Contents

Foreword 3

Chapter 1 Inflation assessment 5

Summary 5

The main scenario 7

The risk spectrum 9

Outlook beyond the forecast horizon 10

Chapter 2 Determinants of inflation 15

External economic activity and inflation 15

Financial asset prices 18

Demand and supply in the Swedish economy 21

Inflation expectations 51

Deregulations, political decisions and transitory effects 53

Chapter 3 The risk spectrum 55

Boxes

Recent inflation 12

Has potential growth slackened? 22

Hours worked – a decomposition 32

Effects of temporarily lower productivity growth 39

Wage statistics and the status of agreements in spring 2002 45

Forecasting inflation with a rising repo rate 59

Foreword

Monetary policy is targeted at keeping inflation at 2 per cent, with a tolerance for deviations up to ±1 percentage point.

This Inflation Report reproduces the main features of the presentations and discussions of inflation at the Executive Board meetings on 22 and 30 May 2002. The assessment of inflation presented here is the Riksbank's overall appraisal of inflation prospects in the current situation.

The Report constitutes the background to the Bank's monetary policy decision on 5 June 2002. Executive Board members may differ in their opinions about how inflation's main determinants will develop and the resultant impact on future inflation. Any divergent opinions of inflation prospects are recorded in the separate minutes of the Board meeting on 5 June, to be published on 19 June 2002.

The Inflation Report aims to provide a basis for monetary policy decisions and spread an awareness and knowledge of the Riksbank's assessments to a wider public, so that monetary policy is easier for outsiders to follow, understand and evaluate. The Report is also intended to encourage a discussion of matters relating to monetary policy.

This Report presents the Riksbank's appraisal of inflation prospects up to the end of 2004 Q2. In order to clarify the consequences for monetary policy, the analysis starts from the technical assumption that in this period the repo rate is unchanged.

Chapter 1 presents the Riksbank's overall assessment of inflation prospects. Chapter 2 contains a discussion of the most probable development of inflation's principal determinants. An assessment of the spectrum of risks in inflation prospects is reported in Chapter 3. The report also contains a number of boxed texts, the purpose of which is to provide additional knowledge about matters of importance for inflation assessments and the formation of monetary policy.

Stockholm, June 2002
Urban Bäckström
Governor of Sveriges Riksbank

Inflation assessment

The general assessment of inflation prospects up to the end of 2004 Q2 is presented in this chapter, given the technical assumption that the repo rate is held unchanged at 4.25 per cent.

Summary

Developments in the rest of the world and in Sweden have broadly followed the scenario on which the recent monetary policy decisions and the March Inflation Report were based. Growth in the rest of the world looks like being in line with the forecast in the March Report, while demand in Sweden is judged to be somewhat weaker. Inflation in Sweden has fallen back, as expected, and there are reasons for assuming that there will be a further decrease in the coming months. But as activity improves in the years ahead, there is likely to be some renewed increase in inflation.

The signs of an international economic recovery have become clearer since the time of the March Report. The improved growth in the United States is judged to contribute to a recovery in Europe, though a persistently weak labour market and subdued real wage growth, for instance, are tending to hold this back. The price of oil, which has risen since the previous Report and acts as a damper on demand, is assumed to fall back successively from the present high levels. This may contribute to a short-term increase in imported inflation that is somewhat greater than expected.

There is still a great deal of uncertainty about the international future. On the one hand, the strength of the recovery may be underestimated; world market growth could be stronger than assumed in the main scenario, not least in view of the expansionary economic policy in many countries. On the other hand, the saving imbalances in the United States may be corrected sooner and more markedly and the recovery in Europe may take longer.

The main features of the March Report's assessment of the Swedish economy still apply. Most things continue to point to a tentative upturn this year and fairly substantial growth in 2003 and 2004. A tentative recovery seems to have begun in manufacturing. A recovery also seems to be gradually on the way in the household sector. Consumption is supported by a favourable development of incomes and by real interest rates being comparatively low initially. Rising property prices seem to be working in the same direction. On the other hand, monetary policy has become less expansionary and market interest rates have risen. It also seems that in the forecast period fiscal policy will be less expansionary than assumed earlier. Moreover, the stock market unrest tends to dampen consumption and investment. Against this

background, it seems that demand will be somewhat weaker than assumed earlier. Compared with the March assessment, this means that resource utilisation in the forecast period will be somewhat lower.

In April the 12-month rate of CPI inflation was 2.5 per cent and UND1X inflation was 2.8 per cent. Effects of various supply shocks that contributed to transiently higher prices last year for energy and certain food products, for example, have receded as forecast in March and helped to lower inflation somewhat. A further fall is likely in the coming months but it will probably not be quite as marked as the Riksbank projected last year.

There is reason to expect some renewed increase in inflation as economic activity picks up. Most things suggest that total resource utilisation is already comparatively high, though there are considerable differences between sectors. Growth will again exceed the long-term potential rate in 2003 and 2004. This implies that in the years ahead, wage increases – even if they are lower than last year – will be relatively high. Productivity will presumably improve to some extent when activity turns upwards but this is unlikely to make up in full for the high wage increases. As the profit share is relatively low, a part of the increased costs will no doubt be passed on in higher prices.

The greatest uncertainty in the inflation assessment has to do with wage formation and the Swedish economy's inflation propensity in a wide sense. The level of resource utilisation is uncertain, for example as regards the size of future labour supply and problems in manufacturing sectors that complicate the assessment of productivity growth in the years ahead. Moreover, the pass-through to inflation from wages and other costs may be higher than assumed in the main scenario. The somewhat higher inflation expectations may contribute to this.

All in all, it is now considered that UND1X inflation will be somewhat lower than foreseen in the March Report and in line with the targeted rate both twelve and twenty-four months ahead. If activity continues to recover as expected, beyond the normal forecast horizon there is reason to believe that the rate of inflation will rise above the target.

The main scenario

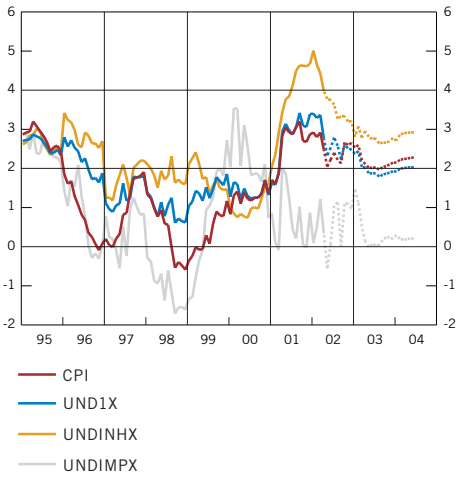
The recent picture of the Swedish economy shows a clear dichotomy. Generally weak demand for manufactured products, combined with more structural problems in the ICT sector (information and communication technology), led to cuts in employment and unutilised production capacity in these activities. At the same time, an expansionary economic policy has helped to maintain demand for consumer goods and services, thereby contributing to a favourable development of production and employment in large segments of the services sector and also at total level.

Inflation has fallen back as foreseen in the March Report; the 12-month rates in April were 2.5 for the CPI and 2.8 per cent for UND1X (for further details see the box on pp. 12–13). Effects of various supply shocks that contributed to higher prices last year for energy and certain food products, for example, have receded and this development will continue for some time. But even when these more transitory price increases are excluded, the rate of inflation has still risen. This is probably due to a variety of factors. Most things suggest that total resource utilisation is comparatively high, though the situation differs considerably between sectors. The slackening of activity last year primarily affected manufacturing, while the level of activity in other sectors remained relatively high. This is mirrored in high wage increases in service-oriented parts of the economy. Meanwhile, productivity growth has slackened, which is normal when demand falls off without a corresponding and immediate adjustment of work forces. It is conceivable, however, that productivity has also weakened for more structural reasons, for example increased long-term absenteeism and problems in the ICT sector. The higher wages and lower productivity led to an appreciable increase in unit labour costs last year. As the profit share had been falling for a number of years, the scope for balancing increased costs with lower profits instead of higher prices had become more limited. This resulted in a general, partly cost-driven increase in prices.

The signs of a recovery in the rest of the world at the time of the March Report have been confirmed and become clearer. In the United States, consumption has continued to hold up and a recovery in manufacturing is already on its way. The improved growth prospects in the United States are judged to contribute to a recovery in Europe, though slack consumption, due for example to a persistently weak labour market and low real wage growth, is tending to hold this back. All in all, growth in the OECD area is calculated to be 1.4 per cent this year, 2.6 per cent in 2003 and 2.7 per cent in 2004. Compared with the March forecasts, these growth figures represent an upward adjustment this year, above all for the United States, a marginal downward revision for 2003 and virtually no change for 2004.

The development of demand abroad affects prices in Sweden, for example through the price of imports. The oil price has risen markedly in recent months in connection with factors to do with

Figure 1. Inflation: outcomes and main scenario. Percentage 12-month change



Sources: Statistics Sweden and the Riksbank.

security policy and rising international activity; a successive fall from the current high levels is foreseen, for instance as non-OPEC production grows. The assessment of international prices for manufactured products is unchanged from the March Report. A continuation of strong international competition and surplus manufacturing capacity implies that prices will remain weak this year and then rise to some extent. The size of the pass-through from import prices to inflation in Sweden will partly depend on the path of the exchange rate. As previously, an appreciation of the krona is foreseen in the forecast period, partly in view of such fundamentals as the current-account surplus and the public sector's financial surplus. Continuing expectations of Sweden's full future participation in the EMU will presumably work in this direction. Since the March Report, however, the krona has been marginally weaker than expected and this has prompted a marginal adjustment of its path. However, the forecast exchange rate at the end of the period is the same as in the March Report. Partly due to the oil price and the path of the exchange rate, imported inflation this year rises more than expected earlier. In 2003 and 2004, on the other hand, falling oil prices and the krona's appreciation tend to hold back imported inflation so that this is lower than forecast previously.

The prospects for economic growth in Sweden are much the same as outlined in the March Report. Manufacturing activity is expected to turn upwards more clearly in the latter part of this year, accompanied by just a temporary slowdown in the production of services. But as the repo rate increases and a less expansionary fiscal policy are expected to result in consumption and investment being somewhat weaker than envisaged in March, domestic demand in 2003 and 2004 is marginally lower. At the same time, the weaker exchange rate points to net exports being somewhat stronger towards the end of the forecast period. All in all, GDP growth is calculated to be somewhat lower than foreseen in March, amounting to 1.6 per cent this year, 2.7 per cent in 2003 and 2.5 per cent in 2004. Even though the recovery is judged to be somewhat more moderate than foreseen in the March Report, there are reasons for expecting an increase in resource utilisation in 2003 and 2004. All in all, this means that although inflation generated in Sweden is assumed to be lower than anticipated earlier, it will remain high. However, lower oil prices and a stronger exchange rate help to hold back the overall development of inflation.

In the short run it is judged that inflation will continued to fall as 2001's marked transitory price increases for energy and food products drop out of the 12-month measurements. With higher oil prices, however, the fall will occur somewhat later than previously expected.

Against this background, in the main scenario UND1X inflation is judged to be 1.9 per cent twelve months from now and 2.0 per cent after twenty-four months (Fig. 1). The corresponding forecast rates for CPI inflation are 2.0 and 2.3 per cent.

The risk spectrum

The spectrum of risks is also relevant for the formation of monetary policy. The uncertainty in the international picture is considerable. The combination of expansionary economic policies in many countries and rapidly rising productivity in the United States may mean that, for example, investment demand and world market growth are stimulated to a greater extent than the main scenario assumes. But it is also conceivable that saving in the United States will rise more rapidly and that the relatively weaker trend in Europe to date is a sign of more fundamental problems in labour market performance or business conditions that together may lead to a weaker global demand trend. Another downside factor is the uncertain security policy situation. In the short run, however, this could contribute – via increased oil prices – to higher inflation. As in the March Report, the spectrum of international risks for inflation in Sweden is considered to be balanced.

The largest risks for inflation in Sweden lie, however, in domestic wage formation and prices. The price and wage increases in the past year may be a sign that underlying domestic inflationary pressure is underestimated. Somewhat less efficient wage formation than expected could be one reason for this; another might be that resource utilisation is more strained than assumed. A further risk factor is labour supply. Rapidly rising absenteeism, demographic developments and a possible shortening of working time may hold back long-term potential growth and contribute to appreciable increases in wages and inflation, mainly towards the end of and beyond the forecast period. There is also a risk of the high inflation in the past year not falling back, for instance if the impact on inflation expectations has been underestimated. All in all, these factors mean that adjusting the main scenario's forecast for risks adds 0.1 to the rate of inflation both one and two years ahead. With the risk spectrum taken into account, the rate of UND1X inflation twelve months from now is judged to be 2.0 per cent, followed by 2.1 per cent twenty-four months ahead (Table 1).

Table 1. Inflation forecasts including the risk spectrum.
Per cent

	Annual rate		12-month rate	
	2002	2003	June 2003	June 2004
CPI	2.6 (2.4)	2.3 (2.3)	2.1	2.4
UND1X	2.8 (2.7)	2.1 (2.2)	2.0	2.1

Note. The table gives the mean values of the inflation assessment's probability distributions (see Figs. 29 and 30).The figures in parentheses are the corresponding values in the March Report.

Source: The Riksbank.

The conclusion from the assessments presented here is that, given an unchanged repo rate of 4.25 per cent and taking the risk spectrum into account, UND1X inflation will be in line with the 2 per cent target both twelve and twenty-four months ahead.

Outlook beyond the forecast horizon

Monetary policy is normally directed at fulfilling the inflation target one to two years ahead. However, even developments in both the shorter and the longer run should also be taken into consideration. But as a rule, the longer the period covered by the forecasts, the greater will be the uncertainty.

In Sweden, the overall effect on demand from interest rates, the exchange rate and other asset prices is judged to be expansionary and tend to raise growth above the potential rate towards and after the end of the forecast period. The expansionary fiscal policy exerts a similar effect. Against this background, in the coming years the labour market will probably become increasingly tight. That may affect the wage negotiations during 2004 as well as the rate of wage increases in the following years.

An increase in inflationary pressure is foreseen already in the latter part of the normal forecast horizon. If developments follow the paths in the main scenario and no measures are taken to subdue demand, this tendency continues so that the risks of inflation become greater after the end of the forecast period. As the krona's appreciation slows and resource utilisation in the rest of the world is judged to be high towards the end of the forecast period, the downward effect on inflation from import prices diminishes in the years after 2004.

If developments follow the paths in the main scenario and no measures are taken to subdue demand, the risks of inflation grow after the end of the forecast period.

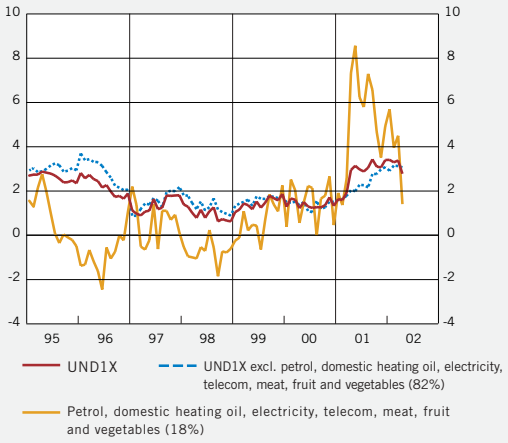
Demand factors are not alone in influencing the path of inflation. In the past decade the situation has been characterised by a substantial degree of unutilised resources after the crisis in the early 1990s. This is no longer the case and if the economic recovery continues as expected, it will be even less so two years ahead. Economic policy's focus is accordingly shifting. To a crucial extent, economic growth will depend on potential output since that determines the expansion of demand that is compatible with price stability.

In this respect there are some tendencies in Sweden that give cause for concern. There is a risk, for example, of labour supply being less favourable after the forecast period on account of demographic developments. A shortening of working time would, of course, work in the same direction. A contrary effect could come, however, from measures for increasing labour supply. One example is a reduction of sick leave. What is clear is that, if developments follow the forecast paths, the functioning of the labour market will be crucial for economic growth both in the coming two years and beyond the normal forecast horizon.

In the rest of the world, there is naturally the possibility of economic growth being either stronger or weaker in the coming two years as well as beyond the normal forecast horizon. A stronger trend could result from, for example, the marked

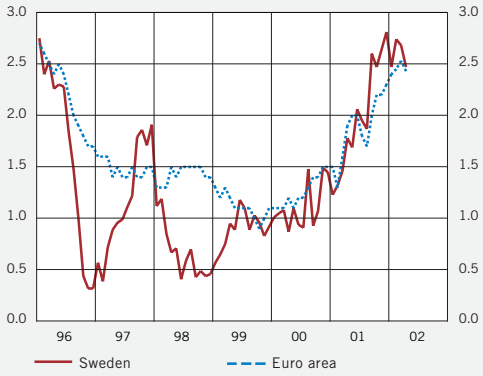
realignment of economic policy, which may contribute to a growth of demand – in the United States as well as Europe – that accelerates more than expected. A weaker trend could stem, for instance, from a longer duration of the general pessimism in Europe, with negative effects on both households and firms, as well as from the expected recovery of investment in the United States not materialising because many firms are in an exposed financial position. A third conceivable alternative is that the upturn is stronger than expected for a time and is then broken, giving way to a more dramatic process of adjustment. A stronger development implies a greater strain on resource utilisation and vice versa.

Figure B1. UND1X with and without more transitory price increases.
Percentage 12-month change



Note. UND1X weights in parentheses.
Source: Statistics Sweden and the Riksbank.

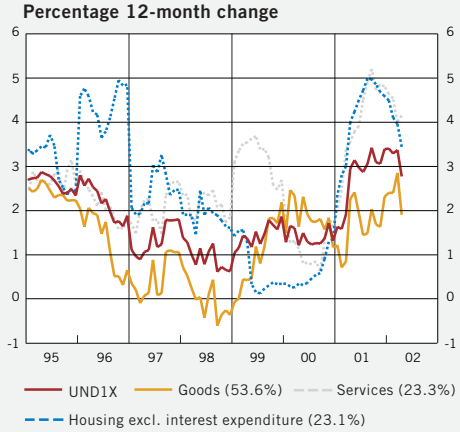
Figure B2. HICP excl. food, energy, alcohol and tobacco.
Percentage 12-month change



Note. The index for Sweden, calculated by the Riksbank, also excludes telecom prices and the effect of introducing the maximum day-nursery charge.

Sources: Eurostat, Statistics Sweden and the Riksbank.

Figure B3. UND1X: goods, services and housing.
Percentage 12-month change



Note. UND1X weights in parentheses.
Sources: Statistics Sweden and the Riksbank.

RECENT INFLATION

As expected, inflation has fallen back since the time of the March Report. The main reason is that 2001's large price increases for energy and certain food products are dropping out of the 12-month figures.[1] In April, the 12-month rates of CPI and UND1X inflation were 2.5 and 2.8 per cent, respectively, which was 0.4 and 0.6 percentage points lower, respectively, than the month before. Imported inflation amounted to 0.3 per cent and underlying domestic inflation to 4.0 per cent (Fig. 1).

Compared with the March assessment, imported inflation has risen somewhat more than expected, mainly due to higher petrol prices. Total domestic inflation has followed the expected path but the domestic price rise excluding movements that are judged to be more transitory was somewhat higher than expected.

UND1X inflation excluding transitory price movements has developed as expected, with a rate of 3.1 per cent in April. Since the turn of 2000 and up to a month or so ago, the price rise for this aggregate shifted upwards, probably due to such factors as a weak exchange rate, price increases for certain intermediate goods and comparatively high resource utilisation (Fig. B1). Underlying inflation has moved up in the euro area, too, but in the past year the rate of price increases there has been lower than in Sweden (Fig. B2).

Domestic inflation has risen rapidly in the past year, particularly prices for services (Fig. B3), though the rate has come down recently. Part of the upward movement can be explained by higher fees for public services. The recent weak productivity growth in the services sector has also contributed to upward pressure on unit labour costs here. Empirical estimations on data for Sweden indicate that a 1 per cent increase in unit labour costs

1 For a fuller account of the factors behind price developments for these items, see e.g. *Inflation Report* 2001:2.

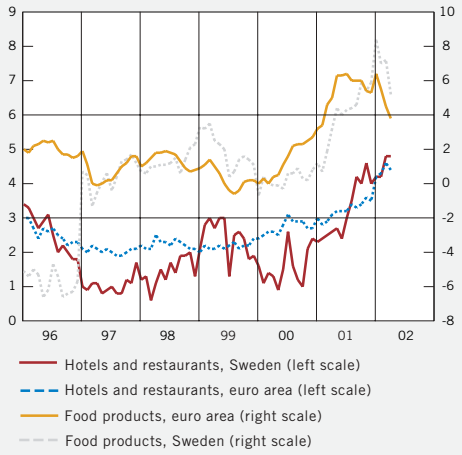
in the services sector leads to a price rise of about 0.5 per cent.[2]

The increase in unit labour costs in Sweden has tended to come from the services sector but this does not seem to be the case in the euro area. In recent years, the wage level in Sweden has risen an average of 1 percentage point more than in the euro area. It is mainly in service industries and construction that the increase has been higher in Sweden, while the development of manufacturing wages has been broadly similar.

Apart from this, in the euro area as well as Sweden, rising prices for certain intermediate goods such as energy and food products have contributed to a higher increase in costs in certain sectors, for example transport services, hotels and restaurants (Figs. B4 and B5). Increased costs can be met by lowering profits or raising prices. The profit share of value-added has been falling for some years. Together with the favourable demand situation, this has probably led to a greater pass-through of costs to consumers in the form of higher prices. Another explanation for the sector differences in rates of inflation may be that parts of the services sector are not as exposed to competition as the production of goods.

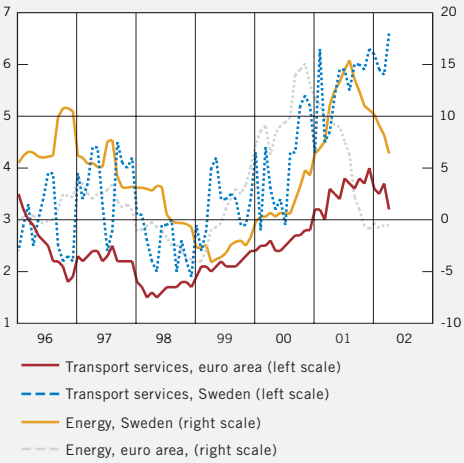
Imported inflation from more manufactured products has risen successively in the past year (Fig. B6). As price developments abroad have been subdued, the most probable explanation is that, in conjunction with relatively high demand, the previously weak exchange rate has begun to affect consumer prices.

Figure B4. Prices in the hotel and restaurant sector and food prices.
Percentage 12-month change



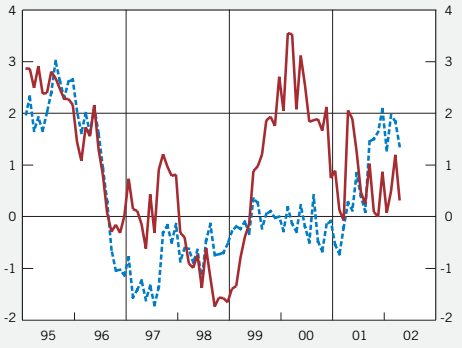
Source: Eurostat.

Figure B5. Prices for energy and transport services.
Percentage 12-month change



Source: Eurostat.

Figure B6. UNDIMPX excluding more transitory price movements.
Percentage 12-month change



Note. UND1X weights in parentheses.

Sources: Statistics Sweden and the Riksbank.

2 The estimations were done with a model for mark-up pricing that assumes that services prices are set in a market with imperfect competition as a mark-up on the firm's marginal costs, earlier prices and how other prices are developing. The firm's marginal costs are approximated as unit labour costs, calculated as hourly wage costs adjusted for labour productivity (hourly wage costs derived from quarterly wage bills including collective charges divided by hours worked). Other prices are measured as the CPI excluding services prices. Dummy variables serve as controls for changes in VAT and other taxes. The model has been estimated on data for 1989–2001 Q4.

Determinants of inflation

This chapter presents the assessments in the main scenario of inflation's principal determinants in the coming two years. International factors are considered first, followed by a discussion of interest rates, the exchange rate and economic developments in Sweden. Finally, transient effects on inflation are considered, as well as inflation expectations.

External economic activity and inflation

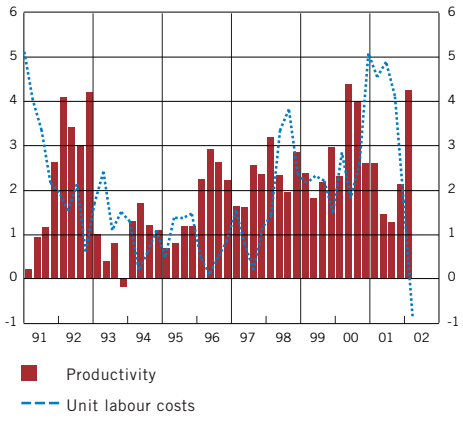
The international economic slowdown is judged to have passed the turning point and entered a recovery. An expansionary economic policy, together with less negative effects from stock-building, is contributing to increased demand in Sweden's main export markets. Financial market developments and the oil price rise since the time of the March Report are assumed to hold back the recovery only marginally.

Global recovery led by the United States.

Interest rate cuts and fiscal stimuli have laid a foundation for a recovery in the United States. Excessively high levels of stocks and fixed capital have been reduced successively. The unexpectedly rapid stock adjustments have created conditions for increases in production. Moreover, strong productivity growth and moderate increases in wage costs have helped to improve profit margins, which paves the way for a gradual increase in investment (Figs. 2 and 3). Recently, however, continued uncertainty about high profit expectations have hit share prices and this may hold investment back.

The outlook for this year's growth in the United States has been revised upwards, mainly in view of the strong development in late 2001 and early 2002. However, the future recovery is still expected to be fairly moderate, above all because a gradual increase in household saving is assumed from a low level. Two reasons for this assumption are that the trend for household equity wealth is expected to remain weak and a fall-off is foreseen from the house price rise in recent years (Fig. 4). There is also this year's subdued real wage trend, occasioned by no prospect of an improvement in the relatively weak American labour market until late in 2002.

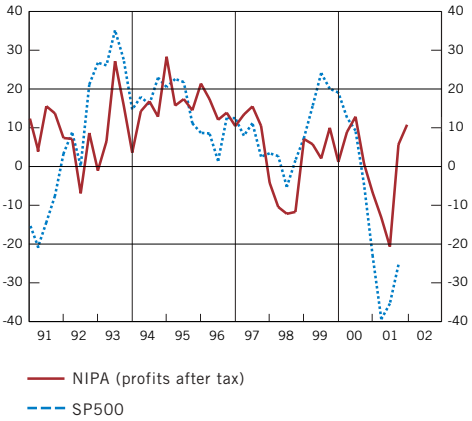
Figure 2. United States corporate sector: productivity and unit labour costs. Percentage 12-month change



Note. Excluding agriculture.

Source: Bureau of Labor Statistics.

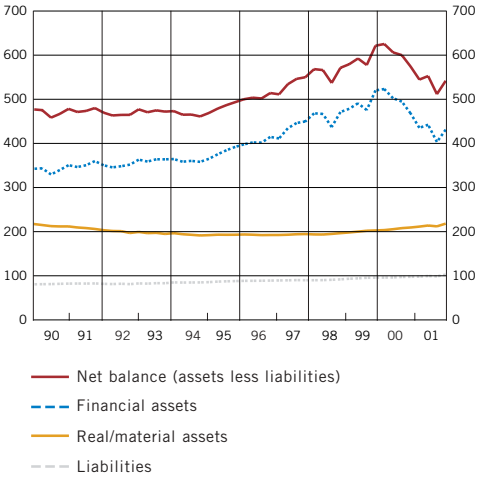
Figure 3. United States: profits (NIPA) and the SP 500 share index. Percentage annual change



Note. NIPA = National Income and Product Account.

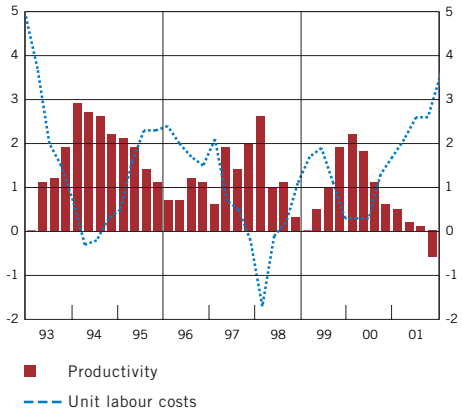
Sources: US Department of Commerce and Standard & Poor's.

Figure 4. United States: households' financial and real net wealth.
Percent of disposable income



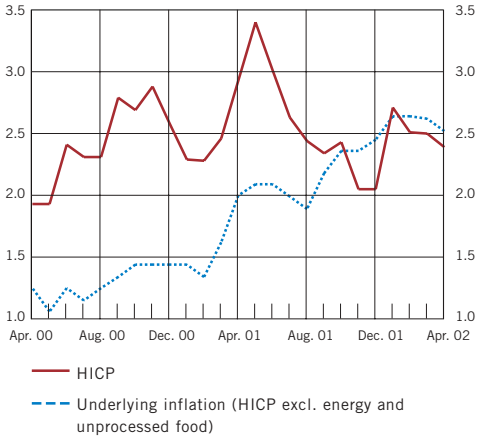
Source: Federal Reserve Board.

Figure 5. Euro area: productivity and unit labour costs.
Percentage 12-month change



Source: ECB.

Figure 6. Euro area inflation.
Percentage 12-month rate



Source: Eurostat.

Tentative recovery in the euro area and unexpectedly high inflation.

The growth forecast for the euro area is in line with the March assessment. Manufacturing here is being stimulated by demand from the United States and business confidence is rising. Household consumption has been weak in the early part of this year in connection with a persistently slack labour market and unexpectedly high inflation. There are signs that in the course of the slowdown firms have had a labour surplus. Productivity has fallen and unit labour costs have risen (Fig. 5). This has depressed profit margins and dampened the investment propensity. So despite improved export prospects, the recovery is expected to be tentative.

The increased unit labour costs may also be one explanation for the high inflation outcomes recently in the euro area. This is one reason why inflation is now expected to bottom at a higher level than calculated earlier (Fig. 6). Another explanation for the high inflation may be secondary effects of earlier price increases for food products and energy, possibly also rounding effects from the physical introduction of the euro. Inflation is expected to slow as activity turns upwards and productivity improves. Even so, the inflation forecast for the euro area has been revised upwards for this year as well as 2003, particularly in the case of some of the smaller countries where resource utilisation is high.

In other important markets for Swedish exports the conditions for a recovery are favourable. In Denmark and Norway, private consumption is benefiting from tax cuts. In the United Kingdom, industrial production is still slack but rising business confidence points to an upturn. Unlike the case in other countries in Europe, private consumption in the United Kingdom has remained strong; this can be attributed to an expansionary economic policy, rising house prices and favourable conditions in the labour market.

In Japan, the appreciable weakening of growth towards the end of last year has prompted a downward revision of the forecast for 2002. The response of exports to the earlier weakening of the yen has been positive but not sufficient to make up for the weak domestic market, with high unemployment and falling prices. A return to positive growth in Japan is not expected until next year. However, the significance of the Japanese economy for world market growth is diminishing.

Table 2. International conditions.
Percentage annual change or annual level

	GDP					CPI				
	2000	2001	2002	2003	2004	2000	2001	2002	2003	2004
United States	4.1	1.2 (1.2)	2.4 (1.6)	3.4 (3.5)	3.5 (3.5)	3.4	2.8 (2.8)	1.6 (1.4)	2.2 (2.1)	2.3 (2.3)
Japan	2.2	-0.4 (-0.4)	-1.3 (-1.1)	0.8 (0.8)	1.4 (1.5)	-0.7	-0.7 (-0.7)	-1.0 (-0.7)	-0.5 (-0.5)	0.5 (0.5)
Germany	3.2	0.6 (0.7)	0.8 (0.8)	2.2 (2.2)	2.0 (2.0)	2.1	2.4 (2.4)	1.5 (1.3)	1.4 (1.4)	1.6 (1.6)
France	4.1	1.8 (2.0)	1.6 (1.6)	2.5 (2.5)	2.2 (2.2)	1.8	1.8 (1.8)	1.7 (1.5)	1.6 (1.6)	1.6 (1.6)
United Kingdom	3.0	2.2 (2.4)	1.9 (2.1)	2.5 (2.5)	2.6 (2.6)	2.1	2.1 (2.1)	2.3 (2.2)	2.4 (2.4)	2.4 (2.4)
Italy	2.9	1.8 (1.8)	1.3 (1.3)	2.5 (2.5)	2.6 (2.6)	2.6	2.3 (2.3)	2.1 (1.8)	2.0 (1.9)	2.0 (1.9)
Denmark	3.0	0.9 (1.2)	1.6 (1.6)	2.2 (2.2)	2.2 (2.2)	2.7	2.3 (2.3)	2.1 (1.9)	2.1 (2.1)	2.2 (2.2)
Finland	5.6	0.7 (0.7)	1.5 (1.7)	2.8 (2.7)	3.1 (3.1)	3.0	2.7 (2.7)	2.0 (1.6)	2.0 (2.0)	2.1 (2.1)
Norway	1.7	1.0 (1.0)	2.0 (1.6)	2.2 (2.2)	2.0 (2.0)	3.1	3.0 (3.0)	1.6 (1.6)	2.5 (2.5)	2.5 (2.5)
Euro 12	3.4	1.5 (1.5)	1.4 (1.4)	2.6 (2.5)	2.5 (2.5)	2.3	2.5 (2.5)	2.0 (1.5)	1.8 (1.7)	1.9 (1.9)
Sweden's TCW export markets	3.2	1.4 (1.5)	1.5 (1.4)	2.5 (2.5)	2.5 (2.6)	2.3	2.3 (2.3)	1.8 (1.5)	1.9 (1.8)	2.0 (2.0)
OECD 19	3.6	1.2 (1.1)	1.4 (1.2)	2.6 (2.7)	2.7 (2.8)	2.2	2.0 (2.1)	1.4 (1.2)	1.7 (1.6)	1.9 (1.9)

	2000	2001	2002	2003	2004
Market growth for Swedish exports	11.0	1.2 (0.5)	2.5 (2.5)	7.9 (7.6)	7.5 (7.5)
OECD area export price in national curreny	1.2	0.4 (0.4)	-0.3 (-0.2)	1.5 (1.5)	1.4 (1.4)
Crude oil price (USD/barrel. Bren Blend)	28.4	24.5 (24.5)	23.8 (21.5)	23.5 (22.9)	22.0 (22.0)

Note. In the United Kingdom CPI stands for RPIX and in Germany, France, Italy, Denmark and Finland for HICP. In Norway GDP refers to the mainland economy. The figures in parentheses are the assessments in the March Report. Market growth for Swedish exports is measured in terms of imports of goods to all countries that are recipients of Swedish exports, weighted with each country's share of total Swedish exports of goods 1999–2000.

Source: The Riksbank.

Moderate world market growth.

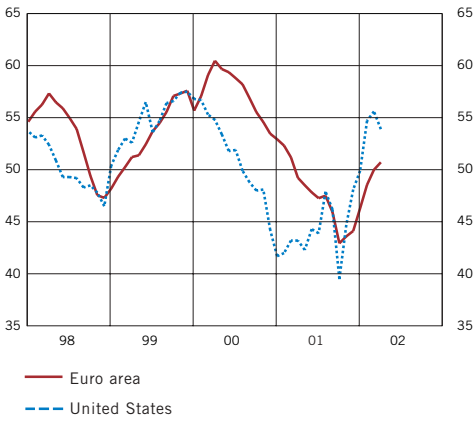
All in all, world trade is expected to turn upwards this year. Last year was characterised by a synchronous fall in industrial production and a marked downturn in international trade relative to GDP. There are now signs of a corresponding synchronous improvement in business confidence and manufacturing in the United States and Europe (Fig. 7). To date this year, however, import outcomes have been weaker in Europe than in the United States and Asia.

The slackening of world market growth is judged to have ceased and a comparatively strong improvement is foreseen during 2001, followed by a return to more normal growth later in the forecast period (Fig. 8).

International price pressure is weak, particularly for export prices.

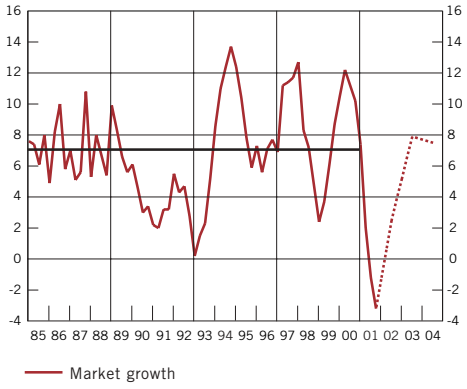
While the world economy is set for recovery, international prices for manufactured exports are expected to remain weak this year and then rise in 2003 (Fig. 9). This assessment mainly has to do with the low capacity utilisation in manufacturing, above all in the United States but also to some extent in the euro area and Asia (Fig. 10). Neither does it look as though domestic inflation in the large economies will rise more than moderately in the years ahead, partly because a less expansionary economic policy should tend to dampen prices. Monetary policy in both the United States and the euro area is expected to become gradually less expansionary during the year.

Figure 7. United States and euro area: business confidence.
Index



Sources: ISM and Reuters.

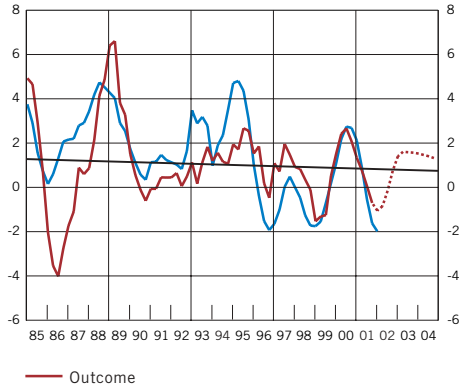
Figure 8. Market growth for Swedish exports.
Percentage annual change



Note. The horizontal line represents the average for 1985–2000. Riksbank forecast 2002–04.

Sources: NIESR and the Riksbank.

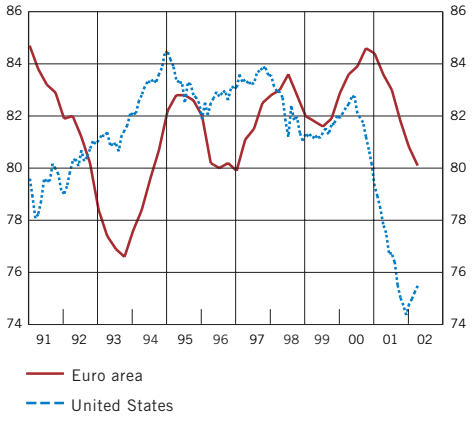
Figure 9 International export prices.
Percentage annual change



Note. Riksbank forecast 2002–04.

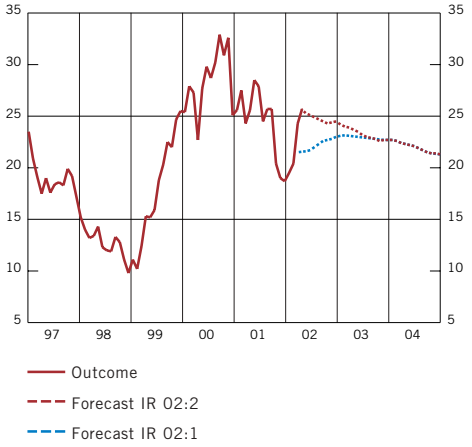
Source: The Riksbank.

Figure 10. United States and euro area: capacity utilisation. Per cent



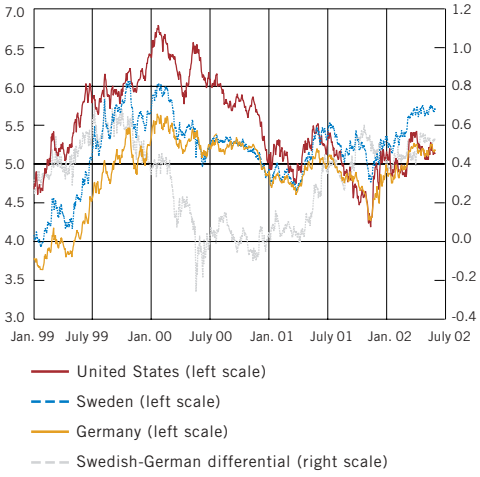
Sources: Federal Reserve and EU Commission.

Figure 11. Crude oil price: outcome and forecasts. USD/barrel



Sources: IPI and the Riksbank.

Figure 12. Ten-year government bond rates in the United State, Sweden and Germany and the Swedish-German differential Daily quotations, per cent and percentage points



Source: The Riksbank.

The price of oil is an uncertain factor.

The price of oil has risen sharply since the time of the March Report. The barrel price in April turned out to be almost USD 26 or about USD 4 above the forecast (Fig. 11). The price rise has been driven both by factors to do with security policy and by improved international economic prospects, mainly in the United States and some Asian countries. These factors are expected to keep the oil price up in the second half of this year, after which the price falls back into line with the earlier assessment. A price fall even though economic activity continues to rise is explained by the prospect of an increased supply of oil. In recent years the high oil price has led to rising investment, after a virtual standstill when the oil price dropped in connection with the Asian crisis. A large part of the increased supply in the years ahead is expected to come from Russia.

Financial asset prices

Financial market developments since the time of the March Report have been marked by some uncertainty about the strength of the global recovery even though the new macro statistics indicate that the recovery is on its way. One probable explanation is the uncertainty about the security policy situation in the Middle East and its consequences for oil prices. In the light of Enron and problems in the telecom sector, there is also uncertainty about creditworthiness. Moreover, a downward adjustment of expected profits, for example in the IT sector, and valuations that are already high initially, have contributed to a weak stock market trend.

Long bond rates in the United States have fallen since the March Report, partly against the background of weak stock markets and the conflict in the Middle East (Fig. 12). In the euro area, on the other hand, the long rates have moved up marginally in connection with rising inflation expectations, partly in view of the wage negotiations in Germany.

In Sweden, long bond rates have risen somewhat more than in the euro area, presumably on account of the Riksbank's repo rate increase and some concern about inflation. In this context it can be noted that variable and fixed house mortgage rates have gone on rising approximately in line with the Riksbank's repo rate increases and the upward movement of treasury bond rates.

All in all, some upward adjustment of the interest rate forecast is motivated for both short and long maturities. The ten-year bond rate is judged to average 5.6 per cent this year, 5.8 per cent in 2003 and 6.0 per cent in 2004.

There are expectations of a continued tightening of monetary policy.

Survey data as well as market prices point to expectations that one year ahead the repo rate will have been raised about 0.75 percentage points to about 5 per cent (Fig. 13). Stock market

tendencies and the quarterly report from Ericsson have contributed, for example, to somewhat more subdued expectations about future increases in the instrumental rate.

Growth of the broad money supply (M3) in 2002 Q1 went on rising from Q4 last year.[3] The growth of notes and coins (M0) has slackened (Fig. 14), which should be seen against the background that the exchange of expiring notes and coins in connection with the euro's physical introduction may have led to temporarily increased demand for Swedish notes and coins towards the end of last year. The Q1 growth of lending to Swedish households remained high. In the corporate sector, however, credit demand has decreased appreciably after a period of rapid growth.

A weak tendency in the IT sector lies behind falling share prices.

Stock markets in the rest of the world have remained weak. Since the time of the March Report the Morgan Stanley world index (MSCI) has fallen about 4 per cent. Most of the fall has come from IT and telecom shares.

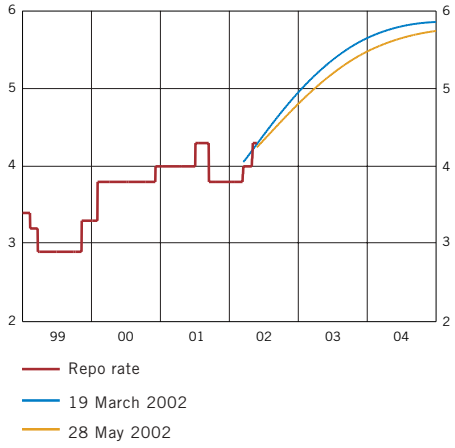
The weak situation in these sectors – with uncertain future prospects indicated by the first-quarter reports from Ericsson and others – explains why the Stockholm exchange has fallen relatively more than other international bourses. At the same time, the Q1 results reported by a majority of the large Swedish listed companies have been somewhat better than the market expected. This may be an indication that a recovery of corporate profits has begun. But there is still some uncertainty that may continue to subdue the development of share prices.

The Swedish krona has been marginally weaker than expected.

The krona's TCW exchange rate has fluctuated in the interval 133–137 since the March Report. Taken as a whole, this is marginally weaker than assumed earlier. The stock market fall and some concern about inflation have probably contributed. Moreover, the exchange rate is affected by shifting expectations of a future EMU membership. There has recently been an appreciation of the krona, partly in connection with a general weakening of the dollar.

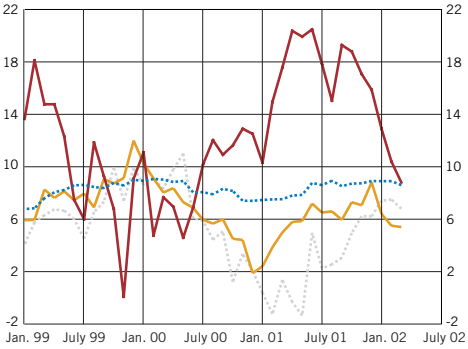
During the forecast period the krona is expected to strengthen, partly in connection with a stabilisation of share prices and because the US dollar is judged to remain overvalued, with the prospect of a depreciation in the forecast period. Since 1998 the krona's real exchange rate has deviated markedly from a long-term rate motivated by fundamentals such as relative growth and terms of trade (Fig. 15).[4] The deviation is mainly due to the real

Figure 13. Expected repo rate derived from forward interest rates.
Per cent



Source: The Riksbank.

Figure 14. Bank lending to Swedish firms, credit institutions' lending to Swedish households and the money supply (M0 and M3). Percentage 12-month change

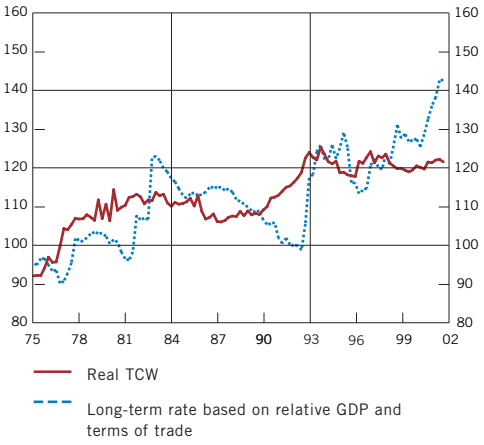


Sorce: The Riksbank.

3 Due to technical changes, the Q1 money supply statistics are preliminary.

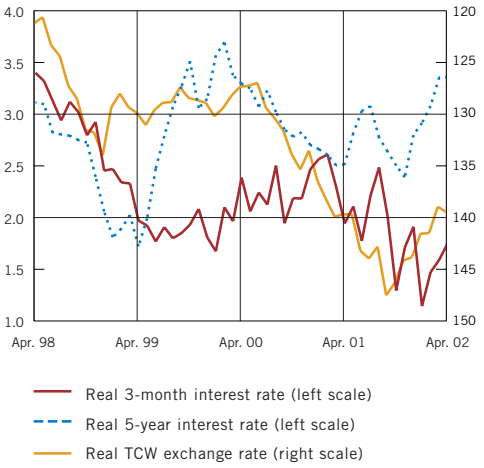
4 The Riksbank has estimated the fundamental long-term exchange rate for the Swedish krona with a variety of models, using relative growth, terms of trade, external debt and other factors as explanatory variables. All these models show that the krona is fundamentally undervalued to a varying degree.

Figure 15. The real TCW index and the long-term exchange rate based on relative GDP and terms of trade.



Source: The Riksbank.

Figure 16. Real interest rates and real TCW exchange rate.
Per cent and index: 1987=100



Source: The Riksbank.

exchange rate being weak in relation to the level motivated by relative growth. Such factors as the current-account surplus, relative growth and high economic policy credibility still point to the krona returning in the somewhat longer term to levels that are more reasonable in the long run. Expectations that Sweden will become a full EMU participator also point in this direction.

All in all, however, the weaker exchange rate outcome, somewhat poorer prospects for relative growth and continued uncertainty about share prices have prompted a marginal revision of the krona's path. In the main scenario the krona is expected to appreciate to an average of 134.7 this year, followed by 128.2 next year and 123.8 in 2004.

Monetary conditions are less expansionary.

The real short-term interest rate has risen since the time of the March Report, while the real long-term rate is virtually unchanged and the stock market has fallen (Fig. 16). Moreover, the real exchange rate has weakened. Taken together, this means that, compared with the time before the March Report, the stimulus from interest rates, stock markets and the exchange rate has become somewhat smaller. Looking ahead, the krona is judged to appreciate, accompanied by a further increase in bond rates. The restrictive effect is countered, however, by a stock market recovery, though compared with the earlier assessment this is now expected to be somewhat slower in the forecast period.

Demand and supply

Last year, GDP growth in Sweden slackened to 1.2 per cent. Final domestic demand was weak and the contribution from stock-building was relatively large and negative. Exports fell but as imports dropped sharply, the contribution from foreign trade was large and positive.

The weak growth meant that total resource utilisation declined. However, the strong wage and price trend indicates that resource utilisation was still comparatively high, particularly during 2000 and the early part of 2001.

The overall picture of the Swedish economy has not changed appreciably in recent months. As in the March Report, the slowdown is judged to be shallow and relatively brief. A gradual recovery of world market growth is expected to turn exports upwards. However, higher interest rates and a less expansionary fiscal policy no doubt mean that activity will be somewhat more subdued than foreseen earlier. The strong development of household disposable income is still judged to generate increased consumption. Public consumption is expected to go on rising, though at a moderate rate. Investment is judged to pick up in 2003 and 2004 and make an appreciable contribution to GDP growth. All in all, this points to real GDP growth of 1.6 per cent this year, followed by 2.7 and 2.5 per cent, respectively, in 2003 and 2004.

HAS POTENTIAL GROWTH SLACKENED?

While GDP growth slowed between 2000 and 2001 from 3.5 to 1.2 per cent, the annual rate of inflation moved up from 1.4 to 2.7 per cent. The unexpected development adds to the uncertainty when forecasting inflation. One conceivable reason why a slackening of demand has been accompanied by a rising rate of price increases is that the Swedish economy's potential output grew more slowly in 2001. The output gap is a central item in the Riksbank's assessment of inflation. The basic notion is that if total demand for economic resources exceeds the available supply, the resultant upward pressure on prices may lead to inflation. Potential output is the level of production that is compatible with price stability. A problem with this approach, increasingly recognised by economists and central banks, is that the concept of potential output is not as clearly defined as aggregate demand. Work is in progress on the development of the analytic foundation for the former concept.

The various measurements of potential output and the output gap that the Riksbank uses in work on its inflation forecast are discussed here. In terms of potential output's trend over longer time horizons, the results of the different measurements are fairly similar. However, over shorter horizons, for example 1–2 years, the differences may be appreciable. In that the Riksbank's monetary policy assessments are primarily concerned with this shorter perspective, it is important to compare the methods.

POTENTIAL GROWTH

Factors that determine long-term potential output include technology, capital stocks, labour supply and the institutions and regulations that affect the workings of the economy. These factors also affect the development of demand. A gap between actual and potential output is liable to arise because, on account of, for example, rigidities in production factors and prices and market imperfections, it takes time for production and demand to adjust to a change.

Potential growth is not constant, neither does the level of production adhere to a simple long-term trend (Fig. B7). The economy is exposed to shocks of various kinds. Some are more transitory, for example a dry winter that leaves less water for hydroelectric power or a currency depreciation unconnected with economic fundamentals that increases demand for exports. Other

shocks are more permanent. For instance, new production technology can affect capital stocks and the industrial structure. Many of the shocks that occur affect both the supply and the demand side of the economy. A productivity shock, for example of the type that occurred in the United States in the late 1990s, besides affecting conditions for production, influences households' expectations of future income and wealth.

MEASURING POTENTIAL GROWTH

The Riksbank uses three different methods to estimate the output gap and these models also calculate potential growth. The measurements of potential growth should be seen as rough approximations, with a large element of uncertainty.[5] The Hodrick-Prescott (HP) method measures potential growth by smoothing actual output; the size of the fluctuations in potential growth then depends on the choice of filter. A weakness of the HP approach is that it does not include a connection between resource utilisation and the rate of price increases and does not say anything about which factors are driving the changes in potential output. The Unobservable Component (UC) method calculates potential growth from an estimation of the level of unemployment (the NAIRU level) that is compatible with unchanged inflation. This method accordingly uses both inflation and unemployment.

The third method, the production function or PF approach, uses a simple aggregated production function for the total economy, where output is determined by labour supply, total factor productivity (TFP) and the effective capital stock.[6] The transition from actual to potential output is achieved by smoothing the trends for mean working time and TFP and adjusting the extended labour force for some estimate of structural

5 Orhanides, A. & van Norden, S. (1999), The reliability of output gap estimates in real time, *Finance and Economics Discussion Series*, Federal Reserve Board 38.

6 Potential output is measured in the light of corporate sector value-added. As public goods and services do not have market prices, public sector output cannot be estimated in terms of value-added. Adding the public sector to value-added gives GDP (in the PF approach this is done by scaling up a factor that is determined by the relationship between value-added and GDP): $Y_t^{pot} = FV_t^{NL\text{-}pot} + FV_t^{off}$. The potential growth of corporate sector value-added is determined as $FV_t^{NL\text{-}pot} = TFP_t^{NL\text{-}HP} x (K_t^{NL\text{-}eff})^{0.39} x (L_t^{NL\text{-}utbud})^{1\text{-}0.39}$, where $TFP_t^{NL\text{-}HP}$ is H-P filtered TFP, $K_t^{NL\text{-}eff}$ is the effective capital stock and $L_t^{NL\text{-}utbud}$ is potential labour supply. The function assumes that the shares of value-added that accrue to capital and labour, respectively, are constant and that they sum to one, implying a constant return to scale. Empirical estimations do not confirm the assumption of a constant return to scale. The PF approach also assumes perfect competition and full capacity utilisation. The effective capital stock is calculated by Statistics Sweden.

unemployment (NAIRU).[7] A problem with the PF approach is the weak link between actual growth, potential output and price stability.

In the longer run these three approaches to the measurement of average potential growth yield comparatively similar results. The potential growth rate has been around 2 per cent in the past three decades and between 2 and 2.5 per cent in the past five years (Table B1).

Table B1. Estimates of potential growth.
Per cent

	UC	H-P	PF	GDP
1970-2000	2.0	1.9	1.9	1.9
1980-2000	1.9	1.9	1.9	1.9
1990-2000	1.9	1.8	1.8	1.6
1995-2000	1.9	2.4	2.3	3.0
1998-2000	2.0	2.7	2.3	3.7

Source: The Riksbank.

HAS RESOURCE UTILISATION RISEN IN RECENT YEARS?

Growth was high in the period 1998–2000; annual GDP growth averaged 3.7 per cent (Fig. B7). At the same time, potential growth seems to have picked up more slowly. Although there was some improvement in potential output, the increase was appreciably less than the acceleration of GDP growth. On average, the unutilised resources were reduced annually by one or two per cent of GDP.

An important question is to what extent resources were de-utilised during the slowdown in 2001, when GDP rose only 1.2 per cent. The UC method suggests that the slowing of GDP growth was accompanied by a largely equivalent decline in potential output, so that resource utilisation may still be broadly as high as at the end of 2000. As measured with the other methods, however, the fall in potential output is smaller (Fig. B7). This illustrates that over a relatively short period, the

7 Labour supply is given by the function $L_t^{NL\text{-}utbud} = N_t^{NL\text{-}utbud} \times L_t^{NLHP}$, where $N_t^{NL\text{-}utbud}$ is the extended NAIRU-adjusted labour force and L_t^{NLHP} the number of hours worked (mean working time smoothed with an H-P filter). The extended NAIRU-adjusted labour force is given by $N_t^{NL\text{-}utbud} = N_t^{NL\text{-}utvidgad} - N_t^{off} - N_t^{NAIRU}$. The extended labour force is given by $N_t^{NL\text{-}utvidgad} = (N_t^{psys} + N_t^{off}) + N_t^{Opp} + N_t^{Latent}$, where N_t^{off} is public sector employment, N_t^{psys} is private corporate sector employment, N_t^{Opp} is open unemployment, and N_t^{Latent} is the number who regard themselves as latent unemployed. NAIRU is given by $N_t^{NAIRU} = NAIRU_t^{UC} \times N_t^{NL\text{-}utvidgad}$. A time-varying NAIRU has been estimated in the UC model.

results from the different methods can differ appreciably. The UC method's results are difficult to interpret in economic terms because in this type of model the combination of low growth and high inflation may imply a slowing of potential growth but the model provides no indication of what this is caused by or the duration of the shock.

To arrive at a better picture of potential output there are grounds for also analysing this question with the PF approach, which is easier to interpret in economic terms. Certain components of the production function, such as mean working time and productivity growth, are smoothed with an H-P filter. Without this smoothing, the PF approach indicates that potential growth slowed from about 3 per cent at the beginning of 2000 to about 1 per cent at the end of 2001 (Fig. B8).

Potential growth can be decomposed into the contributions from its determinants (Table B2). In recent decades the contribution from the capital stock has been virtually constant. Neither did the path of the capital stock deviate during the latest business cycle.

Table B2. Contributions to potential growth.
Percentage points

	1970-2000	1980-2000	1990-2000	1998-2000	2001 2000
Capital stock	0.8	0.8	0.7	0.7	0.8
NAIRU-adjusted labour force	0.1	0.2	0.2	0.3	1.3
Mean working time	-0.3	0.0	0.0	-0.2	-1.3
TFP	1.4	1.2	1.5	2.0	0.6

Sources: Statistics Sweden and the Riksbank.

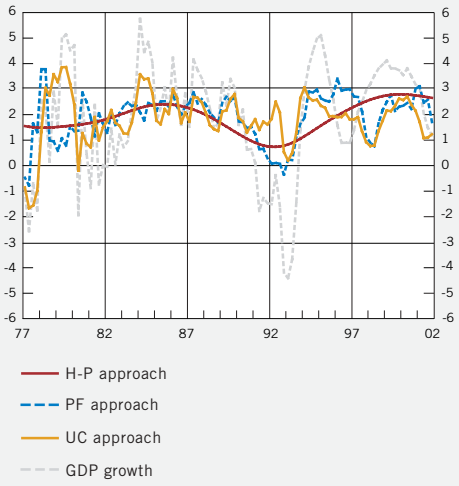
Except in the last few years, the trends for TFP and labour supply also seem to have been comparatively stable.

The extended labour force has expanded appreciably in recent years, above all as a result of increased employment in the corporate sector, particularly in services. This has been countered by a fall in mean working time.

The fall in mean working time is a result of several factors that are analysed in the box on pp. 32–37. A considerable part of the reduction is probably cyclical. But as structural factors also seem to have contributed (e.g. increased sick leave in connection with more generous replacement levels and negotiated working time reductions), it could be that the decrease in labour supply is partly more permanent.

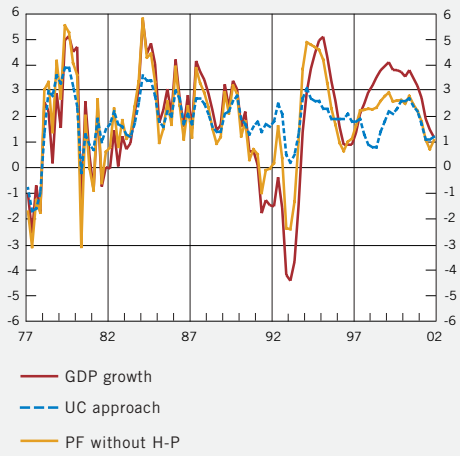
The slowing of productivity growth during 2001 is not remarkable. Compared with the downward cyclical

Figure B7. Estimations of time-dependent potential growth.
Percentage annual change



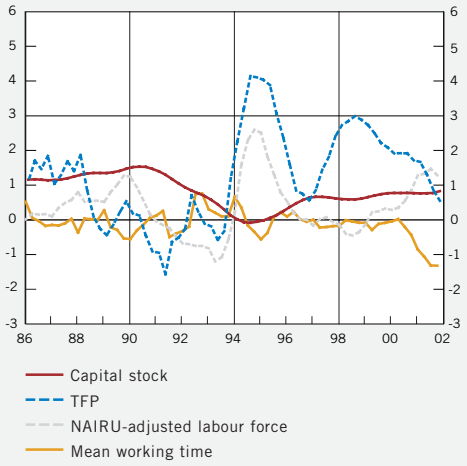
Source: The Riksbank.

Figure B8. Estimations of time-dependent potential growth.
Percentage annual change



Source: The Riksbank.

Figure B9. Factors of production. Percentage 12-month change



Source: The Riksbank.

Figure B10. Corporate sector total factor productivity (TFP) and labour productivity. Percentage annual change

Source: The Riksbank.

phases in 1977, 1980 and 1990, when productivity growth was negative for a number of quarters, the tendency in 2001 is limited. A similar picture emerges when productivity growth is measured as the change in labour productivity.

A difficulty in productivity assessments is that growth models tend not to provide explanations for technological improvements – TFP is obtained as a residual. In recent years theories have been put forward where the impact of technology is an endogenous variable (explained by the model instead of being taken as given); this has underscored the part played by, for example, the degree of openness, human capital and competitive pressure.[8] The favourable path that many of these factors seem to have followed in recent years supports the hypothesis that the slackening of productivity growth is not permanent. It may be the case that the positive effects generated by the deregulations in the late 1990s have now faded. But increased openness, a somewhat higher educational level in the 1990s and some improvements in competitive pressure may indicate that future productivity growth can also be somewhat higher than in the 1970s and 1980s.

An argument that productivity growth will not pick up again to the high rate in the 1990s is that this rate had to do with certain manufacturing sectors, for example the telecom industry. If productivity in these sectors were to become less favourable or if their relative importance becomes permanently smaller, this would suggest that productivity growth in the coming years may be somewhat lower.

The answer to the question posed by the box heading is by no means self-evident. There is much to suggest that a large part of the observed slowing of growth is cyclical. But there may be more permanent elements in two main respects. One is mean working time, which has fallen as a consequence of sick leave and other circumstances; the other is productivity, which may be weaker as a consequence of a diminishing economic role for the IT and telecom sectors.

8 See e.g. Aghion, P. & Howitt, P. (1998), *Endogenous Growth Theory*, MIT Press, and Stiroh, K., What drives productivity growth?, *FRBNY Economic Policy Review*, p. 37.

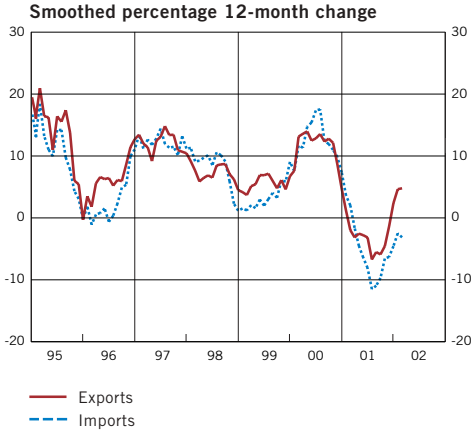
Table 3. Demand and supply.
Percentage annual volume change

	2001	2002	2003	2004
Household consumption	0.2	2.3 (2.3)	2.4 (2.5)	2.4 (2.5)
Public authorities consumption	1.4	0.9 (1.0)	0.7 (0.9)	1.0 (1.1)
Gross fixed capital formation	1.5	0.7 (0.7)	4.3 (4.5)	6.0 (6.5)
Stockbuilding	-0.5	-0.1 (-0.1)	0.2 (0.2)	0.0 (0.0)
Exports	-1.4	2.2 (3.2)	5.6 (6.2)	5.3 (5.3)
Imports	-3.9	2.0 (2.9)	5.5 (5.8)	5.8 (6.3)
GDP at market values	1.2	1.6 (1.6)	2.7 (3.0)	2.5 (2.6)

Note. The figures in parentheses are the assessments in the March Report.

Sources: The Riksbank.

Figure 17. Volume exports and imports of goods.
Smoothed percentage 12-month change



Sources: Statistics Sweden and the Riksbank.

Resource utilisation, comparatively high initially, tends to fall this year and rises after that. As in the March Report, the rate of wage increases is judged to slacken marginally, mainly as a consequence of the current agreements' structure, with lower negotiated increases this year.

Manufacturing activity is turning upwards.

The recovery in manufacturing seems to have continued in the spring, to judge from business tendency surveys and the purchasing managers index, but the picture varies. Basic industries such as forest products and steel are in the process of picking up and the situation has also improved for vehicle manufacturers. On the other hand, demand for telecom products has gone on falling. Ericsson's first-quarter report, presented in mid April, painted gloomy prospects for the near future and redundancies were announced.

Foreign trade expanding again.

The recovery in manufacturing is also evident in the statistics on foreign trade, which indicate that exports of goods have stopped falling, followed by some growth in recent months (Fig. 17).

There is, however, no clear evidence that export orders for manufactured products are picking up. Moreover, the balance of payments statistics suggest that the growth of services exports, which was strong last year, is now considerably weaker.

The world market for Swedish goods, which was unchanged last year, is expected to grow by 2–3 per cent this year, followed by a rate of 7–8 per cent in 2003 and 2004; this is in line with the assessment in the March Report. Poorer prospects for telecom products tend to hold back exports of goods but, compared with the earlier assessment, a weaker path for the exchange rate in the forecast period gives a somewhat more favourable development of relative prices. For imports of goods the differences compared with the earlier assessment are likewise comparatively small but for services imports the balance of payments statistics now point to a weaker tendency this year. All in all, compared with the assessment in the March Report, foreign trade's contribution to GDP growth is now judged to be marginally smaller this year and next but somewhat larger in 2004.

The outlook for disposable income is weaker than assumed earlier.

The public sector's financial surplus has paved the way for tax cuts and increased spending. However, the surpluses for this year and 2003 are calculated to be smaller, partly due to the economic slowdown and partly to the tax cuts. There is accordingly less room in the central government finances for further tax cuts and an implementation of the fourth step in compensating households for earlier increases in employee-paid social security contributions. Against this background, together with the prospect of an economy recovery and persistently high wage increases, it is assumed that the tax cut announced earlier will be deferred. Even so, fiscal policy will contribute to an increase in total demand, since the structural component of the financial balance is expected to go on falling next year.

The assumption that there will be no income tax cut in 2003 has negative consequences for the assessment of disposable income. On the other hand, an increase in unemployment benefits has been announced; its contribution to disposable income is judged to offset approximately a quarter of the loss occasioned by deferring the tax cut. The trend for disposable income is still judged to be favourable in the forecast period, with an increase of almost 5 per cent this year, followed by 2.5–3 per cent in 2003 and 2004.

A comparatively moderate increase in consumption.

A marked increase in household consumption this year is suggested both by the strong development of household income and by the available statistics on retail turnover, car registrations and demand for notes and coins. Further support for the assessment is that in the past six months households have become more optimistic in their expectations about the Swedish economy and unemployment.

In that income continues to develop favourably, it seems that the growth of consumption will rise in the forecast period, though slightly less than foreseen in the March Report. With the repo rate increase of 0.5 percentage points, monetary policy is somewhat less expansionary. Share prices are weak but house prices have risen more than expected this spring. Some continued increase in real-estate prices and the prospect of a moderate stock-market recovery imply that the development of household real wealth in the forecast period will be somewhat stronger than assumed earlier. Taken together, the effects of lower incomes, somewhat higher interest rates and a marginally better development of wealth call for a downward revision of consumption growth in 2003 and 2004.

Public consumption continues to rise moderately.

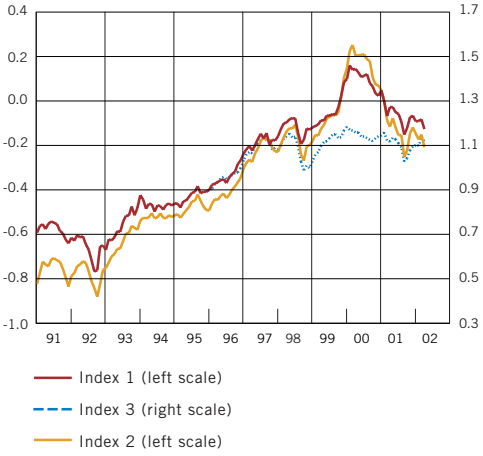
The annual growth of public consumption in the forecast period is judged to be not quite 1 per cent.

In the local government sector the overall financial situation is balanced. The municipal finances are being reinforced this year with the Government's general support to stimulate employment; in 2003 there will be targeted support for municipalities that have increased the number of employees this year. At the same time, wages for local government employees are rising at above the average rate for the total economy and are judged to go on doing so in the forecast period. Labour shortages for certain occupations and high wage increases are judged to restrict the possibility of large increases in real local government consumption in 2003 and 2004.

Central government consumption is expected to be broadly unchanged up to 2004. Here, too, wages are judged to rise comparatively rapidly. Together with the spending ceiling, this tends to restrain the development of real central government consumption, too.

All in all, total public consumption is expected to rise slowly in real terms but goes on falling relative to GDP throughout the forecast period.

Figure 18. Real share price indexes.



Note. The indexes represent the logarithm of the quotient when a nominal share index is divided by the CPI. Index 1 uses *Affärsvärlden*'s general index, index 2 *Veckans Affärer*'s index for manufacturing and index 3 *Affärsvärlden*'s index for industrials.

Sources: Affärsvärlden, SIX, Statistics Sweden and the Riksbank.

Investment picks up towards the end of the forecast period but is held back to some extent by lower profit expectations.

Subdued profit expectations, lower share prices, impaired corporate liquidity and higher interest rates are judged to have negative effects on investment in the forecast period (Fig.18).[9] Against this background, some downward adjustment of the investment forecast for 2003 and 2004 seems to be called for. On the whole, however, the assessment in the March Report still applies: rising demand is expected to lead in time to an increased utilisation of capital stocks and a need for new investment in the latter part of the forecast period.

The new statistics, for example business tendency data, show that firms' stock assessments have not changed appreciably. The picture of the contribution to GDP growth from stockbuilding is therefore the same as in the March Report, with a slightly negative figure this year, followed by a small positive effect in 2003 and a neutral effect in 2004.

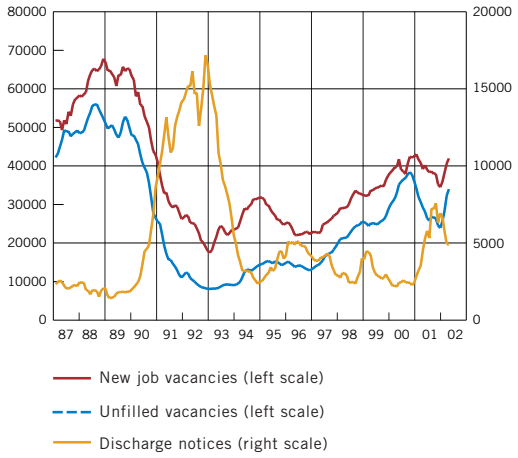
A subdued increase in employment.

The number of persons in employment, as measured by the labour force surveys, in the first four months of this year was unchanged from the same period a year earlier. The unemployment rate was also broadly unchanged.

Industrial employment fell on a 12-month basis during the greater part of last year and then dropped about another 5 per cent in the first four months of this year. On the other hand,

9 Ericsson is an example of firms for which profit expectations have been revised downwards but as this particular company's investment in material assets amounted to only around SEK 3 billion last year, the impact on total fixed capital formation of its downward revision will no doubt be mainly indirect, via the total value of shares.

Figure 19. New and unfilled vacant jobs with a duration of more than 10 days and discharge notices.



Note. Seasonally-adjusted series expressed as moving three-month mean.

Source: National Labour Market Board.

employment in private services rose last year but the increase has slackened this spring. Public sector employment has gone on rising.

The unchanged number in employment between the first four months of 2001 and 2002 was accompanied by a fall of 0.6 per cent in the number at work. Over the past two years, absenteeism has risen by almost half as much as the increase in employment. Mean working time fell last year and probably continued to decline in the early part of 2002, partly due to the growth of absenteeism but also as a result of decreased overtime and a fall in regular working time (see the box on pp. 32–37). [10] [11] The tendencies during the spring imply that the labour market is continuing to weaken. The increased absenteeism could be one reason why the economic slowdown has not yet led to decreased employment and increased unemployment. Another reason may be that firms largely believe that the slowdown will be brief and accordingly consider it worthwhile to maintain work forces; to a varying extent, such labour hoarding is a normal feature of downward phases.

Brief dip in the development of employment.

Although growth in the Swedish economy is judged to pick up this year, the positive effect on employment is not expected before 2003.

The number of new job vacancies admittedly tended to rise in the first four months of this year and discharge notices fell (Fig. 19). Looking ahead, however, this positive tendency may weaken in that, compared with the same period last year, summer jobs made up a larger proportion of the Q1 increase in new vacancies. Moreover, according to Statistics Sweden's vacancy figures, the number of both private and public sector vacancies in Q1 this year was lower than a year earlier.[12] Figures that mirror acute labour shortages also show a decrease in vacancies.[13] Furthermore, the number of discharge notices may rise in the future, for example as a result of the cuts announced by Ericsson.

The somewhat poorer labour market prospects are expected to contribute to a slackening of the increase in labour supply. The number of latent job-seekers is expected to rise this year, along with a decreased labour supply from students.[14] There is also the prospect of somewhat increased participation in labour market programmes. The age structure of the active population is judged to be a limiting factor for labour supply throughout the

10 Measured as the total annual number of hours worked (from the national accounts) divided by the average number in employment (from the labour force surveys).

11 The working time that employers and employees have agreed on.

12 Statistics Sweden measures vacancies from a survey of firms, whereas the figures on new and unfilled vacancies from the National Labour Market Board are based on the public employment offices' registers.

13 Statistics Sweden's series on jobs that are immediately available.

14 Persons willing and able to work who have not searched for a job.

forecast period. The relatively strong increase in young and elderly age groups may lead to increased numbers of students, long-term invalids and early retirees. Labour supply in a wider sense is also influenced by the current rules for unemployment insurance, health insurance and so on. One uncertain factor is the large number of employees who are absent from work; it is difficult to tell to what extent they might be able to return to work and contribute to production. A number of wage settlements included agreements to reduce working time in 2002 and 2003. In the main scenario, however, it is foreseen that the downward tendency in mean working time will cease in the years ahead, mainly on account of an increase in overtime as activity picks up.

All in all, employment is expected to decline this year, accompanied by some increase in unemployment. During 2003 and 2004, however, the outlook for demand implies that employment rises and unemployment falls (Fig. 20). The public sector is judged to make a positive contribution to employment throughout the forecast period, while an increase in corporate sector employment is not expected until the latter part of the period.

Productivity developed weakly last year, which is normal during an economic slowdown, partly on account of labour hoarding (see also the boxes on pp. 22–26 and 32–37). The structure of production also played a part in that sectors such as IT and telecom, where productivity growth has been particularly strong in recent years, declined. It is difficult to foresee the future development of this, possibly more structural, element in the slackening of productivity. But as usual, firms clearly have some surplus capacity to utilise when activity picks up. In that existing work forces can be put to better use in an upward phase, it is often then that productivity rises most. The assessment of productivity is broadly the same as in the March Report.

Figure 20. Labour supply and employment. 100s of persons

Note. Seasonally-adjusted series. Riksbank forecast 2002–04.

Sources: Statistics Sweden and the Riksbank.

HOURS WORKED – A DECOMPOSITION

During 2001 a slackening of economic growth in Sweden was accompanied by some increase in inflation, which raises questions to do with supply-side conditions in the Swedish economy. It is conceivable, for instance, that potential growth has slackened to a greater extent than anticipated earlier.[15] A central factor for potential growth is the development of labour supply; the present account focuses on the number of hours worked. A decomposition of hours worked throws light on the forces that have been driving this factor in recent years. Some alternative scenarios for future developments are also presented. They illustrate the importance of a policy in the coming years that paves the way for a high growth of labour supply.

CHANGES IN HOURS WORKED

The increase in hours worked slackened from 2.5 per cent in 1999 to about 0.5 per cent in 2001, while the number in employment rose 2.2 and 1.9 per cent, respectively. Conceivable explanations for the development of hours worked are, for example, decreased overtime and increased sick leave. One way of analysing the development of hours worked is to look at the sub-components. A decomposition can be done as follows. The number of hours worked is calculated by multiplying mean working time by the number of persons actually in work. These persons can be identified as follows. The working population consists of persons between 16 and 64 years of age. For various reasons (illness, education, family ties, personal choice, for example) not all these people are available for work. Those who have a job or are looking for one constitute the labour force and are either employed or unemployed. Instead of being at work, some of the employed are absent for various reasons (illness, child care, holidays, for example).[16]

15 See also the box on pp. 22–26.

16 The number of persons at work is calculated here as the number in employment less those absent for sickness, so unlike the Riksbank's forecasts, absenteeism for other reasons is disregarded here.

This decomposition gives rise by definition to the following relationship:

$$HW = Pop * part * (1-u) * (1-sick) * mwt \qquad (1)$$

where *HW* is hours worked, *Pop* the population of working age (16–64 years), *part* the percentage of *Pop* that is participating in the labour force, *u* the percentage unemployed, sick persons absent for sickness as a percentage of the employed and *mwt* is mean working time.[17]

The percentage change in hours worked can then be approximated as:

$$\frac{\Delta HW}{HW} * 100 = \left(\frac{\Delta Pop}{Pop} + \frac{\Delta part}{part} + \frac{\Delta(1-u)}{(1-u)} + \frac{\Delta(1-sick)}{(1-sick)} + \frac{\Delta mwt}{mwt} \right) * 100 \qquad (2)$$

The results of such a decomposition of hours worked in the period 1987–2001 is discussed below. Note that the decomposition by itself does not tell us anything about causal connections. Each component is affected in a complex manner by both structural and cyclical factors.

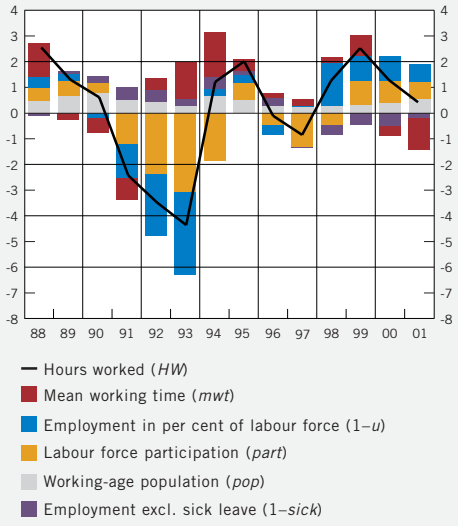
PICTURE OF HOURS WORKED 1987-2001

The results of a decomposition are presented in Fig. B11. It will be seen from the curve that the change in hours worked fluctuated markedly over the years; the bars represent the five factors that contributed to this variation. In 1993, for example, hours worked fell more than 4 per cent and the bars show that this was the net result of a negative contribution of over 6 percentage points from decreased labour force participation and falling employment, countered by a positive contribution of about 2 percentage points from increased mean working time, decreased sick leave and population growth.

So how have the individual components developed and what are the conceivable driving forces? The *population of working age* grew continuously in the period studied here (Fig. B11); the growth was driven by demographic factors, mainly nativity, and to some extent by labour migration. While birth rates change rather slowly over time, they may be susceptible to the labour

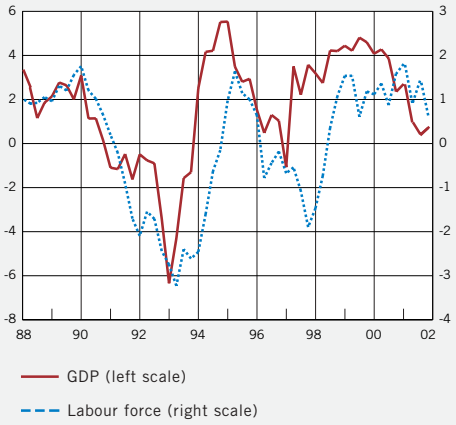
17 Mean working time is calculated here as annual hours worked (derived from the national accounts) divided by the average number in employment and not absent for personal illness (derived from the labour force surveys). The Riksbank's forecasts use the total number in employment.

Figure B11. Contributions to annual changes in hours worked.
Per cent



Sources: Labour force surveys (population, labour force, employment, sick leave and mean working time), National accounts (mean working time) and the Riksbank (calculation of hours worked).

Figure B12. GDP and labour force (no. of persons).
Percentage 12-month change



Source: Statistics Sweden.

market situation, for example.[18] Other components may be affected by changes in the age structure of the working population. Labour force participation by both young and elderly people has generally been below the average rate, for example.

A factor of importance for *labour force participation* is the demand situation (Fig. B12), in that people may refrain from entering the labour force if they see little chance of getting a job. But labour force participation is also related to supply, being affected by, for instance, wages, taxes and work-free income (e.g. transfers), as well as by institutional changes in the educational system and labour market programmes, for example. The decreased participation in the period 1996–98 was partly connected with the government drive for education that was introduced in July 1997.[19]

Moreover, Fig. B11 shows that *employment* largely followed the cyclical pattern and was affected by, for example, the state of demand, the price of various production factors (e.g. wage costs) and technical developments. The level of unemployment can also have to do with a mismatch between the available jobs and those looking for work, as well as by institutional changes such as the construction of unemployment insurance. During the past two years employment has risen appreciably despite the economic slowdown and rising real wages. Underlying factors here may be labour hoarding and increased absenteeism.

Sick leave has tended to lower the increase in hours worked for a number of years. Studies have shown that a high level of unemployment may restrain the propensity of employees to report sick.[20] The reverse may apply, however, in the case of long-term illness and early

18 See e.g. *Barnafödandet i fokus – från befolkningspolitik till ett barnvänligt samhälle* (Focus on childbirth – from population policy to a child-friendly society), Ministry of Health & Social Affairs, DS 2001:57.

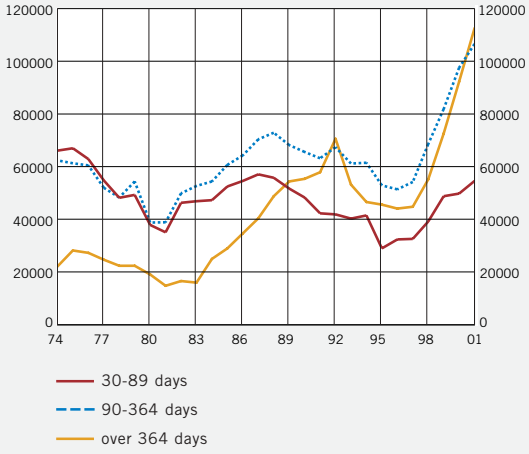
19 The purpose of this programme was to raise the general level of education, mainly among unemployed adults with little or no three-year upper secondary schooling. The programme initially provided an additional intake of 110,000.

20 See e.g. Lantto, K. & Lindblom, E., (1987), Är arbetslösheten hälsosam? (Is unemployment healthy?), *Ekonomisk Debatt* 4, and Lindwall, U. & Skogman Thoursie, P., (2000), *Sjukfrånvaron och förtidspension – En beskrivning och analys av utvecklingen de senaste decennierna*, (Sick leave and early retirement – a description and analysis of developments in recent decades), 2, National Social Insurance Board.

retirement (the latter is often preceded by the former). Those who become redundant when labour demand falls and who are to some extent incapacitated or ill are liable to be completely excluded from the labour market. A breakdown of sick leave by its duration shows that the increase in recent years has come mainly from long-term illness (Fig. B13). One explanation for this may be that the rules for qualifying for early retirement were tightened in 1997.[21] Another institutional explanation for the recent path of absenteeism for illness could be the replacement level in health insurance. In 1998, for example, the level was raised from 75 to 80 per cent.[22] Some part may also be played by other incentives connected with the interactions of unemployment insurance with sickness insurance.[23] There is, for instance, an increased tendency to report sick towards the end of a period of unemployment. It is also conceivable that the activity guarantee, which encroaches on an unemployed person's free time, may have contributed to increased sick leave among the unemployed. Changes in the age structure of the working population may play a part, too.[24]

Mean working time, the last component of hours worked, fluctuates markedly over time. One explanation for this may be labour hoarding; recently, for example, overtime has fallen sharply. Institutional factors may also play a part. For example, the agreed adjustment of working time to the level of activity, particularly in manufacturing, that was introduced in 1998 may have contributed to the recent slowing of mean working time. Changes in mean working time may also have to do with changes in supply. The economic literature shows that employees may choose to shorten/lengthen their working time in response to changes in wages, taxes and work-free income, for example. In practice, however, working time is relatively regulated.

Figure B13. Recipients of sickness benefits broken down by the duration of sick leave.



Source: National Social Insurance Board.

21 Lindwall, U. & Skogman Thoursie, P., (2000), *idem*.

22 See e.g. Henrekson, M. & Persson, M., (2004), The effects on sick leave of changes in the sickness insurance system, *J. of Labor Economics* 22:1.

23 See Larson, L., (2002), Sick of being unemployed? Interactions between unemployment and sickness insurance in Sweden, *IFAU Working Paper* 6.

24 Simple calculations, using the studied age groups' actual proportions of the working population while their sickness rates are held constant at the 1996 level, show that demographic changes account for little more than 6 per cent of the increase in sick leave in the period 1996–2001. When each cohort's sickness rate is held constant at the level in 2001, total sick leave rises only marginally in the forecast period. On the other hand, calculations from the Swedish Trade Union Confederation indicate that the significance of the demographic effects for sick leave is considerably greater, see Andersson, D., Löfgren, A.K. & Wennemo, I., (2002), Ge alla unga ett lånefritt högskoleår (Give all young people a loan-free college year), *Dagens Nyheter* 19 April. Thus, the results seem to depend on the choice of method as well as data.

ILLUSTRATIVE CALCULATIONS FOR 2002-04

The decomposition presented above can be used to illustrate conceivable future scenarios. The Inflation Report's main scenario for hours worked in the period 2002–04 is presented in Table B3 together with three illustrative alternatives. In the main scenario, a fall in hours worked this year is followed by increases in 2003 and 2004.

The first illustrative calculation shows the isolated effect on hours worked from the demographic developments forecast by Statistics Sweden. (The contributions from other factors in the decomposition are accordingly set to zero.) It will be seen from Table B3 that the expected future contribution from changes in the working population are positive; neither do they differ appreciably from earlier contributions (Fig. B11). However, the age structure of the working population could have effects on other components, for example labour force participation and sick leave.

The next illustrative calculation concerns the future development of sick leave. The main scenario assumes that the increase in sick leave ceases during the forecast period. However, the recent increase in absenteeism for illness creates uncertainty about future labour supply. Table B3 shows how hours worked may develop if sick leave were to go on rising in the forecast period.[25] The trend for hours worked would then be appreciably weaker than in the main scenario. Instead of rising 0.7 per cent in 2004, for example, hours worked would be unchanged. It should be noted, however, that such a strong increase in sick leave is considered to be unlikely, particularly in view of the employment forecast in the main scenario. Statistics on short-term sick leave among private employers with up to 49 employees show that sick leave in 2001 Q4 was unchanged from a year earlier, which may indicate that the inflow to sick leave has stopped rising.[26] However, in the same period the proportion of cases that were passed on to insurance offices (sick leave with a duration of more than 14 days) rose from 12 to 14 per cent.

25 In this calculation the number of persons on sick leave in the age groups 16–24, 25–54 and 55–64 years is projected to go on rising in the forecast period at the same average rate as in 1999–2001. As the number in employment is assumed to follow the main scenario, in this illustrative calculation the increase in the proportion on sick leave is remarkably high.

26 See *Korta sjukfrånvaron fjärde kvartalet år 2001* (Short-term sick leave 2001 Q4) (2002), Statistikinformation Is-I 3, National Social Insurance Board.

The third illustrative calculation concerns mean working time, for which the main scenario assumes that the decrease will cease. However, a statutory shortening of working hours would no doubt lead to a fall in mean working time. Table B3 shows how hours worked may develop if working hours are shortened by 2 days in 2004. According to a report from the National Institute of Economic Research, a statutory reduction of standard working hours would lead to a decrease in hours actually worked.[27] This example shows that with a shortening of working time, the development of hours worked in 2004 would be appreciably weaker than in the main scenario.

Table B3. Hours worked in the main scenario and in three illustrative calculations.
Percentage annual change

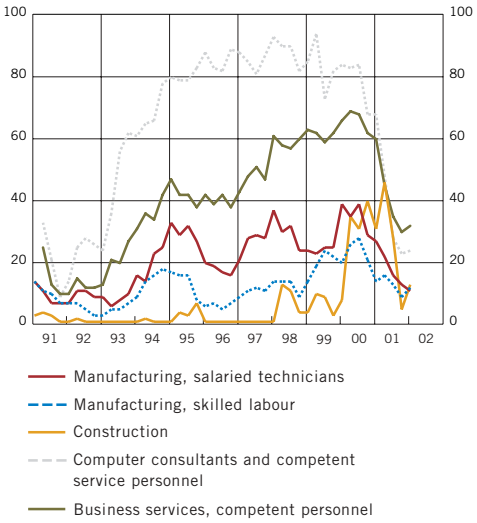
	Main scenario	Demography	Higher sick leave	Shorter working time 2004
2002	-0.4	0.6	-0.9	-0.4
2003	0.5	0.4	-0.1	0.5
2004	0.7	0.4	0.0	0.1

Source: The Riksbank.

To sum up, the weak trend for total hours worked in the period 1999–2001 mainly has to do with increased sick leave and shorter mean working time. If these two factors had stayed at the level in 1999, the growth of hours worked in 1999–2001 would have averaged 2.1 per cent instead of 0.9 per cent. The causes of the unfavourable development of mean working time and sick leave probably lie in both cyclical and structural factors. A continued increase in absenteeism for illness would have a negative effect on labour supply and thereby on potential growth in the coming years.

27 See *Samhällsekonomiska effekter av en allmän arbetstidsförkortning*, (2002), (Macroeconomic effects of a general shortening of working time) , National Institute of Economic Research.

Figure 21. Labour shortages according to business tendency surveys. Per cent



Source: National Institute of Economic Research.

Resource utilisation rises again in 2003 and 2004.

Resource utilisation fell in the course of last year. No new national accounts data, which could provide a basis for new estimations of the output gap, have been published since the time of the March Report. Other statistics do not suggest that current resource utilisation has changed appreciably since that time. The National Institute's business tendency data indicate that labour shortages are still low in certain sectors, for instance construction and computer services (Fig. 21). In the local government sector, however, the latest tendency survey shows an increased labour shortage in health care, for example, and in the coming six months the current shortages are expected to continue or grow, mainly among the municipalities. The National Labour Market Board likewise reports high shortages in care and schools, for example.[28] Resource utilisation in some other sectors, not least the service industries, is difficult to assess due to a lack of equivalent surveys. The high employment and low unemployment to date, together with the high waged increases in the past year, point to resource utilisation still being relatively high.

Some increase in GDP growth is foreseen this year, but not enough to raise resource utilisation. The uncertainty about the potential growth rate has grown, partly because it is not clear to what extent various labour reserves can be activated. The envisaged path for growth implies that actual growth will be above the potential rate in the latter part of the forecast period. That in turn points to a renewed increase in resource utilisation, which is probably already relatively high initially.

28 Israelsson, T., Stannerfors, T. & Tydén H., (2002), Arbetsmarknadsutsikterna för 2002 och 2002 (Labour market prospects for 2002 and 2003), *Ura* 4, National Labour Market Board.

EFFECTS OF TEMPORARILY LOWER PRODUCTIVITY GROWTH

GDP growth in Sweden in 2001 was lower than had been expected. Consumption, investment and exports all slackened. Labour productivity fell off, unit labour costs moved up, inflation rose and the path of the exchange rate was weaker than expected. A conceivable explanation for the developments last year could lie in shocks on the supply side (see also the boxes on pp. 22–26 and 32–37). Effects of a supply shock are illustrated here with a simple simulation in a macro model.

Productivity shocks can affect inflation in various ways. If a weaker level of activity entails a lower utilisation of capital and labour, pressure from costs will probably rise in the short run but when growth picks up again, productivity will also improve. If potential output changes more permanently, perhaps through the introduction of new technology or because the workings of the labour market are affected by changes to taxes and transfers, people may adjust their expectations about future profits, incomes and wealth. The impact of such a shock on inflation is not self-evident, depending as it does on, for example, how firms and households expect the central bank will act.

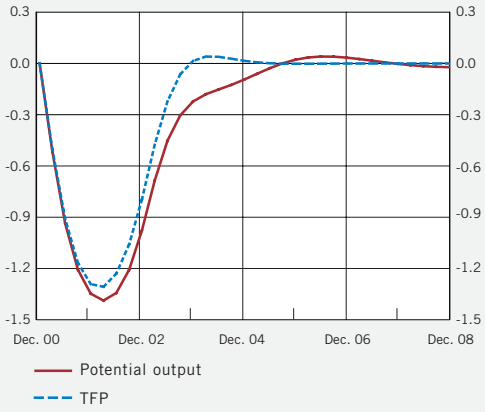
SIMULATION WITH RIXMOD

In order to throw light on developments in recent years, effects of a negative supply shock have been simulated with the Riksbank's model Rixmod, which combines a long-term equilibrium model and a dynamic model.[29]

The long-term model has basic features in common with dynamic general equilibrium models but it has been enlarged with, for example, a relative price structure. The short-run adjustment towards long-term equilibrium is explained with a dynamic model with certain market imperfections such as price rigidities and imperfect competition. The dynamic model is intended to catch behaviours that the long-term model does not explain but which the data seem to express, for instance that adjustment costs influence investment or that transaction costs affect price and wage setting behaviour. Rixmod assigns considerable importance to the expectations of households and firms about future prices and volumes. The expectations are a combination

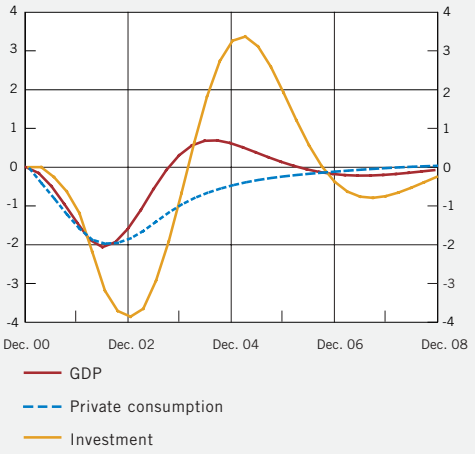
29 For a fuller discussion of Rixmod, see Nilsson, C., (2002), Rixmod – the Riksbank's macro model for monetary policy analysis, *Sveriges Riksbank Economic Review* (forthcoming).

Table B14. A temporary fall in total factor productivity (TFP) and potential output. Per cent, difference from baseline



Source: The Riksbank.

Figure B15. Effects on domestic demand and GDP of temporarily lower TFP. Per cent, difference from baseline



Source: The Riksbank.

of model-consistent (rational) and backward-looking (adaptive) elements. In accordance with a monetary policy rule, the interest rate is adjusted in relation to the degree to which inflation six to seven quarters ahead deviates from the targeted rate.

The example illustrates how a temporary fall in the level of total factor productivity (TFP) affects the economy (the duration of the shock is assumed to be two years).

The assumed shock is presented in Fig. B14.[30] In order to isolate the shock's effects, the economy is assumed to be in long-term equilibrium initially.[31]

The downward shift in TFP in the early stage catches households and firms by surprise. Although firms and households are forward-looking and realise after a while that TFP will return to its earlier path, it is not entirely clear how the changes in productivity will affect incomes and profits, for example.

In this example the path of TFP is set exogeneously but potential output will still be affected through the endogeneous development of the capital stock (Fig. B14). Production capacity as mirrored in potential output falls almost 1.5 per cent in year one compared with the outcome without the shock.

Households are aware of the slowing of potential growth and react by curbing their consumption (Fig. B15). As they initially perceive the drop in productivity as being permanent, the consumption response is relatively pronounced, though less so than the drop they foresee in long-term income. To counter the weaker productivity's impact on consumption, households accordingly reduce their saving.

Households adjust their consumption to the lower potential growth more or less directly, while the slowing of corporate investment occurs more gradually. Wage rigidities and falling labour productivity imply rising unit labour costs for firms, which leads in turn to rising prices. Rising costs and lower GDP growth than expected prompt firms to lower investment. Productivity's initial

30 The example assumes that in time, TFP returns to its path from before the negative shock, which means that productivity growth will be higher in the period after the shock and the economy accordingly returns to the initial long-term equilibrium. Growth rates, relative quantities and relative prices will then be the same as in the outcome without the shock.

31 Even if capacity utilisation was neutral during 2000, implying that the output gap was zero, this does not mean that the economy was in long-term equilibrium. The stronger growth of exports and imports compared with GDP in the 1990s suggests, for example, that the economy was in a process of adjustment to structural changes that entail an increased share for foreign trade.

fall and subsequent recovery give rise to a relatively pronounced investment cycle. The output gap is positive to begin with because the lower productivity affects potential output sooner than it does actual output and demand.

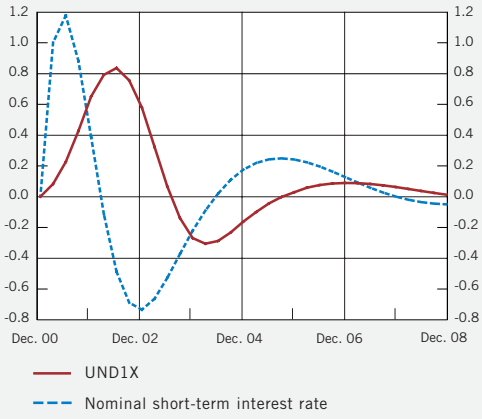
EFFECTS ON INTEREST RATES AND THE EXCHANGE RATE IN RIXMOD

In the simulation, the inflationary impulse is countered by raising the instrumental rate about 1 percentage point. This is needed in the model to prevent increased inflation from affecting inflation expectations. But as demand remains subdued while potential output begins to return to the long-term trend, the output gap becomes successively negative. The decreased demand accordingly helps to anchor inflation expectations around the target, which lessens the need for a more pronounced initial increase in the short-term interest rate. After four quarters, the negative output gap is so large that the interest rate can be lowered.

The exchange rate is affected by two opposed mechanisms. One is a depreciating tendency on account of the weakening of productivity. The real exchange rate depreciates, but only temporarily in that productivity is expected to return to the reference path. The nominal exchange rate also depreciates. The falling exchange rate during year one contributes to a rising rate of inflation in that imported inflation moves up. The other mechanism is the tighter monetary policy's tendency to counter the depreciation. But as the inflationary impulse is higher than abroad, the weakening of the nominal exchange rate remains.

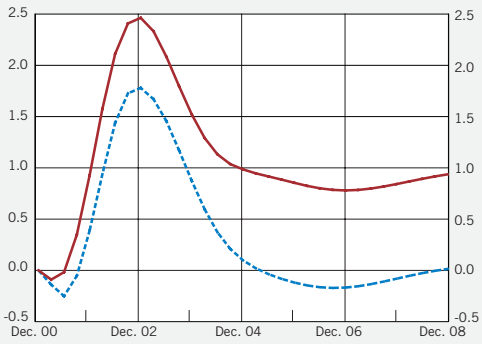
To sum up, the simulation in Rixmod shows that a temporary supply shock that lowers total factor productivity can have major consequences. Potential output falls and so do household consumption and corporate investment. Consumption's decline is countered to some extent in that household saving is also adjusted downwards but the fall in investment is considerable and reduces capital stocks. As a result, the output gap is positive initially, which tends to raise inflation. When the temporary lowering of productivity comes to an end, production rises. Investment picks up again and rises above the earlier equilibrium level. The renewed increase in production capacity also means that inflation falls back. The simulations illustrate the importance of basing monetary policy decisions on forward-looking assessments of supply or demand.

Figure B16. Effects on UND1X and short-term interest rate of temporarily lower TFP. Percentage points, difference from baseline



Source: The Riksbank.

Figure B17. Effects on nominal and real exchange rate of temporarily lower TFP. Per cent, difference from baseline



Source: The Riksbank.

Table B4. Effects on the Swedish economy in year one of a temporary fall in total factor productivity.

Percentage deviation from baseline	
Household consumption	-1.0
Public consumption	-1.5
Fixed gross capital formation	-0.5
Exports	-1.2
Imports	-1.6
GDP	-0.8
Hours worked	0.1
Labour productivity	-0.9
UND1X (Dec.–Dec.)	0.6
TCW exchange rate	0.3
Short-term interest rate	0.9

Note. The deviations in UND1X and the interest rate are given in percentage points.
Source: The Riksbank.

Annual rate of wage increases is above 4 per cent.

The preliminary rate of wage increases in 2001 was 4.3 per cent. The available wage statistics for this year show that the rate is still high. Wage increases in January and February averaged 3.8 per cent, which is about 0.8 percentage points more than in this period a year earlier.

The average annual wage rise this year is expected to be 4.0 per cent or somewhat lower than in 2001. This has to do with the construction of wage agreements and some weakening of the labour market. Last year's weak productivity growth and falling profits may also tend to hold wage increases back. In 2003 and 2004 the assumption of a successive improvement in the labour market points to higher wage drift. Another pointer to higher wages is the increase in replacement levels in unemployment insurance; higher replacement levels can lead to higher unemployment as well as higher real wages.[32] At the same time, somewhat lower inflation is likely to influence inflation expectations among labour market organisations and that in turn should tend to dampen new wage agreements. In 2003 and 2004 the average wage level is judged to rise 4.1 and 4.3 per cent, respectively.

The assessment of total wage developments is broadly the same as in the March Report but the picture at sector level has been revised. The rate of public sector wage increases is now judged to be higher throughout the forecast period. This is partly because labour shortages here are expected to become increasingly marked in the coming years. At the same time, somewhat lower resource utilisation prompts some downward adjustment of wage increases in the corporate sector.

Table 4. Labour market forecast in the main scenario.
Percentage annual change and per cent of labour force

	2000	2001	2002	2003	2004
Nominal wage	3.7	4.3	4.0 (4.0)	4.1 (4.1)	4.3 (4.3)
Labour productivity	2.1	0.7	1.9 (1.8)	2.2 (2.2)	1.8 (1.9)
Unit labour costs	1.9	3.8	2.1 (2.2)	1.9 (1.9)	2.4 (2.4)
Number employed	2.2	1.9	-0.4 (-0.4)	0.2 (0.6)	0.7 (0.7)
Hours worked	1.5	0.5	-0.4 (-0.2)	0.5 (0.8)	0.7 (0.7)
Open unemployment (level)	4.7	4.0	4.4 (4.4)	4.4 (4.3)	4.3 (4.2)
Labour market programmes (level)	2.5	2.5	2.5 (2.5)	2.3 (2.3)	2.1 (2.2)

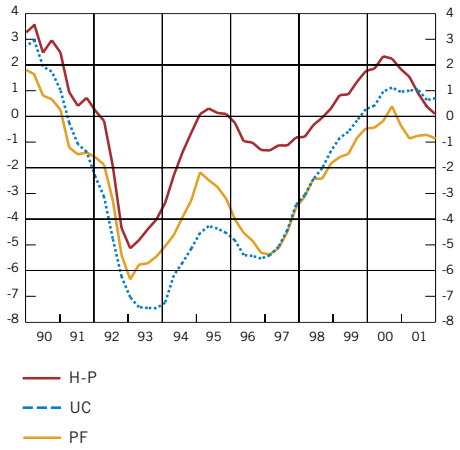
Note. Forecast 2002–04; the figures in parentheses are the assessments in the March Report.
Sources: Statistics Sweden and the Riksbank.

Corporate sector profitability is under pressure.

The assessment of wage increases and productivity implies that the increase in unit labour costs, which is of crucial importance for domestic inflationary pressure, will be somewhat lower than foreseen in the March Report.

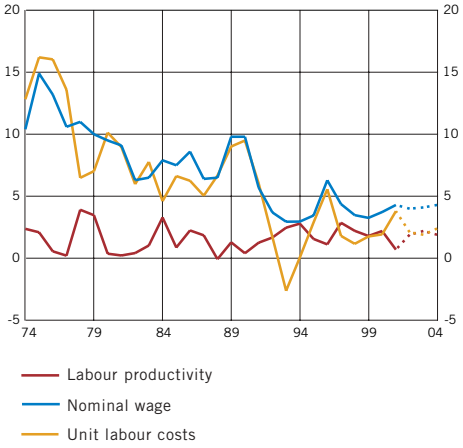
32 See e.g. Calmfors, L & Holmlund, B., (1999), "Arbetsmarknad, arbetslöshet och tillväxt" (Labour market, unemployment and growth), in Calmfors, L. & Persson, M., (eds.), *Tillväxt och ekonomisk politik* (Growth and economic policy).

Figure 22. Econometric estimates of the output gap.
Per cent of potential GDP



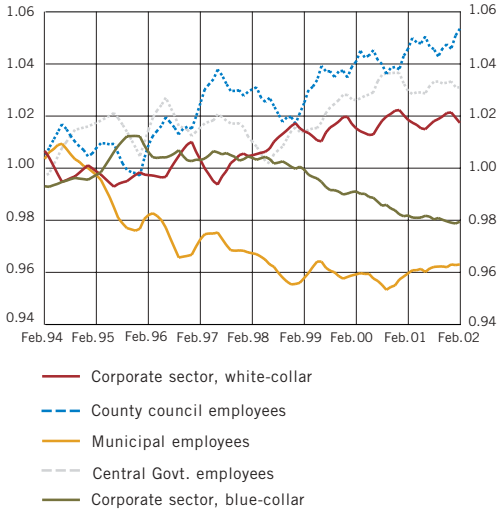
Note. Data presented as moving four-quarter means. H-P stands for the Hodrick-Prescott (or Whittaker-Henderson) filter, UC is the unobserved components method and PF is the production function approach.
Sources: Statistics Sweden and the Riksbank.

Figure 23. Nominal wages, labour productivity and unit labour costs in the total economy.
Percentage annual change



Note. Riksbank forecast 2002–04.
Sources: National Institute of Economic Research, Statistics Sweden and the Riksbank.

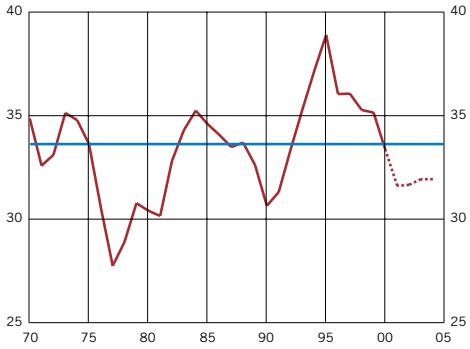
Figure 24. Wage developments for different groups relative to the total change. Index: 1992=100



Note. Seasonally-adjusted series expressed as 6-month moving average.

Sources: Statistics Sweden and the Riksbank.

Figure 25. Profit share. Per cent of GDP at factor values



Note. The horizontal line represents the mean for the period 1970–2000; 2001–04 forecast.

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

Profit's share of value added is affected to the extent that increased unit labour costs are not covered by raising prices. Various indicators of corporate sector profits suggest that profitability is generally rather weak initially, which limits the possibility of covering increased costs by reducing profits. The profitability assessments in the business tendency surveys from the National Institute of Economic Research suggest that profitability in manufacturing is generally weak, albeit with a wide variation between industries. Profitability is favourable in the pulp and paper industry, for which the weak exchange rate seems to be a notable advantage, whereas for telecom products it is very poor. Profitability in services sectors is favourable in retail trade, particularly everyday retailing, but poor for computer consultancy and business services. This year's Q1 reports from listed companies show lower profits than a year earlier; a compilation of the reports from about fifty large companies shows that, excluding capital gains and restructuring costs, profits fell SEK 4 billion or 7.5 per cent.

In the forecast period the profit share of value added in the total economy is judged to stabilise and remain relatively low in a historical perspective (Fig. 25).

WAGE STATISTICS AND THE STATUS OF AGREEMENTS IN SPRING 2002[33]

A picture of some of the available statistics on wages and labour costs is presented here, together with a description of the revisions to some wage data: how large have the revisions in recent years actually been and can a pattern be discerned? Finally, the status of wage agreements is reviewed.

WAGE STATISTICS

Data on wages and labour costs in Sweden are produced by various parties, for instance trade unions, employer organisations, Statistics Sweden and the OECD. It is, however, Statistics Sweden that produces the official statistics in this field, in the form of monthly (conjunctural) wage statistics, a labour cost index (referred to here with the Swedish acronym: AKI) based on the monthly statistics, and annual (structural) wage statistics. Moreover, AKI is incorporated in a European Labour Cost Index (LCI) that also counts as a part of the official wage statistics. Since the beginning of 2001 the authority responsible for the official wage statistics is the National Mediation Office. Statistics Sweden also produces wage bill statistics, based on income statements and tax returns.

Wage developments in Sweden are usually forecast with the monthly (conjunctural) wage statistics. Two reasons for using these statistics are the frequency with which they are published and the quality in general. They are based on aggregated data from a sample of firms together with a total survey of the public sector (see Table B5). However, they miss some components, for instance irregular disbursements, often based on performance, such as bonus wages and a thirteenth monthly wage. The concept of wages in AKI and LCI is somewhat broader than in the monthly statistics; the additional items include statutory and negotiated employer contributions, wage taxes and certain cash disbursements and benefits in kind. AKI is published monthly, LCI quarterly.

The annual (structural) wage statistics are obtained in a total survey, performed once a year, and – unlike the statistics mentioned above – they are based on individual

33 Some of the data presented here come from the National Mediation Institute's annual report (*Avtalsrörelsen och lönebildningen 2001*, February 2002, with a summary in English), which includes more detailed accounts of certain topics that are considered here. The Institute has also permitted the use of other data from its unpublished material.

data. This means that the annual statistics can be broken down by region, sex, age, education and occupation. Among other things, this makes it possible to analyse wage distributions and relative wage developments for different groups in the Swedish labour market. Here, too, the wage concept is broader than for the monthly statistics; additional items includes bonus wages, performance-related wages and taxable benefits.

Statistics on wage bills paid out, derived from income statements and/or tax returns, are also produced by Statistics Sweden. Like the annual wage statistics, they are obtained with a total survey but of firms instead of individuals. The wage bill data are published quarterly and, like the annual wage statistics, they include bonus wages, performance-related wages and taxable benefits, for example. Together with data on employment (number of persons or hours worked), the wage bill series can be used to calculate wage developments in the economy. The OECD and other international forecasters use the wage bill divided by the number in employment as a measure of wage development in various OECD countries.

The monthly (conjunctural) wage statistics are available for virtually the whole of the labour market

Table B5. Summary of wage statistics

	Published	Revisions	Population/coverage	Wage concept
Conjunctural wage statistics	Monthly	12 months	Firms and public sector/total and sample survey, respectively	Wage for hours worked, certain fixed and variable supplements, etc.
Labour cost index for Sweden (AKI)	Monthly	6 months	Firm/sample survey	Wage for hours worked, cash reimbursements, benefits in kind, employers' contributions, etc.
Labour cost index for Europe (AKI)	Quarterly	2 quarters	Firm/sample survey	Wage for hours worked, cash reimbursements, benefits in kind, employers' contributions, etc.
Wage bills	Quarterly	1 quarter, final as of 2001/up to 10 quarters*	Firms and public sector/total survey	Wage for hours worked, variable supplements, bonus & performance wages, taxable benefits, etc.
Structural wage bills	Annually	Final	Individuals/total survey public sector,sample survey private sector	Wage for hours worked, variable supplements, bonus & performance wages, taxable benefits, etc.

Note. *)Wage bill statistics are published in Statistics Sweden's series *Lönesummor, arbetsgivaravgifter och preliminär A-skatt from skattedeklarationer* (Wage bills, employer contributions and preliminary A-tax from tax returns) and the outcomes are final as of 2001. This and some other statistical sources are used as a basis for the wage bill calculations for the National Accounts; for those calculations, moreover, some adjustments are made, for example to incorporate assumptions about the "black" economy. Up to 10 quarters may pass before the wage bill statistics in the National Accounts are finalised.

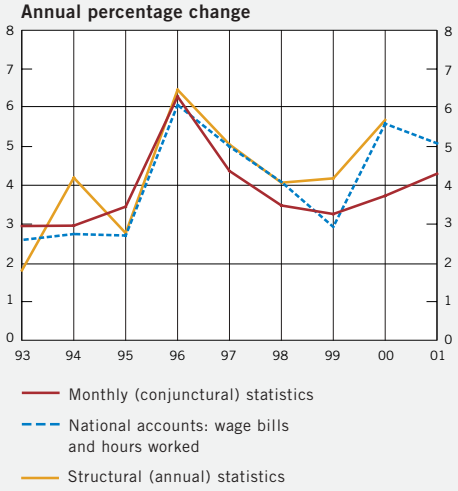
from 1990 onwards. The statistics distinguish between blue-collar workers and salaried employees in the private sector and employees in the central government, county council and municipal sectors. However, the sector data on hourly and monthly wages, including various forms of supplementary wages, are not fully comparable. In the private sector, they show the average hourly wage including overtime pay for blue-collar workers as opposed to the average monthly wage including variable supplements for salaried employees. In the public sector, they show the average of agreed fixed monthly wages for county council and municipal employees, while for central government employees they show the average monthly wage including fixed and variable supplements.

Since January 2000, average wages according to the monthly statistics are finalised after one year, that is, after twelve monthly reports; previously they were finalised after six months. Revisions are occasioned mainly by retroactive wage payments, for instance as a consequence of local agreements. An analysis by the Riksbank of the revisions to wage statistics in recent years shows that in the period 1997–2001 the magnitude of the revisions varied from year to year (Table B6). In 2000 and 2001 the average rate of wage increases in the total economy was adjusted upwards from the first preliminary outcome to the final outcome (for 2001 the most recent preliminary outcome) by an average of about 0.8 percentage points. However, the period studied is short. The results may have been affected by changes in the structure of agreements in recent years and the fact that the economy was in a strong upward phase. Table B6 presents the first published outcome of the preliminary rate of wage increases (time *t*) and the final revised outcome twelve reports later (time *t*+12). It follows that the period during which revisions are made for a particular year, that is, from the first preliminary outcome for January to the final outcome for December, is about two years.

The revisions are made mainly in the early part of the period; in the period January 2000 up to March 2001 at least 90 per cent occurred in the first six months. This is also evident from Figure B18, though as the period for revisions to 2001 lasts until the end of 2002, final data are not yet available for all the months.

Patterns showing that the magnitude of revisions deviates in certain months have not been found for the total economy in this period. Unusually large revisions occur randomly and are therefore difficult to foresee. As noted in the March Inflation Report, wage increases during 2001 were unexpectedly large. The revisions were sizeable above all in November and December (Figs. B19 and 20).

Figure B18. Three measurements of wages in the total economy.
Annual percentage change



Sources: Statistics Sweden and the Riksbank.

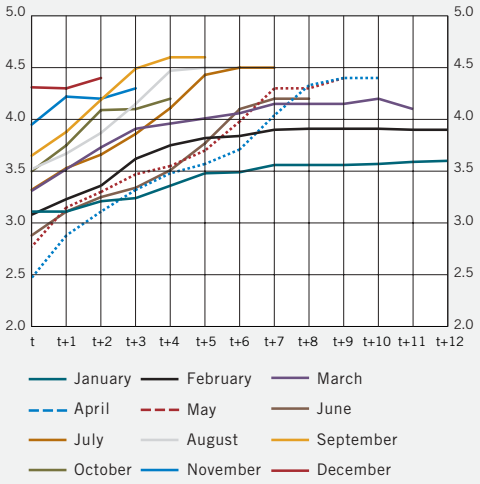
Table B6. Magnitude of wage revisions for 1997–2001.
Change between the annual average of the first preliminary and the final or the latest preliminary monthly outcomes.

Sektor	1997			1998			1999			2000			2001		
	1st prel. (%)	Final (%)	**Diff. (p.p)**	1st prel. (%)	Final (%)	**Diff. (p.p)**	1st prel. (%)	Final (%)	**Diff. (p.p.)**	1st prel. (%)	Final (%)	**Diff. (p.p.)**	1st prel. (%)	Latest prel. (%)	**Diff. (p.p.)**
Central govt.	–	–	**–**	1.15	2.53	**1.38**	3.58	4.70	**1.12**	3.70	4.74	**1.04**	1.99	3.97	**1.98**
County councils	5.34	5.95	**0.61**	1.81	2.40	**0.59**	–	–	**–**	3.16	4.19	**1.03**	3.42	4.91	**1.49**
Municipalities	3.34	4.36	**0.89**	1.30	2.15	**0.85**	–	–	**–**	2.54	3.33	**0.76**	2.88	4.71	**1.83**
Public sector	–	–	**–**	1.36	2.29	**0.93**	–	–	**–**	2.94	3.88	**0.94**	2.76	4.56	**1.80**
Private sec. workers	4.14	4.52	**0.38**	2.69	3.17	**0.48**	2.16	2.31	**0.26**	2.83	3.00	**0.17**	3.28	3.72	**0.44**
Private sec. salaries	3.40	3.99	**0.59**	4.16	4.80	**0.64**	3.18	3.52	**0.34**	3.44	4.00	**0.56**	3.61	4.31	**0.70**
Total economy	–	–	**–**	2.81	3.48	**0.67**	–	–	**–**	3.16	3.74	**0.58**	3.28	4.25	**0.97**

Note. Prior to 1999, local government wage statistics were produced by the respective central associations. When production was taken over by Statistics Sweden the method of measuring the rate of wage increases was changed, which for the time being rules out an evaluation of wage revisions for these sectors. For the period 1997–98 the size of the revisions for county councils and municipalities has been calculated as retroactive disbursements expressed as a percentage of the total paid-out wage bill (adjusted for retroactive disbursements) in each sector. Prior to 1999, moreover, the wage statistics for the central government sector were published quarterly, which may have affected the result for 2000. Statistics Sweden lacks documents on preliminary and final central government wages for 1997. For 2001 the central government sector does not include either the Riksbank or central government agencies. For 2001 the magnitude of the revisions is calculated as the difference between the annual averages of the first preliminary monthly outcomes in 2001 and the preliminary outcomes from February 2002.

Sources: Swedish Association of local Authorities, The Swedish Federation of County Council, Statistics Sweden and the Riksbank.

Figure B19. Preliminary and final rates of wage increases in 2001.
Per cent



Note. Time *t* is the first preliminary outcome for each month and is followed by *t*+1, *t*+2, *t*+3 and so on up to the final outcome at *t*+12.

Sources: Statistics Sweden and the Riksbank.

THE STATUS OF AGREEMENTSIN SPRING 2002

The average rate of wage increases as measured by the monthly statistics covaries to a large extent with the average rate of negotiated wage increases in the total economy (Fig. B21). The residual (the gap between the two curves in Fig. B21) is usually referred to as wage drift. During 2001 wage drift increased from the previous year by 0.3 percentage points. The size of wage drift is dependent in part on the situation in the labour market. It is also affected by structural factors such as changes in the composition of work forces.[34]

Calculations of negotiated wage increases are published by, among others, the National Mediation Office, the National Institute of Economic Research and the Riksbank. Wage agreements for a large part of the labour market were concluded in the course of last year. For 2001 the average negotiated wage rise was estimated to be about 3 per cent. The aggregate figure for 2002 is still preliminary because new agreements are pending for about half a million (annual) employees (Table B7). In 2003 there is the prospect of new agreements for fewer (annual) employees but another major round of wage negotiations is due in 2004.

The number of employees who may be involved in new agreements is liable to change because most settlements have cancellation clauses. Of the private sector employees with three-year agreements, about 80 per cent have the

34 For a fuller account of some of the determinants on wage drift, see e.g. Friberg. K. & Uddén Sonnegård, E. (2001), Changed wage formation in a changing world?, *Sveriges Riksbank Economic Review* 1, pp. 42–69.

possibility of cancelling the final period.[35] Most agreements include a right for either party to cancel the agreement not later than 31 October 2002. High inflation expectations among employer organisations increases the risk of agreements being cancelled. Moreover, relative wage shifts that are perceived as unfavourable for one or more groups in the labour market can give rise to demands for compensation and cancelled agreements.

Table B7. Some existing and expected wage agreements for 2002–05.

Year	Sector	Expiry date	No. of full-time employees
2002	*Corporate sector*		*287,000*
	- Transport	end 2001	34,000
	- Banking	end 2001	40,000
	- Telecom	31 October	37,000
	- IT	31 October	28,000
	Central government	31 March	*203,000*
	Total		*490,000*
2003	*Corporate sector*		*75,000*
	- Banking	31 December	40,000
	Total		*75,000*
2004	*Corporate sector*		*1,600,000**
	- Engineering:		300,000
	white- and blue-collar	31 March	
	- Trade:		
	white-collar	31 March	50,000
	blue-collar	30 April	80,000
	- Construction:		
	blue-collar	31 March	40,000
	- Chemical industry:		
	white-collar	30 April	50,000
	- Services industry,		
	white-collar		50,000
	Central Government	30 Sept.	*25,000*
	Local government		*45,000*
	- Municipal blue-collar	31 March	45,000
	Total		*2,075,000*
2005	*Corporate sector*		*3,000*
	Local government		*495,000*
	- Doctors	31 March	23,000
	- White-collar		
	(Academic Alliance)	31 March	45,000
	- White-collar		
	(SKTF, SSR, Ledarna)**	31 March	137,000
	- Teachers	31 March	200,000
	- Nurses	31 March	90,000
	Total		*498,000*

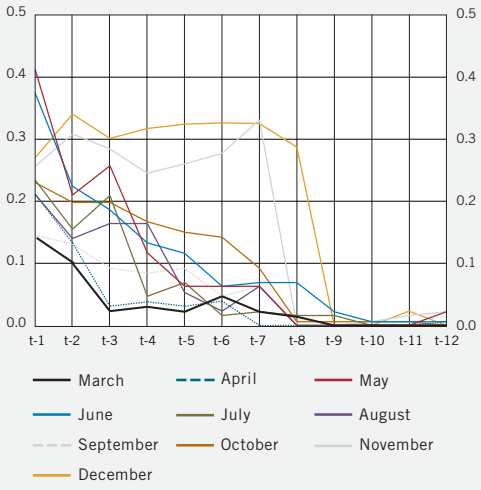
*This figure is a rough approximation.

**SKTF is the trade union federation for civil servants and clerical staff in local government or the church, SSR is the association for social workers and related groups, and "Ledarna" is the association for managerial and professional staff.

Sources: National Mediation Office and the Riksbank.

35 Not quite 85 per cent of all private sector employees have three-year agreements (36–39 months).

Figure B20. Size of wage revisions for the period March–December 2001. Percentage points



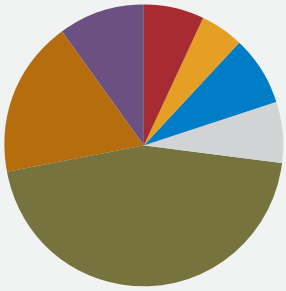
Note. For each month, *t* denotes the final outcome and *t*–12 the first preliminary revision. The line labelled November, for example, depicts the size of that month's revisions to the preliminary figures for October (*t*–1), September (*t*–2) and so on back to the first preliminary figure for November a year earlier (*t*–12).

Sources: Statistics Sweden and the Riksbank.

Figure B21. Nominal wage rise and negotiated wage increases for the total economy. Percentage annual figures

Sources: National Institute of Economic Research, Statistics Sweden, labour market organisations and the Riksbank.

Figure B22. Structure of corporate sector wage agreements from 2001.



- Local wage formation (7%)
- Local wage formation with individual guarantee/general increase if local negotiations break down (8%)
- Local wage formation with central decision if local negotiations break down (5%)
- Specified local amount, no individual guarantee (7%)
- Specified local amount, individual guarantee (45%)
- General increase and specified local amount (18%)
- General increase (10%)

Note: *Local wage formation* = wages set locally without a centrally fixed frame and no individual guarantee. *Central decision* = frame (amount/percentage increase) fixed centrally, to apply if local negotiators fail to reach an agreement. *Individual guarantee* = a share, guaranteed to each individual, of a centrally fixed frame (amount/percentage increase). *Specified local amount* = wage bill for local distribution. *General increase* = centrally fixed frame (amount/percentage increase) guaranteed to each individual.

Source: National Mediation Office (2001 annual report) February 2002.

As the proportion of agreements with an element of local wage formation has risen in the past decade, in future the centrally agreed wage increases may function less well as an indicator of wage developments.[36] In the 2001 round of wage negotiations the construction of corporate sector agreements was such that a relatively high proportion provided for local wage formation (Fig. B22). Such agreements, with various forms of local wage formation and centrally agreed sums for local distribution, mean that wage formation can be arranged entirely or partly at the local level for up to 70 per cent of private sector employees. Local wage formation in the public sector has also become more prevalent in the past decade.

To sum up, wage developments in Sweden are presented in a number of statistical sources. For forecasting, however, the monthly (conjunctural) wage statistics are used, partly because they are published frequently and are of high quality. In a survey of earlier revisions of the monthly statistics, a regular pattern of revisions could not be discerned, though it should be noted that the period covered is short. The analysis of revisions also indicates that wage drift picked up during 2001. The preliminary wage outcomes and the calculations of wage settlements for 2001 give a similar picture. A survey of wage agreements shows that settlements for a large segment of the labour market are due in the coming years. Agreements for about half a million employees are expected this year. As most of the existing agreements include cancellation clauses, however, the picture may change.

36 For the corporate sector, a compilation in Swedish will be found in *Fakta om löner och arbetstider 2002* (Facts about wages and working hours 2002), published by Svenskt Näringsliv (Swedish Business Corporation) in March 2002.

Inflation expectations

The inflation expectations of economic agents have an impact on inflation via price and wage formation and are therefore an important component of the monetary policy analysis. The formation of expectations is influenced by a variety of factors, including the Riksbank's communications and actions as well as perceptions of the inflation target as an anchor for future inflation. Since the March Report, households' expectations of inflation one year ahead have been broadly unchanged at around 2.5 per cent (Fig. 26).

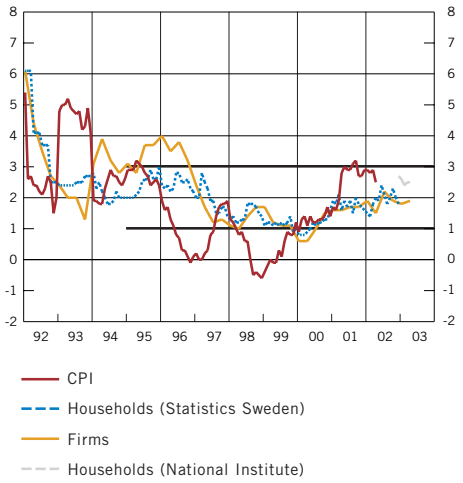
The April business tendency survey from the National Institute of Economic Research shows that firms' one-year inflation expectations are also largely unchanged, with an increase from 1.8 to 1.9 per cent (Fig. 26).[37]

Market prices (using implied forward interest rates) suggest that expectations of inflation two years ahead have risen about 0.5 percentage points since the time of the March Report, while the five-year expectations are broadly unchanged and in line with the inflation target (Fig. 27). It is uncertain, however, to what extent the increase for the two-year horizon does in fact mirror higher expectations. The measured change is probably in part a reflection of methodological problems[38] and should therefore be interpreted with caution, particularly as other indicators (e.g. explicit inflation forecasts by market agents, the slope of the yield curve and the interest differential with the rest of the world) do not suggest that inflation expectations have risen sharply.

The changes between the March and May surveys from Prospera are small for both the short and the longer run (Table 5). For all time horizons the expectations of the various groups are still more than 0.5 percentage points above the target even though monetary policy has been tightened 0.5 percentage points during the spring.

To sum up, expectations of inflation, not just one and two years ahead but also after five years, are somewhat above the Riksbank's inflation target. The expectations do not appear to have changed appreciably since the time of the March Report.

Figure 26. CPI and inflation expectations of households and firms.
Per cent



Note. The expectations are displaced 12 months into the future to coincide with the CPI outcomes to which they refer.

Sources: Statistics Sweden and National Institute of Economic Research.

Figure 27. Expectations of inflation two and five years ahead derived from implied forward interest rates.
Per cent

Source: The Riksbank.

37 The Institute's earlier distinction between manufacturing and service industries has been replaced by inflation expectations among firms in general.

38 One problem with deriving inflation expectations from implied yield curves for nominal and real bond rates lies in the different maturity structures for these two types of bond. The real bonds tend to have longer maturities than nominal bonds; the shortest current real bond matures in 2004. A closer look at the underlying bond rates reveals a marked drop in the two-year real rate; this is probably due in part to pricing in the presence of low liquidity.

Table 5. Expected rate of CPI inflation
Annual rate, per cent

Expected inflation 1 year ahead		
Money market agents	2.4	(0.1)
Employer organisations	2.7	(0.1)
Employee organisations	2.7	(-0.1)
Purchasing managers, trade	2.6	(0.0)
Purchasing managers, manufacturing	2.8	(0.1)
Households (April (March) HIP)	2.5	(0.0)
Firms (April (January) business tendency survey)	1.9	(0.1)
Expected inflation 2 years ahead		
Money market agents	2.4	(0.2)
Employer organisations	2.5	(0.0)
Employee organisations	2.6	(-0.1)
Purchasing managers, trade	2.6	(-0.1)
Purchasing managers, manufacturing	2.8	(0.1)
Expected inflation 5 years ahead		
Money market agents	2.2	(0.1)
Employer organisations	2.3	(0.0)
Employee organisations	2.5	(0.0)
Purchasing managers, trade	2.4	(-0.2)
Purchasing managers, manufacturing	2.7	(0.2)

Note. Unless indicated otherwise, the data are based on Prospera's survey in May 2002. The figures in parentheses are the change in percentage points from the previous survey.

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

Deregulations, political decisions and transitory effects

No new proposals involving changes in indirect taxes and subsidies have been presented since the time of the March Report. The outcome of tax changes decided earlier has been broadly in line with previous assessments. The EU Commission's tightening of the rules for car sales is still expected to act as some constraint on prices.

The European competition authorities are to examine to state of competition among airlines in Europe and plan to present proposals for a possible tightening of the competition rules later this year. In a European comparison, Swedish prices for air travel are not particularly high and low-price operators have recently helped to lower prices for international flights even among other operators in conjunction with falling demand. For domestic flights, however, prices have gone on rising, which could indicate somewhat less efficient competition in this market. Still, the effects on CPI and UND1X inflation of a price fall of, for example, 5 per cent on domestic and international flights would be marginal because the weight of these items is slight.

The new support for dental care for the elderly as of July this year is calculated to have a downward effect on the CPI and UND1X of not quite –0.1 percentage point.

Since the time of the March Report the repo rate has been raised a total of 0.5 percentage points, so the CPI contribution from house mortgage interest expenditure is calculated to be somewhat larger than foreseen earlier. The higher repo rate can also affect UND1X via rents, which tend to follow interest rates with some lag (Fig. 28). Interest costs make up about 45–50 per cent of total real-estate costs.

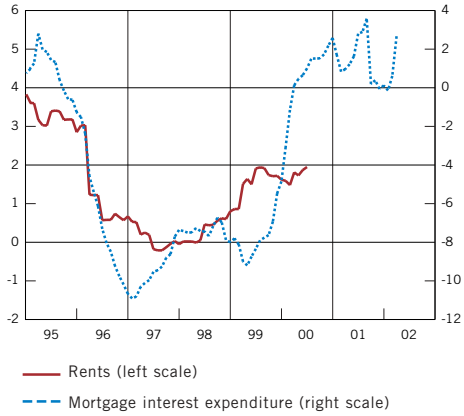
All in all, the contribution to CPI inflation from indirect taxes, subsidies and interest expenditure is judged to be somewhat larger than anticipated in the March Report (Table 6).

Table 6. Direct CPI effects from indirect taxes, subsidies and interest expenditure. Percentage points

	June 2002	June2003	June 2004
Indirect taxes and subsidies	-0.3 (-0.3)	0.1 (0.1)	0.1
House mortgage interest expenditure	0.1 (0.0)	0.2 (0.2)	0.3
Total direct effect	-0.2 (-0.3)	0.3 (0.2)	0.4

Note. The forecasts in the March Report are shown in parentheses for comparison.

Figure 28. Rents and house mortgage interest expenditure.
Percentage 12-month change



Note. The curve for rents has been displaced 21 months into the past.

Source: Statistics Sweden.

The risk spectrum

The inflation forecast in the main scenario represents what the Riksbank – given an unchanged repo rate – considers to be the most probable development of prices in the coming years. In view of the uncertainty in the forecast, some alternative paths for inflation are also presented. They are compiled as a spectrum of risks that have a bearing on the formation of monetary policy.

In the March Report it was judged that the spectrum of international risks was balanced, accompanied by a somewhat increased risk from an underestimation of domestic inflationary pressure. In the present Report the spectrum of international risks is still considered to be balanced and the uncertainty about domestic inflationary pressure continues.

Future world market growth is uncertain. The possibility of an asset price correction in the United States that elicits a quicker adjustment of personal balance sheets cannot be ruled out. Demand in the euro area may be subdued by a weakening of the labour market. At the same time there is a risk of a stronger trend in the United States, with larger positive knock-on effects in the rest of the world.

There is a risk of a weaker trend in the United States and Europe.

The main scenario still assumes that the upturn in the United States will be fairly moderate, partly because an increase is foreseen in household saving. It is conceivable, however, that the adjustment after the recent years of high activity will be more pronounced. That could happen if, for instance, a further fall in share prices or a clear drop in house prices were to result in a more marked change in the value of households' assets and liabilities. The adjustment of corporate and personal balance sheets may lead to a considerably weaker development in the United States. Such a scenario would also be likely to entail a correction of the overvalued dollar. The risk of developments being weaker than in the main scenario also applies to the euro area. Demand there could also be subdued if the labour market remains weak. Yet another factor that could hold back growth and inflation is increased uncertainty connected with the security policy situation. In the short run, however, such a development may contribute – via oil prices – to a somewhat higher rate of price increases.

The risk of a stronger development in the United States.

It is also conceivable that the strength of the recovery is underestimated. Stronger world market growth than assumed in the main scenario may result, not least, from the expansionary economic policy in many countries. Moreover, 2001 Q4 corporate profits in the United States exceeded expectations. Cash flows and profits both improved in connection with high productivity

and lower costs for labour and other inputs. In the main scenario these tendencies are expected to continue this year and lay the foundation for higher investment growth in the second half-year. Provided the positive profit trend and corporate confidence are sustained and continue to improve, in the coming years investment may turn upwards and rise more quickly than is now foreseen. The production of ICT goods in the United States, global demand for semiconductors and Asiatic exports of IT components have risen, which may herald a quicker recovery than expected for this sector. A more favourable development along these lines would probably have positive secondary effects not just in the United States but on world trade, too. The higher activity would entail higher inflationary pressure. In addition, there is the risk of the high wage settlements for German metalworkers pushing up the general development of costs in the euro area and contributing to higher inflation. All in all, the risks in the international picture are judged to be balanced for inflation in Sweden.

For inflation in Sweden, the risks in the international picture are judged to be balanced.

The dominant upside risk is considered, as in the March Report, to lie in inflationary pressure in a wide sense in the Swedish economy. In the spring of 2001 domestic inflation rose more than had been foreseen. In the Inflation Reports since then this has been seen in part as a consequence of more transitory price increases but it has also been noted that even when these effects are excluded, inflation has risen somewhat more rapidly than assumed earlier. During 2001, moreover, higher wages than expected accompanied a slackening of demand. Together with revised GDP statistics for 1999 and 2000, in the March Report this occasioned some upward revision of resource utilisation.

A continued increase in sick leave and a change in statutory working time would tend to lower potential output and thereby contribute to an appreciable increase in inflation towards the end of the forecast period.

Certain arguments to the effect that potential growth slackened during 2001 are outlined in the box on pp. 22–26. Such a tendency may come from a diminishing supply of production factors or lower productivity growth. The main scenario assumes that productivity growth in the years ahead is favourable. There is uncertainty, however, about the persistence of the structural problems that have arisen in certain sectors of manufacturing (e.g. the telecom industry) that contributed appreciably to the somewhat stronger productivity growth in the late 1990s. Another reason why potential growth may have slackened is an unfavourable development of labour supply (see the box on pp. 32–37). The main scenario assumes a marginal increase in average working time, due for example to increased overtime and an end to the growth of absenteeism. However, the outlook for absenteeism is difficult to judge and the effects of a possible shortening of working time also have to be considered. A continued increase in

sick leave and a change in statutory working time would tend to lower potential output and thereby contribute to an appreciable increase in inflation towards the end of the forecast period.

All in all, the upside risk for domestic inflationary pressure is considered to be the same as at the time of the March Report.

Another upside risk lies in wage formation, mainly in the services sector and the possibility of effects spreading to the production of goods. For one thing, labour market groups whose wage increases are relatively low may demand compensation for this; for another, the pass-through from the higher costs to future prices may be greater than assumed in the main scenario. When employment starts rising again in a labour market that is already tight, there is a risk of this affecting the wage agreements that are due in the years ahead, particularly if inflation expectations were then high. All in all, the upside risk for domestic inflationary pressure is considered to be the same as at the time of the March Report.

Against this background, the overall balance of risks is judged to be somewhat on the upside for CPI as well as UND1X inflation both one and two years ahead. In other words, higher inflation than in the main scenario seems to be somewhat more probable than a lower rate. This is evident from Fig. 29, which shows the uncertainty around the forecast for underlying inflation, measured as the 12-month change in UND1X. The balance of risks in the forecast for CPI inflation is likewise on the upside (Fig. 30).

The overall balance of risks is judged to be somewhat on the upside for CPI as well as UND1X inflation both one and two years ahead.

As monetary policy decisions are based primarily on an assessment of price tendencies twelve to twenty-four months ahead, it is the inflation prospects for this time horizon that are particularly relevant. Taking the risk spectrum (the Riksbank's weighted combination of the various risks for inflation) into account, UND1X inflation is expected to be 2.0 per cent one year ahead and 2.1 per cent after two years (Table 7).

Table 7. Inflation forecasts including the risk spectrum.
Per cent

	Annual rate		12-month rate	
	2002	2003	June 2003	June 2004
CPI	2.6 (2.4)	2.3 (2.3)	2.1	2.4
UND1X	2.8 (2.7)	2.1 (2.2)	2.0	2.1

Note. The table gives the mean values of the inflation assessment's probability distributions (see Figs. 29 and 30). The figures in parentheses are the corresponding values in the March Report.

Source: The Riksbank.

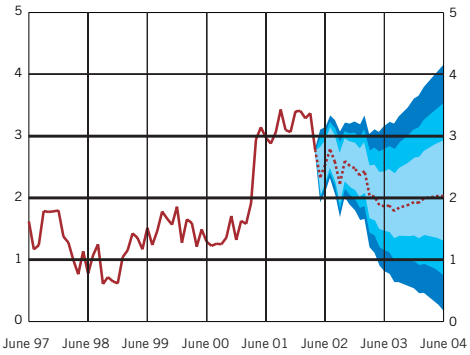
Table 8. UND1X inflation.
Percentage probability, 12-month rate

	UND1X<1	1≤UND1X<2	2≤UND1X≤3	UND1X>3	Total
2003 (June)	8 (3)	45 (32)	39 (49)	8 (16)	100
2004 (June)	18 (15)	29 (27)	30 (31)	23 (27)	100

Note. The figures show the probability of UND1X inflation being in the column's interval. The figures in parentheses are the corresponding values in the March Report.

Source: The Riksbank.

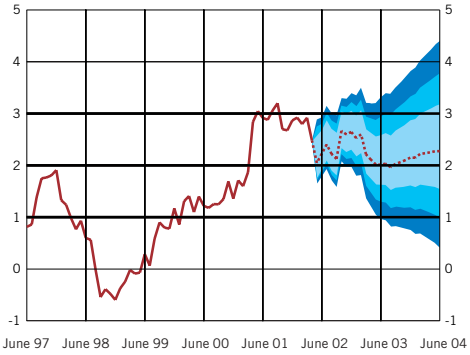
Figure 29. UND1X with uncertainty intervals.
Percentage 12-month change



Note. The uncertainty intervals show the 50, 75 and 90 per cent chances of UND1X inflation being within the respective range. The broken line represents the main scenario's forecast; the horizontal lines at 1, 2 and 3 per cent are the Riksbank's inflation target and the tolerance interval for the annual change in the CPI.

Sources: Statistics Sweden and the Riksbank.

Figure 30. CPI with uncertainty intervals.
Percentage 12-month change



Note. The uncertainty intervals show the 50, 75 and 90 per cent chances of CPI inflation being within the respective range. The broken line represents the main scenario's forecast; the horizontal lines at 1, 2 and 3 per cent are the Riksbank's inflation target and the tolerance interval for the annual change in the CPI.

Sources: Statistics Sweden and the Riksbank.

Table 9. CPI inflation.
Percentage probability, 12-month rate

	CPI<1	1≤CPI<2	2≤CPI≤3	CPI>3	Total
2003 (June)	5 (3)	40 (34)	44 (48)	11 (15)	100
2004 (June)	12 (11)	26 (24)	32 (32)	30 (33)	100

Note. The figures show the probability of CPI inflation being in the column's interval. The figures in parentheses are the corresponding values in the March Report.

Source: The Riksbank.

The conclusion from the assessments presented above is that, given an unchanged repo rate of 4.25 per cent and excluding effects of changes in indirect taxes, subsidies and house mortgage interest expenditure, inflation in the main scenario, as well as when the risk spectrum is taken into account, will be in line with the 2 per cent target both twelve and twenty-four months ahead. The uncertainty in the forecasts of both UND1X and CPI inflation is still considered to be greater than normal and as large as at the time of the March Report.

FORECASTING INFLATION WITH A RISING REPO RATE

Market pricing and survey data of analysts' opinions currently show expectations of future repo rate increases. According to market prices, the repo rate two years ahead is expected to somewhat higher than indicated by external observers. In the Riksbank's main scenario, however, inflation is forecast as usual on the technical assumption that the repo rate will be unchanged; this serves to bring out the consequences for the formation of monetary policy. An illustrative calculation is therefore presented here that incorporates a path for the repo rate that is in line with market expectations as reported in the survey that Prospera undertook on behalf of the Riksbank in May 2002.

The survey data show expectations that the repo rate will be raised to 4.5 per cent in the coming three months, followed by increases to 4.88 per cent after one year and 5.0 per cent after two years.[39] Here it is assumed that the short-term market interest rates will broadly follow the repo rate, while the pass-through to the longer rates is smaller. Compared with assessment in the main scenario, the short rates are judged to be approximately 0.75 percentage points higher both one and two years ahead. The average effect on long rates stops at less than 0.1 percentage point. The higher level of interest rates also points to some strengthening of the exchange rate; during the forecast period the TCW index is judged to be an average of over 0.5 per cent stronger than in the main scenario.

All in all, it is considered that higher interest rates and a stronger exchange rate would lead to somewhat lower GDP growth in the forecast period. Moreover, the somewhat stronger exchange rate dampens import prices.

Table B8. Modified inflation forecast, incorporating the interest rates expected by the money market.
Percentage change and percentage points

	Annual rate 2002	Annual rate 2003	12-month rate June 2003	12-month rate June 2004
CPI	2.6 (0.0)	2.3 (0.1)	2.2 (0.2)	2.2 (0.0)
UND1X	2.7 (0.0)	1.9 (-0.1)	1.7 (-0.1)	1.9 (-0.1)

Note. The figures in parentheses are the difference from the main scenario's rate of inflation with an unchanged repo rate.

Source: The Riksbank.

Somewhat lower resource utilisation and a weaker development of import prices both tend to subdue UND1X inflation one and two years ahead. However, CPI inflation would be somewhat higher than in the main scenario one year ahead and unchanged after two years (Table B8); this is because the downward effects on inflation are countered by the impact of higher house mortgage interest expenditure.

39 These are the median values of the expectations.