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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 8 and 15 March 2001. The assessment of inflation presented here represents the Riksbank's overall appraisal of inflation prospects in the present situation and constitutes the background to the Riksbank's monetary policy decision on 26 March 2001. 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 26 March 2001, to be published on 9 April 2001.

The Riksbank Act (1988:1385, Chapter 6, Article 4) requires the Riksbank to hand over a written monetary policy report to the Parliamentary Standing Committee on Finance at least twice a year. For this purpose the Riksbank has chosen to use two of the year's four Inflation Reports, of which the present Report is one.

The Inflation Report aims to provide a basis for monetary policy decisions and spread an awareness and knowledge of 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.

Chapter 1 takes a retrospective look at price tendencies in a somewhat longer perspective as well as in relation to the assessments in the December Report. The account in Chapter 2 concerns the most probable development of inflation's principal determinants. The chapter is arranged to give a clear picture of which factors are most important for future inflation. Chapter 3 summarises the Riksbank's assessment of inflation prospects. On this occasion, the boxed text on how inflation would develop if the repo rate were to follow money-market expectations has been omitted because these expectations are currently more or less in line with the main scenario's assumption of an unchanged repo rate and the assessments are therefore broadly congruent.

Material for an assessment of monetary policy during the past three years is included in an appendix.

Stockholm, March 2001

Urban Bäckström
Governor of Sveriges Riksbank

Summary

The paths of CPI and UND1X inflation since the December Report have been in line with the forecasts, although the development of components has been somewhat different from what was foreseen. Imported inflation has been somewhat weaker than expected, mainly because the oil price has fallen markedly. This has been offset by a somewhat higher rate of domestic price increases, mainly for services and to some extent housing costs.

Some slowing of international economic activity was foreseen in the December Report. It now looks as though this slowdown is going to be more marked. This is mainly because activity in the U.S. economy has recently weakened comparatively rapidly. The recovery in Japan seems to have been checked and a somewhat weaker development is foreseen in the euro area, too. All in all, growth in the OECD area is judged to be just over 2 per cent this year, around 2.5 per cent in 2002 and almost 3 per cent in 2003. Thus, the main scenario is based on a recovery but a rapid, strong economic upswing is not expected.

The weaker development of international demand affects prices in Sweden through various channels. The quickest effect comes via prices for imported goods, which are now expected to be somewhat more subdued. Perhaps the most important is the price of oil, which has fallen appreciably since the December Report. The path of the Swedish krona is also important for the pass-through from international prices to inflation in Sweden. To date this year the krona has been unexpectedly weak. But in view of the favourable economic development in Sweden, including substantial surpluses on the current account, there are grounds for counting on a stronger exchange rate in the longer run. However, as the appreciation is presumed to occur somewhat more slowly than envisaged earlier, the exchange rate will, on average, be weaker than foreseen in the December Report. This limits the effects on inflation of the more subdued international price trend.

The international economic slowdown also affects inflation in Sweden via its impact on aggregate demand. However, effects of the slowdown are expected to be relatively smaller in Europe, which is the main market for Swedish exports. At the same time, the relatively marked drop in the inflow of orders for major export products may be a sign that the composition of Swedish exports is such that the international slowdown's effects on the Swedish economy are comparatively large. Even so, a weaker exchange rate and a more subdued development of imports are judged to contribute to a path for net exports that is approximately in line with the forecast in the December Report. Together with less

pronounced capacity restrictions, the decreased inflow of orders is expected to act as a damper on investment. The international slowdown is probably also a partial explanation for the less optimistic mood among households, for example via effects from stock markets. Surveys indicate that in recent months households have become appreciably less confident about the future. This reassessment of future prospects by households is assumed to contribute to private consumption developing more weakly than forecast earlier. Another downward effect on growth is a correction of stocks during 2001 after last year's unexpectedly large accumulation. All in all, these factors are expected to result in GDP growth being lower than foreseen in the December Report. The annual GDP growth rate is now judged to be 2.4 per cent in both 2001 and 2002, followed by 2.7 per cent in 2003.

The anticipated development of GDP is judged to mean that total resource utilisation will be broadly unchanged during the forecast period. The lower resource utilisation in both product and labour markets compared with the previous forecast is mirrored in lower domestic inflationary pressure.

■ All in all, in the main scenario with an unchanged repo rate, the 12-month rate of CPI inflation is judged to be 1.9 per cent one year ahead and 2.0 per cent after two years. For UND1X inflation the corresponding assessment is 1.9 per cent both one and two years ahead. The average annual level of CPI inflation is expected to be 1.6 per cent for 2001 and 1.9 per cent for 2002, while the corresponding figures for UND1X inflation are 1.5 and 1.9 per cent, respectively.

Contrary to the assumption in the December forecast, in view of increased uncertainty about how an official report on the review of the CPI will be handled, it is now considered that day nursery charges will not be incorporated in the CPI in the forecast period. In December it was calculated that in 2002 the introduction of a ceiling on day nursery charges would have a downward effect of 0.3 percentage points on both CPI and UND1X inflation. Thus, this effect does not occur in the present forecast. So apart from the altered assumption about the maximum day nursery charge, it is the present expectations of lower resource utilisation and somewhat lower imported inflation compared with the main scenario in December that lie behind the downward revision of inflation two years ahead.

■ The risk spectrum also has a bearing on the formation of monetary policy. The main possibility of a lower path for inflation lies in a weaker economic development. This in turn would probably come from a broader and more protracted international downturn with attendant financial and stock-market unrest. A development in the opposite direction could be generated in the first place if domestic inflationary pressure were to go on rising.

Factors that could lead to this are a higher outcome of the wage negotiations that are still in progress, lower productivity growth and a somewhat less favourable relationship between growth and inflation. Another risk for inflation is the weak exchange rate, although it is reasonable to suppose that a persistently weak krona co-varies to a high degree with the risk of weak economic activity.

The uncertainty in the economic picture is connected above all with the outlook in the United States. The large imbalances that have accumulated there could lead to the economic downturn being more marked and also delay a recovery compared with the assumptions in the main scenario. A more pronounced slowdown in the United States would presumably have appreciable repercussions in other parts of the world, both through direct real channels and via the financial markets, stock markets in particular. That could no doubt also lead to weaker international price trends for commodities and finished goods. All in all, inflation in Sweden could then be more subdued than is assumed in the main scenario.

The downside risk from international developments is partly countered by, for example, a risk of a weaker path for the exchange rate that is not necessarily connected with slacker and more unstable international activity. Although an appreciation of the krona seems to be indicated by real economic developments, with sizeable surpluses on the current account, for example, the exchange rate has remained weak. Explanations, such as a continuation of large purchases of shares abroad, that have been put forward for this – in addition to weak activity and falling stock markets – may go on burdening the exchange rate for some time.

Wage increases to date have been in line with the assessment in the main scenario. The present round of negotiations is still in progress, however, and although certain shifts in relative wages seem to be regarded as acceptable, it is conceivable that high outcomes from remaining settlements would in the coming years influence wage drift in sectors where agreements have already been concluded. Another risk is that the cyclical component of the good productivity growth in recent years has been underestimated, so that when activity slackens the trend will be weaker than forecast and unit labour costs correspondingly higher. Neither can one rule out the possibility that the unexpectedly high domestic inflation is a sign of a less favourable relationship between growth and inflation.

■ All in all, the downside risks in the path of inflation are judged to weigh somewhat more heavily. When the risk spectrum is incorporated, CPI inflation is accordingly expected to be 1.8 per cent one year ahead and 1.9 per cent after two years. The corresponding assessment of UND1X inflation gives a rate of 1.8 per cent both one and two years ahead.

Consumer prices

This chapter looks back at the development of consumer prices. The account begins with the overall development of prices, followed by an analysis of price movements for the goods and services that are included in underlying inflation as measured by UND1X. Finally there is a discussion of consumer price effects from indirect taxes, subsidies and house mortgage interest expenditure.

CPI and UND1X inflation have both been broadly in line with the assessment in the December Inflation Report and the 12-month rate in February was 1.6 per cent (Fig. 1). The increase in underlying domestic inflation (UNDINHX) has, however, been larger than expected, while imported inflation excluding taxes has been weaker.[1]

Inflation has been broadly in line with the forecast.

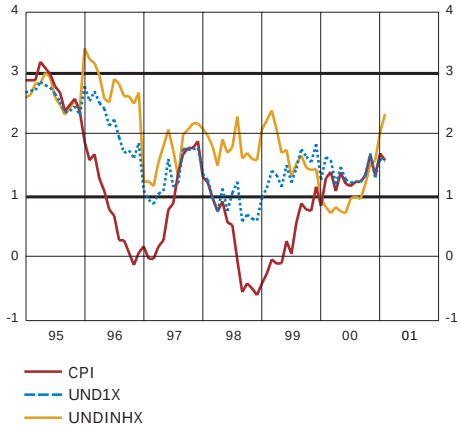
A look at the forecasts of CPI and UND1X inflation that the Riksbank presented during 1999 and early in 2000 shows that they were comparatively accurate. UND1X inflation during the past year was somewhat lower that predicted during 1999 and early in 2000, largely because domestic inflation was low. CPI inflation, on the other hand, was higher than expected because house mortgage interest expenditure rose more than assumed earlier. This was partly because the Riksbank raised the repo rate late in 1999 and early in 2000, while the Bank's assessments start from the technical assumption of an unchanged repo rate. The Riksbank's forecasts and formation of monetary policy are discussed more fully in an appendix in this Report.

LARGE RELATIVE PRICE SHIFTS IN RECENT YEARS

While UND1X inflation has been relatively stable in recent years, there have been some substantial shifts in relative prices. Housing costs and prices for services rose faster than prices for goods during a large part of the 1990s. Considering that productivity growth in services industries is normally lower than for the production of goods, this pattern appears natural. From autumn 1999 to the end of 2000, however, prices rose faster for goods than for services (Fig. 2). The tendency can be explained in part by increased competition in the services sector. Low rent increases as a consequence of lower interest rates, for instance, have also contributed. Moreover, the rate of price increases for goods

1 UND1X is defined as the CPI excluding house mortgage interest expenditure and direct effects of altered indirect taxes and subsidies; UNDINHX also excludes goods that are mainly imported.

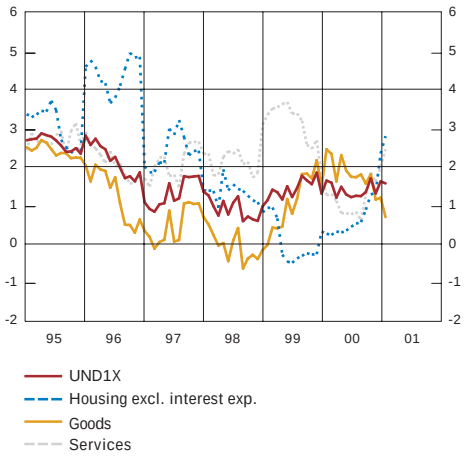
Figure 1. CPI and underlying inflation.
Percentage 12-month change



Note. The horizontal lines represent the Riksbank's tolerance interval for the change in the CPI.

Source: Statistics Sweden.

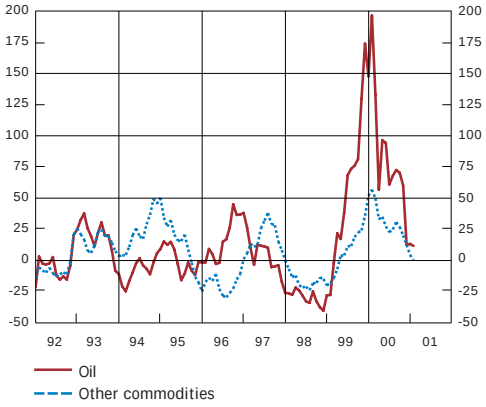
Figure 2. UND1X components: goods, services and housing.
Percentage 12-month change



Note. UND1X corresponds to the CPI excluding indirect taxes, subsidies and house mortgage interest expenditure. Housing costs have not been adjusted for effects of the freeze of taxable property values.

Source: Statistics Sweden.

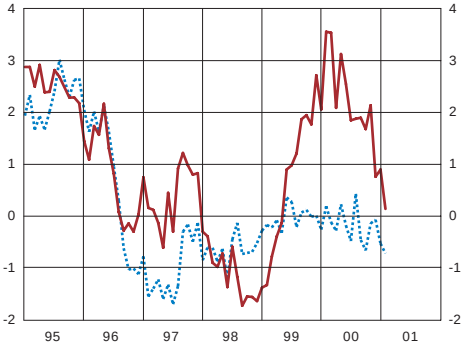
Figure 3. SEK prices for oil and import-weighted commodities excl. oil.
Percentage 12-month change



Note. The price for commodities excluding oil covers aluminium, copper, nickel, zinc, gold, silver, lead and tin, each weighted for its annual share of total Swedish imports; the aggregate share is approximately 2 per cent, while the share for oil is about 8 per cent (2000).

Sources: Statistics Sweden and the Riksbank.

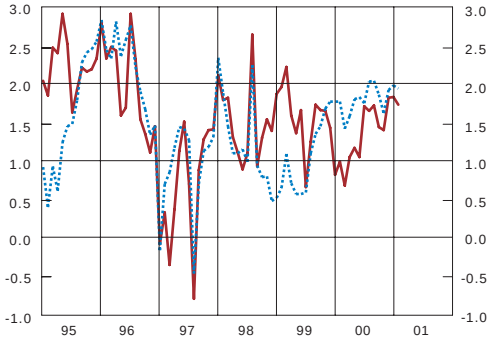
Figure 4. CPI component: imported goods excluding indirect taxes.
Percentage 12-month change



Note. The figures in parentheses are the component's CPI weight.

Source: Statistics Sweden.

Figure 5. CPI component: Swedish goods excluding indirect taxes.
Percentage 12-month change



Note. The figures in parentheses are the component's CPI weight.

Source: Statistics Sweden.

accelerated from the beginning of 1999 up to mid 2000, largely on account of the sharp price rise for oil. Recently, however, the tendency has been more in line with the historical pattern, with lower price pressure from imported goods in particular.

IMPORTED INFLATION LOWER THAN EXPECTED

The price of oil fell markedly towards the end of 2000 (Fig. 3). Probable explanations are the economic slowdown plus the fact that OPEC's expansion of production earlier in the autumn seemed to be having effects on price formation.

In January the oil price rose in connection with expectations that OPEC would cut production quotas. Since then the oil price has fallen because any future production cuts are not expected to counter the downward price affects of lower demand. Since the December Report the oil price has been considerably weaker than expected.

Imported inflation has been held down by lower oil prices and strong competition.

Prices for other imported goods have remained weak; they have fallen more or less continuously ever since 1996 (Fig. 4). Strong international competition and low resource utilisation in Sweden has probably contributed to this, so that firms have not been in a position to pass through rising costs for commodities, for example, to consumers.

PRICE PRESSURE FROM SWEDISH GOODS STILL MODERATE

Price pressure from Swedish goods has been moderate in recent years (Fig. 5). Probable explanations are low resource utilisation, heavier competitive pressure and stable inflation expectations. In the past one to two years, however, there has been a slight upward price trend in connection with rising resource utilisation.

RISING RATE OF PRICE INCREASES FOR SERVICES

The rate of price increases for services fell by degrees during the 1990s, partly due to low resource utilisation and the growing proportion of this sector that is exposed to competition (Fig. 6). One example is the fall in telecom prices in the wake of the telecom market's deregulation (Fig. 7). On the other hand, prices that are set administratively, for instance municipal tariffs for water, drainage and waste disposal, have risen at an accelerating rate since the beginning of the 1990s and this has partly countered the price effects of increased competition (Fig. 6).

Since the December Report, the rate of price increases for services has risen. A large part of the explanation lies in price increases for domestic travel, particularly prices for passenger shipping and public transport. Contributions have also come from rising prices for telecom services, various types of insurance and

bank services. It seems, moreover, that telecom prices will make a growing contribution to future inflation. Acting on the abolition of the price ceiling on subscription charges for fixed telephony at the turn of last year, Telia announced a price increase of about 20 per cent in March, which adds over 0.1 percentage point to both CPI and UND1X inflation. All in all, since the December Report prices for services have risen more than expected.

Higher prices for domestic travel are contributing to increased services prices.

HOUSING COSTS MOVING UP

The rate of increase in housing costs slowed during the 1990s and was almost zero during 1999 and 2000 (Fig. 8). Factors behind the weak development of costs included falling interest rates, property tax reductions and technical changes in the calculations.[2] Another explanation is lower electricity prices after the deregulation in 1996 had led to increased competition.

Rent increases and higher electricity prices have contributed to rising costs for housing.

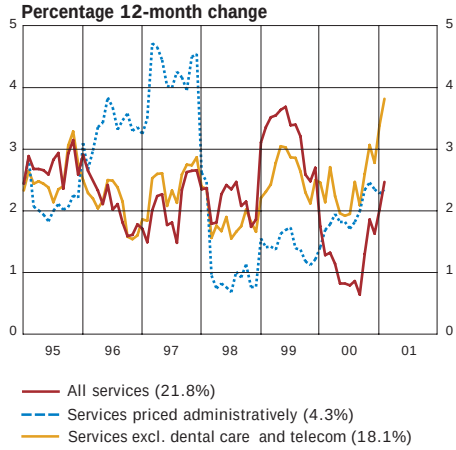
Since the December Report, however, housing costs have been rising more quickly. The rent increase to date this year amounts to about 1 per cent, accompanied by an increase in taxable values, while the property tax rate has been lowered. Electricity prices have also moved up in recent months, partly due to increased taxes (Fig. 9). All in all, housing costs have risen somewhat more than expected since the December Report.

UNDERLYING INFLATIONARY PRESSURE REMAINS LOW

One way of measuring underlying inflationary pressure involves adjusting CPI inflation for certain components, for instance those with price effects that are judged to be only temporary. UND1X is an example of this approach. Another method reduces the impact of prices that vary a great deal. A third approach uses econometric methods.[3] Some alternative indicators of underlying inflation are presented in Fig. 10.

All these indicators show that underlying inflationary pressure decreased in the 1990s and that price pressure has been relatively stable in recent years. Tendencies in recent months likewise witness to low underlying inflationary pressure.

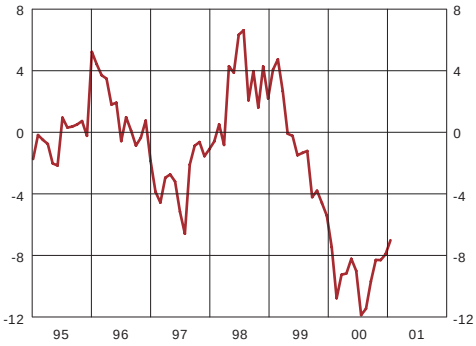
Figure 6. CPI component: services excluding indirect taxes.
Percentage 12-month change



Note. The figures in parentheses are the component's CPI weight.

Source: Statistics Sweden.

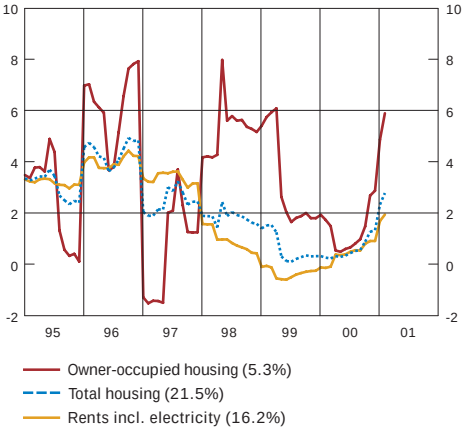
Figure 7. CPI component: telecom prices.
Percentage 12-month change



Note. The CPI weight for this component is 2.7 per cent.

Source: Statistics Sweden.

Figure 8. CPI component: housing excluding indirect taxes and interest expenditure.
Percentage 12-month change



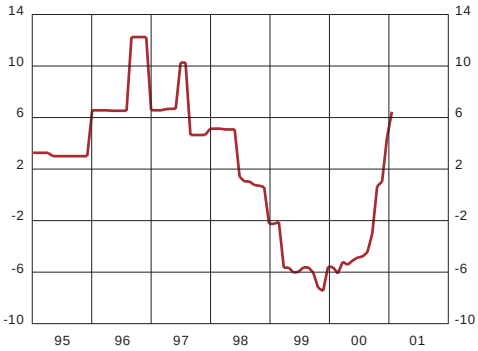
Note. The figures in parentheses are the component's CPI weight.

Source: Statistics Sweden.

2 Changes by Statistics Sweden in the method for measuring write-downs for owner-occupied houses occasioned a sizeable break in the measured price change.

3 See *Inflation Report 1999:2*, box on pp. 51–52, or Apel, M. & Jansson, P. (1999), *A parametric approach for estimating core inflation and interpreting the inflation process*, Sveriges Riksbank Working Paper 80.

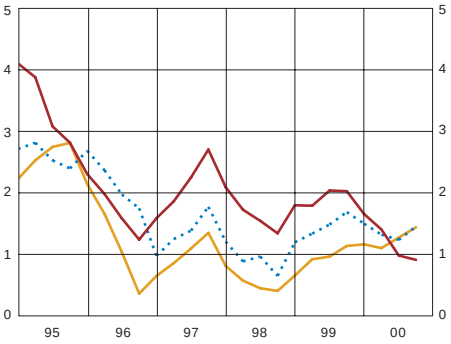
Figure 9. CPI component: electricity prices for owner-occupied dwellings.



Note. The CPI weight for this component is 2.2 per cent.

Source: Statistics Sweden.

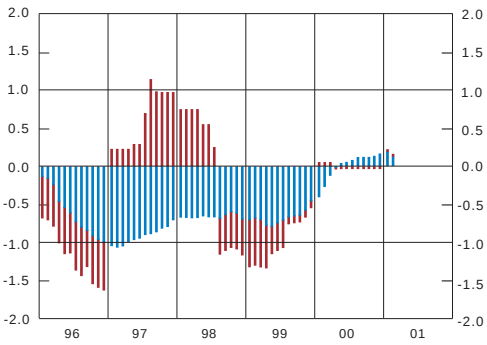
Figure 10. Alternative indicators of underlying inflation.
Percentage 12-month change



Note. The CPI weighted with standard deviations is based on a 70-component CPI index with the standard deviations estimated over 24 months. The series are based on quarterly data.

Sources: Statistics Sweden and the Riksbank.

Figure 11. CPI effects of changes in indirect taxes, subsidies and house mortgage interest expenditure.
Percentage points



Sources: Statistics Sweden and the Riksbank.

SMALL EFFECTS FROM INDIRECT TAXES, SUBSIDIES AND INTEREST EXPENDITURE

The contribution to CPI inflation from indirect taxes and subsidies has varied markedly over time but since mid 2000 it has been small (Fig. 11).

To sum up, both CPI and UND1X inflation have been in line with the assessment in the December Report. The path has also been broadly as expected compared with the forecasts that were presented during 1999 and early in 2000. The forecasts for components of UND1X have been less accurate. Since the December Report the oil price has fallen more than expected, leading to a weak tendency for imported inflation. Domestic price pressure, on the other hand, has been stronger than expected, mainly because the price rise for services has exceeded the forecast, above all for domestic travel and less so for housing.

Determinants of inflation

This chapter presents the assessment of the most probable development of inflation's main determinants in the coming twenty-four months. International factors are considered first, followed by a survey of developments in the Swedish economy.

International activity and inflation

The slackening of international economic activity since the December Inflation Report has been quicker than expected in the main scenario and is now more in line with the risk scenario at that time. This is primarily due to a deeper downturn in the U.S. economy and continued financial market unrest. The main scenario now allows for an appreciable weakening of growth in the OECD area this year. In the rest of the forecast period, growth is expected to pick up gradually in the United States as well as in the OECD area as a whole (Table 1).

Table 1. International conditions.
Percentage annual change or annual level

	GDP							CPI						
	1999	2000	*rev*	2001	*rev*	2002	*rev*	2003	1999	2000	*rev*	2001	*rev*	2002	*rev*	2003
U.S.A.	**4.2**	**5.0**	*-0.2*	**2.0**	*-1.2*	**2.7**	*-0.2*	**3.2**	**2.2**	**3.4**	*0.1*	**2.4**	*-0.2*	**2.3**	*-0.1*	**2.4**
Japan	**0.3**	**1.7**	*0.0*	**1.2**	*-0.8*	**2.0**	*-1.0*	**2.0**	**-0.3**	**-0.6**	*0.0*	**-0.5**	*-0.5*	**0.0**	*-0.5*	**0.5**
Germany	**1.5**	**3.0**	*0.0*	**2.4**	*-0.6*	**2.5**	*0.2*	**2.5**	**0.6**	**2.0**	*0.0*	**1.7**	*0.0*	**1.5**	*-0.2*	**1.5**
France	**3.2**	**3.4**	*0.0*	**2.8**	*-0.4*	**2.8**	*0.2*	**2.8**	**0.5**	**1.9**	*0.0*	**1.7**	*0.0*	**1.7**	*0.0*	**1.6**
U.K.	**2.1**	**3.0**	*-0.1*	**2.6**	*-0.2*	**2.5**	*0.0*	**2.6**	**2.3**	**2.1**	*0.0*	**2.2**	*-0.3*	**2.4**	*-0.1*	**2.4**
Italy	**1.4**	**2.9**	*0.0*	**2.5**	*-0.5*	**2.5**	*0.0*	**2.7**	**1.7**	**2.5**	*0.0*	**2.0**	*0.0*	**1.9**	*0.0*	**2.0**
Denmark	**1.6**	**2.8**	*0.0*	**2.0**	*-0.4*	**2.2**	*-0.2*	**2.2**	**2.1**	**2.7**	*0.0*	**2.3**	*0.0*	**2.0**	*0.0*	**2.1**
Finland	**3.5**	**5.7**	*0.6*	**4.3**	*-0.1*	**3.5**	*0.0*	**2.7**	**1.3**	**3.0**	*0.0*	**2.5**	*0.0*	**2.1**	*0.0*	**2.3**
Norway	**0.9**	**1.8**	*-0.4*	**1.2**	*-0.2*	**1.6**	*0.2*	**1.8**	**2.3**	**3.1**	*0.0*	**2.7**	*0.0*	**2.4**	*0.0*	**2.1**
Euro12	**2.3**	**3.4**	*0.0*	**2.6**	*-0.6*	**2.7**	*0.2*	**2.8**	**1.1**	**2.3**	*0.0*	**2.0**	*0.0*	**1.8**	*-0.1*	**1.9**
Sweden's TCW exports	**2.3**	**3.3**	*-0.1*	**2.4**	*-0.6*	**2.6**	*0.1*	**2.7**	**1.4**	**2.3**	*0.0*	**2.0**	*-0.1*	**1.9**	*-0.1*	**1.9**
OECD 19	**2.8**	**3.8**	*0.0*	**2.2**	*-0.8*	**2.6**	*-0.2*	**2.8**	**1.4**	**2.3**	*0.1*	**1.8**	*-0.2*	**1.8**	*-0.1*	**1.9**

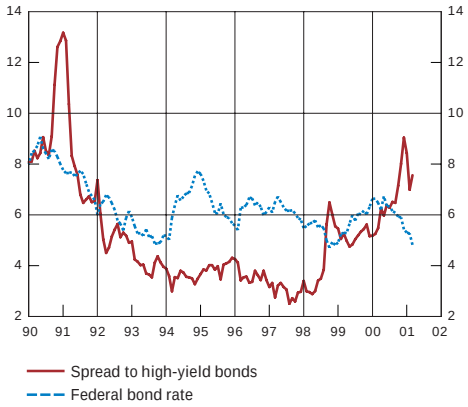
	2000	*rev*	2001	*rev*	2002	*rev*	2003
Market growth for Swedish exports	**10.8**	*0.0*	**7.3**	*-1.5*	**8.0**	*-0.1*	**8.5**
OECD area manufactured export price in national currency	**1.2**	*0.2*	**1.3**	*0.0*	**1.0**	*-0.3*	**1.2**
Crude oil price (USD/barrel Brent Blend)	**28.4**	*-0.7*	**25.9**	*-1.6*	**23.9**	*-1.6*	**22.2**

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 italics are the revision compared with the December Inflation Report.

Source: The Riksbank.

Still, the uncertainty in the international outlook is pronounced. This is evident from the scenarios that feature in the debate about the U.S. economy (see the box on pp.17–20). The optimistic V scenario assumes that the American slowdown is mainly a consequence of transient factors. Since productivity growth is judged to be mainly of a structural nature, there is plenty of

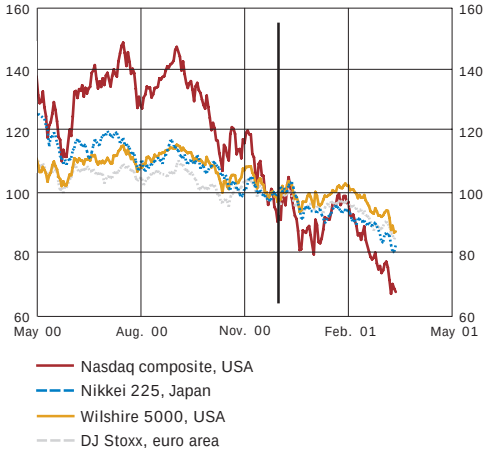
Figure 12. U.S. Federal bond rate and the spread to American high-yield bonds.
Per cent and percentage points



Note. High-yield bond is a term for bonds issued by firms with a low credit rating.

Source: Lehman Brothers/Datastream.

Figure 13. Stock exchange indices.
Index: 27 November 2000=100



Note. The vertical line is the cut-off date for the December Inflation Report.

Sources: Hanson & Partners AB, Morgan Stanley Capital International and Wilshire Associates.

room for monetary policy measures. With no appreciable correction of saving imbalances in the coming years, the growth of domestic demand could remain good. The pessimistic L scenario perceives the current slowdown as the beginning of a longer period of slow growth. The increased productivity growth is assumed to be cyclical in nature and the saving imbalances are expected to undergo a marked correction, for instance when households cut their consumption. This implies a more pronounced decline in domestic demand. In such a situation, economic policy has less effect than in the more optimistic scenario. The path that has been adopted in the main scenario in this Report can be said to lie midway between these two alternatives. It is assumed that the slowdown will not be all that long but growth is still judged to be below the potential rate throughout the forecast period.

GLOBAL SLOWDOWN DRIVEN BY DOWNTURN IN THE UNITED STATES.

An important factor behind the slowdown in the United States is last year's marked tightening of monetary policy, occasioned by increasingly clear restrictions on labour supply and strained resource utilisation. Since last autumn profit expectations have been revised downwards by many firms, particularly in the IT sector, and the risk of firms being unable to meet loan commitments has increased. The level of credit spreads is still high but the Federal Reserve's interest rate cuts in January have led to lower costs for corporate financing (Fig. 12). Moreover, banks have become more cautious about lending to firms but demand for credit has also fallen. The lower profit expectations have led to stock-market turbulence and share prices have gone on falling, above all in the technology sector (Fig. 13).

The stock-market correction has had negative wealth effects for households as well as firms.

The stock-market correction has had negative wealth effects for households as well as firms. This has markedly subdued the optimism of households, albeit from record levels (Fig. 14). Together with high energy prices and a saturation phase for purchases of durable goods, this has led to a fall in household consumption that in turn has resulted, for example, in a marked accumulation of stocks. An abrupt adjustment of stocks began towards the end of last year. In addition, the very cold winter in the United States has had a direct negative impact on the consumption propensity and construction investment. The slackening demand has contributed to what is probably a recession in manufacturing. One sign of this is the purchasing managers index (NAPM), with a level in January that was the lowest since 1991; there was, however, a marginal improvement in February (Fig. 15). The slowdown is mirrored to a large degree in private investment, particularly in the IT sector. The high rate of investment earlier has built up a large capital stock, which points to investment growth being lower in the forecast period.

In view of the weaker development of activity and expectations of lower price pressure in the future, market players judge that the Federal Reserve will cut the instrumental rate by about another 1 percentage point in the rest of this year. Growth in the United States is judged to pick up successively in the second half of 2001, partly due to monetary policy's realignment. Improved profit expectations and gradually rising demand are judged to result in a recovery of private investment. Low house mortgage rates are assumed to go on supporting the housing market and construction, which so far have been fairly resilient to the slowdown. Positive contributions are also foreseen from low unemployment and a continuation of comparatively favourable trends for productivity and real wages. Moreover, factors that have temporarily subdued growth, for example high energy prices and stock adjustments, are assumed to fade away successively. Fiscal policy and its impact are difficult to assess at present but tax cuts are to be expected and should have a slight positive effect on growth, mainly during 2002 and 2003.

Growth in Europe as well as Japan is expected to suffer from the slowdown in the United States.

All in all, growth in the main scenario is judged to be below the potential level throughout the forecast period, so that the positive output gap becomes gradually smaller. This course presupposes a high degree of economic flexibility, a judicious monetary policy and a relatively high potential growth rate. At the same time, investment yields are judged to remain good and help to at least partly maintain the capital inflow to the U.S. economy. This means that the saving imbalances in the private sector are expected to undergo only a limited correction in the forecast period.

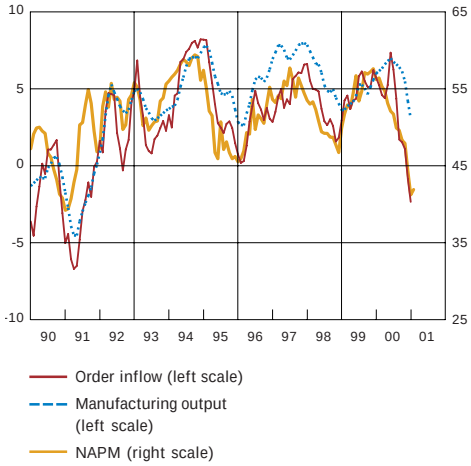
Growth in Europe as well as Japan is expected to suffer from the slowdown in the United States. In the euro area, the poorer economic prospects are judged to result in the contribution from net exports being negative both this year and next. Forward indicators and business surveys have been pointing to some slackening of manufacturing activity ever since 2000 Q2. However, the downward impact seems to vary from country to country, as illustrated, for example, by consumer confidence, expected output and incoming orders (Fig. 16). This is mainly due to differences in the economies' degree of openness and the significance of the stock market for households' economy but it also has to do with differences in the structure of manufacturing, product mixes and geographical markets.

Notwithstanding the weaker prospects for global growth and signs of somewhat slacker manufacturing activity, there are grounds for supposing that the slowdown in Europe will be less pronounced than in America. Dependence on stock markets is less in Europe and in contrast to the United States, the level of confidence indicators, consumer confidence in particular, is still high (Fig. 17). Considerably lower IT investment implies less risk

Figure 14. United States: unemployment and consumer confidence.
Per cent of labour force and index

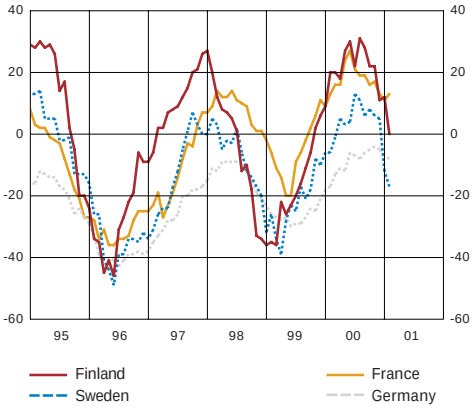
Sources: U.S. Bureau of Labor Statistics and Conference Board.

Figure 15. United States: order inflow, manufacturing output (moving 3-month mean) and NAPM.
Percentage annual change and level



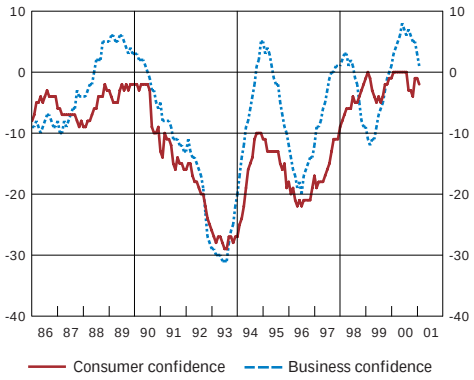
Sources: Federal Reserve, U.S. Department of Commerce and NAPM.

Figure 16. Order inflow in selected European countries.
Net balance



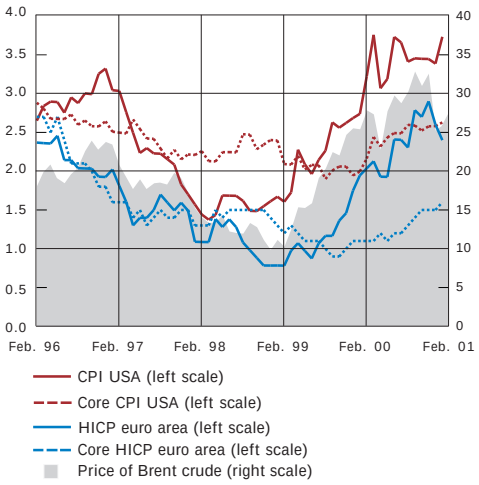
Source: European Commission.

Figure 17. Euro area: consumer and business confidence.
Net balance



Source: Eurostat.

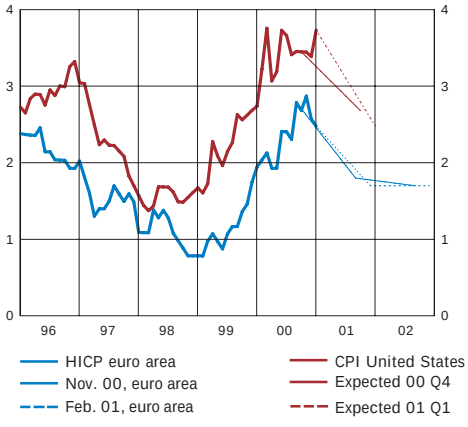
Figure 18. CPI and core inflation in the United States and the euro area and the price of crude oil.
Percentage 12-month change and USD/barrel



Note. Core CPI defined for the euro area as the HICP excluding energy and seasonally-dependent food products, for the United States as the CPI less energy and all food products; the two are therefore not entirely comparable.

Sources: U.S. Bureau of Labor Statistics, Eurostat and Hanson & Partners AB.

Figure 19. Euro area and United States: expected rates of inflation one and two years ahead.
Percentage 12-month change



Sources: ECB (Survey of Professional Forecasters) and Federal Reserve Bank of Philadelphia.

of investment falling to the same extent as in the U.S economy. Moreover, the saving imbalances that have grown up in the United States have no counterpart in the euro countries and both corporate and household debt are lower. If the American economic slowdown were to last longer, however, and stock markets went on falling, developments in the euro area could be worse than in the main scenario due to effects from trade flows, financial links and confidence.

The relatively more favourable growth prospects, together with a diminishing interest rate differential with the United States, are assumed to lie behind the euro's appreciation against the dollar and this is expected to continue during the forecast period. The currency appreciation and lower oil prices mean that inflationary pressure decreases successively. Market players expect the ECB to cut the interest rate by up to 0.5 of a percentage point this year, which helps to stimulate domestic demand above all during 2002.

For the Japanese economy, the negative impact of the American slowdown is judged to be heavier than for the euro area. Japan is considerably more dependent on exports to the United States and the effects of the fall in the IT sector are assumed to be greater than in Europe. For Japan, moreover, the global fall-off comes at an unsuitable time in that just a few months ago it looked as though exports and manufacturing output might generate higher growth. Having led the earlier recovery of investment and wages, manufacturing in particular has been hit by the decline. Private consumption is weak and prices have gone on falling. The recent sharp fall on the stock market is yet another negative factor. During the forecast period the Japanese recovery is expected to recover to some extent; contributory factors are structural changes in large corporations, increased political pressure for economic reforms and a persistently weak yen that is expected to favour exports.

World market growth is judged to be lower than assumed earlier as a consequence of this year's poorer economic prospects.

World market growth is judged to be lower than assumed earlier as a consequence of this year's poorer economic prospects. The oil price has fallen since the December Report and is expected to go on falling in the forecast period. Thus, the development of international export prices will remain subdued. All in all, these factors are expected to lead to lower inflationary pressure in the future, thereby breaking the upward trend in the past two years (Fig. 18). This is mirrored in inflation expectations, which remain low in the United States as well as the euro area (Fig. 19).

To sum up, growth and inflation in the OECD are both judged to be lower than was assumed in the December Report's main scenario. The rapid, broad slowdown of activity in the United States, with repercussions elsewhere in the world economy, is expected to affect growth prospects above all during 2001. Moreover, international inflationary pressure is judged to become somewhat lower in the future.

ALTERNATIVE SCENARIOS FOR THE U.S. ECONOMY

BACKGROUND

In recent years the growth of consumption and investment in the United States has probably been above the level that can be maintained in the longer run. This has shown up in a positive output gap and a massive private sector saving deficit that has contributed to large deficits on the current account. A recurrent question is how and when these imbalances will be corrected.[4] The situation has been particularly difficult to assess since the turn of 2000. Two alternative scenarios that have featured in the debate are discussed here.

RAPID RECOVERY – THE V SCENARIO

Many observers believe that the current economic slowdown is just a temporary phenomenon and foresee a V-shaped recovery where GDP growth returns in a couple of quarters, that is, comparatively quickly, to a level around the presumed potential rate. The central assumption in this scenario is that organisational changes, new technology, increased globalisation and a more judicious economic policy have markedly raised the potential growth rate in recent years. The greater part of the improvement in labour productivity in the latter part of the 1990s is attributed to long-term factors.[5] The higher potential rate of production is taken to mean that the positive output gap is comparatively small. A temporary economic slowdown would then suffice to reach a level of resource utilisation that is sustainable in the longer run.

4 Considering the demographic structure of the United States relative to other industrialised countries, some national saving deficit (a deficit on the current account) may be motivated for a time. To the extent that the return on investment in the United States is higher than elsewhere, a period with capital inflows to finance these investments is also motivated.

5 Compared with the level in the preceding twenty years, in the latter part of the 1990s the rate of productivity growth rose more than 1 percentage point. Recent studies indicate that about 0.25 percentage points came from an increase in total factor productivity in the manufacture of computers and about 0.5 percentage points from increased use of computers. With higher total factor productivity in other sectors contributing just over 0.4 percentage points, the overall increase in total factor productivity contributed about two-thirds of the change in productivity growth. See e.g. Oliner, S. & Sichel, D. (2000), *The Resurgence of Growth in the Late 1990s: Is Information Technology the Story?* Finance and Economics Discussion Series Paper 20, Federal Reserve Board.

This scenario presupposes that an easing of monetary policy favours share prices and household consumption. As long as productivity and thereby profitability are higher in the United States than elsewhere, it is reasonable to assume that investment in the United States exceeds domestic saving, so that the current account continues to show a deficit. The V scenario accordingly envisages that as profits and share prices start rising, demand rapidly returns to strong and sustainable growth.

STAGNATION – THE L SCENARIO

Other observers with a more pessimistic view of the future development of activity argue that households and firms, as well as foreign investors, have had a fundamentally unrealistic picture of the U.S. economy's potential growth rate and thus of the future development of corporate profits and share prices. In their opinion, the greater part of the strong productivity growth in recent years is of a cyclical nature and the rate when activity slackens will therefore be considerably lower. Moreover, growth in recent years is considered to have exceeded the potential rate by a broad margin, giving rise to a sizeable positive output gap. A period of appreciably lower growth is therefore needed to reduce the over-utilisation of economic resources.

In this scenario, less optimistic expectations and falling share prices contribute to an increased risk of more and more households beginning to regard their debts as excessively large in relation to income and wealth. Together with a subdued development of household income, a higher saving ratio and rising unemployment may result in a marked slackening of household consumption. There is also a risk of firms suffering from surplus capacity and for this and other reasons becoming more uncertain about the expected return on invested capital. That implies a risk of investment being weak for a considerable period.

There are differences, of course, but some parallels can be drawn with what happened in Sweden and the United Kingdom in the late 1980s and early 1990s. Undue optimism and strong credit growth led there to rapidly rising asset prices as well as high growth rates for investment and consumption. At the same time, economic policy failed to subdue the tendencies to overheating. Private sector debt accumulated and ultimately a correction became inevitable. In both countries the economic downturn was unexpectedly pronounced and the subsequent recovery took a long time.

There are some other observers who consider that the large saving deficits will completely neutralise economic policy in the United States and they even draw parallels with Japan in the 1980s and 1990s. As in Japan, they see U.S. stock markets as over-valued. Moreover, the increase in private sector debt is comparatively large. In addition, certain industries are probably burdened by earlier over-investment. In this context, interest rate cuts would not have any appreciable stimulatory effect on demand because lower interest rates would be used to strengthen the balance sheets of households as well as firms. Such a development could result in very weak growth for a considerable period.

At the same time there are notable differences between these countries. The over-investment in Japan occurred in traditional industries in accordance with a system of alliances between banks, firms and politicians. That is an important cause of the problems today in both the corporate and the financial sector. Moreover, demographic conditions are considerably more favourable in the United States.

To sum up, the uncertainty about future developments in the United States is considerable. The most crucial factor is the U.S. economy's fundamental conditions for growth. If productivity growth turns out to be higher than in the rest of the world, then the slowdown in the United States can be comparatively brief, partly because there should be more room for monetary policy measures, more favourable profit expectations and less cause for concern about current-account deficits. If potential growth were to be more in line with Europe, on the other hand, the imbalances in the United States can lead to a period of weak growth that is considerably longer.

HOW IS INFLATION IN SWEDEN AFFECTED BY A TEMPORARY SLOWDOWN IN THE UNITED STATES?

Simulations in a model for the global economy indicate that if the GDP growth rate for the United States is 1 percentage point lower than assumed in the main scenario in this Report, then at unchanged Swedish nominal interest rates the average annual rate of inflation in Sweden would be just over 0.1 percentage point lower in year one and just over 0.2 percentage points lower in year two.[6] The main factors behind the lower inflation are weaker export demand and lower international price pressure.

6 The simulations were done with the NiGEM model (National Institute Global Econometric Model) from the National Institute of Economic and Social Research, London.

However, the impact on inflation from such a shock can be greater than the model simulations suggest. The effects channelled via international demand and prices can be stronger than historical relationships indicate. Moreover, the effects can be accentuated through credit and confidence channels if growing unrest in the global financial markets alters the behaviour of financial institutions, firms and households.

Interest rates and exchange rate

Since the December Report the Swedish ten-year bond rate has followed the international tendency and fallen about 0.4 percentage points (Fig. 20). The downward movement is largely attributable to the global economic slowdown and a flight of investment capital to the bond market in connection with the turbulence in stock markets. The long-term interest rate differential between Sweden and Germany is broadly unchanged at around 0.1 percentage point.

The repo rate is expected to be kept unchanged in the forecast period.

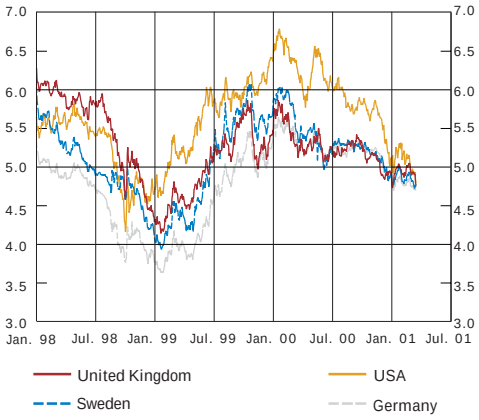
The publication of the December Report was accompanied by a repo rate increase of 0.25 percentage points, to 4.0 per cent, which was wholly in line with market expectations. Since the December increase, however, the picture of monetary policy expectations has changed appreciably. Survey data and market prices both point to the repo rate remaining broadly unchanged (Fig. 21). In the United States as well as the United Kingdom the instrumental rate has been lowered since the December Report and market prices point to further cuts in the future. As the ECB is also expected to reduce its rate, all this implies that the short-term interest rate differential between Sweden and the rest of the world is expected to go on decreasing.

The Swedish krona has been weaker than expected earlier.

During 2000 Q4 the Swedish krona's TCW exchange rate followed the forecast in the December Report. Since then, the krona has weakened to an unexpected extent, above all against the euro. This is probably due to a combination of factors. Continued unrest in the international financial markets has probably contributed to a weakening of the krona. There are also certain indications that activity in Sweden has weakened more than in the euro area. Moreover, the Swedish stock market, technology shares in particular, has continued to fall; a high proportion of foreign owners of Swedish shares may have meant that this also tended to weaken the krona (Fig. 22). In addition, portfolio investments by various players have entailed capital outflows. Against the U.S. dollar, on the other hand, the krona has appreciated marginally as a result of signs that the American slowdown is relatively marked, accompanied by a decreased short-term interest rate differential.

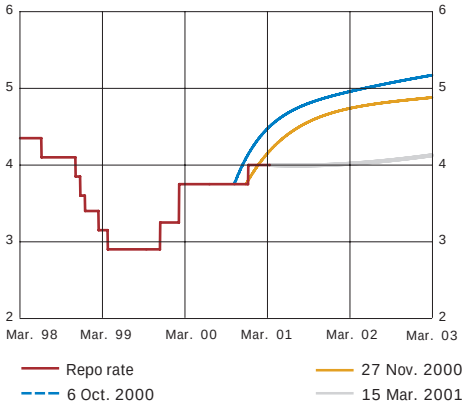
There is still a high degree of uncertainty about the krona's future path, as can be seen, for example, from the persistently high volatility against the euro. Moreover, option pricing suggests that the volatility will continue to be high for a time (Fig. 24 and the box on p. 22).

Figure 20. Ten-year bond rates in selected countries.
Daily quotations, per cent



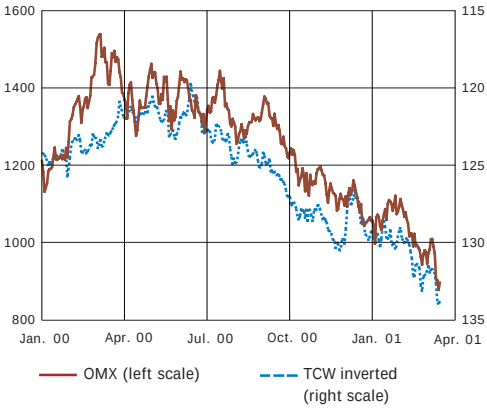
Source: The Riksbank.

Figure 21. Repo rate and expected rate implied by forward interest rates.
Simple annual rate, per cent



Source: The Riksbank.

Figure 22. OMX index and nominal effective TCW exchange rate.
Daily quotations; TCW index: 18 November 1992=100



Source: The Riksbank.

SEK AND EUR VOLATILITY

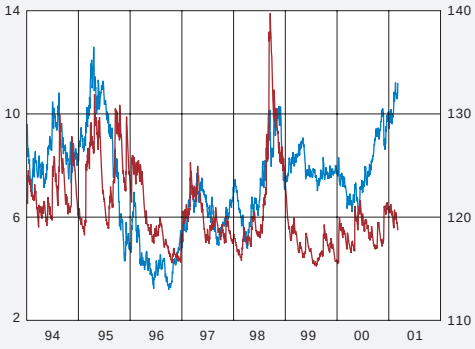
Volatility is a term for the degree to which prices of financial assets fluctuate. In the foreign exchange market, to some extent volatility can be presumed to mirror general uncertainty about a currency. This notion is supported by, for instance, the fact that volatility tends to increase in periods of financial unrest, of which autumn 1998 is one example. The Swedish krona is commonly considered, not least in the public debate, to be a currency that fluctuates comparatively markedly. As exchange rates can be measured in a variety of ways, registered volatility depends on the choice of method for measuring it. The volatility of the Swedish krona is studied here in trade-weighted terms (TCW).[7] The results are compared with a corresponding measure of the euro's volatility. This shows that in trade-weighted terms, the krona in recent years has not fluctuated to a remarkable extent.

Since the beginning of 1999 the krona's volatility has been comparatively stable (Fig. B1). Moreover, the fluctuations have been less pronounced than earlier in the 1990s. Up to mid March this year the krona's annual volatility has averaged about 5.4 per cent. And as the currencies of other countries that target inflation have displayed approximately the same degree of volatility, neither can the krona's exchange rate fluctuations be said to be high in an international perspective.[8]

The euro's volatility has increased in conjunction with the weakening of its exchange rate since the introduction in January 1999 (Fig. B2). In the period up to mid March this year, annual volatility has averaged 8.2 per cent. No signs of diminishing volatility are yet discernible.

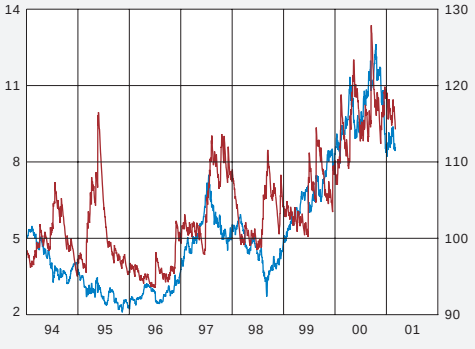
To sum up, in a historical perspective the trade-weighted volatility of the Swedish krona in the past two years has been comparatively low; neither has it been remarkably high compared with the currencies of other countries with a flexible exchange rate regime. The volatility of the krona has been considerably lower than the euro's.[9]

Figure B1. SEK: TCW exchange rate and its volatility.
Per cent and index



Source: The Riksbank.

Figure B2. EUR: TCW exchange rate and its volatility.
Per cent and index



Sources: ECB and the Riksbank.

7 Volatility is estimated with a GARCH (1,1) model (Generalised AutoRegressive Conditional Heteroscedasticity); see *Inflation Report 1998:4*, box on pp. 24–25.

8 Comparisons in trade-weighted terms have been made with e.g. NZD, CAD and GBP. Even compared with European currencies prior to their incorporation in the ERM, the krona has not been conspicuously volatile.

9 It should be noted in this context that the economic significance of exchange rate fluctuations has to be considered in relation to the degree of openness: Sweden's export share is about 47 per cent of GDP as against about 16 per cent for the euro area.

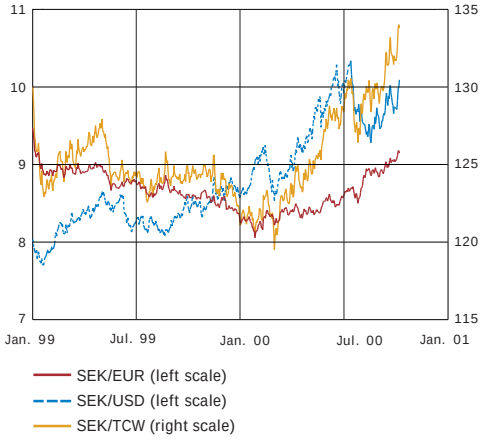
Due to the weakening of the krona, the combined effect on demand from interest rates and the exchange rate is judged to have become more expansionary since the December Report (Fig. 25). The real TCW exchange rate has weakened 3.5 per cent. The short-term real interest rate has risen 0.3 percentage points, while the long-term real rate has fallen 0.2 percentage points.

The repo rate increase in December means that the forecast development of short-term interest rates is based on a nominal level that is somewhat higher than in the December Report. The forecast for the ten-year bond rate, on the other hand, has been revised downwards over the entire forecast period, by an average of about 0.3 percentage points, in view of a lower initial level and poorer economic prospects. In the coming two years the ten-year bond rate is now expected to rise to 5.2 per cent.

The Swedish krona is judged to appreciate during the forecast period but to a weaker level than foreseen in the December Report.

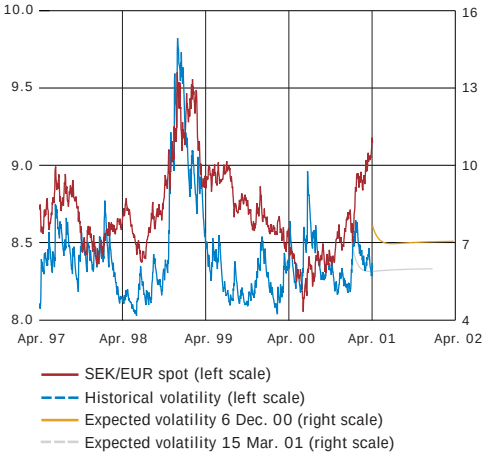
The recent weakening of the krona is assumed to be a temporary phenomenon, in keeping with the assessment in December. In view of a good and stable economic development in Sweden, with substantial surpluses on the current account, during the forecast period the krona is expected to appreciate, albeit to a lower level than was foreseen in December, mainly because the initial level is now weaker. In keeping with the December forecast, it is assumed that a decreased short-term interest rate differential in connection with the slackening of growth, above all in the United States, will also contribute to an appreciation of the krona against the dollar and sterling. Some appreciation of the krona is also foreseen against the euro, mainly as a consequence of good economic fundamentals but also because, for example, the unrest in financial markets, stock markets in particular, is judged to subside (see the box on pp. 24-25). The expected reduction of the short-term interest rate differential also points in this direction. In the main scenario the TCW index is judged to average 128.2 during 2001 and 123.7 during 2002.

Figure 23. Nominal effective SEK/TCW exchange rate, SEK/USD rate and SEK/EUR rate. Daily quotations, index: 18 November 1992=100



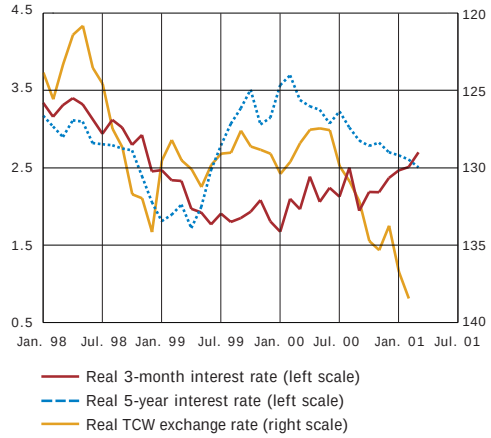
Source: The Riksbank.

Figure 24. Historical SEK/EUR volatility and market expectations. SEK/EUR and per cent



Source: The Riksbank.

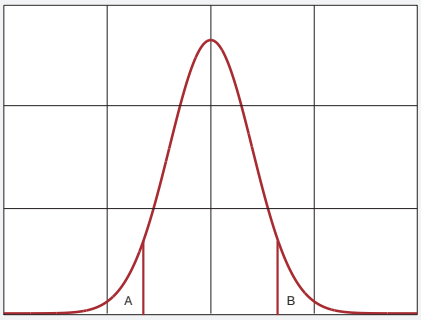
Figure 25. Real interest and exchange rates. Per cent and index: 18 November 1992=100



Source: The Riksbank.

IMPLICIT PROBABILITY DISTRIBUTIONS AND EXPECTED STOCK-MARKET TENDENCY

Figure B3. Skewness and kurtosis (see text).



Source: The Riksbank.

Stock markets have been turbulent in recent years and as sizeable share price fluctuations affect household wealth, for monetary policy it is relevant to develop an indicator of the stock market's future path. As illustrated here, market expectations of the future share price tendency can be extracted from option pricing. This is done by calculating the distribution of the probabilities of future stock-market developments that are implicit in option prices.

One way of facilitating the interpretation of probability distributions is to calculate a number of statistical measures that describe the distributions' characteristics. The statistical properties that are most appropriate for analysing the implicit probability distribution are skewness and kurtosis. An illustration of these two aspects of a distribution can start from Fig. B3. The skewness of a probability distribution can be described in terms of the relative sizes of areas A and B, where A represents the probability of the stock market falling by a certain amount (10 per cent or more, for example) and B the probability of the market rising by the same amount. If A is greater than B, the probability is said to be negatively skewed and vice versa. For share-index options, for example, a positive skewness (B is greater than A) means that market players judge that the stock market is more likely to rise than to fall. Kurtosis can be illustrated as the sum of A and B. Kurtosis, like variance, is an indicator of uncertainty but whereas variance measures aggregate uncertainty, kurtosis measures the probability of extreme outcomes.

The following measures were chosen for the analysis below:

Uncertainty indicator: the probability of the stock market rising 10 per cent or more *plus* the probability of the market falling 10 per cent or more. This corresponds to B plus A in Fig. B3.

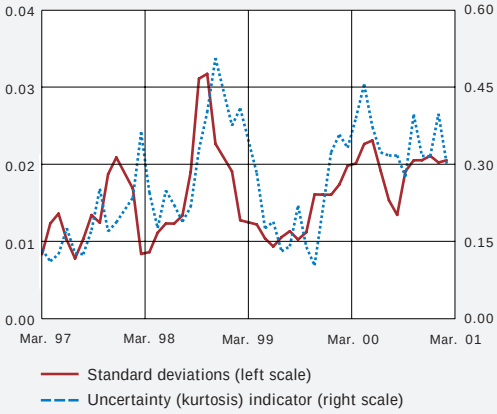
Skewness indicator: the probability of the stock market rising 10 per cent or more *less* the probability of the market falling 10 per cent or more. This corresponds to B minus A in Fig. B3.

From Fig. B4 it will be seen that the uncertainty indicator is a fairly good predictor of the future uncertainty.[10]

The next question is to what extent it is possible to predict the direction in which the stock market may move. The skewness indicator can be used to answer this. As Fig. B5 shows, the skewness indicator is a fairly good predictor of the stock market's future tendency, at least in some periods. Positive bars point to a rising stock market (in the coming 45 days) and vice versa. The indicator seems to have predicted the stock market fall during 2000 rather well, whereas it failed to catch the sharp fall in autumn 1998.

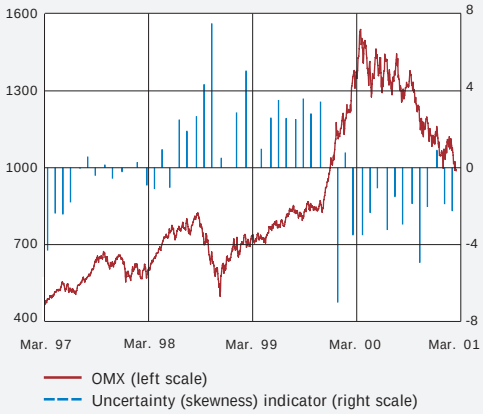
To sum up, the implicit probability distributions for OMX share-index options are above all a good indicator of future uncertainty. As an indicator of the stock market's future tendency they are more questionable. To some extent, the implicit probability distributions have managed to predict extended upward and downward tendencies in the stock market, whereas they have failed to provide satisfactory advance indications of corrections that are sudden and pronounced.

Figure B4. Uncertainty expressed as standard deviations and as the uncertainty indicator (kurtosis in the implicit probability distribution).



Sources: Reuters och the Riksbank.

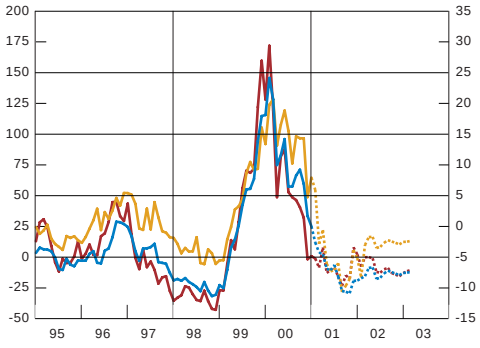
Figure B5. OMX index and uncertainty indicated by the skewness in the implicit probability distribution.



Source: Reuters och the Riksbank.

10 Future uncertainty calculated as the stock market's standard deviation over the coming 45 days.

Figure 26. Prices for crude oil and petroleum products.
Percentage 12-month change

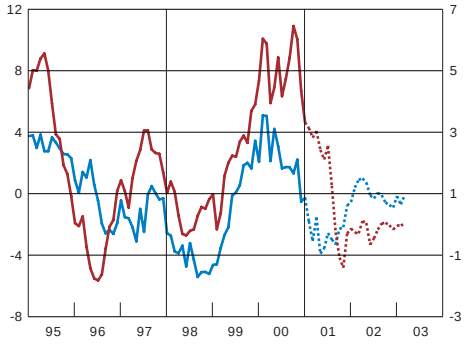


Crude oil price in USD (left scale)
Import price for crude oil and petroleum products (left scale)
CPI component: motor fuel and heating oil, excl. taxes (right scale)

Note. 2001–03 forecast.

Sources: International Petroleum Exchange, Statistics Sweden and the Riksbank.

Figure 27. Import prices to producers and consumers.
Percentage 12-month change



Import price, consumption-weighted (left scale)
CPI component: goods mainly imported, excl. taxes (right scale)

Note. CPI goods that are mainly imported include a considerable proportion of services, for example transportation and retail trade. 2001–03 forecast.

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

Import prices

Price tendencies for imported goods are partly dependent on movements in the exchange rate, discussed in the previous section, and on international prices for goods.

The crude oil price forecast is adjusted downwards.

In the December Report it was foreseen that the oil price would remain high for some time to come and then fall back during 2001 Q2, mainly due to seasonally lower demand for oil (Table 1). The oil price fall has, however, come earlier than expected.

The poorer international growth prospects compared with the December Report imply less demand for oil and thereby downward pressure on its price. It is considered that further production cuts by OPEC will not suffice to prevent oil prices from falling as demand weakens. Furthermore, an increased supply is foreseen from non-OPEC oil-producing countries.

Against this background the barrel price of oil has been revised downwards to an average level of USD 26 this year and USD 24 in 2002. In 2003 Q1 the level is expected to have fallen to USD 22 (Fig. 26).

Other commodity prices have been weaker than expected earlier. The slacker manufacturing activity is judged to lead to a future price tendency that is more subdued than foreseen in the December Report; this is also indicated by forward prices.

Forecasting a lower oil price implies that producer and consumer prices for imported petroleum-related goods will fall to a greater extent than assumed earlier. During 2002, moreover, the lower international price for manufactured exports tends to subdue the development of consumer prices for imports. Throughout the forecast period, however, the weaker appreciation of the krona has a contrary effect. All in all, some fall is foreseen this year in prices to consumers, excluding tax, for imported goods, followed by an average price rise of 1 per cent in 2002 (Fig. 27).

To sum up, prices to consumers for imported goods are judged to fall by an average of 0.2 per cent in 2001 and rise by an average of 1 per cent in 2002. Compared with the December assessment, this amounts to downward revisions of 1.5 percentage points for 2001 and 0.1 percentage point for 2002.

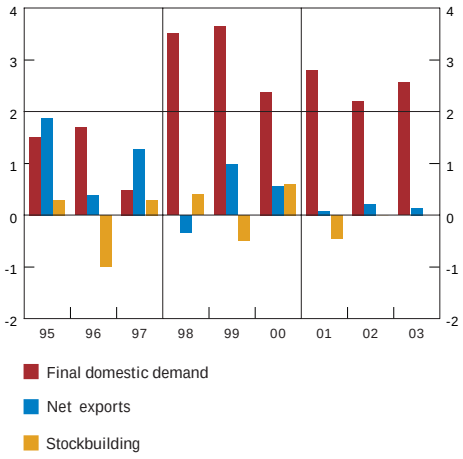
Demand and supply

SUMMARY OF GDP GROWTH 2000-03

Economic prospects for Sweden point to more subdued activity than foreseen in the December Report. Growth in 2000 was high but not as high as expected, which had to do with a slacker tendency, mainly for household consumption, towards the end of the year. For 2001 the revision of GDP growth is substantial. The export-led weakening of manufacturing activity is expected to have a negative impact on corporate investment both this year and next. Besides this, with last year's involuntary stock accumulation, the 2001 contribution from stockbuilding is expected to be negative. Households' assessments of their own economic future deteriorated gradually last year and this, together with a somewhat slacker development of real disposable income and a more subdued outlook for wealth, points to consumption being lower than forecast earlier. The weaker exchange rate and slower import growth are expected to keep net exports in line with the December forecast (Table 2, Fig. 28).

The latest business tendency survey indicates that capacity utilisation in manufacturing fell back at the end of 2000, accompanied by reports from certain industries that labour recruitment had become less troublesome. With the revised growth prospects, total resource utilisation is judged to be broadly unchanged in the forecast period. The growth of employment is expected to slacken in the course of this year. Since the lower demand is assumed to affect production more quickly than employment, average labour productivity in 2001 has been revised downwards. The recent wage agreements call for a marginal upward adjustment of the rate of wage increases this year and a downward revision for 2002. With the more subdued demand, the level of wage drift is, however, judged to be somewhat lower than assumed in the December Report.

Figure 28. Contributions to GDP growth. Percentage points



Note. 2001-03 forecast.

Sources: Statistics Sweden and the Riksbank.

Table 2. Demand and supply in the main scenario. Percentage annual change

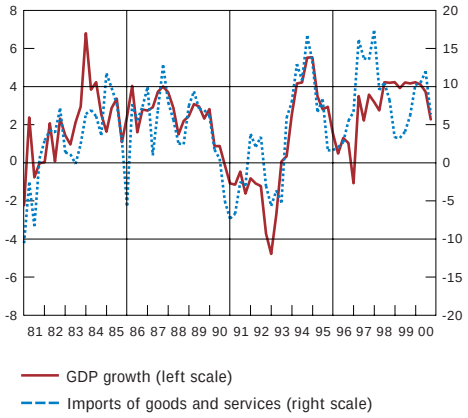
	2000	2001	2002	2003
Household consumption	4.1	3.0 (3.5)	2.3 (3.0)	2.1
Public authorities consumption	-1.7	1.1 (1.2)	1.0 (1.0)	1.0
Gross fixed capital formation	4.5	5.7 (7.5)	4.5 (6.2)	6.9
Stockbuilding*	0.6	-0.5 (-0.1)	0.0 (0.0)	0.0
Exports	9.8	6.5 (7.8)	6.2 (6.6)	5.5
Imports	9.7	7.1 (8.6)	6.4 (7.4)	5.8
GDP	3.6	2.4 (3.4)	2.4 (2.9)	2.7

*Contribution to GDP growth in percentage points.

Note. 2001–03 forecast; the figures in parentheses are the assessment in the December Report.

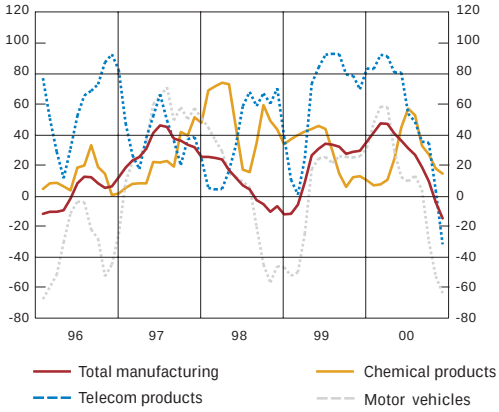
Sources: Statistics Sweden and the Riksbank.

Figure 29. Swedish imports and economic activity (GDP growth).
Percentage 12-month change



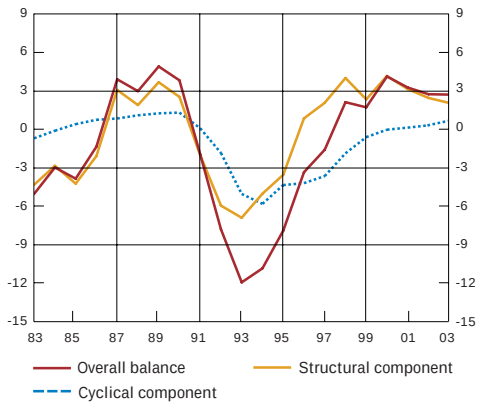
Source: Statistics Sweden.

Figure 30. Export order inflow.
Net balance



Source. National Institute of Economic Research (business tendency surveys).

Figure 31. Consolidated public sector financial balance.
Per cent of GDP



Note. 2001-03 Riksbank forecast. The cyclical balance is calculated from output gap estimates obtained with the Unobserved Components method.

Sources: Statistics Sweden and the Riksbank.

FOREIGN TRADE

The slackening of international economic activity since the December Report points to export growth being weaker in the forecast period.

Small open economies with a comparatively large GDP share for foreign trade can be relatively more sensitive than large economies to variations in international demand. Moreover, their sensitivity can be assumed to increase with the degree to which the country specialises in the production and export of certain goods or services. The marked drop in the inflow of export orders for products that are important for Swedish exports suggests that the international slowdown may hit exports relatively heavily in the course of this year (Figs. 16 and 30). The effects are countered to some extent by a weaker path for the exchange rate. Together with the weaker krona, the downward revisions to exports and domestic demand contribute to lower import demand. All in all, the development of net exports is sustained and is expected to be in line with the forecast in the December Report.

Total export growth is expected to be between 6 and 7 per cent in both 2001 and 2002 (Table 2). Imports are also expected to rise around 7 per cent in these two years. Foreign trade's annual net contribution to GDP growth in the forecast period is accordingly judged to be 0.1-0.2 percentage points.

FISCAL POLICY

The good financial position in recent years has enabled the Government and the Riksdag (Sweden's parliament) to raise the target for the public sector's financial balance successively and also lower income tax. The Riksbank has assumed earlier that tax reductions will also be implemented in 2002. The present forecast also includes the assessment that the final stage of compensation for the earlier increase in personal social security contributions will be implemented in 2003; this is judged to be in line with the Government's intentions. As previously, however, it is assumed that the balance in excess of the official target for the budget surplus will not be distributed to households in the form of additional tax cuts.

Compensation for the earlier increase in personal social security contributions is assumed to continue in 2003.

The revision of growth in the forecast period means that the public sector financial surplus is judged to be smaller than forecast at the time of the December Report. The Riksbank's calculations indicate, however, that throughout the forecast period the public sector surplus will exceed 2 per cent, which is the Government's target for the average level over a business cycle (Fig. 31).

The assessment of public consumption has not changed at all decisively since the December Report. The overall financial position in the local government sector is relatively good, with rising tax revenue and growing grants from the central government. The introduction of a maximum day nursery charge next year can be

expected to lead to some increase in demand for child care and thereby in consumption expenditure. At the same time, local government consumption expenditure is restricted by the requirement that budgets are not to show a deficit from 2000 onwards. The overall assessment is that local government consumption rises slightly in the forecast period. The growth of central government consumption expenditure is assumed to be lower than foreseen in the December Report, mainly due to diminishing defence allocations this year and next.

HOUSEHOLD CONSUMPTION

Households' total consumption expenditure has risen rapidly in the past two years. Recently, however, the prospects for household consumption have deteriorated in several respects: expectations have become more subdued, asset values have fallen and disposable income is judged to be somewhat weaker than before.

Prospects for household consumption have deteriorated recently.

During 2000 households became less optimistic about their *own economic future*, which suggests that the fall-off in the growth of consumption that was foreseen earlier may be more marked than was expected in December (Fig. 33).[11] Expectations about *Sweden's economic future* and *unemployment* twelve months ahead have also become less optimistic.

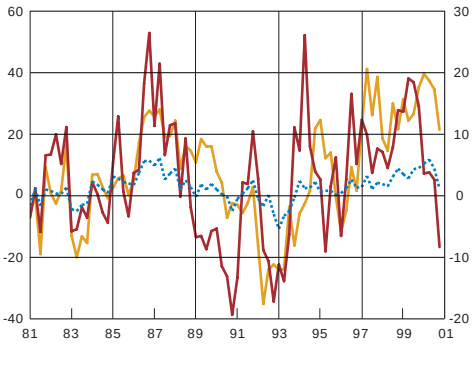
Household purchases of durable goods show a cyclical pattern that depends in part on product life. The turning points of these cycles are difficult to predict exactly but it is normally reasonable to expect that a long period with an accelerating increase in sales will be followed by a period in which the increase slackens. Such a period of diminishing growth now seems to have started.

Wealth in the form of shares has fallen since the December Report, accompanied by increased fluctuations in share prices and thereby greater uncertainty. However, the weak stock-market trend has not yet had any appreciable effect on other asset prices. Real house prices have been rising in recent years at the historically high average annual rate of 7 per cent. It is reasonable to count on a future development of asset prices that is more in line with the general economic trend.

Wealth in the form of shares has fallen.

The growth of lending to households has become somewhat slacker but the rate is still high and the ratio of debt to disposable income has gone on rising (Figs. 34 and 35). Since the early 1990s, however, household interest expenditure relative to disposable

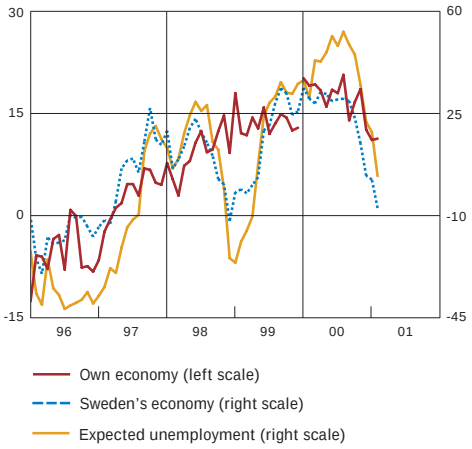
Figure 32. Household expenditure on total consumption, car purchases and other durables. Percentage annual change, constant (1995) prices



Note. The procedure for collecting data on household purchasing plans (HIP) was changed as of January 2000.

Source: Statistics Sweden.

Figure 33. Households' expectations: own economy, Sweden's economy and unemployment. Net balance

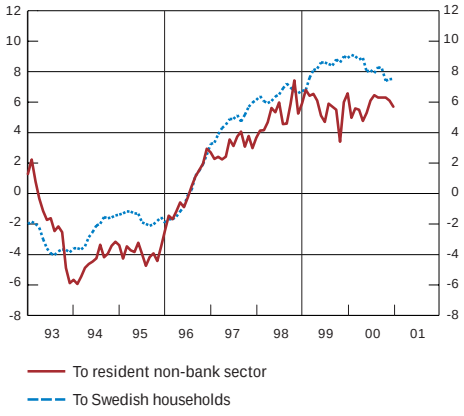


Note. The procedure for collecting data on household purchasing plans (HIP) was changed as of January 2000.

Source: Statistics Sweden.

11 The expectations of households, particularly about future real disposable income, are an important factor for private consumption expenditure. Households' expectations about *their own economic situation* twelve months ahead, as reported in surveys of household purchasing plans (HIP), appear to be a good indicator of the future development of income and consumption according to Malmberg, K. & Lindblad, H. (1988), *Konjunkturläget* May, National Institute of Economic Research, Stockholm, and studies at the Riksbank.

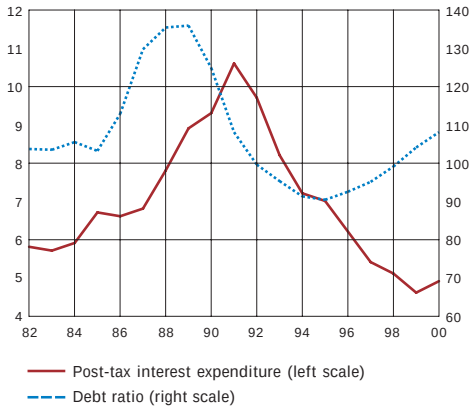
Figure 34. Lending by credit institutions. Percentage 12-month change



Note. Credit institutions comprise banks, house mortgage institutions and other credit market companies. The non-bank sector is defined as households, firms and local authorities. Banks' repos with the non-bank sector are included from 1995 onwards. Lending by house mortgage institutions has been adjusted for the transfer of state housing loans to this category in July 1995.

Source: The Riksbank

Figures 35. Total household debt and post-tax interest expenditure. Per cent of disposable income



Source: Statistics Sweden.

income, which can be seen as an indirect indicator of households' ability to manage debt, has fallen continuously (Fig. 35).

Real disposable income is expected to grow by just over 4 per cent in 2001 and about 3 per cent a year in 2002-03. This is somewhat less than assumed earlier, mainly because the growth of real wages and employment is now judged to be lower. It is envisaged that the effect on consumption of the planned tax cuts in 2002 and 2003 will be relatively moderate. Besides reflecting the size of the cuts, this is because to some extent households have presumably already adjusted consumption behaviour to the expected tax relief. It is conceivable, however, that the effect will be larger and accordingly lead to higher consumption.

Household consumption is expected to rise more slowly.

Total household consumption expenditure is expected to rise 3.0 per cent this year, 2.3 per cent in 2002 and 2.1 per cent in 2003. This means that for 2001 and 2002 the forecast annual growth of consumption has been revised downwards about 0.5 percentage points.

FIXED INVESTMENT AND STOCKBUILDING

The signs of a slowdown in *manufacturing* activity have become more distinct since the December Report. The tendency comes from a majority of industries and is particularly marked for telecom products and motor vehicles. The business tendency survey from the National Institute of Economic Research shows a marked fall-off in the inflow of orders, mainly from abroad. A weakening of domestic demand is foreseen, which will also have a downward effect on resource utilisation. The recent share price fluctuations represent uncertainty about future corporate profits and contribute to a poorer climate for investment. Thus, the conditions for fixed capital formation have deteriorated. The fact that long bonds rates are lower than at the time of the December Report does not alter this assessment. On the other hand, corporate sector output has risen relatively strongly in the past year and such a development tends to be followed by increased investment. Even so, there are grounds for a downward revision of the investment forecast for manufacturing in particular but also for other parts of the corporate sector.

The slowdown in manufacturing activity is particularly marked for telecom products and motor vehicles.

The slowdown in manufacturing can be assumed to affect the rest of the corporate sector, too, since large parts of the *services sector*, for example the transportation of goods, retail trade and most branches of consultancy, are strongly linked to manufacturing.

A contrary factor is the construction of networks for the third generation of mobile telephony but both the magnitude and the timing of these investments are uncertain and difficult to predict.[12]

Housing investment is expected to go on rising in the forecast period. The growth of residential construction is spread more or less evenly between apartment buildings and 1 and 2-family houses; neither is it confined to the metropolitan regions. The continued increase is likely to spread to additional regions.

All in all, gross fixed investment is judged to rise 5.7 per cent this year, followed in 2002 and 2003 by increases of 4.5 and 6.9 per cent, respectively. This time profile is crucially dependent on the path of manufacturing activity. As there is generally an interval before investment decisions are implemented, the investments undertaken this year may be based in part on earlier increases in production.

Stockbuilding contributed 0.6 percentage points to GDP growth in 2000 according to the national accounts. That was more than the December assessment allowed for. The statistics on manufacturing stocks show that in recent years it is input stocks which have grown in particular as the volume of production became markedly larger. During the second half of 2000, stocks of finished goods also rose in many parts of manufacturing. The development of stocks of finished goods could indicate an involuntary accumulation. This is supported by the Q4 business tendency survey, which indicates dissatisfaction over unduly large stocks of goods in manufacturing and parts of the trade sector (Fig. 38).

Indicators point to some involuntary stock accumulation in manufacturing and parts of trade.

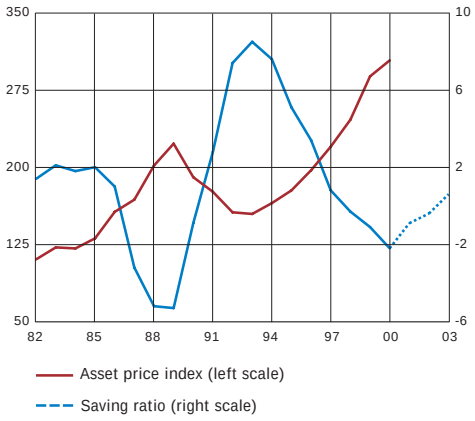
All in all, a build-up of stocks that was larger than expected last year, together with the assessment that economic growth is slackening, suggests that this year's GDP contribution from stockbuilding is likely to be clearly negative. It is accordingly judged to be -0.5 percentage points. In the rest of the forecast period, stockbuilding's contribution to GDP growth is judged to be more or less neutral.

EMPLOYMENT AND PRODUCTIVITY

The development of employment during 2000 was stronger than assumed in the December Report. The largest increase occurred in private services and the growth of public employment continued. The most recent statistics indicate that employment went on rising in January and February this year.

Last year's strong outcome for employment and the continued increase early this year call for a marginal upward revision of average employment growth in 2001. The number of new job

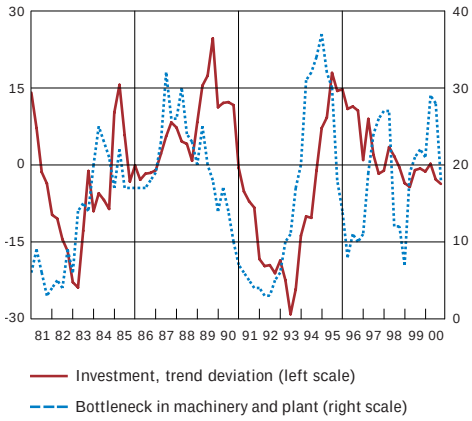
Figure 36. Household saving ratio and asset prices.
Per cent of disposable income and real price index: 1980=100



Note. The saving ratio is defined as disposable income less expenditure on consumption, expressed as a percentage of the former. The asset price index is a weighted mean of prices for shares, owner-occupied houses and commercial real estate; BIS data up to the end of 1997, thereafter Riksbank projections.

Sources: Bank for International Settlements, Statistics Sweden and the Riksbank.

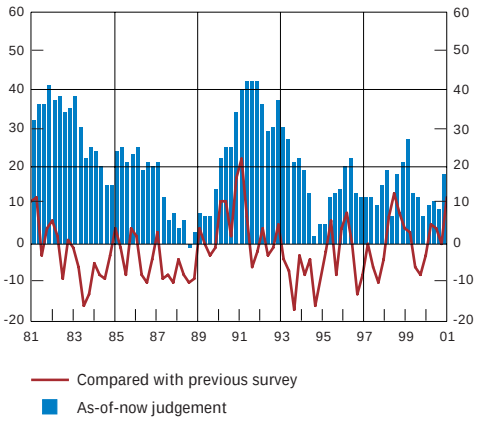
Figure 37. Investment in manufacturing and firms with machinery and plant capacity as the primary bottleneck.
Per cent



Sources: National Institute of Economic Research and Statistics Sweden.

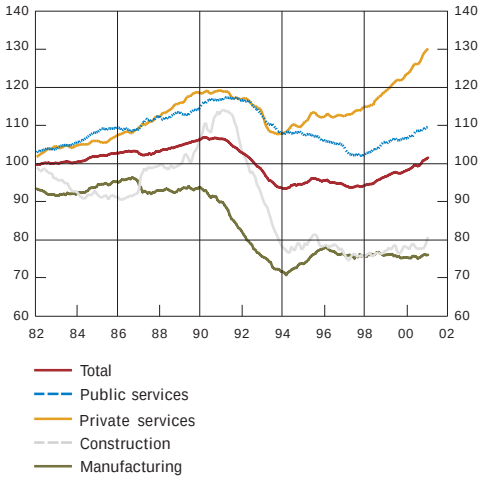
12 The four operators that have been awarded licences have made commitments totalling almost SEK 100 billion up to the end of 2011 but as they are expected to collaborate, this figure is not realistic. Assuming, as an arithmetical example, that construction of the network entails investing SEK 10 billion a year in 2002 and 2003, in these years it would account for about 4.5 per cent of investment in the corporate sector excluding manufacturing.

Figure 38. Stocks of finished goods in manufacturing.
Net balance



Source: National Institute of Economic Research (business tendency surveys).

Figure 39. Employment (persons).
Index: 1980 Q3=100



Note. Seasonally-adjusted series expressed as moving 3-month means.

Source: Statistics Sweden.

vacancies has levelled out since the December Report, which suggests that the increase in employment will slacken in the course of this year. At the same time, the increase in the number of unfilled job vacancies has slowed since the December Report, which may indicate that vacancies have become easier to fill (Fig. 40).

It is reasonable to expect that the growth of employment will slacken in the course of this year as economic growth becomes weaker.

In 2001 it is judged that the revised GDP growth rate will be mirrored in an increase in employment that is weaker than was assumed in the December Report. All in all, in the coming three years the number in employment is assumed to rise by around 130,000 persons.

During 2000 additional funds were assigned to the National Labour Market Board and the number of participants in cyclically-related programmes began to rise towards the end of the year. Total participation in labour market programmes last year somewhat exceeded the expected number in the December Report. Additional funds have also been assigned to the Board for 2001 and this is expected to mean that the number of participants in labour market programmes falls somewhat more slowly. For 2002 the weaker outlook for employment prompts an upward revision of open unemployment.

Average labour productivity generally displays a pro-cyclical pattern. One explanation for this is the phenomenon known as labour hoarding, whereby firms refrain from adjusting employment as much as production when demand is temporarily low. This phenomenon can have to do with, for example, the costs associated with recruitment and dismissal (induction and administrative costs, severance pay, etc.). Changes in employment also tend to lag behind those in production because hiring and firing take time. All this means that average labour productivity tends to slacken in periods when demand is falling. There are signs, however, that this relationship is not as clear as it used to be; in recent years firms seem to have adjusted employment more promptly in response to changes in production (Table 3).

Table 3. Maximum correlation between changes in GDP and two measurements of employment

Period	No. in employment	Hours worked
81 Q1–89 Q4	0.44 [4]	0.55 [0]
90 Q1–00 Q4	0.90 [2]	0.88 [0]
93 Q1–00 Q4	0.84 [1]	0.90 [0]
95 Q1–00 Q4	0.82 [1]	0.82 [0]
81 Q1–00 Q4	0.81 [2]	0.80 [0]

Note. The figures in parentheses are the time lag in quarters.

Sources: Statistics Sweden and the Riksbank.

In recent years it has become increasingly possible to vary working hours, particularly in manufacturing. New wage agreements have, for example, given employers more of a say in the distribution of working hours, for instance in relation to cyclical fluctuations. Moreover, the number of persons employed by the hour has risen. With more flexible working time, firms are in a better position than before to reduce average hours worked instead of their average labour force. Firms' increased possibilities of adjusting working time in response to demand can be expected to mean that labour productivity's variation with fluctuations in production may be smaller than before. All in all, however, it is reasonable to assume that labour productivity will continue to follow a pro-cyclical pattern to some extent, partly because the flexibility of working time varies greatly between sectors and it is also difficult for firms to predict the duration and magnitude of fluctuations in demand.

Against this background, the growth of labour productivity has been revised downwards rather more than half of a percentage point for 2001 but the rate in 2002 is expected to be in line with the earlier assessment.

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

	2000	2001	2002	2003
Nominal hourly wage	3.6 (3.5)	4.1 (4.0)	3.9 (4.3)	3.9
Labour productivity	2.1 (2.0)	1.4 (2.1)	1.7 (1.8)	1.7
Unit labour costs	1.9 (1.9)	2.7 (1.8)	2.3 (2.5)	2.2
Hours worked	1.5 (1.9)	1.0 (1.4)	0.7 (1.1)	1.0
Open unemployment	4.7 (4.7)	4.2 (4.2)	4.2 (3.7)	4.0

Note. The figures in parentheses are the assessment in the December Report.

Sources: Statistics Sweden and the Riksbank.

RESOURCE UTILISATION

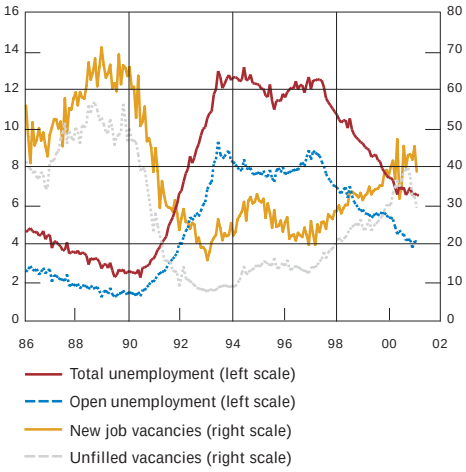
Resource utilisation in the economy is a central factor in the assessment of inflation's path. The Riksbank uses a number of indicators to judge how capacity utilisation is developing. One way of measuring total resource utilisation involves estimating the output gap with econometric methods.[13] Since last year the Riksbank estimates the output gap with an extended concept of unemployment that includes latent job-seekers as well as open unemployment.[14] An overall assessment of the calculations suggests that the output gap has closed either almost or completely (Fig. 42).

The appraisal of resource utilisation also includes more direct information about capacity utilisation, shortage figures and so on in different economic sectors. In manufacturing, which is affected at a relatively early stage by the weaker international activity, the latest business tendency survey shows that capacity utilisation has fallen. The proportion of firms where supply factors

13 The results of econometric estimations of the output gap are bound to be uncertain because, in addition to the statistical uncertainty inherent in all econometric models, there is uncertainty about the gap's level since this is not observable even with hindsight.

14 See *Inflation Report 2000:3*, box on pp. 40–43.

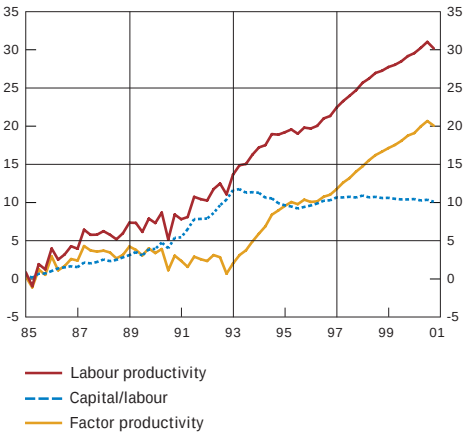
Figure 40. Unemployment and job vacancies. Per cent and thousands



Note. Seasonally-adjusted series.

Sources: National Labour Market Board and Statistics Sweden.

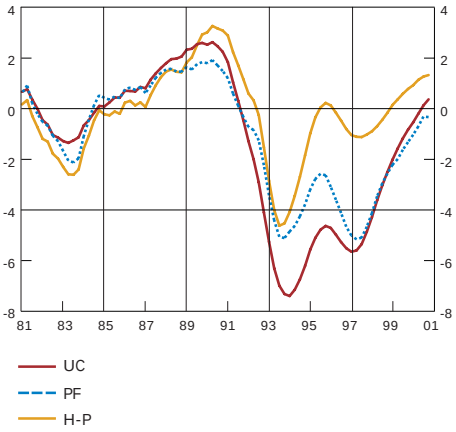
Figure 41. Components of corporate sector labour productivity. Logarithmic index: 1984=0



Note. Labour productivity decomposed with a Cobb-Douglas production function with constant returns to scale; the wage share of GDP is set at the historical mean: 0.6.

Sources: Statistics Sweden and the Riksbank.

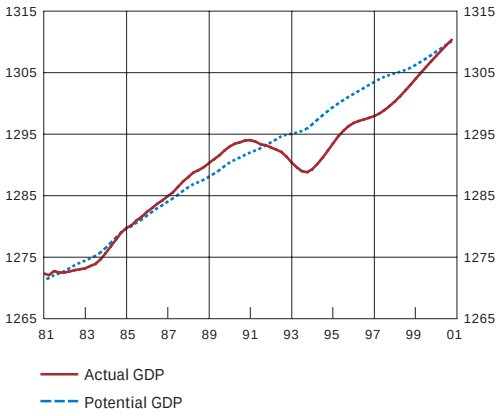
Figure 42. Econometric estimates of the output gap.
Per cent of potential GDP



Note. Data presented as moving four-quarter means. UC is the Unobserved Components method, PF the production function approach, which has been updated with extended unemployment, and H-P stands for the Whittaker-Henderson or Hodrick-Prescott filter, which is based on the Riksbank's GDP forecast for 2001-03.

Source: Statistics Sweden and the Riksbank.

Figure 43. Actual GDP and the potential path.
Logarithmic level



Note. Potential GDP estimated with the Unobserved Components method, which is one of several approaches used by the Riksbank to quantify resource utilisation (see *Inflation Report 1997:2*, box on p. 17).

Sources: Statistics Sweden and the Riksbank.

are the primary bottleneck has also decreased to some extent, as have the shortage figures for skilled workers and salaried technicians (Fig. 44).

In the construction sector as well as in service industries it is mainly labour shortages that can cause bottleneck problems. The proportion of construction firms reporting labour shortages fell only slightly in seasonally-adjusted terms from 2000 Q3 to Q4. The picture of activity in service industries is more varied, with clear indications of a slowdown in the car trade but a continuation of good growth in wholesale trade, business services and computer consultancy. Labour shortages were unchanged on the whole from Q3 to Q4 but some service industries, computer consultancy for example, do report a decreased shortage.

Another central factor for the paths of resource utilisation and inflationary pressure is the potential growth rate. The trends for labour supply and productivity may have been affected by a number of different changes.[15] These include reforms to systems for taxation, social security and pensions, for example, as well as changes that have affected the degree of competition in the economy. Together with changes to the institutional framework for wage formation, stabilisation policy's focus on low inflation and macroeconomic stability may have helped to improve the workings of the economy and thereby contributed to somewhat higher potential growth. Moreover, demographic changes influence potential growth directly through their impact on labour supply as well as indirectly via saving, etc.[16]

In view of the revised picture of growth in the forecast period, little change is foreseen in resource utilisation.

The potential growth rate is judged to lie in the interval 2-2.5 per cent a year, which is in line with the average GDP growth rate over a longer period. The revision of growth in the coming years implies that the amount of unutilised resources in the economy should be broadly unchanged in the forecast period.

WAGES AND UNIT LABOUR COSTS

The wage settlement for teachers that was concluded at the end of last year gives an annual wage rise of around 4 per cent over a period of five years. The current round of wage negotiations is still in progress and has already resulted in further agreements in manufacturing, for example. A large part of the negotiated wage increases in the manufacturing settlements is scheduled for the beginning of the duration. Calculations also suggest that the level of wage increases in the settlements to date is somewhat higher than the level in the previous round.

15 See *Inflation Report 1999:4*, box on pp. 41-44. Conceivable effects on inflation from changes in trend labour supply and productivity were discussed in *Inflation Report 2000:2*, box on pp. 32-34.

16 See *Inflation Report 2000:3*, box on pp. 44-47.

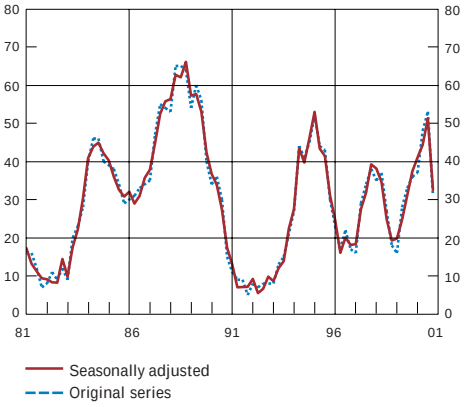
Together with low inflation expectations, the recent signs of an economic slowdown have probably influenced the outcome of wage negotiations. Moreover, changes in the negotiating system, such as the agreement on negotiating procedures and the coordination of negotiations, have probably contributed to the comparatively low levels.

The levels and profiles of a number of future agreements are expected to be in line with the settlements to date.

However, some agreements are still pending in the current round of wage negotiations. In the near future settlements are expected in, for example, the central and local government sectors as well as in construction, trade and the hotel and restaurant industry. The levels and profiles of future agreements are expected to be largely in line with the settlements to date.[17] Wage drift is expected to be lower than assumed in the December Report, mainly in view of slacker economic growth and a somewhat weaker situation in the labour market.[18] However, if one or more unions were to obtain relatively high wage increases, there is a risk of wage drift rising in the years ahead. All in all, the profile in the recent wage settlements and lower expected wage drift prompt a revision of the wage forecast; the total wage level is now expected to rise 4.1 per cent this year, followed by 3.9 per cent in both 2002 and 2003 (Table 4).

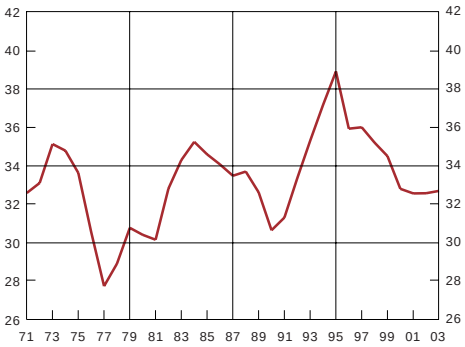
The altered picture of wage increases and productivity growth leads to an upward revision of the forecast development of unit labour costs in 2001. This is followed by some downward adjustment of the forecast for 2002, mainly because the rate of wage increases is expected to be lower. All in all, unit wage costs are expected to follow approximately the same path as domestic inflation, which means, for instance, that the profit share stabilises (Table 4, Fig. 45).

Figure 44. Proportion of manufacturing firms where supply is the primary bottleneck.
Per cent



Source: National Institute of Economic Research.

Figure 45. Profit share.
Per cent of GDP at factor values



Note. Series based on the earlier system of national accounts (SNA 68) as well as the new system (ESA 95). 2001-02 forecast.

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

17 Empirical estimations indicate that in the period 1972-98 manufacturing was the wage leader in relation to other economic sectors. See Tägström, S. (2000), The wage spread between different sectors in Sweden, *Sveriges Riksbank Economic Review* 4.

18 Wage drift for manufacturing workers, for example, shows high correlations with the situation in the labour market in terms of unemployment, unfilled vacancies and labour shortages. See Friberg, K. & Uddén-Sonnegård, E. (2001), Changes in wage formation in a changed world (preliminary title), *Sveriges Riksbank Economic Review* 1.

Price effects of deregulation and trade liberalisation

During the 1990s a number of markets in Sweden were exposed to competition and this has contributed to a lower rate of increase in consumer prices. But even though prices have converged towards the EU average in recent years, the price level in Sweden is still over 20 per cent above this average and up to half of this difference can be attributed to a lack of competition in Sweden. [19]

In recent months the downward price effect from the deregulation of electricity and telecom markets has diminished. In the December Report it was judged that the contribution to CPI inflation from electricity and telecom prices would cease to be negative as of this year, while the EU's Agenda 2000 reform of agriculture would continue to hold CPI inflation back by 0.1 percentage point. BSE and foot-and-mouth disease may entail a temporary contribution to CPI inflation that is positive, due to price increases for fish and meat.[20]

All in all, in the period 2000-03 the downward effect on CPI inflation from various deregulations and trade liberalisation is judged to be 0.1 percentage point a year. In the past, however, these downward factors have exceeded expectations and it is conceivable that there will be additional deregulations which strengthen competition and thereby contribute to a more subdued development of prices. Today there are many areas where the concentration of firms is high and competition from imports is weak. Examples are the car industry, the food industry and the transport sector. One step towards increased competition in these areas is that the block exemption for voluntary retail chains will come to an end by mid 2001. Another is the European Commission's review of car industry agreements between producers and dealers regarding exclusive sales and selective distribution.

19 Konkurrensverket (2000), *Varför är de svenska priserna så höga?* (Why are Swedish prices so high?), Report series, 12.

20 The CPI weights for meat and fish are 2.5 and 0.7 per cent, respectively. A 10 per cent price increase for these products would accordingly make a positive contribution to CPI inflation of about 0.3 percentage points.

Effects of political decisions and interest expenditure

No new proposals involving altered indirect taxes or subsidies have been announced since the December Report. The contribution to inflation from this source is accordingly expected to remain small throughout the forecast period. The forecast for house mortgage interest expenditure is also broadly unchanged.

Taxable property values were raised in January this year for owner-occupied houses, while the tax rate was cut from 1.5 to 1.2 per cent. The contribution to CPI inflation from these changes is just over 0.1 percentage point. A green tax switch was also introduced, entailing higher taxes on energy and lower VAT on collective travel, for example. Given a full pass-through to prices from the lower VAT on collective travel, the contribution to CPI inflation would be -0.1 percentage point; CPI outcome figures suggest that this has not been the case. All in all, the contribution to CPI inflation from indirect taxes is judged to be small in 2001 (Table 5). As a result of price increases in the previous year, the indexing of certain specific taxes is judged to raise CPI inflation marginally in January 2002 and 2003. The contribution to CPI inflation is calculated to be just under 0.1 percentage point in both 2002 and 2003.

Table 5. Direct CPI effects from indirect taxes, subsidies and interest expenditure. Percentage points

	Dec. 2001	Mar. 2002	Mar. 2003
Indirect taxes and subsidies	0.0 (0.1)	0.1 (0.1)	0.1
House mortgage interest expenditure	0.1 (0.0)	0.1 (0.1)	0.2
Total direct effect	0.1 (0.1)	0.1 (0.2)	0.2

Note. The forecasts in the December Report are shown in parentheses for comparison. This table shows only direct effects of changes to indirect taxes; indirect effects are presented in Table 6. The overall CPI effect is therefore represented by the sum of the total effects in Tables 5 and 6.

Sources: Statistics Sweden and the Riksbank.

House mortgage interest expenditure contributed 0.1 percentage points to the 12-month rate of CPI inflation in February. During 2002 and 2003 the contribution is expected to remain slightly positive.

Both CPI and UND1X inflation are also affected by a number of political decisions. A ceiling on payments of property tax is discussed in the Budget Bill for 2001; the proposed rule would, under certain circumstances, limit the amount paid in property tax on the permanent residence to a certain proportion of the household's income. This rule is judged to have a downward effect on CPI inflation of not quite 0.1 percentage point in 2001. UND1X will probably not be affected. For apartment buildings, the lower rate of property tax made a negative contribution to both CPI and UND1X inflation in January that was somewhat larger than foreseen in the December Report (Table 6).

In view of greater uncertainty about how the review of the consumer price index (SOU 1999:124) will be handled, it is now assumed – in contrast to the assessment in December – that day nursery charges will not be included in the CPI for 2002. That does away with the downward effect of 0.3 percentage points on CPI and UND1X inflation in 2002 that the introduction of a maximum charge was calculated to entail.

Table 6. CPI and UND1X effects from political decisions.

Percentage points

	Dec. 2001	Mar. 2002	Mar. 2003
Property tax on apartment buildings	-0.2 (-0.1)	0.0 (0.0)	0.0

Note. The forecasts in the December Report are shown in parentheses for comparison. See also the note to Table 5.

Source: The Riksbank.

Inflation expectations

The surveys that have been published since the December Report generally indicate lower inflation expectations in both the short and the longer run. The somewhat lower long-term inflation expectations probably have to do with the signs of a global economic slowdown. The changes in inflation expectations since the December Report are generally small. It is worth noting both the comparatively low short-term expectations of households and that employers' expectations have been revised downwards for all time horizons (Table 7). In general, the inflation expectations are well in line with the inflation target.

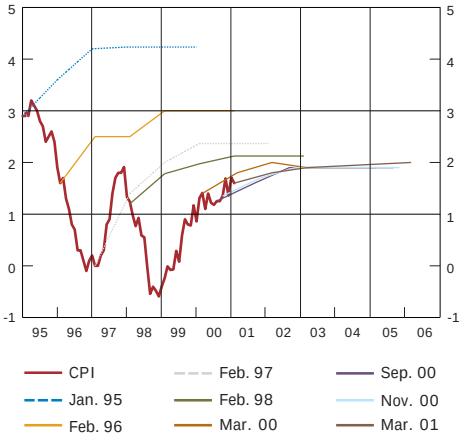
Table 7. Expected rate of CPI inflation.
Annual rate, per cent

Expected inflation 1 year ahead		
Money market agents	1.8	(0.1)
Employer organisations	1.8	(-0.1)
Employee organisations	1.8	(-0.1)
Purchasing managers, trade	2.1	(0.0)
Purchasing managers, manufacturing	2.2	(-0.1)
Households (HIP)	1.4	(-0.1)
Manufacturing firms (business tendency surveys)	1.8	(0.1)
Services firms (business tendency surveys)	1.8	(0.2)
Expected inflation 2 years ahead		
Money market agents	1.9	(0.0)
Employer organisations	1.9	(-0.2)
Employee organisations	1.9	(-0.1)
Purchasing managers, trade	2.2	(0.0)
Purchasing managers, manufacturing	2.2	(-0.1)
Expected inflation 5 years ahead		
Money market agents	2.0	(0.1)
Employer organisations	1.9	(-0.2)
Employee organisations	2.2	(0.2)
Purchasing managers, trade	2.3	(0.0)
Purchasing managers, manufacturing	2.3	(0.0)

Note. The figures in parentheses are the change in percentage points from the previous survey.

Sources: National Institute of Economic Research and Statistics Sweden.

Figure 46. Money market agents' inflation expectations.
Percentage 12-month change



Sources: Prospera Research AB and Statistics Sweden.

Inflation assessment

This chapter summarises the Riksbank's assessment of inflation prospects up to 2003 Q1, given that the repo rate is left unchanged at 4.0 per cent. The principal features of the main scenario (the price developments in the coming twenty-four months that are considered most probable) are described, followed by an appraisal of the uncertainties and risks in the inflation prospects. The chapter ends with an outlook over the year after the two-year horizon.

Inflation prospects in the main scenario

Some slowing of international economic activity was foreseen in the December Report, along with the risk of an even weaker outcome. New statistics in recent months point to a development that is more in line with the risk spectrum's scenario of a more pronounced international slowdown. This is primarily due to the recent comparatively rapid weakening of activity in the United States. While the monetary easing by the Federal Reserve does lessen the risk of a deep downturn, it does not seem capable of preventing a development, above all in the short run, that is more subdued than the December Report anticipated.

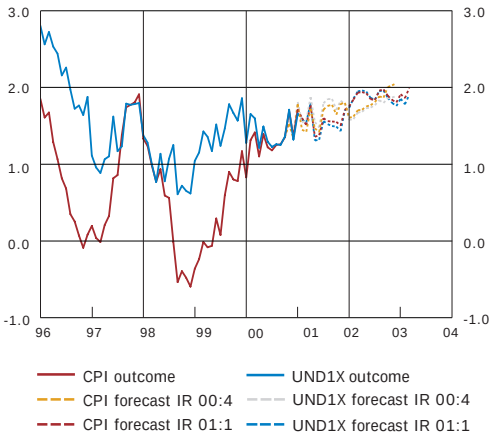
The Japanese economy is expected to show relatively marked effects of the American slowdown, mainly because a large proportion of Japanese exports goes to markets either in the United States or in other parts of Asia that in turn are highly dependent on activity in the United States. There are also underlying problems in the Japanese economy, for example in the financial sector, that have not yet been resolved. Moreover, the IT sector, where Japan is relatively prominent, has been hit comparatively heavily by the economic slowdown.

Activity in the euro area has also become more subdued. Developments here, however, are more in line with earlier assessments and the American slowdown is expected to have comparatively limited effects. Still, growth prospects for 2001 have been adjusted downwards.

All in all, growth in the OECD area is estimated to be 2.2 per cent this year and 2.6 per cent in 2002, which is a downward revision of 0.8 and 0.2 percentage points, respectively, compared with the forecast in December. Growth in 2003 is expected to reach 2.8 per cent. The main scenario accordingly envisages a gradual recovery in the forecast period, partly as a result of successive effects from an easing of monetary policies, mainly in the United States. An upswing that is rapid and robust is not expected.

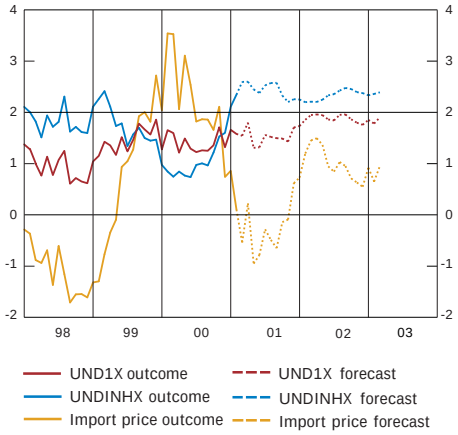
The weaker development of international demand affects prices in Sweden through various channels. The quickest effect comes via prices for imported goods. Slacker international activity can be expected to result in a somewhat more subdued path for international prices, of which perhaps the most important is the

Figure 47. CPI and UND1X: outcome and the main scenario in this and the previous Report. Percentage 12-month change



Sources: Statistics Sweden and the Riksbank.

Figure 48. UND1X, UNDINHX and price of imported goods; outcome and main scenario. Percentage 12-month change



Sources: Statistics Sweden and the Riksbank.

price of oil, which has fallen faster and is assumed to follow a weaker path than foreseen in the December Report.

The path of the Swedish krona plays an important part in the extent to which the development of international prices passes through to inflation in Sweden. To date this year the krona has been unexpectedly weak. The reasons presumably include capital outflows connected with the large proportion of listed shares that is owned abroad, as well as portfolio investment connected with premium pensions. Other factors are no doubt the general international economic and financial unrest, which places the krona – as a small currency – at a disadvantage, and the concern about a weaker development of exports. The main scenario still counts on an appreciation of the krona in the forecast period but as this is now assumed to be somewhat slower than envisaged earlier, the exchange rate will, on average, be weaker than foreseen in the December Report. This is partly offset by the more subdued international price trend.

Another, slower, channel through which the international slowdown affects inflation in Sweden is the impact on aggregate demand. As mentioned earlier, effects of the slowdown are expected to be relatively smaller in Europe, which is the main market for Swedish exports. At the same time, the relatively marked drop in the inflow of orders for major export products may be a sign that the product mix in Swedish exports is such that an international economic slowdown hits Sweden sooner and more heavily. However, the weaker exchange rate and a more subdued development of imports are judged to contribute to a path for net exports that is approximately in line with the forecast in the December Report.

The weaker international activity will presumably affect investment, too. Business tendency data show a fall-off in the order inflow to manufacturing, which is the sector where a weakening of activity abroad is likely to be felt first. Moreover, the proportion of firms reporting machinery and plant capacity as a bottleneck has decreased recently, which presumably implies less need to expand production facilities. Against this background it is considered that gross fixed investment should be adjusted downwards.

The international slowdown is probably also a partial explanation for the less optimistic mood among households, for example via effects on the financial markets, in particular the weak and turbulent stock markets. Surveys indicate that in recent months households have become appreciably less confident about the future. This reassessment of future prospects by households, together with a cyclical fall-off in the rate of increase in purchases of durable goods, is expected to lead to slower consumption growth in the coming years.

Together with expected stock corrections during 2001, after last year's accumulation, it is foreseen that the weaker development of exports, gross fixed investment and private consumption will result in GDP growth being lower than foreseen in the December Report. These effects are offset to some extent in that imports

are also expected to be weaker. All in all, the GDP growth rate in both 2001 and 2002 is expected to be 2.4 per cent, which is 1.0 and 0.5 percentage points less, respectively, than assumed in December. Growth in 2003 is put at 2.7 per cent. It should be underscored that in a historical perspective, even the revised growth rates are comparatively high.

All in all, the GDP growth rate is expected to be 2.4 per cent in both 2001 and 2002, followed by 2.7 per cent in 2003.

The anticipated development of GDP is judged to mean that total resource utilisation will be broadly unchanged during the forecast period. In manufacturing – the sector that is most affected by conditions abroad – clear signs of falling capacity utilisation are already evident. With lower resource utilisation compared with the previous forecast, inflationary pressure from domestic sources is not expected to be as high as was foreseen in the December Report.

The current round of wage negotiations has proceeded to date as foreseen in the December Report. However, the outcome does motivate a marginal revision of the time profile in that the major share of the negotiated wage increases is scheduled for an earlier stage than the December forecast envisaged. The weaker GDP growth that is now foreseen can be expected to result in relatively lower demand pressure in the labour market, too. This no doubt means that the risk of high market-driven wage drift has become correspondingly smaller. It should be borne in mind, however, that wage negotiations are still in progress and it may be premature to rule out a development of wage costs that is less favourable in the context of inflation.

Against this background, compared with the December Report, the present picture of inflation in the main scenario can briefly be described as follows: Weaker international activity results in a more subdued international price trend. However, the impact on inflation in Sweden is partly countered by a weaker path for the exchange rate. The international slowdown also affects growth in Sweden through various channels, not least the stock market. The relatively lower resource utilisation in the coming two years that results from this is mirrored in lower domestic inflation.

All in all, in the main scenario with an unchanged repo rate, the 12-month rate of CPI inflation is judged to be 1.9 per cent one year ahead and 2.0 per cent after two years. For UND1X inflation the corresponding assessment is 1.9 per cent both one and two years ahead. The average annual level of CPI inflation is expected to be 1.6 per cent for 2001 and 1.9 per cent for 2002, while the corresponding figures for UND1X inflation are 1.5 and 1.9 per cent, respectively (Fig. 47, Table 8).

It should be noted that unlike the case in the December forecast, it is now assumed that day nursery charges will not be incorporated in the CPI in the forecast period. The question of how to handle the introduction of a ceiling on day nursery charges has been discussed in connection with earlier Inflation Reports.

The Riksbank's earlier assessment was that day nursery charges would be incorporated in the CPI as well as in UND1X. That in turn meant that the introduction of a maximum charge would have a downward effect on these indicators of inflation. In December it was calculated that in 2002 the effects would amount to –0.3 percentage points on CPI and UND1X inflation and –0.5 percentage points on UNDINHX inflation. In view of uncertainty about how the official report from a review of the CPI will be handled, it now seems less probable than before that day nursery charges will in fact be incorporated in these inflation indices in such a way that they are affected when the maximum charge is introduced. Hence the altered assumption. Excluding this change, the forecast means that for UND1X inflation, for example, the annual level in 2002 has been adjusted downwards 0.2 percentage points and the 12-month change in December 2002 by 0.4 percentage points.

A more difficult matter of principle is how the Riksbank ought to treat the effects of the maximum charge on inflation if day nursery charges are included in the CPI and UND1X. This issue no longer appears to be topical but it may still be relevant to recall a passage from Inflation Report 2000:2 (p. 49): "… changes in day nursery charges clearly do not affect underlying, more cyclical inflationary pressure, at least not directly, and it is this cyclically determined inflation that is primarily influenced by monetary policy". This clearly also applies in the present situation, which moreover is about how the maximum charge will be registered in the price statistics rather than some new assessment of the reform as such.[21]

The comparatively rapid increase in UNDINHX inflation in recent months has to do with a number of factors. One is unexpectedly large rent increases. Prices of other services are also rising comparatively fast at present. Previously, these price increases were countered to some extent by downward price effects from the deregulation of telecom and electricity markets. As total resource utilisation is expected to be broadly unchanged in the coming years, a stabilisation of UNDINHX inflation is foreseen.

CPI inflation in the main scenario is judged to be 1.9 per cent one year ahead and 2.0 per cent after two years, while UND1X inflation is 1.9 per cent both one and two years ahead.

21 As the HICP and the GDP deflator include day nursery charges, they will show a downward effect from the introduction of a maximum charge.

Table 8. Inflation forecasts in the main scenario.
Percentage change

	Annual rate		12-month rate	
	2001	2002	March 2002	March 2003
CPI	1.6 (1.6)	1.9 (1.8)	1.9	2.0
UND1X	1.5 (1.7)	1.9 (1.8)	1.9	1.9
UNDINHX	2.4 (1.9)	2.3 (2.0)	2.2	2.4
HICP	1.4 (1.7)	1.4 (1.6)	1.4	1.7

Note. The figures in parentheses are the forecasts in the December Report.

Source: The Riksbank.

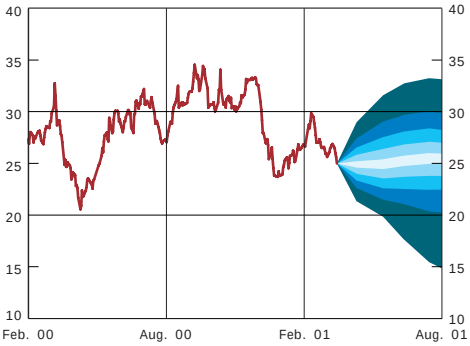
The Riksbank has clarified that monetary policy should focus on fulfilling the inflation target as defined in terms of CPI inflation twelve to twenty-four months ahead but that under certain circumstances there can be reasons for diverging from this aim.[22] One reason may be that inflation in this time horizon is affected by factors that the Riksbank can choose to disregard in the formation of monetary policy. Changes in house mortgage interest expenditure can be one such factor because they are directly linked to the Riksbank's repo rate adjustments. The impact of interest expenditure is particularly large when the level of interest rates changes markedly. That was evident in the latter part of the 1990s when a major reduction of the repo rate was accompanied by a downward shift in long-term interest rates as confidence in monetary policy gradually grew. CPI effects from falling or rising interest rates can occur over a comparatively long period in that they are governed by the duration of house mortgage agreements. After a period of falling interest rates, a mortgage-holder's interest expenditure does not fall until the time comes to renew the earlier agreement. The fact that this effect is registered in the CPI but not in UND1X is the main reason why CPI inflation was so much lower than UND1X inflation for a long time (Fig. 47). Direct effects of changes in indirect taxes and subsidies are likewise excluded from UND1X.

Now that the level of interest rates has been comparatively stable for a fairly long time and the contribution from indirect taxes and subsidies has been small, the discrepancy between the CPI and UND1X has successively diminished. This will continue to be the case in the current time horizon 2001–03. So in practice it would not make any difference if monetary policy were to be based at present on UND1X or the CPI.

As the Riksbank's opinion about the effects of changes in house mortgage interest expenditure, indirect taxes and subsidies is the same as before, there are no grounds for departing from the arrangement that has been chosen in recent years, whereby monetary policy is based on UND1X. Adhering to this arrangement as long as there are no tangible reasons for considering other transitory effects on inflation also makes monetary policy easier to evaluate.

22 Minutes of the Executive Board meeting on 4 February 1999. The clarification is presented in Heikensten, L. (1999), The Riksbank's inflation target — clarifications and evaluation, *Quarterly Review* 1, Sveriges Riksbank.

Figure 49. Crude oil price (Brent) and uncertainty intervals based on option prices on 15 March 2001.
USD/barrel



Note. The central band is the price range that is expected to apply at the indicated dates with 10 per cent of the total probability range; each successive pair of bands covers an additional 20 per cent of the probability, so that the outermost pair encloses 90 per cent.

Sources: International Petroleum Exchange and the Riksbank.

The risk spectrum

The inflation forecast in the main scenario is the path the Riksbank considers most probable, given the assumption of an unchanged repo rate in the coming two years. But as inflation forecasts are uncertain, the risk spectrum is also relevant in the formation of monetary policy.

In the December Report it was the upside risks for inflation that were judged to predominate in the forecast period. They included the risk of the oil price being higher than in the main scenario and the exchange rate being weaker. There was also assumed to be a risk of a stronger wage trend and larger expansionary effects from fiscal policy. The downside risks were perceived to be a weaker international economic trend and a relationship between growth and inflation that is more favourable than in the main scenario. All in all, the upside risks for both UND1X and CPI inflation were judged to predominate to some extent after one year and to a considerable extent after two years.

In the present report the uncertainty about *international developments* is still considered to be considerable and the downside risk two years ahead has become somewhat greater. International growth in the main scenario has been revised downwards but there is still a risk of growth being even weaker. This risk has to do above all with fears that the repercussions elsewhere from the weaker prospects in the United States will be greater than foreseen at present. The situation in Japan, for example, which is already troublesome for structural reasons, could become still worse. The effects in Southeast Asia and Europe could be substantial, not least through financial channels such as falling stock markets, higher risk premiums and rising credit costs. All this could lead to a global slowdown that is more synchronised.

The effects of the international slowdown on the IT and telecom sector appear to be relatively marked. Countries such as Sweden, where production in this sector is large, are particularly affected by this. It is conceivable that the knock-on effects, through real as well as financial channels, will be more pronounced than allowed for in the main scenario and lead to more subdued inflationary pressure. The price of oil, for example, could be weaker than in the main scenario. Option prices for oil indicate a downside risk for the price of crude (Fig. 49). However, the downside risk for inflation in Sweden in this alternative is countered in that an increasingly deep international downturn would presumably be associated with a weaker exchange rate. If the krona were to remain weak for a longer period, that would help to offset the consequences for Swedish exports of the loss of demand in the rest of the world. The downward impact on domestic consumer prices would also be smaller.

Domestic inflation is considered to be an upside risk for the path of inflation. The main source of this upside risk is unit labour costs, which could rise if wage agreements turn out to be higher than has been allowed for. Most of the settlements to date have admittedly given wage increases that are in line with the assessment

in the main scenario but negotiations are still in progress for some of the large unions, for example municipal and commercial employees. If the outcomes were to be appreciably higher than in the agreements concluded earlier, there would be an increased risk of compensatory wage drift in the years ahead. Another risk is that productivity growth will be lower than assumed in the main scenario, leading to higher unit labour costs and higher inflation. A further possibility is that the unexpectedly high domestic inflation is a sign of a somewhat less favourable relationship between growth and inflation. Here it can be noted that in recent years the development of prices has been held back by deregulations in a number of sectors and this is not expected to be the case in the future.

Another item in the risk spectrum is an *exchange rate* that is weaker than in the main scenario even though the slowdown in activity is not more marked. In this situation the exchange rate constitutes an upside risk for inflation.

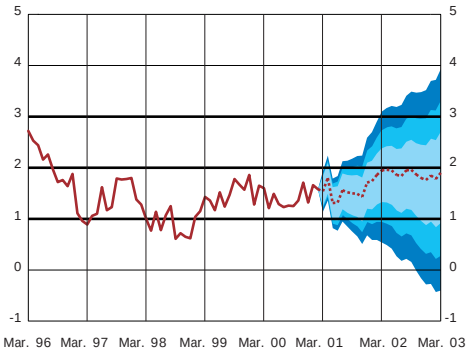
All in all, the balance of risks in the forecasts for CPI and UND1X inflation is judged to be on the downside both one and two years ahead. It is considered that the downside risks associated with the development of international activity are not fully balanced by upside risks from the development of domestic inflation and the exchange rate. Thus, it seems more probable that inflation will be below the rate in the main scenario than that it will be higher. This is evident from Fig. 50, which shows that the uncertainty in the forecast of underlying inflation, measured as the 12-month change in UND1X, is skewed somewhat negatively.[23] The same is true of the risk spectrum in the forecast of CPI inflation (Fig. 51).

All in all, the balance of risks in the forecasts for CPI and UND1X inflation is judged to be on the downside both one and two years ahead.

The degree of uncertainty in the assessment of both UND1X and CPI inflation is approximately the same as at the time of the December Report.

As monetary policy decisions are based primarily on an assessment of price tendencies twelve to twenty-four months ahead, the inflation prospects for this time horizon are particularly relevant. In the main scenario, the rate of inflation measured as the 12-month change in UND1X is expected to be 1.9 per cent in March 2002 as well as in March 2003. With the predominant downside risk in the inflation assessment, the mean value of the complete assessment of UND1X inflation, that is, including the risk spectrum, is approximately 0.1 percentage point lower both one and two years ahead. The mean assessment of UND1X

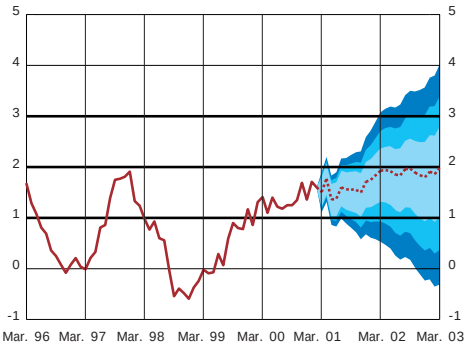
Figure 50. UND1X with uncertainty intervals. Percentage 12-month change



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 51. 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.

23 For an account of how the uncertainty interval is derived, see Blix, M. & Sellin, P. (1999), Inflation forecasts with uncertainty intervals, *Quarterly Review 2*, Sveriges Riksbank; for a fuller analysis, more focused on models, see *idem* (1999), *Uncertainty bands for inflation forecasts*, Sveriges Riksbank Working Paper 65.

inflation is accordingly 1.8 per cent both one and two years ahead. For CPI inflation the corresponding assessment is 1.8 per cent one year ahead and 1.9 per cent after two years (Table 9).

Table 9. Inflation forecasts including the risk spectrum.
Per cent

	Annual rate		12-month rate	
	2001	2002	March 2002	March 2003
CPI	1.6	1.8	1.8	1.9
UND1X	1.5	1.8	1.8	1.8

Note. The table gives the mean values of the inflation assessment's probability distributions (see Figs. 50 and 51).

Source: The Riksbank..

Table 10. UND1X inflation.
Percentage probability, 12-month rate

	UND1X<1	1<UND1X<2	2<UND1X<3	UND1X>3	Total
2001 (March)	14	43	37	7	100
2002 (March)	27	28	26	18	100

Note. The figures show the probability of UND1X inflation being in the column's interval.

Source: The Riksbank.

Table 11. CPI inflation.
Percentage probability, 12-month rate

	CPI<1	1<CPI<2	2<CPI<3	CPI>3	Total
2001 (March)	14	43	36	6	100
2002 (March)	25	28	27	20	100

Note. The figures show the probability of CPI inflation being in the column's interval.

Source: The Riksbank.

The conclusion from the assessments presented above is that, excluding transitory effects from changes in indirect taxes, subsidies and interest rates and given an unchanged repo rate of 4.0 per cent, inflation will be approximately in line with the 2 per cent target both one and two years ahead. When the risk spectrum is incorporated, it is foreseen that inflation will somewhat below the target both one and two years ahead. The degree of uncertainty in the forecast of both UND1X and CPI inflation is judged to be approximately the same as at the time of the December Report.

Outlook beyond the two-year horizon

The uncertainty in the forecasts inevitably grows with the distance into the future. However, trying to draw certain conclusions about the economic situation a bit beyond the inflation forecast's regular two-year horizon is still relevant, partly to see whether dramatic developments may lie in wait. It is also the case that monetary policy elicits effects even after the normal two-year perspective, so it is only reasonable to make some allowance for what may be liable to happen then. It should be underscored that assessments with such a distant horizon have to be relatively general, so that in the formation of monetary policy they should not be assigned as much weight as the more detailed regular forecast. The element of uncertainty appears to be particularly large in situations like the present, with the difficulty in fully comprehending the consequences of the economic slowdown that is leaving its mark both internationally and in Sweden.

With the main scenario as a starting point, there are some tendencies on which to build an outlook that extends another year beyond the regular two-year horizon for forecasting inflation, that is, up to the end of 2004 Q1. In the years ahead it is foreseen that international economic activity will be characterised by a gradual recovery from the slowdown that is now becoming increasingly clear. The expected course of the recovery is not dramatic, however, and could probably be associated with relatively low international price pressure during as well as immediately beyond the two-year horizon. Relationships between supply and demand are expected to contribute, for instance, to a subdued development of the oil price.

In Sweden, too, the future path of activity is characterised by a successive recovery. With the GDP growth forecast at 2.7 per cent in 2003, some renewed increase in resource utilisation is more probable than in the two preceding years. That could lead to some increase in domestic inflationary pressure towards the end of 2003 and the beginning of 2004. In that both the level of GDP and its growth rate are probably not all that far from what can be regarded as sustainable in the longer run, the effects on domestic inflation would probably be comparatively limited. This is supported, moreover, by the long-term inflation expectations being well in line with the inflation target at the same time as little change is expected in the repo rate.

Given that the current financial and economic unrest subsides as international economic activity recovers, there are good prospects of the Swedish krona's exchange rate being governed to a greater extent by fundamental factors. There are therefore conditions for a development of the exchange rate even beyond the forecast period that is favourable in the context of inflation.

All in all, no sizeable changes in the rate of price increases are expected beyond the regular two-year horizon. A slight upward tendency in domestic inflationary pressure makes some increase in domestic inflation probable but the impact on CPI and UND1X inflation is countered, as previously, by a more subdued development of imported inflation. If developments follow the forecast paths, no major problems should be encountered in making timely interest rate adjustments to ward off any threat to the price stability target.

Material for assessing monetary policy 1998–2000

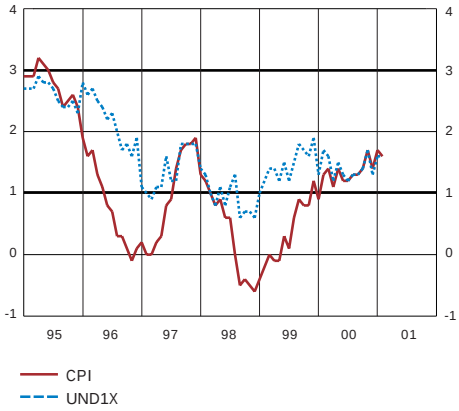
Introduction

The economic trend in Sweden has been positive ever since the recession at the beginning of the 1990s. Annual GDP growth from 1994 onwards has averaged over 3 per cent and employment has risen markedly. The economic policy realignment has contributed to the favourable development. Monetary policy has focused on price stability, the central government budget has been consolidated and clear rules for budget policy have been adopted. This has led to a clear downward shift in both inflation and inflation expectations and that in turn has paved the way for a markedly lower level of interest rates. The repo rate was cut from 11 per cent at the beginning of 1993 to below 3 per cent during the greater part of 1999; since then the repo rate has been adjusted upwards to 4 per cent.

Since 1999, the Parliamentary Standing Committee on Finance makes an annual assessment of monetary policy in the past three years. To facilitate this work, an account of the formation of monetary policy and the path of inflation in the period 1997–99 was included in the March 2000 Inflation Report. A corresponding account for the period 1998–2000 is presented in this appendix.

Monetary policy is targeted on keeping the annual rate of inflation, measured by the consumer price index (CPI), at 2 per cent, with a tolerance for deviations up to ±1 percentage point. In the period 1998–2000 as a whole the CPI rose at an average annual rate of 0.7 per cent, or by 0.4 per cent in 1998, 0.3 per cent in 1999 and 1.3 per cent in 2000. It will seen from Fig. A1 that there was no month in this period in which CPI inflation was above the targeted rate but a number of months in which it was outside the lower tolerance limit. The main factor behind the low CPI inflation was falling house mortgage interest expenditure in connection with the Riksbank's interest rate reductions and increasingly firm confidence in economic policy. The interest rate cuts led to CPI inflation being below the path in the Riksbank's forecasts, which are based on the repo rate remaining unchanged. The Riksbank's target is formulated in terms of the CPI. However, as this measure of inflation gives rise to certain problems, the Riksbank has made it clear that there can be grounds for basing policy on some other measure. In recent years, monetary policy has been based on assessments of UND1X inflation. This indicator of inflation,

Figure A1. CPI and UND1X inflation.
Per cent



Note. The horizontal lines represent the Riksbank's tolerance interval for the change in the CPI.

Source: Statistics Sweden.

which does not include mortgage interest expenditure, averaged 1.3 per cent in 1998–2000, or 1.0 per cent in 1998, 1.5 per cent in 1999 and 1.4 per cent in 2000.[24] Thus, during 1998 and 1999 there were substantial differences between CPI and UND1X inflation, while the two largely coincided during the greater part of 2000 (Fig. A1).

Inflation assessments and monetary policy considerations

When assessing whether or not the formulation of monetary policy has been reasonable, it is important to consider whether the Riksbank acted consistently in relation to the forecasts at the time, as well as whether the information available to the Riksbank could have been put to better use, that is, whether the forecasts could clearly have been better.

The main function of the tolerance interval around the inflation target is to acknowledge that inflation is likely to diverge from the target. The interval also demonstrates an ambition to limit such deviations. The Riksbank influences inflation by adjusting the repo rate. These adjustments are expected to affect the development of prices after a time lag. Monetary policy therefore has to be based on a forward-looking assessment of inflation prospects. Developments twelve to twenty-four months ahead have been regarded as particularly relevant. As forecasts contain a considerable degree of uncertainty, in the formation of monetary policy the Riksbank considers both the main scenario (the most probable development) and a spectrum of risks. Since spring 1998 the risk spectrum is presented in the Inflation Report as the distribution of the probabilities of conceivable inflation outcomes.

The basic rule of action that guides monetary policy is simple: if inflation twelve to twenty-four months ahead is forecast to be above (below) 2 per cent, the repo rate shall normally be raised (lowered) in order to fulfil the inflation target. The rule is not applied mechanically, however. It can happen, for example, that there is a risk of causing unnecessary turbulence because the analysis behind a monetary policy measure has not yet been properly presented to the financial markets. Such considerations can influence the exact timing of a repo rate adjustment. There are also grounds for assigning some weight to developments before as well as after the target horizon of 1–2 years. Two more fundamental reasons for diverging from the target were spelt out in the Riksbank's clarification, at the beginning of 1999, of how the inflation target is to be interpreted.[25] Grounds for diverging from the 2 per cent inflation target can exist when the CPI is

24 In the period 1996–98 underlying inflation was measured with an index, UND1, that the Riksbank calculated. Its construction is largely the same as that of UND1X, which is calculated by Statistics Sweden (there are some differences over which taxes are excluded from the CPI). While UND1 and UND1X inflation can differ in certain months, the differences in the average annual rate are usually marginal. The text therefore refers only to UND1X.

25 Minutes of the Executive Board meeting on 4 February 1999. The clarification is presented in Heikensten, L. (1999), The Riksbank's inflation target – clarifications and evaluation, *Quarterly Review* 1, Sveriges Riksbank.

affected by transitory shocks that have no permanent impact on inflation or price formation. One example of such factors is changes to indirect taxes and subsidies. Another is changes in house mortgage interest expenditure occasioned by monetary policy. There may also be grounds for refraining from an unduly rapid return to the target after a sizeable shock if this is judged to be economically harmful. In such cases the Riksbank is to explain in advance (that is, as soon as effects of the shock have been identified) why a divergence from the rule of action may be motivated.

The specification of monetary policy principles at the beginning of 1999 amounted to a codification of the policy that had been applied in the preceding years. Since that clarification, monetary policy, as mentioned above, has been guided to a high degree by assessments of UND1X inflation because changes in indirect taxes, subsidies and house mortgage interest expenditure have been judged to have effects on inflation that are sizeable but only transitory.

As monetary policy's effects on the path of inflation extend over at least a couple of years, an analysis of price developments in the period 1998–2000 should start from the Riksbank's assessments and monetary policy decisions in the period 1996–99. The development of prices in 1998 and 1999, along with the monetary policy deliberations in 1996 and 1997, were described relatively fully in last year's March Report. The present account therefore concentrates on price developments during 2000 and the monetary policy deliberations in 1998 and 1999.

INFLATION IN 2000

At the end of 1997 it was judged that both CPI and UND1X inflation would be above the targeted rate one to two years ahead. Survey data indicated that inflation expectations were also above 2 per cent. Against this background, in December 1997 the Riksbank raised the repo rate 0.25 percentage points. Early in 1998 the forecasts for CPI and UND1X inflation were adjusted down to 2 per cent. One reason for this was an outcome from the wage negotiations in the latter part of the autumn that was lower than there had been reason to fear. The situation was difficult to assess, however. Downward price effects of the Asian crisis were beginning to appear at the same time as resource utilisation continued to rise; moreover, the krona was weak. In view of the uncertainty in the assessment and some presumed downside risk for inflation, the Riksbank chose to await further information. In the first five months of 1998 the repo rate was left unchanged.

Further downward adjustments of forecast inflation one to two years ahead were made during 1998. The main reason for them was the assessment that the global financial crises had worsened the outlook for growth. This in turn had effects on international prices. Inflationary pressure was also revised successively downwards as wage negotiations gave lower outcomes than expected, accompanied by stronger productivity growth and what seemed to be a weaker impact on domestic inflation from

the degree of resource utilisation. The Riksbank therefore lowered the instrumental rate on four occasions in 1998, beginning in June, from 4.35 to 3.40 per cent.

After a dramatic autumn in the financial markets, the international economic outlook went on deteriorating in the early part of 1999 and this meant that international inflation prospects were revised gradually downwards. Moreover, falling oil prices contributed to declining prices for imported goods. At the same time as international activity weakened, however, domestic demand was being stimulated by the Riksbank's interest rate cuts and a weak exchange rate. Even so, further downward adjustments were made to forecast inflation compared with the assessments during 1998.

Inflation expectations pointed to very low inflation in the short run and a rate in line with the Riksbank's target in the longer run. In the March 1999 Inflation Report it was judged that both CPI and UND1X inflation would be below the targeted rate one to two years ahead. Moreover, the balance of risks was considered to be on the downside, mainly because of fears that international activity could prove to be weaker than expected. Against this background, in the first half of 1999 the Riksbank lowered the repo rate on two occasions, by a total of 0.5 percentage points, to 2.90 per cent.

As early as 1999 Q2 but particularly in Q3, both international and domestic economic prospects shifted in a positive direction. A stronger tendency in the United States and, later, in Japan contributed to the brighter international picture. This and a low level of interest rates stimulated domestic demand. In view of the more favourable growth prospects, in the course of 1999 forecast inflation was adjusted gradually upwards, albeit to only a limited extent because, for example, the effects of deregulations were expected to go on subduing inflation. Moreover, there were many signs that the relationship between growth and inflation had changed as a result, for example, of lower inflation expectations, increased competition and possibly a permanently higher productivity trend. Inflation expectations did move up during 1999 but the two-year expectations continued to be below the inflation target. Against this background the repo rate was left unchanged from April until the middle of November 1999.

The risk spectrum for inflation one to two years ahead shifted from a downside risk early in 1999 to an upside risk in the autumn. This mainly had to do with a successively smaller risk of weaker international activity and a growing risk of stronger domestic demand and more pronounced labour shortages. With the altered risk spectrum and increased capacity utilisation, it was judged that inflation one to two years ahead would be above the targeted rate. This caused the Riksbank to raise the repo rate 0.35 percentage points in November 1999.

The rate of inflation in 2000, measured by the CPI and UND1X, averaged 1.3 and 1.4 per cent, respectively, and was thus below the targeted rate but inside the tolerance interval. One reason why inflation was lower than had been expected was that the price effects of deregulating various markets were

underestimated. Another was the low international price pressure in the wake of the Asian crisis.

The Riksbank's forecasts and monetary policy decisions in recent years are summarised in Table A1. It will be seen that on those occasions when inflation one to two years ahead was judged to be above 2 per cent, the repo rate was raised and vice versa. A more formal analysis of the formation of monetary policy likewise indicates that the approach has been consistent (see the box on pp. 58–61). The assessments of risks and the uncertainty in the forecasts also influenced the formation of monetary policy. This was most evident early in 1998, when it was considered that both CPI and UND1X inflation one to two years ahead would be above 2 per cent but the risk spectrum was judged to be such that the probability of future inflation being lower than in the main scenario was greater than the probability of a higher rate. The repo rate was therefore left unchanged. It was also evident later in 1998 when concern about a deeper financial decline led to the repo rate being lowered in a number of steps between the September and the December Inflation Report.

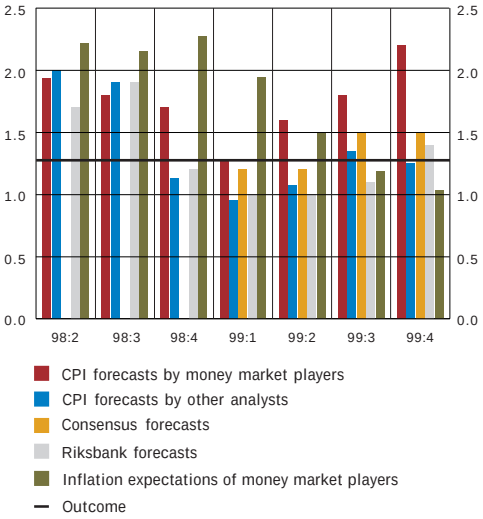
Table A1. The Riksbank's main scenario forecasts and monetary policy decisions

Inflation Report	Forecast CPI inflation 1 to 2 years ahead	Forecast UND1X inflation 1 to 2 years ahead	Uncertainty in inflation assessment	Balance of risks for inflation	Monetary policy response
Mar. 98	2.2-2.1	2.0-2.6	More than normal	Downside	Unchanged
Jun. 98	0.9-1.6	1.5-1.8	Normal	Downside	Repo rate lowered 0.25 percentage points
Sep. 98	1.3-1.9	1.3-1.9	More than normal	Symmetric	Repo rate lowered on two occasions in November by a total of 0.50 percentage points
Dec. 98	1.2-1.4	1.8-1.7	Somewhat more than normal	Downside	Repo rate lowered 0.20 percentage points, followed by another 0.25 percentage points in February 1999
Mar. 99	1.1-1.4	1.7-1.8	Somewhat more than normal	Downside	Repo rate lowered 0.25 percentage points
Jun. 99	1.0-1.6	1.9-2.0	Somewhat more than normal	Symmetric	Unchanged
Oct. 99	1.1-2.0	1.8-2.1	Normal	Upside	Repo rate raised 0.35 percentage points in November
Dec. 99	1.4-2.3	1.8-2.2	Normal	Upside	Repo rate raised 0.50 percentage points in February 2000

Note. The forecasts in March, June and September 1998 refer to UND1.

Source: The Riksbank.

Figure A2. CPI forecasts and outcome for 2000. Average annual rate



Note. CPI forecasts by money market players are represented by a simple average of forecasts by Merita-Nordbanken (formerly Nordbanken), Svenska Handelsbanken, SEB and Swedbank. Other observers comprise the Federation of Swedish Industries, the Trade Union Confederation, the Confederation of Professional Employees, the Swedish Research Institute of Trade, the National Institute of Economic Research, the Ministry of Finance, the OECD and Hagströmer & Qviberg. The inflation expectations of money market players refer to data from surveys done in the month in which the corresponding Inflation Report was published; as the expectations start from the time they were measured and thus do not refer to a specific calendar year, the expectations of inflation 1, 1–2 and 3–5 years ahead have been weighted together to obtain a figure that refers to 2000.

Sources: The institutions named in the note and the Riksbank.

Could the information available to the Riksbank have been put to better use? A comparison of inflation forecasts shows that the Riksbank's were approximately as accurate as those of other observers (Fig. A2). A fair comparison of the forecasts is difficult, however, one reason being that their underlying assumptions may not be the same. For example, the Riksbank, unlike other forecasters, starts from the technical assumption of no change in the repo rate. In 1998 Q2 and Q4, as well as during the greater part of 1999, the Riksbank's forecasts of CPI inflation in 2000 tended to be somewhat below those of other observers. This was partly due to the Riksbank lowering the repo rate during 1998 and the beginning of 1999 by a total of 1.45 percentage points. As the Riksbank's forecasts start from an unchanged repo rate, it is only to be expected that – via the forecast of a relatively weaker development of demand – they will be lower than those of other observers during a period of interest rate reductions, given that the other observers' repo rate expectations are more or less correct.

In recent years both the Riksbank and other observers have overestimated inflation. This is largely explained by the economy being hit by shocks that were difficult to foresee and quantify, for example the Asian crisis and the effects of deregulating the telecom and electricity markets. For CPI inflation, another explanation for the discrepancies between forecasts and outcomes is the considerable fall in house mortgage interest expenditure; the Riksbank's forecasts did not allow for this because they start from the technical assumption of an unchanged repo rate. However, these discrepancies had no practical consequences in that policy focused on UND1X inflation.

At the same time as the Riksbank and other observers overestimated inflation in recent years, GDP growth was higher than expected. This suggests that the relationship between growth and inflation may have changed. The Riksbank's inflation forecasts in recent years have allowed for some change in this relationship, partly on the grounds that inflation expectations have stabilised. It is conceivable, however, that the change is greater than assumed to date. Assessments of resource utilisation encounter major difficulties because the amount of unutilised resources cannot be observed and therefore has to be calculated on the basis of assumptions that are uncertain. One of the assumptions concerns the level of potential growth. Although the Riksbank's assessment of potential growth has been revised upwards, a number of factors point to the possibility of a further increase in potential growth in recent years.

Summary and conclusions

In the period 1998–2000 the rate of underlying inflation (UND1X), on which monetary policy mainly focuses, averaged 1.3 per cent, which is below the targeted rate but inside the tolerance interval. CPI inflation in this period averaged 0.7 per cent. The fact that CPI inflation was appreciably lower than UND1X inflation was primarily a consequence of the low level of interest rates.

A comparison of the Riksbank's forecasts and the direction of monetary policy shows that the Riksbank followed its rule of action. When it was judged that inflation one to two years ahead would exceed 2 per cent, the repo rate was raised and vice versa. Both the risk assessments and the uncertainty in the forecasts have influenced the formation of monetary policy.

Could the available information have been put to better use? In recent years inflation has been lower than expected. To a large extent this can be explained by the occurrence of economic shocks that were difficult to foresee. Examples are the Asian crisis and price effects from market deregulation. There are also indications that the relationship between growth and inflation has changed; in recent years the Riksbank's assessment of potential growth has been revised upwards. It is difficult to see how available economic theory or knowledge of empirical relationships could have made it possible to produce essentially better inflation assessments than those presented by the Riksbank. The forecasting errors were common to virtually all forecasters. Comparisons are complicated, however, by the circumstance that the Riksbank's forecasts start from the technical assumption of an unchanged repo rate.

THE INFLATION FORECASTS AND MONETARY POLICY

Swedish monetary policy is sometimes described in terms of a simple rule: if the forecast rate of inflation (one to two years ahead) exceeds 2 per cent, then the repo rate ought to be raised, and vice versa. A simplified rule of action, however, can hardly be expected to describe monetary policy exactly. On the contrary, repo rate adjustments have to be based on a thorough analysis of all the factors that determine both current and future inflation. Many considerations have to be taken into account when the Executive Board of the Riksbank reaches a decision about the repo rate's appropriate level. It has also been made clear that the Board does not confine itself to the forecast of inflation one to two years ahead; monetary policy can also be affected by prospects in both the shorter and the longer run. Moreover, the formation of monetary policy is influenced by the spectrum of risks.

Even so, for various purposes it can be of interest to study how the repo rate adjustments relate to some simple rule. As the Riksbank's principal, in its policy evaluations the Riksdag (Sweden's parliament)may wish to compare the Bank's interest rate adjustments with some simple rule of thumb as a basis for discussing whether the policy could have been better and, if so, in what way and why. It is also in the Riksbank's own interest to make such an analysis. An ongoing policy evaluation is an important component of the basis for monetary policy decisions. Moreover, players in financial markets may need a better understanding of how monetary policy is conducted to put them in a better position to predict interest rate adjustments. Researchers, too, tend to be interested in identifying the reaction functions of central banks, usually as a prelude to studying monetary policy's economic effects. In this context a distinction is often needed between interest rate adjustments that follow an earlier, systematic relationship with the macroeconomic trend and those that do not. This is because the latter may be taken as a sign of a change in monetary policy and in that case there are grounds for supposing that their effects differ from those of interest rate adjustments that are solely a response to economic developments.

A simple approach that is often used for comparing monetary policy in different countries is the Taylor rule. It describes a nominal short-term interest rate (in

Sweden's case this would be the Riksbank's repo rate) as a function of the current levels of inflation and the output gap. It has been found that a very simple rule such as this can explain a large part of the interest rate's path in a variety of countries. Considering how monetary policy has been formulated in recent years, particularly in countries where inflation is targeted explicitly, it would be more natural to expect the relationship to be stronger between interest rate movements and changes in forecast rather than current inflation. There are in fact studies which suggest that such forecast-based rules give better outcomes, in the form of greater stability in inflation and output, than the simplest Taylor rule.[26] Naturally enough, the results are sensitive to the assumptions that are made about the workings of the economy. Nevertheless, it is interesting that one can formulate simple rules of action for monetary policy that appear to characterise both a reasonable policy and how central banks actually behave.

In a study from the Riksbank, the interest rate adjustments since the introduction of the inflation target have been compared with the following simple rule:[27]

$$r_t - r_{t-1} = \alpha(\pi^f_{t,t+8} - \pi^f_{t-1,t+8-1}) + \beta\Delta y^f_t + \gamma(r_{t-1} - r_{t-2}), \qquad (1)$$

where r_t is the Riksbank's repo rate at a given time (period t), $\pi^f_{t,t+8}$ is the rate of inflation two years (eight quarters) ahead forecast by the Riksbank at time t, and Δy^f is the current year's GDP growth rate as estimated by the Bank. Note that the latter two terms are the rates of future inflation and growth that the Riksbank foresees given an unchanged repo rate. They do not represent the best forecasts, which obviously ought to allow for a certain probability that the repo rate will be adjusted but which for that very reason cannot be used to explain *how* the interest rate is changed at any particular time.[28]

26 See Rudebusch, G. & Svensson, L.E.O. (1999), Policy rules for inflation targeting, in Taylor, J.B. (ed.), *Monetary Policy Rules*, University of Chicago Press, pp. 203–246.

27 See Jansson, P. & Vredin, A. (2001), *Forecast-Based Monetary Policy in Sweden 1992–98: A View from Within*, Sveriges Riksbank Working Paper no. 120.

28 This will be readily understood by considering what would happen if monetary policy were such that the best inflation forecast pointed to inflation always being exactly on target eight quarters ahead. The absence of any divergence from the target could then self-evidently not be used to argue that there is no need to adjust the interest rate. The problem is that the best inflation forecast is dependent on monetary policy, while (1) is a model for how monetary policy is dependent on some (other) forecast.

Rules of roughly the same form as (1) have proved to be a good starting point for the analysis of monetary policy in many different countries. When it came to estimating such a rule on Swedish data, however, a number of problems were encountered. Riksbank forecasts that can be inserted in the rule (1) are certainly available but only for periods that coincide with the Bank's output of inflation reports; interest rate adjustments have also been made in the intervals between the published forecasts. Another problem is that the GDP forecasts published by the Riksbank refer to GDP growth rather than to the deviation from trend GDP, which is the explanatory variable that is usually used in the theoretical models. That is why the rule above is specified in the form of differences. A third problem concerns what is meant by forecast inflation 'two years ahead' and the forecast rate of GDP growth 'in the current year' when forecasts are produced three to four times a year, yet the forecasts all refer to full calendar years.[29]

The circumstance that a given interest rate adjustment is seen as a function of the adjustment in the previous period (γ is assumed to be greater than zero) has to do with the high degree of persistence that interest rates display in practice; this is seen, among other things, as an expression of central banks' desire to modify interest rate fluctuations over time. That in turn may reflect a wish to allow for monetary policy's real economic effects. The Riksbank has stated explicitly that it takes such considerations into account.[30] This means that the interest rate's sensitivity to GDP fluctuations (β) does not say anything directly about how much importance monetary policy attaches to GDP compared with inflation. The policy's preferences are also reflected in the coefficients α and γ. Finally, something should be said about variables that are *not* included in the rule above, for instance the exchange rate. One reason for excluding the exchange rate from this analysis is that the Riksbank has underscored that it does not target the Swedish krona's exchange rate; it is therefore not evident that a systematic relationship exists between repo rate decisions and the path of the exchange rate.

29 For details of how these and other problems are handled in the analysis, see Jansson & Vredin (*idem*).

30 Minutes of the Executive Board meeting on 4 February 1999. The clarification is presented in Heikensten, L. (1999), The Riksbank's inflation target — clarifications and evaluation, *Quarterly Review* 1, Sveriges Riksbank

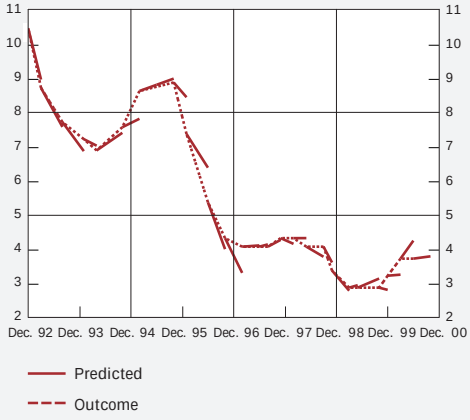
The simple rule (1) was estimated on data from the first inflation report, published in December 1992, up to and including the third report in 2000, published in October, with the following result:

$$r_t - r_{t-1} = \underset{(0,23)}{0,66}(\pi^f_{t,t+8} - \pi^f_{t-1,t+8-1}) + \underset{(0,11)}{0,03}\Delta y^f_t + \underset{(0,19)}{0,61}(r_{t-1} - r_{t-2}) + \varepsilon_t \quad (2)$$

The figures in parentheses are the standard error of the respective coefficient. The results indicate that the Riksbank's repo rate adjustments are systematically related to changes in the inflation forecast as well as to earlier interest rate adjustments but not to the Bank's assessments of GDP growth. The divergences from the interest rate rule (ε_t) are presented in Fig. B6, where the broken curve represents the actual path of the repo rate between the consecutive forecasts[31] and the offshoots from the curve are the repo rate adjustments that would have been made if the Riksbank had kept strictly to the estimated rule (2).[32] It will be seen that monetary policy as practised led to an interest rate that was sometimes higher than the rule and sometimes lower. This is an automatic consequence of the coefficients in (2) being calculated so as to minimise divergences from the rule. A more interesting point is that on most occasions the repo rate was actually adjusted in the direction indicated by the rule. Considering the rule's extreme simplicity, the divergences must be regarded as small.

This suggests that there is a case for describing monetary policy in terms of a simple rule. Those who manage to foresee the Riksbank's inflation forecasts will also be able to predict future repo rate adjustments fairly reliably. However, as the rule is not a perfect description of monetary policy and it very probably would not be optimal for the Riksbank to follow it exactly, there is a need to explain why the interest rate has sometimes been changed more quickly or slowly than the simple rule calls for. One of the purposes of the Riksbank's Inflation Report is to make monetary policy as transparent and clear as possible so that questions such as this are easier to answer.

Figure B6. The path of the repo rate and a predicted rule-based rate.
Per cent



Source: The Riksbank.

31 Note that the regression (2) describes how the repo rate changed as a function of changes in forecast inflation. Regression (2) and Fig. B6 are based on data from the series of twenty-five forecasts in the period December 1992 to October 2000. The distribution of the interest rate changes in the interval (days, weeks, months) between two forecasts has not been studied and is therefore not described in Fig. B6.

32 In Fig. B6 the actual path of the repo rate is compared with an estimated rule where $\beta = 0$ because (2) indicates that there is no relationship between the repo rate adjustments and the GDP forecasts. The effect of this on the estimations of α and γ is very slight.