sources: National sources and the Riksbank.

confidence among companies have led to a cautious increase in investment. The investment upturn is expected to continue over the coming years. Capacity utilisation is expected to rise in future. CPI inflation is expected to remain negative this year but the assessment is that the long deflation period in the Japanese economy will be broken next year.

Growth in China remains at a high rate. During the first half of this year, growth amounted to just under 10 per cent, compared with the same period last year. In relation to many other countries, the Chinese investments are very high. However, the rate of increase has been somewhat subdued this year. A slightly lower investment rate is expected to lead to the rate of increase in total domestic demand slowing down over the coming years. The revaluation of the currency is expected to have minor effects on exports, which is expected to continue to grow strongly during the forecast period. GDP growth next year and during 2007 and 2008 is expected to be lower, but relatively high in an international perspective.

Growth in most other Asian countries has also benefited from developments in China and from the strong US economy. Economic expansion in this region is expected to continue at a high rate, although a relatively high oil dependency in some countries will lead to increased costs and subdued growth rates.

Oil price keeps up international producer prices.

Despite the high oil price, inflation trends in the OECD area have so far been subdued (see Figure 22). It does not appear as though any more tangible indirect effects have arisen from the high oil price as yet. Over the coming years, inflation is expected to remain relatively subdued, even with the increasing international capacity utilisation.

Global producer prices are expected to increase more this year and next year than was assumed in the June Inflation Report. One important explanation is the sharp upturn in the oil price. The assessment is that producer prices will increase by 3.1 and 2.0 per cent respectively in 2005 and 2006. When the effects of the high oil price subside, it is assumed that the rate of increase in producer prices will decline somewhat. At the same time, the effects of an increased element of price competition from low-cost countries will continue to contribute to keeping world market prices down. However, the continued strengthening of economic activity in the world economy is expected to lead to producer price pressures remaining high during the forecast period (see Figure 23).

Market growth will slow down this year.

Growth in the Swedish export markets is expected to slow down substantially this year from last year's high rates of increase (see Figure 24). The reason for this is the temporary slackening in international economic activity. It is mainly the relatively weak growth in the euro area that dampens export prospects for this year. A large

part of Swedish goods exports are to Europe and there mainly to the euro area. During the remainder of the forecast period market growth is expected to gradually increase again.

Table 3. International conditions.
Annual percentage change

	GDP				CPI			
	2005	2006	2007	2008	2005	2006	2007	2008
United States	3.6 (3.7)	3.3 (3.4)	3.2 (3.2)	3.1	3.2 (2.6)	2.7 (2.4)	2.5 (2.5)	2.5
Germany	0.8 (0.9)	1.3 (1.6)	2.0 (2.0)	2.3	2.0 (1.5)	2.0 (1.4)	1.5 (1.5)	1.5
United Kingdom	1.9 (2.7)	2.1 (2.8)	2.4 (2.7)	2.5	2.1 (1.8)	2.1 (2.1)	2.2 (2.2)	2.3
Denmark	1.8 (1.8)	2.1 (2.3)	2.0 (2.0)	2.0	1.7 (1.7)	2.0 (1.9)	1.8 (1.8)	1.8
Finland	2.0 (2.0)	2.2 (2.4)	2.3 (2.3)	2.5	1.2 (1.2)	1.7 (1.7)	1.7 (1.7)	1.4
Norway	3.5 (3.5)	2.8 (2.8)	2.5 (2.5)	2.5	1.5 (1.3)	2.1 (2.0)	2.5 (2.5)	2.5
Euro 12	1.2 (1.3)	1.7 (2.0)	2.2 (2.3)	2.4	2.1 (2.0)	2.0 (1.8)	1.8 (1.8)	1.8
TCW-weighted	1.8 (2.0)	2.0 (2.3)	2.3 (2.4)	2.4	2.0 (1.7)	2.0 (1.8)	1.9 (1.9)	1.9
OECD 19	2.4 (2.5)	2.4 (2.6)	2.6 (2.7)	2.6	2.3 (1.9)	2.1 (1.9)	2.1 (2.1)	2.1

	2005	2006	2007	2008
GDP World	3.9 (3.9)	3.7 (3.9)	3.5 (3.5)	3.5
Swedish export market growth	4.6	5.5	5.7	5.7
Global PPI	3.1 (2.5)	2.0 (1.8)	1.4 (1.5)	1.5
Crude oil price, annual average (USD/barrel Brent Blend)	55 (48)	58 (46)	57 (44)	55

Note. The figures in parentheses are the forecasts in the previous Inflation Report. CPI refers to HICP for Germany, the United Kingdom, Denmark and Finland. GDP for Norway refers to the mainland economy. OECD 19 refers to the EU countries (excluding Luxembourg), the United States, Canada, Japan, Norway and Switzerland. 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 a weighted average of each country's share of total Swedish exports 2003-2004. The forecast for Swedish export market growth is not comparable with that published in the previous Inflation Report because of a change in the country samples. International producer prices in national currencies are a weighted average of national PPI series for manufactured goods. This weighted average includes eleven countries and is arrived at using TCW weights. The countries included are the United States, Germany, the United Kingdom, Norway, Finland, Denmark, Belgium, Japan, Canada, France and the Netherlands. These together comprise approximately 85 per cent of the total TCW weighting.

Sources: International Petroleum Exchange, OECD and the Riksbank.

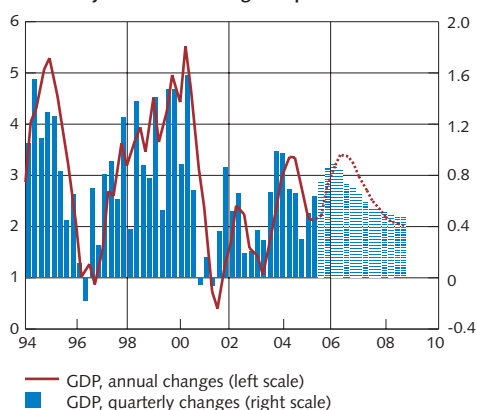
Revised forecasts since the June Inflation Report

- The oil price forecasts have been revised up for all years in the forecast period.
- The higher oil price will subdue growth in the world economy in 2006 and 2007.
- The euro area growth forecast has been revised down, which is due to the higher oil price and also to a new assessment of how rapid the economic recovery will be.
- The forecast for CPI in the OECD area has been revised up this year and next year due to the upturn in the oil price.

Economic developments in Sweden

By all appearances the weakening in the Swedish economy around the turn of the year was temporary. The economic upswing seems to have regained its impetus recently. Growth in private consumption appears now to have started to increase and is expected to strengthen further in the coming years. Public consumption also will pick up, above all next year, mainly owing to the more expansionary stance of fiscal policy. At the same time the investment upturn that began last year will continue, although it will gradually enter a slacker phase. Resource utilisation in the economy will rise in the beginning of the forecast period, but is forecast to slow to relatively moderate levels as the upswing in demand is dampened.

Figure 25. GDP: outcomes and forecasts for seasonally adjusted and calendar-adjusted series. Quarterly and annual changes in per cent



Note. The broken line and dashed bars represent the Riksbank's forecasts.

Sources: Statistics Sweden and the Riksbank.

■ ■ Economic upswing continuing.

Growth in the Swedish economy weakened more than anticipated at the start of the year, prompting the Riksbank to revise down its forecast comparatively sharply in the June Inflation Report. However, the slowdown was judged to be temporary rather than a change in the economic cycle. The recent months' data support this view. Furthermore, the performance in the first quarter this year does not seem to be as weak as before, following the revisions that have been made to the National Accounts.

Growth in private consumption is showing signs of an incipient increase after a number of weak years and is expected to pick up further in the coming years as a result of, among other things, high real wage increases and rising employment. At the same time, the low interest rate environment and good corporate profitability mean that investment will continue to rise at a relatively fast rate for some time yet. Public consumption too is expected to begin to grow quicker, especially next year, on account of a more expansionary fiscal stance and stronger local government finances. A continued recovery in the international economy, which like the Swedish one recently underwent a temporary slowdown, gives reason to expect firm growth in exports as well following the weak start to the year. At the same time, the upswing in demand will help to fuel a faster rise in imports.

Domestic demand therefore will become a more important driving force in the coming years than it has been to date in the cyclical upswing. The changed composition of demand growth is reflected in, among other things, more subdued developments in manufacturing, with output and employment in the construction sector and the private services sector growing considerably faster.

The recent years' high productivity growth can be said to have laid the foundation for the continued upturn in economic activity, while it to some extent also can explain the recent years' performance. A productivity upswing leads to upward pressure

on wages and downward pressure on prices. Higher wages in turn stimulate demand. This adjustment can be assumed to come about with a lag, however. A more direct, immediate effect of a productivity boost is that it enables companies to maintain output levels with a smaller contribution from labour than before. Initially, this therefore results in weak growth in the labour market and relatively subdued growth in household incomes, as has also been observable. These mechanisms have likely been one cause of the weak growth in private consumption in recent years. The subdued consumption demand, as well as the fact that the high productivity and increased competition has depressed companies' costs, has helped to restrain price increases in the economy.

The low inflation rate has made it possible to conduct an expansionary monetary policy for a comparatively long period. At the same time, the high productivity and the relatively good corporate profitability mean that wage growth in the period ahead may become somewhat stronger than before, i.e. wages begin to adjust upwards. The subdued price increases in turn can be seen as an adjustment of the price level to the higher productivity. The low interest rate environment and improved wage growth entail good prospects for firm growth in domestic demand and employment in the coming years.

However, the upswing in demand is forecast to begin to slacken by degrees. That is partly due to the assumption of a rising repo rate and a gradually less expansionary fiscal stance, and partly a result of conventional mechanisms that dampen economic activity, for example that investment growth gradually slows down as companies become more and more satisfied with the expansion of their output capacity. Also, the fact that productivity growth eventually begins to decrease will contribute to curbing the upswing in demand in that it will lead to rising corporate costs and therefore higher inflation.

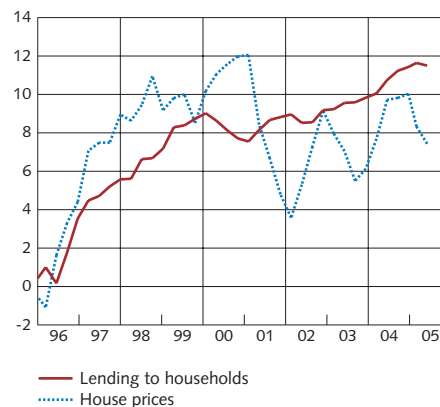
The economy is forecast to grow at a comparatively firm rate during the forecast period. Growth in GDP is expected to be 2.3 per cent this year, 3.0 per cent in 2006, 2.5 per cent in 2007 and 2.2 per cent in 2008. That means that resource utilisation will pick up in the near term but thereafter slow to relatively moderate levels.

Compared with the assessment in the previous Inflation Report, GDP growth is anticipated to be somewhat more robust. The fundamental outlook for the period ahead is thus more positive than in June. That is due in large part to more expansionary economic policy, with an assumed repo rate development that is lower throughout the forecast period than was the case in June and fiscal policy that will stimulate demand more than was anticipated at that time. But other information regarding the Swedish economy has also contributed to the upward revision of the growth forecast.

■ ■ Stable pick-up in consumption.

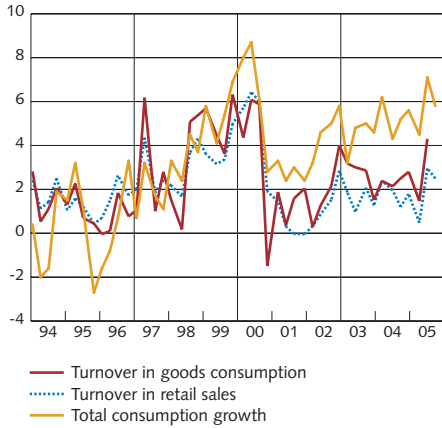
In recent years private consumption has grown comparatively weakly, notwithstanding the low interest rate environment and households' fast rate of borrowing (see Figure 26).

Figure 26. House prices and lending to Swedish households from all credit institutions. Annual percentage change



Sources: Statistics Sweden and the Riksbank.

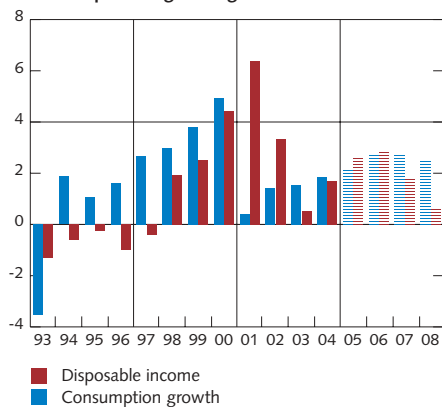
Figure 27. Retail sales and private consumption.
Fixed prices, annual percentage change



Note. Non-calendar-adjusted data.

Sources: Statistics Sweden and the Riksbank.

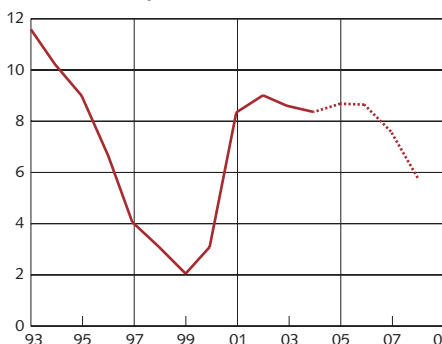
Figure 28. Household consumption: outcome and forecast.
Annual percentage change



Note. The dashed bars represent the Riksbank's forecasts.

Sources: Statistics Sweden and the Riksbank.

Figure 29. Households' saving ratio: outcome and forecast.
Per cent of disposable income



Note. The broken line represents the Riksbank's forecast.

Sources: Statistics Sweden and the Riksbank.

This year, though, and particularly during the second quarter, growth in consumption seems to have picked up. There is also evidence that consumption continued to grow strongly in the third quarter this year. Retail sales, for example, are showing a high rate of increase (see Figure 27).

Households have also become more optimistic about the future, both as regards their own finances and in terms of their outlook on the labour market. The Riksbank expects private consumption this year to rise by fully 2 per cent. That is slightly slower than the rate of increase in incomes and implies that households will continue to save a large share of their incomes this year as well (see Figures 28 and 29).

It is likely that the high saving rate somewhat reflects many households' efforts to restore the value of their assets following the weak growth in the equity market in the period 2000-2002 (see also the box "Households' consumption and saving"). That applies in particular to the large group of households that are approaching retirement age and that have invested a large portion of their pension capital in equities. It is also likely due in some measure to precautionary saving in response to the weakness in the labour market.

The consumption upswing is forecast to continue during the forecast period. An important driving force will be increasing employment and improved wage growth for households. Above all in 2006, the expansionary fiscal stance in the central government budget is also estimated to help boost households' disposable incomes. The low interest rate environment, too, will fuel consumption.

Towards the end of the forecast period, gradually rising interest rates and a less rapid rate of increase in incomes are expected to dampen consumption growth. However, this will be countered to some extent by a decrease in precautionary saving as the improvement in labour market conditions becomes more evident, as well as by the fact that household wealth will begin to come back to past levels.

It is uncertain what impact the high oil price will have on households' propensity to consume. The current forecast is based on an estimate of how households are affected directly through lower real purchasing power. It is also possible, however, that the spike in oil prices will make many households feel uncertain about future economic developments and thus cause them to postpone some consumption. The significance of such an effect is very difficult to assess, though.

■■ Strong but gradually decreasing investment growth.

The investment upswing that began last year has continued in the first half of 2005. Residential investment in particular has increased rapidly. Business investment, too, has risen at a relatively firm rate, whereas growth in public sector investment has been weak (see Figure 30).

High capacity utilisation in manufacturing, low interest rates and a benign corporate situation, characterised by relatively strong balance sheets and good profitability, suggest that investment will continue to pick up at a fairly fast pace for some time yet. The National Institute of Economic Research's (NIER) latest business tendency survey indicates that a comparatively large share of manufacturers consider the availability of plant capacity to be a limiting factor. Low levels of interest rates and favourable growth in households' disposable incomes entail good prospects for a continued upswing in residential investment in the coming years. Public sector investment is expected to begin to increase again after the recent years' weakness, due in part to greater investment scope for local governments and to central government investment in infrastructure. However, as interest rates rise and companies become increasingly satisfied with the level of their output capacity, the rate of increase in gross fixed capital formation is anticipated to be dampened more and more.

■ ■ Sharp rise in public consumption in 2006.

By all appearances, the general government net lending surplus this year will be somewhat higher than expected in the previous Inflation Report. Outcomes for the central government budget balance this year have exceeded, for example, the earlier forecasts of the Swedish National Financial Management Authority. The improvement mainly seems to be accounted for by partly temporary tax revenue from firms and lower central government spending. Meanwhile, the Government has presented a number of new measures that are deemed to have an impact on public sector consumption and net lending, mainly next year.

**Table 4. Net lending.
Per cent of GDP**

	2004	2005	2006	2007	2008
Public sector	1.4	1.6	1.1	0.7	1.2

Note. The forecasts in the previous Inflation Report are not given since they were based on an unchanged repo rate.

Source: The Riksbank.

The fiscal stance in the Government's Budget Bill for 2006 is highly expansionary. Both tax and spending measures have been announced to stimulate private and public consumption as well as to boost private sector demand for labour. As regards spending, the steps include higher child allowances and a two-year employment package designed to provide around 55,000 people with work, trainee positions or education and training. On the tax side, the measures include a reduction of employer contributions for solo entrepreneurs who take on one employee.

In previous Inflation Reports the Riksbank has forecast more expansionary fiscal policy, chiefly next year. However, the scale of the recently announced stimulus package for 2006 is larger than expected in the June Report. These extra stimulus measures are estimated to

**Figure 30. Gross fixed capital formation: total and broken down by sector.
Annual percentage change**

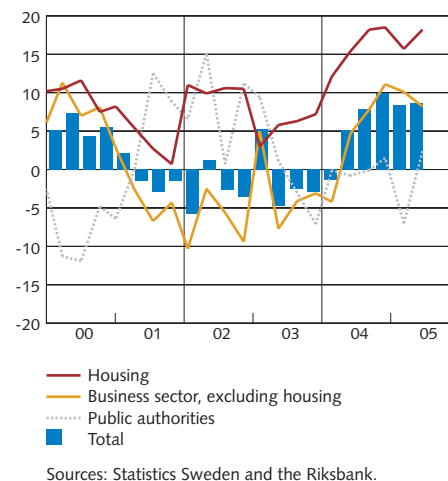
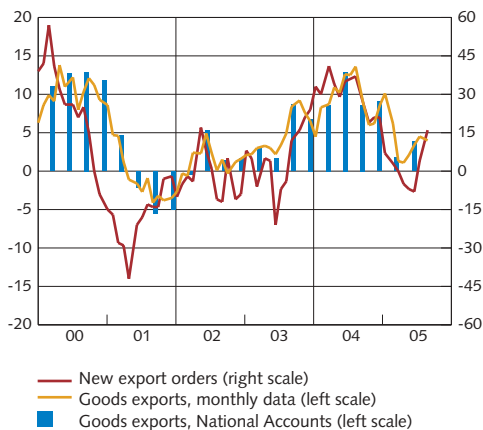


Figure 31. Real goods exports according to National Accounts and monthly data and new export orders.

Annual percentage change and balance



Note. Goods exports according to monthly data expressed as rolling quarterly average. The export price index has been used as a deflator.

Sources: NIER and the Riksbank.

Figure 32. Swedish exports and export market growth for goods.

Annual percentage change



Note. The broken lines represent the Riksbank's forecasts. See note in Figure 24.

Sources: Statistics Sweden and the Riksbank.

correspond to a weakening of the public finances of around 0.5 per cent of GDP in 2006. The overall effects on GDP, according to the multipliers presented in the box "The significance of fiscal policy for monetary policy" in Inflation Report 2004:4, will be an addition to GDP growth of some 0.3 percentage points.

The Riksbank's assessment is that the general government net lending surplus as a share of GDP will decrease in the period ahead. Towards the end of the forecast period, though, it is assumed that the public finances will improve again as a result of efforts to return to the surplus target. Indicators such as the central government budget balance suggest that net lending will be somewhat higher than previously estimated. Higher growth forecasts and lower interest rate forecasts imply an improvement in general government net lending in the years ahead. The improvement in net lending is countered, however, by the new expansionary proposals in the Budget Bill. All in all, the changes have prompted a slight downward revision of the forecast for net lending during the period 2006-2008. The forecast is based both on already adopted or announced measures, including those in the Budget Bill, and on the Riksbank's assessments of fiscal policy formulation in the coming years.

Public consumption, notably for local governments, has grown unexpectedly weakly to date this year. Much suggests that the local government sector will generate substantial surpluses in 2005. One possible explanation for this is that local governments' much tighter budgets in 2004 affected their budget plans for this year and onward. The Riksbank's assessment, however, is that local governments, notwithstanding their favourable finances, will not boost consumption to any appreciable extent during the end of 2005. Instead, local government consumption is estimated to rise relatively sharply in 2006 and then hold up well over the remainder of the forecast period.

The expansionary stance of the Budget Bill is projected to fuel growth in public consumption above all in 2006, whereas the effects thereafter will be small.

■■ Recovery in both exports and imports.

Export growth was somewhat weaker than expected during the first half of the year owing to the dip in international economic activity (see Figure 31). The slowdown concerned exports of both goods and services. However, monthly data for goods exports and the NIER's business tendency data for new export orders point to a slight pick-up recently.

In the period ahead international economic activity is forecast to strengthen again, thus laying the foundation for relatively firm export growth. The expected appreciation of the krona in TCW terms is countered by the fact that Swedish relative export prices are estimated to drop somewhat. Overall, this means that Swedish competitiveness is assumed to remain essentially unchanged during the forecast period. Against that background exports are forecast to grow roughly

in line with the export market, implying increases of fully 5 per cent a year during the forecast period (see Table 5).

Imports rose less than anticipated in the first half of this year. Services imports in particular grew weakly. The slowdown is deemed to be temporary, however, and in the period ahead import growth is forecast to pick up as economic activity strengthens and demand increases. All in all, imports are estimated to grow by around 6 per cent a year in the coming years, i.e. somewhat faster than exports (see Table 5).

Table 5. GDP by expenditure.
Annual percentage change

	2004	2005	2006	2007	2008
Private consumption	1.8	2.2	2.7	2.9	2.5
Public consumption	0.3	0.5	1.8	0.7	0.5
Gross fixed capital formation	5.5	7.3	5.5	4.8	3.0
Inventory investment, contribution	-0.3	-0.2	0.0	0.0	0.0
Exports	10.5	3.6	5.3	5.7	5.6
Imports	6.9	4.0	5.7	6.5	6.0
GDP at market prices	3.6	2.3 (1.9)	3.0 (2.6)	2.5 (2.4)	2.2
Final domestic demand	2.0	2.6	3.0	2.6	2.1
Net exports, contribution	2.0	0.2	0.3	0.1	0.3

Note. The data refer to actual, non-calendar-adjusted, growth rates. The figures in parentheses are the forecasts in the previous Inflation Report.

Sources: Statistics Sweden and the Riksbank.

■ ■ Time series and indicator models support the assessment.

The assessment that the slowdown in economic activity has been temporary is supported by the time series and indicator models used by the Riksbank to try to predict GDP growth in the near term. These models indicate roughly the same growth during the third quarter this year as during the second quarter and point to somewhat higher growth in the fourth quarter (see also the box "GDP indicators").

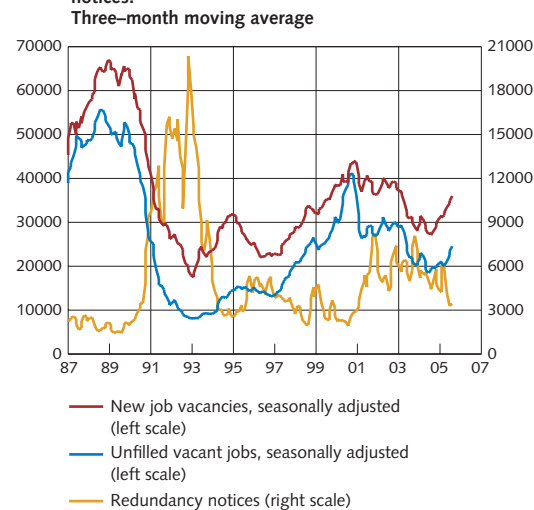
■ ■ Brighter prospects in the labour market.

According to the National Accounts there was an upturn in the number of hours worked in the second quarter this year. The increase occurred in the construction and services industries, while hours worked fell in manufacturing. Average hours worked also rose during the second quarter, as is normal in an economic upswing. When there is an upturn in the economy existing staff are initially used more intensively, and only at a later stage do firms add to their workforces.

Due to the upswing in average hours worked the increase in demand has not yet entailed any significant pick-up in employment. According to the labour force surveys the number of employed to date this year has risen by 0.4 per cent compared with the same period last year. However, this outcome comes from the new EU-harmonised labour force survey, which differs from previous surveys. That means that the data are not directly comparable over time.²

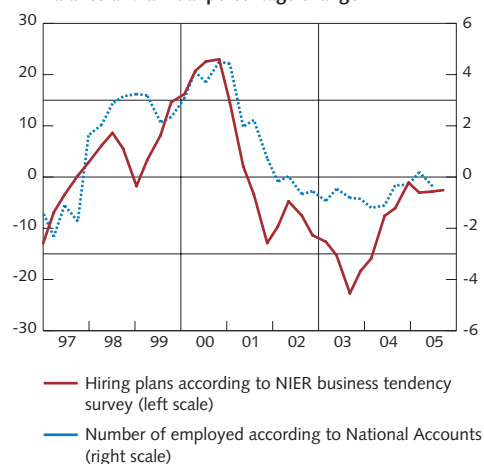
² The new labour force survey is published as from April this year. Estimates of changes compared with dates prior to April 2005 are based on a splice, performed by the Riksbank, of the new survey series with the aid of the old survey series.

Figure 33. New and unfilled vacant jobs with a duration of more than 10 days and redundancy notices.



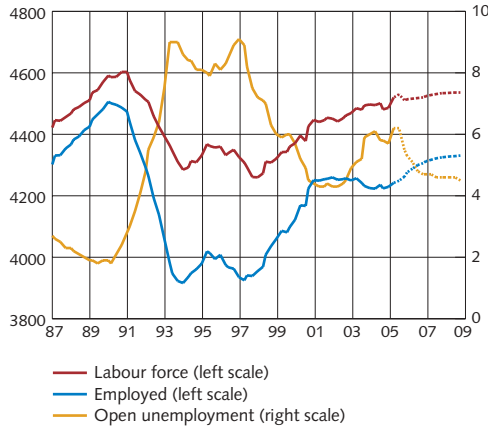
Source: National Labour Market Board.

Figure 34. Number of employed and hiring plans in business sector.
Balance and annual percentage change



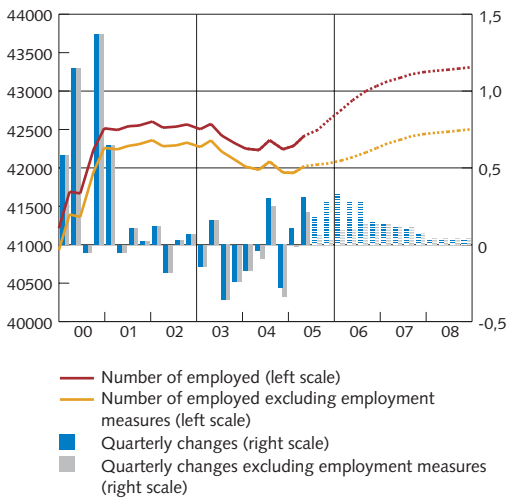
Sources: NIER, Statistics Sweden and the Riksbank.

Figure 35. Labour force, number of employed and open unemployment.
1000s of persons and per cent of the labour force, seasonally adjusted data



Note. The broken lines represent the Riksbank's forecasts. Historical data have been spliced by the Riksbank.
Sources: Statistics Sweden and the Riksbank.

Figure 36. Total employment and employment excluding employment programmes.
100s of persons and quarterly changes in per cent, seasonally adjusted series



Note. The broken lines and dashed bars represent the Riksbank's forecasts. Historical data have been spliced by the Riksbank.

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

Indicators of future developments in the labour market point to an improvement in conditions. So far this year almost 6,000 fewer people have received notice of redundancy, compared with the same period last year (see Figure 33). In addition, the number of new job vacancies at Swedish employment offices continued to increase over the summer and autumn. The increase has been noted in both the business sector and public services. The NIER's quarterly business tendency survey indicates continued positive hiring plans in the construction sector and parts of the private services sector, even though the plans in the business sector overall remain relatively subdued (see Figure 34).

During the forecast period, relatively strong growth in domestic demand coupled with a more subdued rate of productivity growth than before are expected to contribute to a rise in labour demand. Against that background the number of hours worked is anticipated to show positive growth throughout the forecast period (see Table 6). Average hours worked by the employed is also forecast to pick up, chiefly in 2006, due in part to a continued reduction in sick leave. However, in statistical terms the rise in average hours worked will be dampened in 2006 by the Government's career break scheme – whereby employees can take a publicly financed career break of three to twelve months provided that their position is filled by an unemployed person – since the number of people availing of the scheme, which are counted as employed, will still be rising somewhat.

Table 6. Labour market forecast.
Annual percentage change

	2004	2005	2006	2007	2008
Number of hours worked*	-0.3	0.6	1.4	0.7	0.2
Average hours worked by the employed* **	-0.3	0.1	0.3	0.1	0.0
Number of employed**	-0.5	0.4	1.1	0.6	0.2
Labour force**	0.2	0.4	0.1	0.3	0.1
Open unemployment (as per cent of labour force)**	5.9	5.9	5.0	4.6	4.6
Labour market policy programmes (as per cent of labour force)**	2.4	2.7	3.6	3.3	3.0

* Calendar-adjusted data. ** Historical data have been spliced by the Riksbank.

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

Employment is projected to increase throughout the forecast period (see Figure 35). The fastest rise will be in construction and the public sector, but the private services sector is also expected to contribute positively to employment growth. In this year's Budget Bill the Government has announced a sharp rise in the number of participants in labour market policy programmes next year. Growth in regular employment will thus be considerably weaker than that in total employment (see Figure 36).

The number of people in the labour force to date this year has increased by 0.5 per cent on the same period last year, according to the new EU-harmonised labour force survey and the Riksbank's

spliced data. The labour force is anticipated to increase only moderately during the forecast period. Population growth is high but mainly in the younger and older age groups in which labour force participation is low. At the same time the increase in the number of labour market programmes in 2006 entails a lower supply of labour. The number of participants on these programmes is assumed, according to the recently announced figures, to average 121,000 in 2005 and 162,000 in 2006. The numbers are expected to decrease again at the end of the forecast period.

Open unemployment was high during the summer months. One explanation is that unemployment seems to be displaying a new seasonal pattern in the new EU-harmonised labour force survey. However, open unemployment is anticipated to drop back somewhat in the coming months (see Figure 35). National Labour Market Board data regarding the number of registered unemployed does not point either to any significant rise during the summer. Since employment is set to rise and the labour force to grow only modestly, open unemployment will fall during the forecast period. Developments in total unemployment will not be as positive, however, as the number of participants in labour market programmes will pick up.

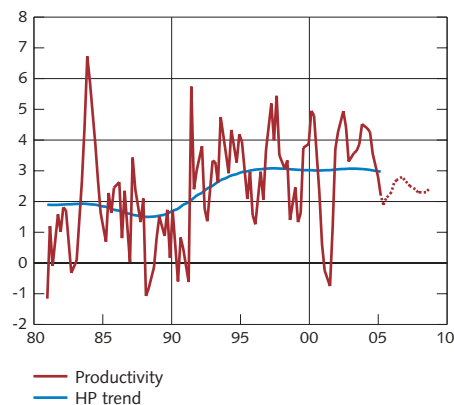
■ Slight dampening of productivity growth.

In recent years productivity growth has been remarkably high. The reasons for this are not fully understood. Large-scale investment in information technology in the late 1990s has likely played a part, as has tougher domestic and international competition. The rapid changes in the international division of labour may also have had some significance. Like a number of other forecasters, the Riksbank has revised up its forecast for underlying productivity growth in the years ahead.³ One recent sign that the increase in productivity is a comparatively durable phenomenon is that productivity gains in the service industries do not seem to have slackened, even though it is there that the upswing in hours worked has been most evident recently.

However, there is judged to be a cyclical feature in the developments, to the extent that the existing labour force at the start of the economic upturn has been used more intensively. This productivity reserve is now starting to become increasingly depleted, and as the cyclical upswing continues, productivity growth will therefore slow.

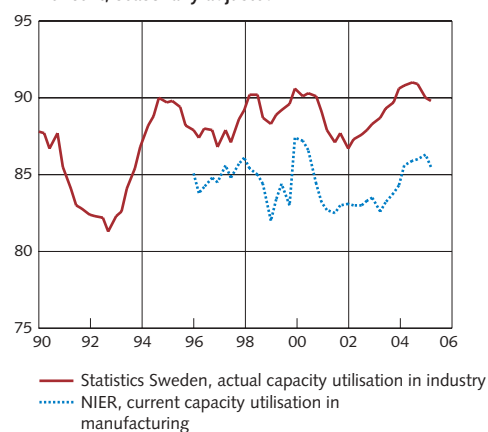
National Accounts data for the second quarter point to a rise in both output and the number of hours worked. Growth in hours worked increased more than for output, which explains the slight drop in productivity growth (see Figure 37). This development mainly reflects the recent slowdown in manufacturing, but is also probably due to the fact that the scope for companies to continue to boost output without adding to their workforces is beginning to become more and more limited.

Figure 37. Actual and trend productivity growth in the business sector since 1980. Annual percentage change



Note. The broken line represents the Riksbank's forecast. Sources: Statistics Sweden and the Riksbank.

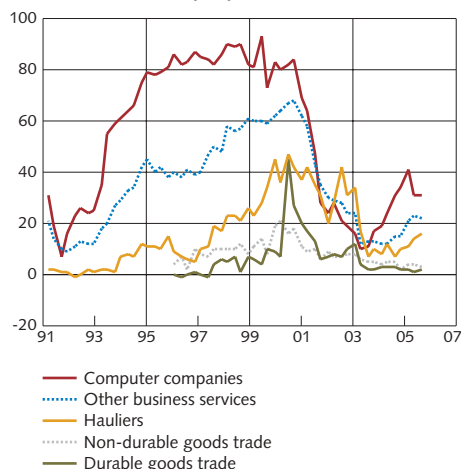
Figure 38. Capacity utilisation in industry according to Statistics Sweden and the NIER. Per cent, seasonally adjusted



Sources: NIER and Statistics Sweden.

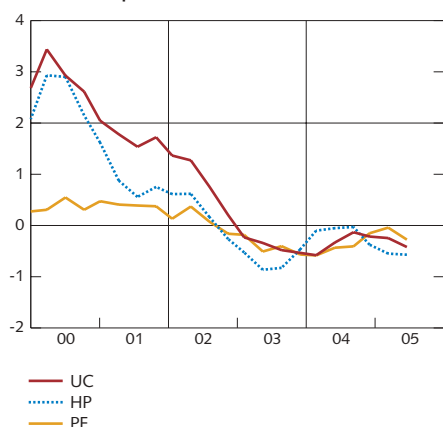
³ See, for instance, the NIER's special study no. 6, "Productivity and wages until 2015", 2005.

Figure 39. Proportion of firms reporting a shortage of staff.
Per cent, seasonally adjusted



Source: NIER.

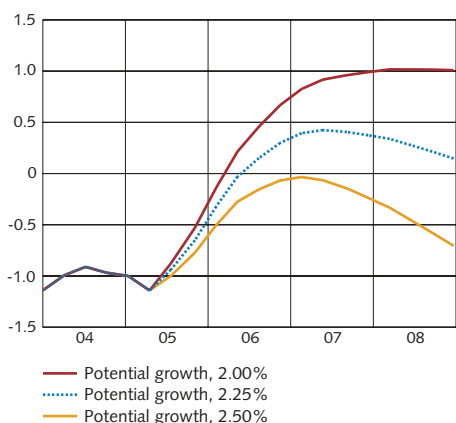
Figure 40. Econometric estimates of the output gap.
Per cent of potential GDP



Note. UC is the Unobserved Components method, HP stands for the Hodrick-Prescott filter and PF is the production function approach.

Sources: Statistics Sweden and the Riksbank.

Figure 41. Developments in the output gap 2005–2008 under different assumptions for potential growth.



Source: The Riksbank.

A slight recovery in manufacturing activity in the short term is expected to contribute to somewhat more robust business sector productivity growth in the immediate future. But manufacturing activity is expected to slacken somewhat in the period ahead, shifting the composition of growth towards domestically-oriented sectors, such as service industries, in which productivity and productivity gains are lower. All in all, productivity growth is forecast to be subdued by both cyclical factors and composition effects during the latter part of the forecast period. However, the underlying trend rate of productivity growth is predicted to be higher in the period ahead as well, compared with the 1980s. On average over the forecast period productivity growth has been revised up by a couple of tenths of one percentage point.

■ ■ Resource utilisation to pick up in the years ahead.

To get an idea of the level of resource utilisation in the economy it is necessary to compile information from many different sources. This information includes survey data regarding companies' outlooks on, for example, capacity utilisation and labour shortages, as well as econometric estimates of the output gap.

Surveys by the NIER and Statistics Sweden indicate that capacity utilisation in manufacturing is high at present (see Figure 38). It fell somewhat during the first quarter, though. At the same time, the NIER's business tendency surveys show that manufacturing firms in general are not experiencing any notable shortage of labour. The high reported level of resource utilisation thus seems to reflect utilisation of physical capital more than labour shortages. The investment upswing now means that plant and machinery capacity is rising. This, coupled with the more subdued manufacturing activity in the period ahead, suggests that no serious bottlenecks are going to arise in this sector.

In the services industries, too, labour shortages are reported to be very low even though they have begun to increase in some businesses, e.g. computer companies and the category 'other business services' (see Figure 39). The picture of relatively weak resource utilisation is also supported by estimates of the output gap (see Figure 40).

The comparatively firm growth in demand is expected to result in a pick-up in resource utilisation at the start of the forecast period. Owing to, among other things, gradually less expansionary economic policy, the upswing in demand will be dampened by degrees and thereby also the rate at which idle resources are put to use.

Precise estimates of how resource utilisation in the total economy will develop are highly uncertain since they require assumptions regarding both potential growth and the exact current level of the output gap. A reasonable assessment is that potential growth is about 2-2.5 per cent. Under the assumption that the current output gap is about -1 per cent the developments in the gap up to 2008 can be illustrated for different values of potential growth (see Figure 41).

The example shows that resource utilisation initially rises relatively quickly. The rate then slows gradually, though. Given a potential

growth rate of 2.25 per cent or more, resource utilisation decreases again towards the end of the forecast period.

■ ■ Rate of wage increases to rise somewhat.

Wages have continued to rise slowly in the recent period. According to preliminary data from the National Mediation Office, wages increased by 3.1 per cent during the first half of the year in the business sector and by 2.0 per cent in the public sector (see Figure 42). These figures are preliminary, though, and will most likely be revised up. Large upward revisions are to be expected in the public sector in particular. Wage increases were low in all sectors except for the construction sector and trade, hotels and restaurants, which reported wage increments of around 3.5 per cent.

The weak labour market without any real shortage of labour, wage agreements for practically the whole economy that run a couple of years ahead and low inflation expectations suggest that wage increases will continue to be modest. But as labour market pressures pick up, the rate of wage increases is anticipated to rise gradually, reaching around 4 per cent at the end of the forecast period (see Table 7).

Table 7. Wages and unit labour costs in the business sector.
Annual percentage change, calendar-adjusted data

	2004	2005	2006	2007	2008
Hourly wage, NMO	3.0	3.3	3.5	3.9	4.1
Hourly wage, NA	3.0	3.7	3.8	4.2	4.4
Other wage costs, contribution	-0.1	-0.3	0.0	0.1	0.1
Labour costs, NA	3.0	3.4	3.8	4.3	4.5
Productivity*	4.6	2.3	2.7	2.5	2.3
Unit labour costs	-1.5	1.1	1.1	1.8	2.1

Note. NMO is the National Mediation Office's short-term wage statistics and NA is the National Accounts.

*Productivity is calculated on the basis of employees' working hours.

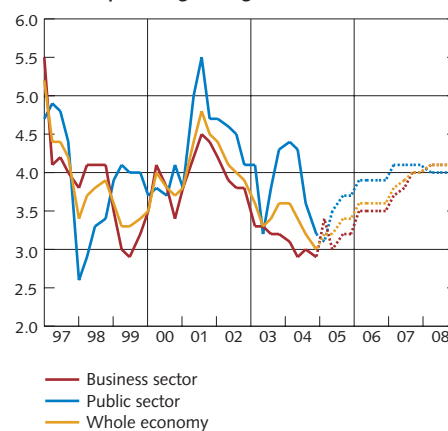
Sources: Statistics Sweden and the Riksbank.

The situation in the construction and local government sectors differs in some respects from that in most other parts of the economy. In construction, wage negotiations are due to begin in the autumn, at a time when the shortage of labour is increasing. In the local government sector, too, labour demand is expected to pick up, and the financial situation in the sector appears bright in the coming years. Consequently, wages in these sectors are assumed to rise faster than in the rest of the economy.

■ ■ Rising cost pressures.

Although productivity growth is anticipated to slow in the period ahead, a slight recovery is predicted after a weaker performance this year. That will temporarily contain cost pressures in the economy. During the latter part of the forecast period, however, gradually higher wage increases and weaker productivity gains will cause cost pressures to begin to rise again. At the end of the forecast period, unit labour costs are forecast to be increasing by fully 2 per cent.

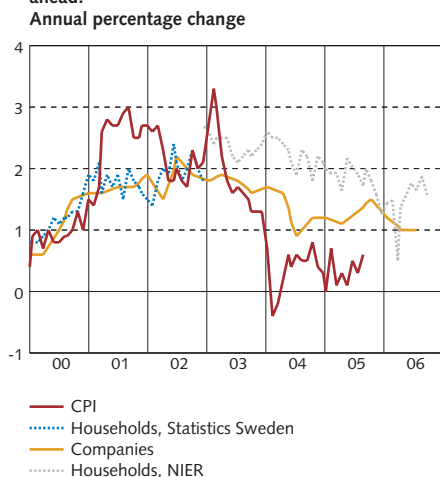
Figure 42. Wage growth: outcomes and forecasts.
Annual percentage change



Note. The broken lines represent the Riksbank's forecasts.

Sources: National Mediation Office and the Riksbank.

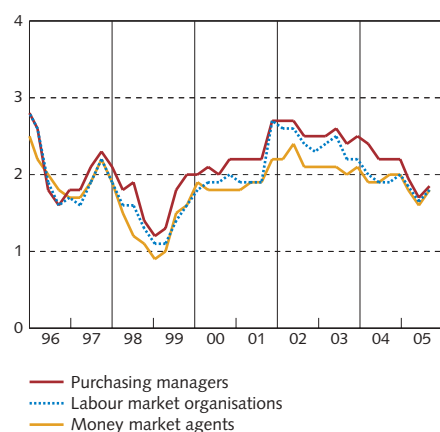
Figure 43. Actual CPI inflation and households' and companies' expectations of inflation one year ahead.



Note. The curves have been shifted ahead 12 months to coincide with the CPI outcomes to which the expectations refer. 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 CPI.

Sources: NIER and Statistics Sweden.

Figure 44. Different agents' expectations of inflation two years ahead.



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.

Inflation expectations

Companies' and households' expectations regarding price developments affect actual inflation in that they are an important basis for price and wage formation. They are therefore a significant element for the Riksbank to take into account in its analysis. The expectations in turn are influenced by various factors, primarily the Riksbank's signalling and the outlook for both the economy as a whole and for key submarkets, e.g. the labour market.

According to the National Institute of Economic Research's (NIER) latest measurement, households' expectations regarding the rate of increase in consumer prices one year ahead are anchored at the same level as in the previous Inflation Report. Their expectations in the summer were marginally higher, but during the autumn they have fallen back to 1.6 per cent.

The inflation expectations of companies have been unchanged since April, according to the NIER. In the April and July surveys, companies' expectations were anchored at 1.0 per cent one year ahead (see Figure 43).

Prospera's most recent survey, conducted between 19 September and 3 October, shows that inflation expectations on average have risen in the short term compared with the survey in June. Inflation is now expected to average 1.6 per cent one year ahead, 1.8 per cent two years ahead and 2.0 per cent five years ahead. All surveyed groups have revised up their expectation by 0.1 to 0.2 percentage points in the near term. In the longer run, only employer organisations have revised up their expectations (see Table 8).

Table 8. Expected rates of inflation according to Prospera's survey in October 2005, unless otherwise specified.
Per cent, average

Expected rate of inflation in	1 year	2 years	5 years
Money market agents	1.3 (1.1)	1.8 (1.6)	1.9 (1.9)
Employer organisations	1.6 (1.4)	1.9 (1.7)	2.1 (1.9)
Employee organisations	1.4 (1.4)	1.7 (1.6)	1.9 (2.0)
Purchasing managers, trade	1.6 (1.5)	1.7 (1.6)	1.8 (1.9)
Purchasing managers, manufacturing	1.8 (1.6)	2.0 (1.8)	2.1 (2.1)
Households (Consumer Survey) in September (May)	1.6 (1.6)		
Firms (Business Tendency Survey) in July (April)	1.0 (1.0)		

Sources: National Institute of Economic Research and Prospera Research AB.

Revised forecasts since the June Inflation Report (forecasts based on implied forward rates)

- The GDP forecast has been revised up, mainly for 2005 and 2006 but also for 2007, due in part to the assumption of more expansionary economic policy.

The Inflation Report describes the forecasts for the macro economy made by the Riksbank for the coming two to three years. These forecasts are produced by means of expert assessments and various types of macro economic models. The Inflation Report provides an account of much of the information used to make the final forecasts, but for obvious reasons cannot document in detail all of the components. This box provides more detailed information on one of these components, namely forecasts of GDP growth produced using time-series and indicator models.

The forecasts in the Inflation Report are produced in a procedure that involves both assessments and models

The Riksbank's Inflation Report currently includes forecasts for more than 50 variables in the Swedish and international macro economy. The procedure of integrating these forecasts into a consistent picture of economic developments in Sweden and abroad involves combining expert assessments, analyses of structural models⁴ and forecasts from a large number of time-series and indicator models.

There are several reasons why it is both necessary and desirable to use models in forecasting. One is that they help to make the analysis more efficient and systematic. The forecasting procedure entails translating an enormous amount of information into detailed estimates of how different variables will develop in the future and this work would be both unwieldy and non-transparent without the aid of models. The models do, of course, have limitations and comprise simplifications (which is one reason why expert assessments are needed) but they make it easier to understand how the final forecast is obtained.

The Inflation Report provides an account

of a very large part of the information used in the Riksbank's forecasting process, but it is not possible, for obvious reasons, to document all of the significant information in detail. It may therefore be of interest to occasionally make an in-depth study of parts of the information that cannot be directly observed in the reports. This box aims to provide such a study with regard to the Riksbank's time-series and indicator models for GDP growth. Different evaluations indicate that these types of models – which make more or less advanced extrapolations of the patterns in historical data – are above all useful in making short-term forecasts (one or two quarters ahead).

The database currently includes 109 indicators of GDP growth

The database used to estimate the different models at present contains 109 quarterly observed indicators. Table B1 shows which sectors of the economy are covered by the database. The sample period currently covers 1991 Q1 to 2005 Q2. An alternative database has also been constructed with a longer sample, for the purpose of investigating the consequences of changing the period to which the data applies. This includes 67 indicators and the sample period begins in 1982 Q1 (see Table B1).

This type of analysis can also be carried out for other variables than Swedish GDP growth. The models used are not specifically designed for a particular variable; they can equally be applied to, for instance, various measures of inflation or measures of economic activity abroad. However, the choice of indicator needs to be adapted to the variable one wishes to forecast. The Riksbank also intends to present similar analyses for other important variables in the Swedish and international macro economy in the future.

⁴ The Riksbank has used several structural macro models over the years. The model currently used is a so-called DSGE model ("Dynamic Stochastic General Equilibrium"), see Adolfson, M., S. Laséen, J. Lindé and M. Villani, "Bayesian Estimation of an Open Economy DSGE Model with Incomplete Pass-Through", Sveriges Riksbank Working Paper Series No. 179, 2005.

Table B1. GDP indicators.

Data period	
1991 Q3–2005 Q2	1982 Q1–2005 Q2
11 real	10 real
11 labour market	11 labour market
12 prices	12 prices
13 financial economy	13 financial economy
9 international	9 international
53 Business survey	12 Business survey
109 total	67 total

Source: The Riksbank.

Four different model approaches are used

Four different model approaches are applied in the analysis. Each of these approaches involves calculating a large number of models with different combinations of the GDP indicators in Table B1. The model approaches consist of classical VAR models, Bayesian VAR models, VAR models based on statistical factors (so-called FAVAR models), and models based on "forward-looking" information. Research in this field indicates that all of the approaches work well with regard to short-term forecasts in particular.⁵ Below is a brief description of the principles behind each of the approaches.

I. Classical VAR models. VAR stands for Vector AutoRegression and is a system of equations where current observations are explained by historical observations of all variables included in the system. In a special case – when only one variable is included – the model is called AR (AutoRegression). In this case the variable is explained (forecast) only on the basis of its own historical pattern.

II. Bayesian VAR models. These are VAR models that have been conditioned on some form of subjective information (so-called priors). One example is that inflation in the long term is expected to be in line with the Riksbank's

inflation target. The subjective information can be made more or less binding, depending on how convinced one is that it is correct.

III. FAVAR models. These are Factor-Augmented VAR models where the information in the original explanatory variables is summarised with a small number of statistical factors (common components for the explanatory variables). In this way a very large model (with many estimated parameters) is converted into a much smaller one (with few estimated parameters) without losing very much of the information included in the explanatory variables.⁶

IV. Models based on "forward-looking" information. These models use explanatory variables whose outcomes are obtained before the outcome for the variable one wishes to forecast. One example with regard to GDP forecasts is retail sales. The outcome for retail sales in a particular quarter is obtained approximately one month before the GDP outcome for the same quarter.

The accuracy of the forecasting models is evaluated for the period 1999 Q1 to 2005 Q2

A useful method for obtaining an idea of how well the various models perform on average is to make a forecast evaluation where data are saved for a particular period at the end of the sample and forecasts then evaluated over that particular period. Forecasts are made for each of the model approaches I–IV on the basis of different combinations of the indicators in Table B1. The forecast horizon extends from one to eight quarters (Q) ahead⁷ and the total amount of forecasting models evaluated is around 20,000.

The exercise entails first estimating the models using data up to the end of 1998 Q4

5 See, for instance, Robertson, J. and E. Tallman, "Vector Autoregressions: Forecasting and Reality", Federal Reserve Bank of Atlanta Economic Review 84, first quarter 1999, 4–18; Stock, J. and M. Watson, "Macroeconomic Forecasting Using Diffusion Indexes", *Journal of Business and Economic Statistics* 20, 2002, 147–162; Wright, J., "Forecasting U.S. Inflation by Bayesian Model Averaging", International Finance Discussion Papers No. 780, 2003; Hansson, J., P. Jansson and M. Löf, "Business Survey Data: Do they Help in Forecasting GDP Growth?", *International Journal of Forecasting* 21, 2005, 377–389.

6 This principle is sometimes called "Occam's Razor" (or the principle of parsimony) and has in many cases proved to lead to models with good forecasting properties, see for instance Clements, M. and D. Hendry, *Forecasting Economic Time Series*, Cambridge University Press, 1998.

7 For the models using forward-looking information the forecast horizon is shorter, however, and determined by the time perspective the indicator refers to.

(i.e. data for the period 1999 Q1 and onwards are not included in the estimate). On the basis of these models, the mean value of all forecasts and the “best” forecast are calculated for each of the model approaches I to IV and the forecast horizon $Q=1, \dots, 8$.⁸ The estimation period is then increased by one quarter (so that data from 1999 Q2 and onwards are not included) and the exercise is repeated in the same way, generating further mean value forecasts and best forecasts for each model approach and forecast horizon. The next step involves adding a further observation to the estimation period and repeating the procedure, and so on. This gives in total a set of mean value forecasts and best forecasts for which standard deviations can be calculated (see columns M and B respectively in Tables B2–B4).⁹ The lower the standard deviation, the better the forecast ability (a forecast that is always correct has a standard deviation of zero).

The models' short-term forecasting ability is relatively good

The tables show that the model approaches provide forecasts with similar standard deviations (in particular with regard to the short-term forecast one to two quarters ahead). These are in the range of 0.3–0.4 percentage points for GDP growth (measured as the percentage increase in GDP over four quarters) one quarter ahead and approximately twice as large for growth two quarters ahead. Thus, if the forecast errors are normally distributed, a forecast interval with the width 0.6–0.8 percentage points will in 95 per cent of the cases include the outcome for GDP growth for the next quarter. The

uncertainty is considerable, and yet clearly less than for short-term forecasts using structural models.¹⁰ On the other hand, structural models often show better forecasts than time-series and indicator models in the medium-term and longer perspectives.¹¹

Table B2. Forecast evaluation: 109 indicators, data from 1991 Q3.

Standard deviations								
Q	Classical VAR		Bayesian VAR		FAVAR			AR
	M	B	M	B	M	B		
1	0.41	0.47	0.40	0.43	0.39	0.50	0.43	
2	0.71	0.80	0.73	0.87	0.68	0.97	0.75	
3	1.05	1.17	1.12	1.37	1.03	1.55	1.11	
4	1.41	1.58	1.55	1.92	1.43	2.23	1.52	
5	1.39	1.49	1.59	2.06	1.43	2.32	1.52	
6	1.33	1.41	1.58	2.04	1.42	2.43	1.43	
7	1.12	1.21	1.46	1.88	1.26	2.32	1.17	
8	0.92	1.07	1.34	1.60	1.11	2.20	1.02	

Note. The forecast with the lowest standard deviation for the respective forecast horizon (Q) is marked in bold. M is the mean value of all forecasts within the respective approach and B is the (historically) best forecast. AR is an autoregression.

Source: The Riksbank.

Table B3. Forecast evaluation: 67 indicators, data from 1982 Q1.

Standard deviations								
Q	Klassisk VAR		Bayesiansk VAR		FAVAR			AR
	M	B	M	B	M	B		
1	0.40	0.36	0.36	0.39	0.38	0.32	0.28	
2	0.69	0.73	0.66	0.72	0.67	0.71	0.58	
3	1.00	1.11	1.00	1.09	1.01	1.16	0.92	
4	1.33	1.45	1.35	1.51	1.39	1.63	1.29	
5	1.30	1.58	1.36	1.51	1.41	1.80	1.38	
6	1.25	1.77	1.30	1.46	1.38	1.73	1.32	
7	1.06	1.71	1.08	1.24	1.17	1.45	1.14	
8	0.89	1.84	0.91	0.94	0.95	1.23	1.01	

Note. The forecast with the lowest standard deviation for the respective forecast horizon (Q) is marked in bold. M is the mean value of all forecasts within the respective approach and B is the (historically) best forecast. AR is an autoregression.

Source: The Riksbank.

⁸ “Best” forecast here means the forecast that had the greatest accuracy on the *preceding* forecast occasion (lowest standard deviation, see footnote 9). This does not necessarily mean that this forecast proves to be the best at the current forecast occasion.

⁹ The standard deviation is uncentred and calculated as $(\Sigma e^2/T)^{1/2}$, where e represents forecast errors and T the number of forecast errors in the summation. $\Sigma e^2/T$ is also known as the forecast mean squared error.

¹⁰ For example, the standard deviation for the forecasts one quarter ahead in the Riksbank's new structural model (see discussion above) amounts to just over 0.5 percentage points and in a similar structural model estimated on US data to 0.7 percentage points (see Del Negro, M., F. Schorfheide, F. Smets and R. Wouters, “On the Fit and Forecasting Performance of New-Keynesian Models”, European Central Bank Working Paper Series No. 491, 2005). A fair comparison between Swedish and US data requires that the calculation of standard deviations takes into account the fact that GDP growth in the two countries does not have the same variability (it is of course easier to make forecasts for a variable that shows a more stable development). As US GDP growth varies on average less than Sweden's, this type of comparison reinforces the conclusion that time-series and indicator models provide better short-term forecasts than structural models.

¹¹ See, for instance, Adolfson, M., M. 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.

Table B4. Forecast evaluation: models based on forward-looking information.

Standard deviations				
Q	From 1991 Q3		From 1982 Q1	
	M	B	M	B
1	0.44	0.47	0.42	0.49

Note. Q is the forecast horizon, M is the mean value of all forecasts, and B is the (historically) best forecast.

Source: The Riksbank.

In line with the research in this field, it can be observed that forecasts based on mean values of other forecasts often show greater accuracy than individual forecasts and even than forecasts that have historically shown the greatest accuracy (the standard deviation for the mean value forecasts is usually lower than that for the "best" forecasts in the tables).¹² Another result that tallies with earlier research is that the forecast error usually increases with the forecast horizon's length and the standard deviation for the error largely coincides with the standard deviation for GDP growth when the forecast horizon is around three to four quarters. The fact that the forecast error and the forecast variable have the same standard deviation means – put simply – that the forecasting model does not work better than the simple assumption that the forecast variable will in the future coincide with its historical average. Time-series and indicator models thus have their main area of use in short-term forecasts – one, two or at best three quarters ahead.

The models indicate rising GDP growth at the end of 2005 and beginning of 2006

What then do the models say about current growth prospects in the Swedish economy? Figure B1 (109 indicators, data from 1991 Q3) and B2 (67 indicators, data from 1982 Q1) show the forecast paths for GDP growth that the time-series and indicator models generate up to 2006 Q4, given the GDP outcome up to 2005 Q2. The paths consist of the mean value of all forecasts within the respective model approach.

According to the models, growth in Q3 will be largely the same as in Q2. The most optimistic forecast comes from the FAVAR models, and according to these GDP will increase by 2.1 per cent. The lowest forecast is made by the AR model, which predicts an increase of around 1.9 per cent. All of the models expect more rapid growth in Q4. For that quarter it is the Bayesian VAR models that show the most rapid GDP growth, almost 2.5 per cent. Once again, the lowest growth rate is predicted by the AR model, just under 2.3 per cent. The models expect continued improvement in growth at the beginning of next year.

The assessment in the main scenario is slightly more optimistic than the model forecasts

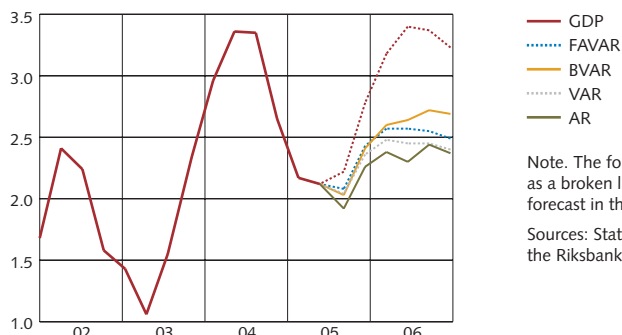
The forecast in the main scenario is largely in line with the time-series and indicator models' forecasts for Q3 (see Figures B1 and B2). However, the assessment in the main scenario is slightly more optimistic than the model forecasts with regard to Q4 and particularly for the beginning of 2006. This is because the forecast in the main scenario takes into account information that is not included in the time-series and indicator models. One example is the increase in expenditure and the tax relief recently presented in the Government's Budget Bill. These measures concern future changes in expenditure and taxes (in 2006 and 2007) and are not reflected in the data that are used in the time-series and indicator models. The main scenario assumes that the public sector financial balance will deteriorate in total by more than SEK 25 billion as a result of these measures. It should also be pointed out that there are signs that the time-series and indicator models underestimate the effects that expansionary monetary policy may have on future growth. Analyses made with the Riksbank's new structural model indicate that this may be the case. One reason for this could be that the time-series and indicator models

¹² See, for instance, Stock, J. and M. Watson, "Combination Forecasts of Output Growth in a Seven-Country Data Set", *Journal of Forecasting* 23 (Issue 6), 2004, 405–430.

are estimated using aggregate GDP and cannot therefore take account in the best possible way of the various underlying demand components being affected differently by interest-rate and exchange-rate changes.

This box has presented, evaluated, and applied the Riksbank's time-series and indicator models for GDP growth. The forecast evaluation shows that the models' forecasting ability is relatively good in the short term. With regard to the growth prospects for the Swedish economy, the models predict largely unchanged growth in Q3, compared with Q2. They predict higher growth in the Swedish economy in Q4 and at the beginning of 2006. The differences between the model forecasts and the main scenario forecast are small with regard to Q3. However, the assessment in the main scenario is slightly more optimistic than the model forecasts with regard to Q4 and particularly for the beginning of 2006.

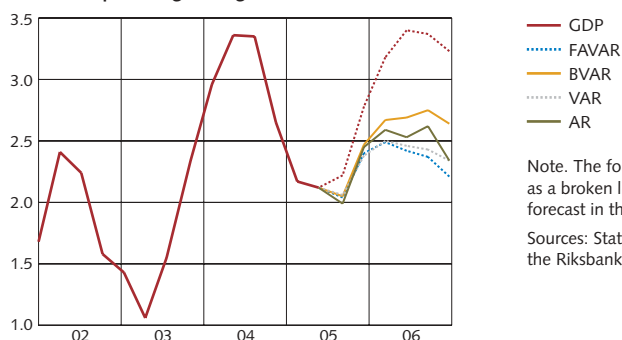
Figure B1. Outcome and forecasts according to time-series and indicator models: 109 indicators, data from 1991 Q3
Annual percentage change



Note. The forecast path shown as a broken line is the GDP forecast in the main scenario.

Sources: Statistics Sweden and the Riksbank.

Figure B2. Outcome and forecasts according to time-series and indicator models: 67 indicators, data from 1982 Q1
Annual percentage change



Note. The forecast path shown as a broken line is the GDP forecast in the main scenario.

Sources: Statistics Sweden and the Riksbank.

Households' consumption, debt and saving

In recent years households have saved a comparatively high share of their disposable incomes. One important explanation for this is likely the sharp drop in the value of household wealth in connection with the equity market decline at the start of the current decade. At the same time as households have had high saving in financial assets, they have taken on new loans at a rapid rate. That their borrowing has increased at the same time as interest rates in the economy have dropped and house prices have risen is in itself nothing remarkable. However, there are some risks associated with these developments, related to house prices and possible elements of exaggerated interest rate optimism.

The beginning of the current decade saw a steep rise in household saving. Even though interest rates have been cut gradually since 2002 and

now stand at very low levels in both nominal and real terms, household saving has remained high in recent years, which has resulted in relatively weak growth in consumption. Consumption does appear to have picked up during 2005, but households are still consuming a relatively low share of their incomes. At the same time, they have continued to take on new loans at a fast rate. Whether households have increased their debt levels too much and why they are continuing to borrow so much while their saving is so high has been discussed in various contexts recently.

This box has two aims. The first is to discuss conceivable causes of the comparatively low consumption, in relation to incomes, in recent years. To what extent does the consumption appear to be accounted for by standard explanations such as developments in household wealth? The other aim is to illustrate the relationship between households' consumption and debt. This has been weaker in recent years than before. What is the implication of this? A central issue is whether households' high indebtedness is an indication of some kind of imbalance that might have to be corrected in the period ahead. That is a very difficult question to answer, though. What follows in this box can mainly be seen as a point of departure for further analyses and discussions.

Theory explains consumption by developments in incomes and wealth

The prevalent theory for explaining household consumption is the life cycle hypothesis. This says that households make their consumption decisions on the basis of their total expected income over their lives.

$$C_t = \beta W_t$$

where C is households' consumption and W their total income over their lives. Total income consists of households' current financial net wealth, real wealth (mainly housing) and human capital. Human capital is the present

Figure B3. Nominal and real three-month interest rate. Per cent

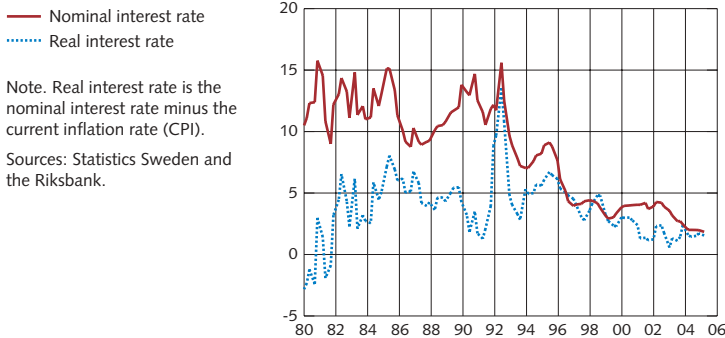
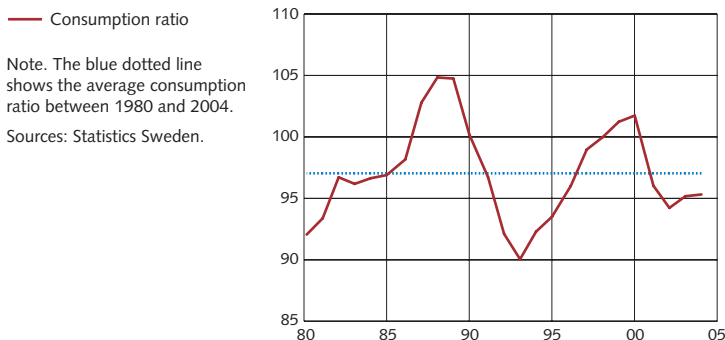


Figure B4. Households' consumption as a share of their disposable incomes. Per cent



value of current and future incomes. In practice, the value of future incomes is not easy to estimate. One way of dealing with this is to assume that human capital grows in line with households' other wealth. Another is to allow today's incomes to be approximations of the entire stock of human capital. Measures of current incomes exist, of course, and can be estimated on the basis of households' disposable incomes.¹³ If households are credit rationed or if they for some reason have a short-term planning horizon, current incomes become more important than prescribed by the basic theory. Since the propensity to consume with respect to income changes and wealth changes in that case no longer has to be the same, the consumption function can instead be written as

$$C_t = \alpha Yd_t + \beta W_t$$

where C is household consumption, Yd is households' disposable incomes and W now denotes the sum of households' financial and real net wealth.

If consumption instead is expressed in relation to incomes we get

$$C_t/Yd_t = \alpha + \beta W_t/Yd_t$$

This simplified theory shows that variations in the consumption ratio (consumption in relation to disposable incomes) can be explained by developments in wealth. A faster rate of growth in wealth creates, for instance, an opportunity for households to boost their consumption more than what is given by income growth.

Consumption in relation to incomes

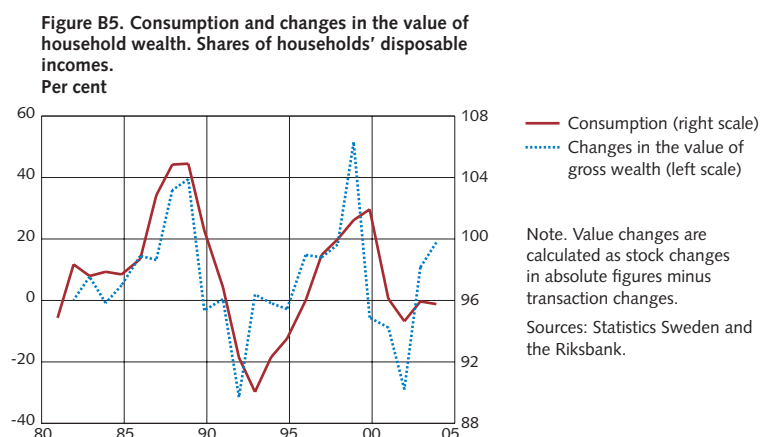
How then has consumption developed in relation to incomes in recent years? Figure B4 shows that consumption grew quicker than incomes over the greater part of the 1990s; the consumption ratio rose in other words. After

2000, however, this changed, and growth in consumption was much weaker than income growth in the following two years.¹⁴ In 2003 and 2004 consumption once more increased somewhat faster than incomes. Consumption's share of incomes was still relatively low in 2004, though. In other words, in a historical perspective households saved a relatively high share of their incomes.

It follows from the above relationships that one of the causes of the low consumption in relation to incomes might be developments in wealth. That is discussed in the next section. It should be pointed out, though, that the simple theory above does not take account of the fact that the sensitivity of consumption to changes in income (α) can vary depending on the factors that drive income developments and on how limited households' liquidity is. These reasons why consumption can fluctuate in relation to incomes have not been accounted for in the below discussion.

Consumption in relation to wealth

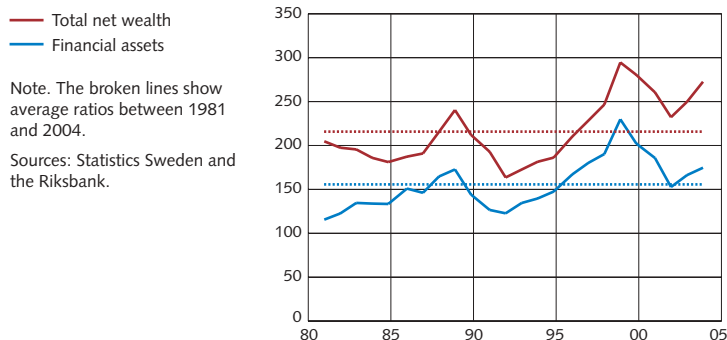
Historically, households' consumption ratio and changes in the value of their wealth have exhibited fairly clear co-variation (see Figure B5). In the 1990s household wealth



¹³ Strictly speaking, in this context household income should exclude all income that derives from the wealth stock. In practice, the common measure of household disposable income includes changes in households' net interest income and capital gains taxes.

¹⁴ Some of the fall in the consumption ratio between 2000 and 2001 is primarily of a statistical nature, however. Due to the weak equity market developments, households' capital gains taxes decreased, contributing to a comparatively strong rise in incomes 2001.

Figure B6. Total household net wealth and financial assets in relation to disposable incomes.
Per cent



Note. The broken lines show average ratios between 1981 and 2004.

Sources: Statistics Sweden and the Riksbank.

increased steadily in value and at the same time consumption rose faster than incomes. When equity prices began to decline in 2000, causing a sharp fall in the value of household wealth, the consumption ratio also dropped. In the following two years the total value of household wealth continued to decrease, as did the consumption ratio.

Figure B5 also shows that developments in consumption in recent years have followed developments in wealth to a lesser extent than before. The drop in the consumption ratio between 2000 and 2002 was comparatively small in relation to the change in wealth. After 2002 equity prices rebounded. Coupled with continued rises in house prices, this meant that total household wealth started to increase in value again. Since 2002 the consumption ratio has not risen with the increasing wealth either in the same way as before.

In other words it seems that recently households have been slower than before to adjust their consumption in line with changes in wealth. One interpretation is that the sharp fluctuations in equity prices in recent years, coupled with the fact that equities have comprised a growing share of households' financial portfolios, has played a part in households' consumption propensity with respect to changes in wealth. Households may have perceived the changes in their wealth to

be temporary to a greater extent than before. (Previously it was changes in real wealth that contributed most to changes in the value of households' total wealth).

If it is the case that households have kept their saving high for a long period to rebuild their wealth after the equity market decline, one central (but difficult) question is how far they have come in this process. Figure B6 may give an indication. It shows that the value of total household net wealth in relation to disposable incomes was still considerably lower last year than in 1999. However, the elevated equity prices at the time just before the stock market downturn meant that the value of total household net wealth was historically high then. If households assumed at least to some extent that the equity price levels at the time were not sustainable, the wealth level in 1999 may be less relevant as a comparison for households. Compared with a historical average for the level of household net wealth in relation to incomes, the wealth ratio was not low in 2004.

However, it is not evident that it is enough to study developments in total household wealth since, as mentioned above, households' consumption propensity with respect to changes in wealth can vary depending on the kind of assets that change in value.¹⁵ Households that are approaching retirement age may, for instance, have an ambition to restore the value of their financial wealth. Nevertheless, households' financial assets, too, were still lower in 2004 in relation to their incomes than prior to the equity market decline. But compared with a historical average the level of financial assets was not low either in 2004. It is possible, though, that structural change in the economy, concerning the pension system for example, has meant that households today are aiming for a higher value of financial assets in relation to incomes. (This is discussed in more detail below). But this saving should also decrease in the future as the value of household financial wealth rises.

¹⁵ This is less important for the interpretation of developments up to 2000 since at that time it was changes in residential property prices that accounted for most of the changes in the value of total household wealth. It is significant for interpreting the developments after 2000, however, since it has mainly been changes in financial prices that have accounted for the value changes in this period.

Other possible explanations for the weak consumption

The above discussion shows that the low consumption ratio in recent years seems, to a relatively high degree, to be explainable by developments in household wealth. The consumption ratio has, however, been less sensitive to changes in wealth in recent years than before. That might be because equities to a higher degree than before have been causing the variations in household wealth and because households have been slower to respond to these than to changes in the value of their real wealth.

At the same time it is of course conceivable that wealth developments are being attributed greater significance for consumption than has actually been the case. For example, it is possible that other factors that have developed in a similar way to household wealth also have played a significant part in households' consumption decisions.

One factor that can be assumed to have significance for households when they make their consumption decisions, in addition to expected income over their lives, is how uncertain their expectations about the future are. If households are very unsure about their future incomes they may want to have a high rate of saving for precautionary reasons. In recent years the labour market has been very weak in spite of high growth in output. Figure B7 shows that households in 2004 were still strongly pessimistic regarding labour market conditions. That could support the argument that the weak labour market may have played a part in the weak consumption growth over and above the direct effect from the weak growth in incomes. In other words households' uncertainty over the labour market may have contributed to the low consumption ratio.¹⁶

Another conceivable explanation for the low consumption ratio is that changes

in the social security system have meant that households want to save more than before. The new pension system, for example, may have increased the perceived need for households to save with a view to ensuring reasonable pension levels.

In addition, the steep drop in equity prices that began in 2000 meant that the value of households' stock of pension savings fell sharply. As mentioned earlier, that may have prompted households to boost their saving with the aim of restoring the value of their financial assets. The fact that an unusually large share of the population is approaching retirement age may have reinforced this tendency. In that case, though, household saving in personal pension schemes should reasonably have risen. The increase in saving between 2000 and 2001 was not channelled mainly into equities or mutual funds but rather was invested in interest-bearing securities and liquid assets. However, this

Figure B7. Households' expectations regarding unemployment in 12 months (net figures) and consumption ratio. Per cent



¹⁶ However, empirical studies have often found it difficult to prove that precautionary motives are more significant than other possible explanations for changes in households' saving behaviour. See, for example, Phillip Merrigan and Michel Normandin, "Precautionary Saving Motives: An Assessment from UK Time Series of Cross-Sections", *The Economic Journal*, Vol. 106, No. 438, 1193 – 1208.

may have been due to a lack of confidence in equities as an appropriate form of investment for pension capital, at least in the short term.

Relationship between household borrowing and consumption

At the same time as consumption has grown weakly in recent years, households have been taking out new loans at a fast rate. Households' debt stocks have risen considerably faster than their incomes. House prices have shown a similar increase. A central question in the assessment of households' future consumption is what

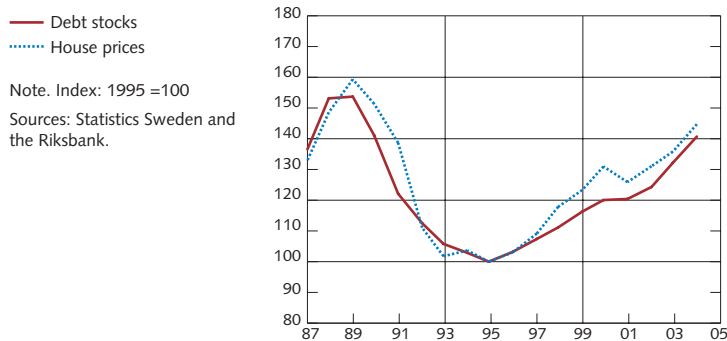
the relationship is between borrowing and consumption and whether households' high levels of debt are an indication of some kind of imbalance that might have to be corrected in the period ahead.

To begin with, the new loans have mainly been secured on residential property. However, new investment in houses and tenant-owned apartments cannot explain the rise in debt since residential construction has been low for a long period. That means that at aggregate level households have borrowed money to a high extent against the old housing stock. The degree of leverage has not changed appreciably, however, indicating that at aggregate level households have realised some of the value gains on their housing.¹⁷ This can be interpreted to mean that capital gains have been realised via loans, which in turn has created liquidity that potentially could be used to finance increased consumption. It is true that most of the loans have been taken to finance housing purchases but the cash flows that are created when households increase their loans to buy houses and tenant-owned apartments in the secondary market creates scope for consumption or saving in financial assets.

At micro level it could be a question of two different kinds of housing transaction. The first is a transaction whereby a homeowner sells his home in order to either buy a cheaper one or to leave the housing market. The seller receives a payment that includes a realised capital gain. The second kind of transaction is when a homeowner uses the higher property value to increase the mortgage on his home or when a household that buys a new home borrows more than necessary to finance the purchase.¹⁸

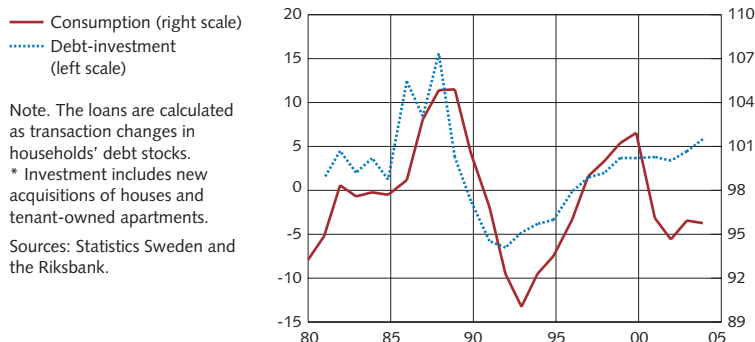
During the 1990s there was a clear relationship between the rate of increase in loans and the consumption ratio in Sweden (see Figure B9). That suggests that in practice loans have been an important source of financing

Figure B8. House prices and households' debt stocks as a share of disposable incomes. Index



Note. Index: 1995 = 100
Sources: Statistics Sweden and the Riksbank.

Figure B9. Household consumption and household debt (excluding those loans that have financed new investment* in housing). Shares of households' disposable incomes. Per cent



Note. The loans are calculated as transaction changes in households' debt stocks.
* Investment includes new acquisitions of houses and tenant-owned apartments.
Sources: Statistics Sweden and the Riksbank.

¹⁷ Known as mortgage equity withdrawal.

¹⁸ However, if the property is a house and the purpose of the increased mortgage is to improve the standard of the house through conversion or renovation this will boost residential investment and not household consumption. Homeowners' purchases of, for example, white goods are also considered as investment. On the other hand, purchases of white goods by owners of tenant-owned apartments and tenants in rental housing are treated as consumption in the National Accounts.

when households have wanted to boost consumption following capital gains.¹⁹

As Figure B9 shows, though, this relationship has not been valid in the current decade. At aggregate level, the loans have continued to build up in line with rising house prices but they have not been channelled into consumption to the same extent as before (and not as stated above into new investment in residential property either). At aggregate level the realised capital gains have, as noted earlier, instead been converted into financial investments. However, it is unlikely that it is the same households that are borrowing and saving. Low interest rates have bolstered demand for loans and housing among some households, whereas households that have been hit by falls in equity prices or felt greater uncertainty over the future have saved more.

In terms of transactions the relationship between debt and household consumption may have weakened because homeowners, who have increased the mortgages on their homes, have done so for consumption purposes to a smaller extent than before. It is also possible that homeowners who have left the housing market or moved to cheaper housing have saved the proceeds on the sale to a greater extent than before. But it could also be that households who have neither moved nor sold their property have sharply increased their saving in financial assets while those who have borrowed have used the funds for consumption roughly as before.

Potential risks associated with high debt levels and high housing prices

It is genuinely difficult to ascertain whether household debt and house prices have risen exaggeratedly much, and to what extent this entails risks of sharp corrections in the future. Provided that households have acted rationally and that markets function efficiently the fact that households' balance sheets have been

inflated by high debt levels and high property prices should in itself not have any significance.

Were house price inflation to become more subdued in the period ahead, which is reasonable to expect, it should, via the wealth effect, depress the consumption ratio and therefore also consumption growth (all other things being equal). But were house price inflation to be dampened due to higher interest rates in response to the economic upswing and an improvement in the labour market, lower precautionary saving should have the opposite effect. These are normal cyclical developments to some degree.

If house prices for some reason are overvalued, though, the moderation of consumption growth could prove particularly sharp if and when house prices normalise. However, the Riksbank's assessment is that the fast rate of increase in house prices is largely explained by developments in household incomes and by the low interest rates. The low residential investment in recent years in combination with high demand from a growing share of the population of working age has probably also played a part in the price developments. When interest rates are raised property prices can indeed be expected to rise at a slower rate, but there is little at present to point to abrupt adjustments in the property market.

One uncertain factor is the possibility that households have not fully taken into account the prospect of rising interest rates and that they therefore have taken on too much debt. There are several reasons to believe that this may have had some significance. Both short-term and long-term interest rates have been unusually low in recent years. That may have created the impression that interest rates should remain at a lower level in the long term than what might prove to be the case. The low bond yields have depressed fixed mortgage rates. A historically low credit risk premium between mortgage rates

¹⁹ It is interesting to note, though, that this does not appear to have been the case in, for example, the UK to the same extent. See, for example, "Practical Issues in UK Monetary Policy, 2000 – 2005", speech by Stephen Nickell., Bank of England Monetary Policy Committee, 20 September 2005.

and government bond yields (essentially no premium at all) has further held down lending rates.

The Riksbank's assessment is that households in general have adequate margins to cope with rises in lending rates. The risk that a higher level of interest rates would lead to such substantial liquidity problems in the household sector as to threaten financial stability is judged to be small.²⁰ But the contracting effect on consumption that may arise when interest rates increase and households are forced to use a larger portion than expected of their incomes for housing could nonetheless be considerable. Smaller margins than households have counted on could in turn result in an increased turnover in the housing market and downward pressure on housing prices. That could lead to a further moderation of consumption growth.

Summary and outlook

That households at present are consuming a comparatively low share of their incomes has most likely several explanations. Changes in the social security system and a high share of the population at those ages when pension saving can be assumed to be high have probably contributed for a long period to a higher saving rate than before. In the period ahead these factors should affect the saving ratio in the opposite direction. Demographic factors point to a declining saving ratio in the future while an increased need among households to save towards, for instance, their pensions may contribute to a high saving ratio.

The weak growth in total household net wealth following the equity market decline is

likely an important reason why the consumption ratio fell sharply at the beginning of the current decade and thereafter has remained low. Many households probably have a high rate of saving in financial assets with a view to restoring the value of their assets to the level that prevailed before the stock market decline. That may include the large group of households that are approaching retirement age and that have had a portion of their pension capital invested in equities or housing.

This saving should decrease in the future as the value of household wealth is restored to previous levels. Moreover, some of households' high saving at present is judged to be precautionary saving that should also decrease as labour market conditions improve. At the same time, higher interest rates and a slower rate of increase in the prices of houses and tenant-owned apartments should have the opposite effect, i.e. entail higher saving in relation to incomes. In the coming years, however, the Riksbank expects the influences that are causing a reduction in saving to dominate. The saving ratio therefore is estimated to drop a number of years ahead.

The fact that households' balance sheets have been inflated by high credit demand and high housing prices can probably be explained in large measure by income developments and the low interest rate environment. However, it is not possible to disregard the risk that household debt levels and the prices in the housing market have been driven up too much. One cause may be that households have been overly optimistic about their future interest burden. That in turn risks dampening consumption growth unexpectedly much at a later stage.

²⁰ See, for example, Financial Stability Report, 2005:1

■ Inflation assessment

Underlying inflationary pressures in the Swedish economy are judged to be still relatively weak. The unexpectedly fast rise in consumer prices recently has mainly reflected price increases for a small number of products, chiefly oil products. The rise in producer prices in the recent period has been broader-based, but still modest. Compared with the June Inflation Report, inflation is expected to be higher in 2005 and 2006 owing to both higher oil prices and more expansionary economic policy. Underlying inflation is projected to rise in the immediate years thereafter, too, as resource utilisation picks up and domestic and international cost pressures become higher.

Recent developments in inflation and inflation prospects in the main scenario

This chapter describes inflation developments since the previous Inflation Report and gives an assessment of inflation prospects up to and including 2008 Q3. The forecast shows what the Riksbank deems to be the most likely path for inflation provided that the repo rate evolves in line with implied forward interest rates. According to this scenario, the repo rate is raised gradually to around 3 per cent by the end of 2008. The chapter also includes an assessment of the risks to inflation. The risk that inflation will turn out higher than in the main scenario is deemed to be roughly equal to the risk of it turning out lower.

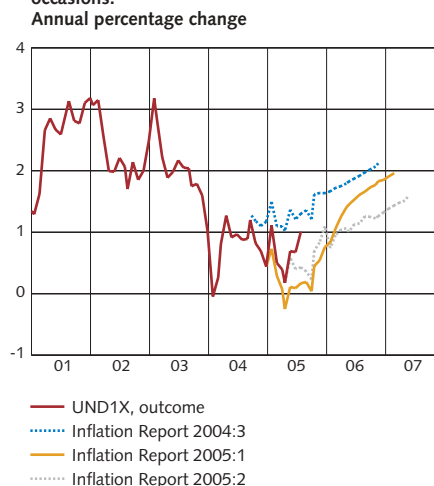
■ ■ Low but higher inflation than expected since June.

Since the previous Inflation Report new inflation outcomes have been released for the months June to August. These were somewhat higher than forecast. The rate of price increases for imported goods and services (imported inflation) has been unexpectedly high compared with the June forecast. That is mainly due to oil price developments, whereas the rate of price increases for goods and services produced in Sweden (domestic inflation) has turned out slightly lower than anticipated.

Seen over a longer perspective inflation is still low, and lower than expected at the end of last year, for example (see Figure 45). In August the annual rate of increase in the CPI stood at 0.6 per cent. Falls in mortgage interest costs, in part because of expansionary monetary policy, has helped curb inflation in terms of this measure. UND1X inflation was 1.0 per cent in August.

Excluding energy prices, both domestic and imported inflation have dropped in the past three years (see Figure 46). A number of different factors have contributed to this, e.g. fast productivity growth, a stronger krona and relatively low resource utilisation. The rate of increase in companies' unit labour costs has also slowed in recent years on account of productivity gains and moderate wage increments (see Figure 47). Imported inflation has fallen more than the domestic rate, and over a longer period. One important reason

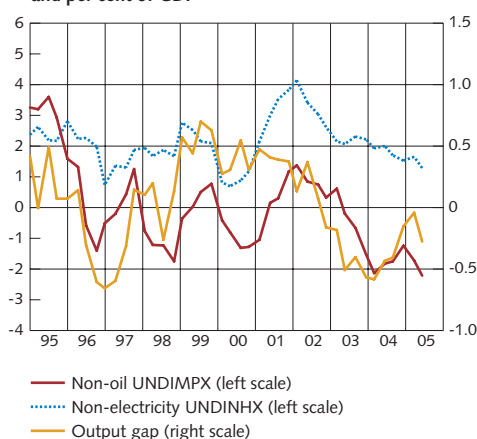
Figure 45. UND1X: outcome and forecasts on different occasions.



Note. Since Inflation Report 2004:4 the UND1X outcomes have been revised due to changes in Statistics Sweden's methods for computing inflation.

Sources: Statistics Sweden and the Riksbank.

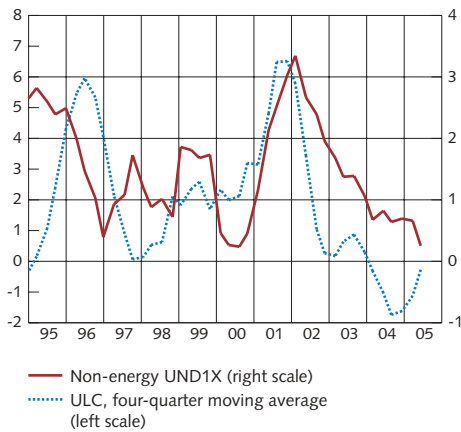
Figure 46. Non-energy domestic and imported inflation and the output gap.
Annual percentage change (quarterly average) and per cent of GDP



Note. The output gap is calculated according to the production function approach.

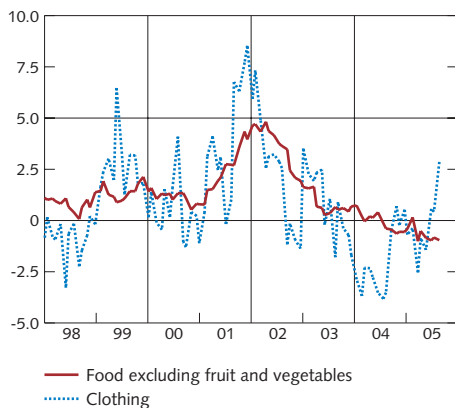
Sources: Statistics Sweden and the Riksbank.

Figure 47. Non-energy UND1X and unit labour costs.
Annual percentage change (quarterly average)



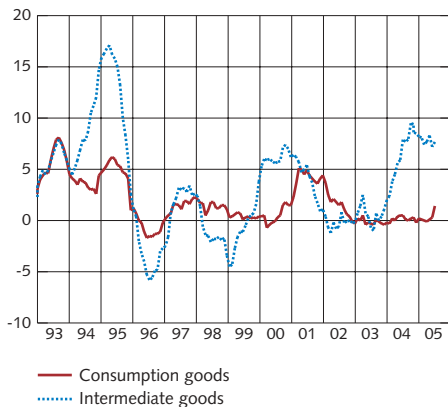
Sources: Statistics Sweden and the Riksbank.

Figure 48. Price inflation for food and clothing.
Annual percentage change



Sources: Statistics Sweden and the Riksbank.

Figure 49. Producer price index for domestic supply.
Annual percentage change



Note. The price index for domestic supply is an aggregate of the import price index and home market price index in the PPI.

Source: Statistics Sweden.

for the drop in import prices may be increased competition as well as substitution of imports from countries with relatively high prices in favour of imports from countries where prices are comparatively low (see the box "Why are import prices so low?" in Inflation Report 2005:2). Prices of, for example, food and clothing have risen unusually slowly and have even declined over the past year. Tougher competition in the retail food sector has been one reason for the falls in food prices. The EU's abolition of import quotas on clothing and textiles at the start of the year has helped to restrain clothes price inflation (in addition to the effects of the previous appreciation of the krona). These were two contributory factors behind the Riksbank's decision to sharply revise down its inflation forecasts in connection with the March Inflation Report (see Figure 45). Food prices were assumed to fall by 3 per cent in 2005, contributing to a downward revision of 0.3 percentage points in the inflation forecast during 2005.

To date, food prices have not dropped as much as anticipated, having only declined by around 0.1 percentage points since December last year. Clothes prices fell at the beginning of the year but were 2.9 per cent higher in August compared with a year earlier (see Figure 48). Prices of clothing and food are now forecast not to fall as fast as previously assumed by the Riksbank.

■ ■ Higher oil price has driven up inflation.

In August the annual rate of imported inflation (in terms of the measure UNDIMPX) was almost 2 percentage points higher than forecast in the previous Inflation Report. Roughly one-third of that (about 0.8 percentage points) reflects unexpectedly large price increases for clothing and footwear, while the remainder (around 1.2 percentage points) stems from rises in the prices of oil products.

The direct effects on inflation of the price increases for oil products are chiefly mirrored in the prices of petrol and heating oil. Prices of oil products rose by some 15 per cent in August in annual terms (excluding effects of changes in indirect taxes), resulting in a direct contribution to UND1X inflation of around 0.7 percentage points. It is also possible that the oil price is fuelling inflation indirectly, for example via rising intermediate goods prices. So far, though, there are only weak signs of that. Intermediate goods prices have indeed risen over the past year; the increase stood at a little less than 8 per cent in August year on year. Producer prices of consumption goods are still rising slowly, however, even though the annual rate of increase in August of 1.4 per cent was up on July (see Figure 49).

■ ■ Low underlying inflation rate.

In order to analyse developments in inflation excluding various temporary effects, the Riksbank studies different measures of underlying inflation. The aim is to attempt to discern the trend, or cyclical, component of inflation. Underlying inflation is not an unambiguously defined concept, though, and can accordingly be

measured in different ways. Common methods are to exclude certain components from CPI inflation that are deemed to be temporary in nature. It is also possible to use statistical methods to exclude or lessen the significance of groups of goods and services whose prices display sharp fluctuations. Figure 50 presents different measures of underlying inflation. All measures show that the underlying inflation rate has exhibited a falling trend since the start of 2002 and that inflation at present is low and relatively stable.

To sum up, most evidence suggests that the unexpectedly rapid rise in consumer prices recently has mainly been attributable to sharp price increases for a small number of goods; chiefly oil products, clothing and footwear. The increase in producer prices has been broader-based, but is still modest. As regards forecasting inflation in the period ahead, it is a matter of determining how much of the price increases is temporary and how much is due to longer-term changes in demand and resource utilisation.

■ ■ Low but rising domestic inflation during the forecast period.

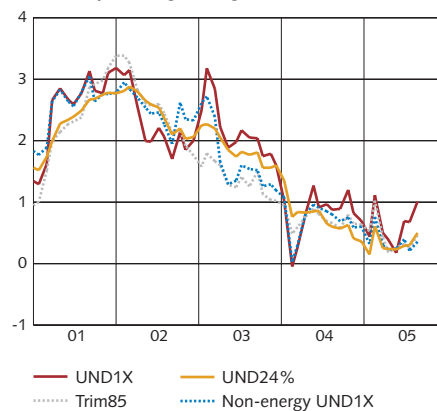
As regards domestic inflation it is anticipated that the factors that have been dampening the rate in the past year – a rapid upswing in productivity, increased competition and low resource utilisation – will continue to have some impact. As a result domestic inflation is expected to rise only slowly during the forecast period (see Figure 51). Employment is projected to pick up both in terms of the number of employed and the number of hours worked, primarily on account of fiscal policy measures but also owing to gradually increasing demand for labour due to stronger economic activity. The upswing in economic activity and employment is assumed in the ordinary way to entail higher wage inflation and slower productivity growth. Coupled with a pick-up in resource utilisation this will drive up the domestic inflation rate. Domestic inflation is expected to be 1.6 per cent, 2.5 per cent and 2.8 per cent, respectively, one, two and three years ahead. The average rate of increase over the past ten years has only been 2.2 per cent (see Figure 52), but that is partly because productivity has risen at a higher rate than is expected to be sustainable in the long term.

■ ■ Rising imported inflation.

Excluding oil products, prices of imported goods and services (UNDIMPX) have dropped since the beginning of 2003 (see Figure 53). In August the annual rate of change in non-oil UNDIMPX stood at -1.3 per cent. It is not just in recent years, when the value of the krona has strengthened, that import prices have grown weakly. The average rate of increase in the past ten years has been only 0.3 per cent (see Figure 52).

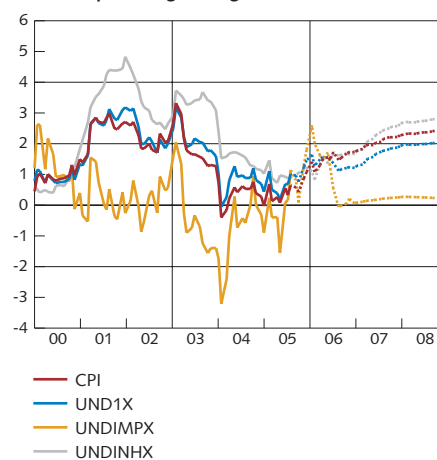
During the forecast period the effects of some of the price-dampening factors are anticipated to diminish. Although substitution in favour of cheaper imports can be expected to continue, increasing global resource utilisation is estimated to lead to higher imported

Figure 50. Different measures of underlying inflation. Annual percentage change



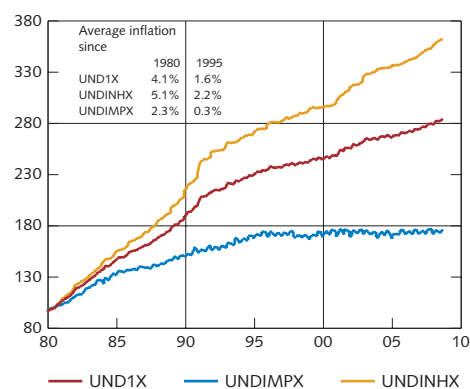
Note. The alternative measures are calculated on the basis of CPI divided into around 70 subgroups. UND24 is aggregated using weights adjusted for the historical standard deviation for the deviation between the annual rate of increase in the total CPI and the respective subgroup over the past 24 months. 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.

Figure 51. Inflation: outcome and forecasts. Annual percentage change



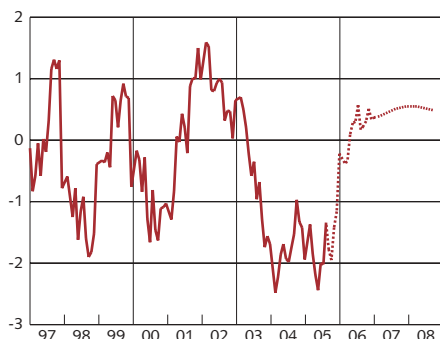
Note. The broken lines represent the Riksbank's forecasts. Sources: Statistics Sweden and the Riksbank.

Figure 52. UND1X, UNDINHx and UNDIMPX. Index: 1980=100



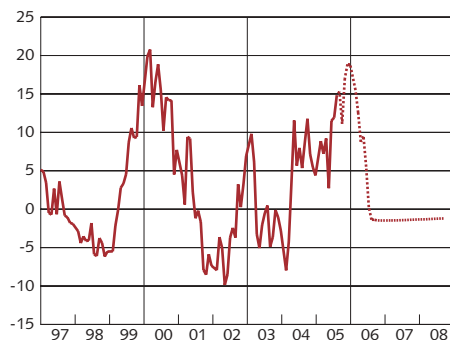
Sources: Statistics Sweden and the Riksbank.

Figure 53. Non-oil UNDIMPX: outcome and forecast.
Annual percentage change



Note. The broken line represents the Riksbank's forecast.
Sources: Statistics Sweden and the Riksbank.

Figure 54. Oil prices in UND1X: outcome and forecast.
Annual percentage change



Note. The broken line represents the Riksbank's recast.
Sources: Statistics Sweden and the Riksbank.

inflation via rising international prices. At the same time, the krona is expected to appreciate only marginally during the forecast period. The fact that cost pressures and resource utilisation will rise in Sweden is also judged to affect consumer prices of imported products since these are processed and distributed before being sold on in the Swedish market.

Recent increases in the prices of clothing and footwear may be a purely temporary effect but the agreement signed by the EU and China at the beginning of June with a view to limiting Chinese exports may lead to higher prices in the period ahead as well. Furthermore, there is reason to believe that costs and prices will accelerate in low-cost countries as output and employment there pick up.

So it is difficult to determine how significant the price-dampening effects of increased competition in the world market and at home will prove to be in the long run. There is reason to believe, however, that the price cuts will not continue at the same rate as during the past two years. All in all, non-oil imported inflation is forecast to rise during the forecast period, reaching around 0.5 per cent towards the end of the period (see Figure 53).

■ ■ Higher energy prices during whole forecast period.

Total imported inflation, including oil products, has been held up in the past year by a rising oil price (see Figure 54). The forecast for the oil price in this Inflation Report entails a sharp upward revision of some 25 per cent on average over the forecast period compared with the assessment in the previous Report. The direct effect of that is an upward revision of the inflation forecast of around 0.2 percentage points this year and next. In addition, the oil price is expected to have an indirect impact on inflation of just less than 0.1 percentage points annually over the forecast period. Since the oil price is anticipated to fall during the forecast period, this will curb the inflation rate somewhat towards the end of the forecast period.

The price increases for oil products have resulted in a more general rise in the prices of intermediate goods, and intermediate goods prices usually feed through to consumer prices with a lag. As regards producer prices, a slight increase has been noted for imported consumption goods. The price rises are still moderate but are more broad-based, in several categories, than what has been observable in consumer prices. That suggests that the full impact on consumer prices of the oil price increase (and the krona's weakening) has not likely occurred yet. On the other hand, both inflation expectations and the rate of wage increases have dropped in the past year, indicating that the effects on inflation of the recent year's high oil prices will probably be limited.

However, the oil price is not the only energy price that has significance for Swedish cost and inflation developments. The

forecasts in this Inflation Report have also been affected by a new assessment of electricity prices.

The Riksbank's previous forecasts for electricity prices have been based on the water level in Swedish reservoirs, which used to be a good indicator of the direction of electricity prices. But now it is somewhat other factors that determine electricity prices. The opening of a common electricity market in the EU means that the electricity supply can no longer be analysed from a Swedish perspective only. The increase in prices on the Nordic power exchange (Nord Pool) is not a local phenomenon; rather, it coincides with price developments on the Continent. The current price on the German electricity exchange is over 30 per cent higher than in Sweden. Another important factor is that the EU's common climate policy will affect electricity prices from this year. A large part of the electricity production in Europe is carried on in power stations that now have to buy emission rights to be able to continue production. The price of these emission rights has risen this year to a level that is much higher than had been anticipated beforehand. That the pricing of emissions would make some electricity production more expensive was something that political policymakers had intended to achieve, though.

In addition, the spike in oil prices influences electricity prices in several ways. Demand for other forms of energy, including electricity, increases, leading to higher prices. In Sweden, households' electricity prices are also pushed up by electricity certificates and the environmental tax shift.

The electricity price index in the CPI has a weighting of around 5 per cent. The index is not affected directly by the electricity prices on Nord Pool since the index also includes grid tariffs and taxes. These three components make up roughly one-third each. The part of the index that concerns electricity prices is about 45 per cent composed of 'until-further-notice' prices, about 50 per cent composed of fixed-price agreements that run for one year, with the remaining 5 per cent consisting of variable prices that are tied to price developments on Nord Pool. The until-further-notice prices are paid by consumers that did not make an active choice in connection with the deregulation of the electricity market. These prices are relatively sticky and seem to follow the developments on Nord Pool with a lag.

Figure 55 shows the price developments on Nord Pool and the electricity price index in the CPI. There is reason to believe that the electricity prices in the CPI will rise during the forecast period although not as quickly as suggested by forward prices in the electricity market. That is because until-further-notice prices are already at a comparatively high level. These prices rose relatively sharply at the beginning of 2003 when prices on Nord Pool went up, and since then they have not fallen back that much. That indicates that electricity companies have good margins and that they therefore

Figure 55. Spot and forward prices on Nord Pool compared with the electricity price index in UND1X. Index: January 1997=100

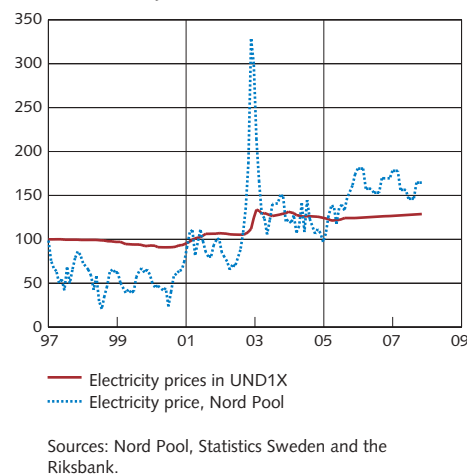


Figure 56. UND1X: outcome and forecasts. Annual percentage change

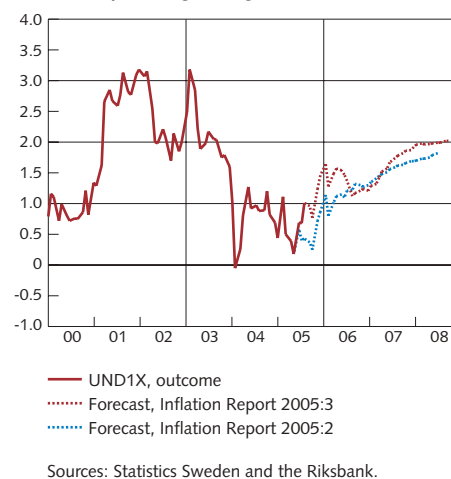
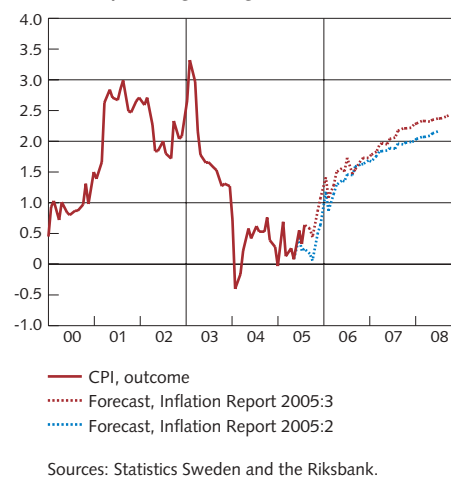


Figure 57. CPI: outcome and forecasts. Annual percentage change



will not be raising their prices so much. Compared with the previous Inflation Report the forecast for the rate of increase in consumer electricity prices has been raised by fully 2 percentage points a year, contributing to an increase in inflation of around 0.1 percentage points a year during the forecast period.

■ ■ **Higher inflation in the short term.**

To sum up, inflation is expected to rise during the rest of the year, chiefly due to increasing oil prices. Thereafter, inflation will fall back somewhat when the direct effects of the spike in oil prices during the current year no longer affect the annual inflation rate. However, higher energy prices will have an impact on inflation two to three years ahead as well. Excluding energy prices, inflation will increase gradually during the remainder of the forecast period as resource utilisation picks up and domestic and international cost pressures mount. Nevertheless, inflation is anticipated to fall short of 2 per cent for the greater part of the forecast period (see Figures 56 and 57). That applies under the assumption that the repo rate evolves in line with implied forward rates. Were the repo rate instead to be held constant, inflation would turn out somewhat higher (see the box “Forecasts up to 2007 under the assumption that the repo rate is held constant for two years”).

Compared with the June Inflation Report the inflation forecast has been revised up, mainly in the short term but also towards the end of the forecast period (see Table 8). More expansionary economic policy will contribute to higher inflation via, among other things, higher resource utilisation and a weaker exchange rate. Adding to this is inflationary impulses from higher energy prices. That is countered somewhat by the fact that the forecast for productivity growth has been revised up slightly, contributing to lower inflation forecasts.

■ ■ **CPI inflation higher than UND1X inflation towards end of forecast period.**

During the past two years, CPI inflation has been lower than UND1X inflation. That is because falling interest rates have resulted in declining interest costs for homeowners, which affects CPI inflation but not UND1X inflation. This difference is forecast to continue in the short run. Over the rest of the forecast period, however, higher interest rates and increases in indirect taxes – among other things on energy, tobacco and air travel – are expected to contribute to CPI inflation outpacing UND1X inflation somewhat (see Table 9).

**Table 8. Inflation forecasts in the main scenario.
Annual percentage change**

	Annual average			12-month rate			
	2005	2006	2007	Sept.-05	Sept.-06	Sept.-07	Sept.-08
CPI	0.5 (0.3)	1.5 (1.4)	2.1 (1.9)	0.6 (0.2)	1.5 (1.6)	2.2 (2.0)	2.4
UND1X	0.8 (0.5)	1.4 (1.2)	1.6 (1.6)	1.0 (0.4)	1.2 (1.3)	1.8 (1.6)	2.0
UNDINHX	1.0	1.5	2.3	1.0	1.6	2.5	2.8
UNDIMPX	0.2	0.9	0.2	0.8	0.0	0.2	0.2

Note. The figures in parentheses are the forecasts in the previous Inflation Report. UND1X is CPI inflation excluding household mortgage interest expenditure and the effects of changes in indirect taxes and subsidies. UNDINHX refers to prices of mainly domestically produced goods and services in UND1X. UNDIMPX refers to prices of mainly imported goods and services in UND1X.

Sources: Statistics Sweden and the Riksbank.

**Table 9. Change in the CPI compared with UND1X.
Annual percentage change and percentage points.**

	Sept.-05	Sept.-06	Sept.-07	Sept.-08
UND1X	1.0	1.2	1.8	2.0
Effects of changes in mortgage interest expenditure	-0.5	0.2	0.3	0.3
Effects of changes in indirect taxes and subsidies	0.3	0.2	0.2	0.2
=CPI	0.6	1.5	2.2	2.4

Note. The contributions may not sum up due to rounding.

Sources: Statistics Sweden and the Riksbank.

Revised forecasts since the June Inflation Report (forecasts based on implied forward rates)

- The inflation forecast has been revised up in the short term, mainly owing to higher oil prices. But on account of second-round effects higher energy prices will result in higher inflation towards the end of the forecast period as well.
- A lower interest rate path contributes to higher inflation via increased resource utilisation and a weaker exchange rate. Expansionary fiscal policy, too, will lead to higher resource utilisation and somewhat higher inflation.
- The inflation forecasts are kept down, however, by the upward revisions to the forecasts for productivity growth.

Risk assessment

The main scenario describes the path of inflation assessed by the Riksbank to be the most likely if the repo rate develops in line with implied forward rates, which reflect the financial markets' expectations of the repo rate. The forecasts are uncertain, however. When formulating monetary policy, the Bank takes account of the risk that inflation may deviate from the main scenario. There may also be reason to take into account other conditions concerning the stability of the financial markets and of the Swedish economy. Over the past year, for instance, a credit boom and house price trends have had some significance for the monetary policy stance.

This section discusses the risks of inflation being higher or lower than is forecast in the main scenario. The assessment is that the probability of inflation being higher is roughly the same as the probability of it being lower.

In the June Inflation Report, the assessment was that the risk of inflation being lower than the main scenario was greater than the risk of it being higher. This was mainly connected with the uncertainty regarding economic activity in Sweden and abroad. The main scenario was based on the assumption that the signs of a slowdown in economic activity seen at the beginning of the year reflected a temporary phenomenon rather than an economic turnaround. However, the risk of lower growth than forecast in the main scenario was assessed to be greater than the risk of growth exceeding expectations. The new information received during the summer nevertheless supports the interpretation that the slowdown was temporary. The probability of lower growth and inflation can therefore be regarded as having declined significantly.

At present the most important sources of uncertainty regarding inflation in Sweden are considered to be linked to international developments. There is still considerable uncertainty over the consequences of the high oil price and of the large deficits in the US current account and the corresponding surpluses in other countries, particularly the oil-exporting countries and rapid-growth economies in Asia. Oil price trends are primarily associated with risks of lower growth and higher inflation, while an adjustment in current accounts towards long-term equilibrium could mean that both growth and inflation are lower than in the main scenario during a period of time.

■ ■ Oil price remains a source of uncertainty.

The oil price has been higher than expected since the June Inflation Report was published. Experts in the oil market disagree over whether the price will rise or fall in future. Expectations appear to be mainly focussed on the oil price remaining high but falling slowly, judging from the pricing in the futures market. There is considerable uncertainty over what effects the high oil price will have on growth and inflation around the world. As a result of a general decline in oil dependency over time, it is reasonable to expect that the effects on the economies will be less than in the case of earlier, more rapid upswings in oil prices. The effects that arise will also depend on

whether the high price first and foremost reflects rising demand or whether it is due to supply shocks.

The upturn in the oil price in recent years has been accompanied by an increase in oil production, which indicates that the price increase was mainly due to high demand. This would also explain why the effects on economic growth have not been as negative as might have been feared. At the same time, it is evident that there have been supply shocks. The conflict in Iraq and the recent storms in the Gulf of Mexico and the southern United States are just a few examples. It is possible that the full impact of the supply shocks has not yet become evident on growth and inflation. One possibility is that the upturn in the oil price is perceived as temporary, which has subdued the effects. If the high oil price were to persist, even at the slightly lower levels indicated by forward prices, it is possible that the effects would be greater. There are fundamental factors in the oil market which indicate that there is also, however, a probability that the oil price will be lower than assumed in the main scenario. The margins between the prevailing world market price for crude oil and the production costs are high in a historical perspective. The oil price fell slightly at the beginning of October. At the same time, it is possible that the forecasts in the main scenario have underestimated future indirect effects of the price upturn. With regard to the oil price, the risks of higher inflation appear to be slightly greater than the risks of lower inflation.

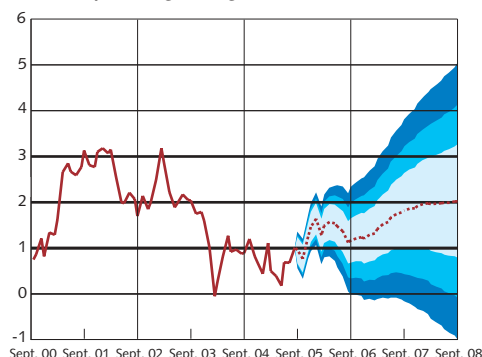
■ ■ Risks associated with international imbalances, interest rates and exchange rates.

The large deficit in the US current account and the corresponding surpluses in the current accounts of certain Asian countries and the oil-exporting countries has been one of the most important risk factors for some time now. The question is not so much whether or not this situation is tenable – there are many reasons to expect that the imbalances will decline in the future – concerns are more centred on the size of the adjustment that could be needed in interest rates and exchange rates and how rapidly these will be made. There is reason to believe that the United States' real exchange rate will depreciate, which could occur either by US inflation falling in relation to the rest of the world or by the dollar declining in value. Corresponding changes, with the reverse signs, can reasonably be expected in the countries with current account surpluses. It is also possible that there will be an upturn in international interest rates. So far, the US savings deficit has not induced an increase in interest rates because savings have been high in other areas. This situation will probably change.

In addition, international interest rates have recently been depressed by a number of factors this will probably change in future. Studies indicate that temporarily low risk premiums, effects of changes in rules for pension saving and Asian countries' and oil-exporting countries' build-up of currency reserves may together have depressed US bond rates so that a rapid upturn in bond rates is a possibility when the situation normalises.²¹

²¹ See, for instance, Bernanke, B., V. Reinhart and B. Sack (2004), "Monetary Policy Alternatives at the Zero Bound: An Empirical Assessment" Finance and Economics Discussion Series, Federal Reserve Board, 2004-48.

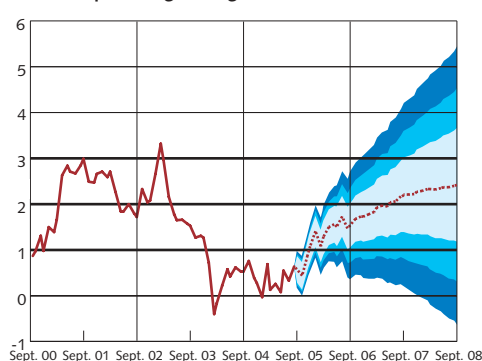
Figure 60. UND1X inflation with uncertainty bands.
Annual percentage change



Note. The uncertainty bands show the 50, 75 and 90 per cent chances of UND1X inflation being within the respective range. The broken line represents the forecast in the main scenario. 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.

Sources: Statistics Sweden and the Riksbank.

Figure 61. CPI inflation with uncertainty bands.
Annual percentage change



Note. The uncertainty bands show the 50, 75 and 90 per cent chances of CPI inflation being within the respective range. The broken line represents the forecast in the main scenario. 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.

Sources: Statistics Sweden and the Riksbank.

If the changes on the capital and foreign exchange markets were to occur very rapidly and unexpectedly, there is a risk of lower growth in the world market. One channel could entail a weaker dollar and a stronger euro having a negative effect on production and demand in the euro area, where the larger countries are already showing slow growth due to structural problems. Another would be a sudden upturn in interest rates leading to US housing prices falling and the repercussions of this on wealth and consumption in the United States. These types of development trend would also affect exports, production, employment and consumption in Sweden. A weaker dollar, higher interest rate and reduced demand for exports could lead to lower Swedish inflation than anticipated.

■ ■ Uncertainty over import prices and productivity.

Two important explanations behind the low Swedish inflation rate over the past year are that import prices have fallen and domestic productivity has increased rapidly. There is considerable uncertainty as to how these variables will develop in the long term. Over the year, the Riksbank's forecasts for imported inflation have been revised downwards and the productivity forecasts have been revised upwards. There is still a possibility that import prices will be even lower and productivity growth even higher, but there is also a risk that the forecast adjustments are too large and that future inflationary pressures have been underestimated.

All in all, this leads to a balanced risk spectrum.

Table 10. Risk-adjusted inflation forecasts.
Annual percentage change

	Annual average			12-month rate		
	2005	2006	2007	Sept.-06	Sept.-07	Sept.-08
CPI	0.5	1.5	2.1	1.5	2.2	2.4
UND1X	0.8	1.4	1.6	1.2	1.8	2.0

Note. The table gives the mean values of the probability distributions for the inflation forecasts in Figures 60 and 61.

Source: The Riksbank.

Table 11. UND1X inflation (12-month rate).
Percentage probability of different outcomes

	UND1X<1	1<UND1X<2	2<UND1X<3	UND1X>3	Total
Sept. 2006	41	47	12	0	100
Sept. 2007	25	31	28	16	100
Sept. 2008	28	22	22	28	100

Anm. Siffrorna anger sannolikheten för att UND1X-inflationen hamnar i det i kolumnen angivna intervallet.

Källa: Riksbanken.

Table 12. CPI inflation (12-month rate).
Percentage probability of different outcomes

	CPI<1	1<CPI<2	2<CPI<3	CPI>3	Total
Sept. 2006	23	51	24	2	100
Sept. 2007	16	27	31	26	100
Sept. 2008	20	20	23	37	100

Note. The figures show the probability of UND1X inflation being within the given range.

Source: The Riksbank.

Forecasts to 2007 under the assumption that the repo rate is held constant for two years

This box presents two-year forecasts for Swedish inflation and the real economy conditioned on the assumption that the repo rate is held constant at its current level for the next two years. In this alternative scenario, which implies a lower repo rate than in the main scenario, inflation rises faster than in the main scenario, especially in 2007.

In this Inflation Report the forecasts in the main scenario are based on the assumption that the repo rate follows a path in line with implied forward rates. Prior Inflation Reports have used a different interest rate assumption, namely that the repo rate is held unchanged for two years. To facilitate a comparison with the Riksbank's previous forecasts this box provides forecasts for inflation and GDP conditioned on a constant interest rate assumption. When comparing with the forecasts in the previous Inflation Report, however, it is important to remember that the repo rate was lowered by 0.5 percentage points in June. The forecasts in Inflation Report 2005:2 were thus based on the assumption that the repo rate would be 2 per cent until June 2007, whereas the forecasts in this box assume that the repo rate will be 1.5 per cent until September 2007.

The forecasts in this box extend two years ahead, in contrast to the main scenario's three-year forecast horizon. In previous Inflation Reports, where the main scenario involved an assumption of a constant repo rate, the forecast horizon was two years. The reason for continuing with the shorter forecast horizon in this box is that the assumption of a constant repo rate becomes more difficult to apply the further ahead the forecasts extend; under normal circumstances a constant repo rate over as long a period as three years would be a highly unlikely outcome. This can cause technical problems in the forecasting models used by the Riksbank, but is, above all, very difficult to take into account in the expert assessments that are a central feature in the formulation of the final forecasts.

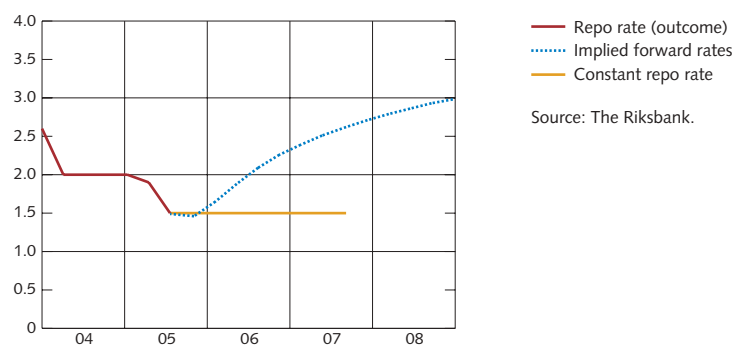
Figure B10 shows the difference between the interest rate assumptions in the main

scenario and in this box. The repo rate is kept on hold at 1.5 per cent until September 2007 instead of raising it as from spring 2006.

In the third quarter 2007 the repo rate in this alternative scenario is more than one percentage point lower than the main scenario's interest rate assumption.

The more expansionary monetary policy means that UND1X inflation rises faster than in the main scenario, due in part to a somewhat weaker exchange rate and higher economic growth. In the third quarters of 2006 and 2007, UND1X inflation is approximately 1.5 per cent and 2.1 per cent, respectively (see Table B5 and Figure B11). In CPI terms, short-term inflation developments are more subdued under a constant repo rate, in that mortgage interest expenditure, among other things, is lower with the constant repo rate (see Table B5). In the longer run, though, the constant repo rate means that the CPI forecast exceeds the corresponding forecast in the main scenario. Growth in investment, exports and consumption is somewhat stronger than in the main scenario, and GDP growth turns out higher in 2006 and 2007 (see Table B6).

Figure B10. Repo rate assumptions: The main scenario's implied forward rate curve (15-day average as of 3 October 2005) and the alternative assumption of a constant repo rate.
Per cent



Source: The Riksbank.

**Table B5. Inflation forecasts under the assumption of a constant repo rate.
Annual percentage change**

	Annual average			12-month rate		
	2004	2005	2006	Sept.-05	Sept.-06	Sept.-07
CPI	0.4 (0.4)	0.5 (0.5)	1.3 (1.5)	0.6 (0.6)	1.3 (1.5)	2.1 (2.2)
UND1X	0.8 (0.8)	0.8 (0.8)	1.5 (1.4)	1.0 (1.0)	1.4 (1.2)	2.1 (1.8)

Note. The figures in parentheses are the forecasts in the main scenario. UND1X is CPI inflation excluding household mortgage interest expenditure and the effects of changes in indirect taxes and subsidies.

Sources: Statistics Sweden and the Riksbank.

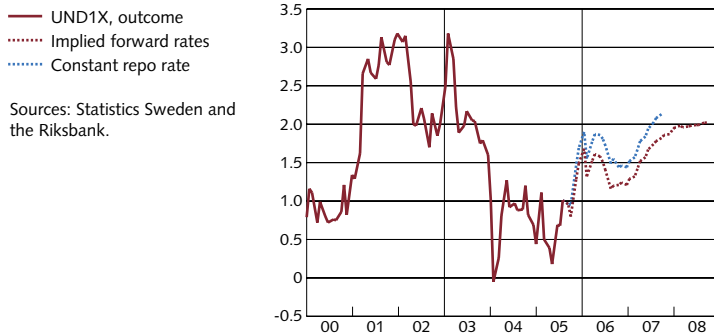
**Table B6. GDP growth: forecasts based on constant repo rate.
Annual percentage change**

	2005	2006	2007
GDP at market prices	2.3 (2.3)	3.3 (3.0)	2.8 (2.5)

Note. The data refer to actual, non-calendar-adjusted, growth rates. The figures in parentheses are the forecasts in the main scenario.

Sources: Statistics Sweden and the Riksbank.

**Figure B11. UND1X: outcome and forecast up to September 2007 under the assumption of a constant repo rate and up to September 2008 under the assumption that the repo rate evolves in line with implied forward rates.
Annual percentage change**



**Figure B12. CPI inflation: outcome and forecast up to September 2007 under the assumption of a constant repo rate and up to September 2008 under the assumption that the repo rate evolves in line with implied forward rates.
Annual percentage change**

