

# Contents

■ <b>Foreword</b>	3
■ <b>Chapter 1 Inflation assessment</b>	5
Summary	5
The main scenario	7
The risk spectrum	11
Outlook beyond the forecast horizon	13
■ <b>Chapter 2 Determinants of inflation</b>	19
External economic activity and inflation	19
Interest rates and exchange rate	23
Demand and supply in the Swedish economy	26
Inflation expectations	46
Deregulations, political decisions and transitory effects	48
■ <b>Appendix Material for assessing monetary policy 1999–2001</b>	51
<b>Boxes</b>	
■ Recent inflation	14
Leading indicators point to a recovery	28
Perspectives on a recovery	41
Forecasting inflation with a rising repo rate	49
Monetary policy and simple rules	60





# Foreword

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

This Inflation Report reproduces the main features of the presentations and discussions of inflation at the Executive Board meetings on 7 and 13 March 2002. The assessment of inflation presented here is the Riksbank's overall appraisal of inflation prospects in the current situation.

The Report constitutes the background to the Bank's monetary policy decision on 18 March 2002. Executive Board members may differ in their opinions about how inflation's main determinants will develop and the resultant impact on future inflation. Any divergent opinions of inflation prospects are recorded in the separate minutes of the Board meeting on 18 March, to be published on 8 April 2002.

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

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

This Report presents the Riksbank's appraisal of inflation prospects up to the end of 2004 Q1. In order to clarify the consequences for monetary policy, the analysis starts from the technical assumption that the repo rate is unchanged.

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

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

Stockholm, March 2002  
Urban Bäckström  
Governor of Sveriges Riksbank



# Inflation assessment

*The general assessment of inflation prospects up to the end of 2004 Q1 is presented in this chapter, given the technical assumption that the repo rate is held unchanged.*

## Summary

Inflation is currently just over 3 per cent. Part of the explanation for the comparatively high rate lies in various supply shocks that have pushed up prices for electricity, meat, fruit and vegetables, for example. But even when these price increases are excluded, inflation has become higher. It is largely other domestic price increases that have continued to exceed expectations. There are presumably a number of conceivable, interacting explanations for this development. Resource utilisation in Sweden has probably been somewhat higher than expected and this has contributed to larger wage increases, particularly in service industries, than had been foreseen. Then there are other divergences between different groups in the labour market. As this has been accompanied by weak productivity, mainly it seems for cyclical reasons, there has been upward pressure on prices. The problem has been accentuated in that the overall profit share has been pushed down for a number of years. All this raises questions about resource utilisation, inflationary pressure and the workings of the economy.

It is foreseen, however, that inflation will fall back as the transitory price increases slacken, along with a downward effect on import prices from the development of oil prices and an appreciation of the Swedish krona. Growth below the sustainable trend in 2001 and 2002, plus a somewhat slower future increase in labour costs, also contribute to declining inflation. But the downward shift in inflation is judged to occur somewhat later than calculated previously, with domestic inflation remaining comparatively high throughout the forecast period. The overall assessment, with the risk spectrum taken into account, is that inflation one to two years ahead will be somewhat above the Riksbank's target.

The prospects for growth in the rest of the world have improved. The effects of the expansionary monetary and fiscal policies on both sides of the Atlantic are becoming increasingly clear. The slowdown accordingly looks like being relatively limited. At the same time there are factors whereby the recovery will not be as strong as earlier upturns. Low household and corporate saving in the United States and a continuation of subdued profit expectations are judged to result in future investment and consumption trends that are comparatively weak. In Europe it is considered that a recovery will be impeded by product and labour market rigidities and limited scope for measures of fiscal policy.

New statistics for Sweden likewise confirm that manufacturing activity has probably reached a low. Tax cuts and increased

transfers contribute to a strong increase in household disposable income in the forecast period. In the early part of the period, however, growth is held back by weak world markets and a less advantageous mix of export goods; towards the end of the period the stronger exchange rate forecast also implies a more subdued development of exports. GDP growth in the main scenario is judged to be 1.6 per cent this year, 3.0 per cent in 2003 and 2.6 per cent in 2004. Compared with the previous assessment, this implies somewhat weaker growth early in the period but a stronger rate next year.

In recent years the Swedish economy has developed advantageously, with substantial growth and high employment. However, judging from labour market developments, inflationary pressure and estimated capacity utilisation, it seems that total resource utilisation has been somewhat higher than expected. It is accordingly considered that, notwithstanding the downward revision of this year's growth, there will be less unutilised resources throughout the forecast period. It follows that, compared with the assessment in the December Report, the increase in labour costs is now judged to be somewhat more marked. Mainly for these reasons, domestic inflation is expected to be higher in the forecast period. Imported inflation, on the other hand, has been somewhat weaker than foreseen earlier. In view of lower international export prices initially and a somewhat larger future pass-through from the appreciating krona, imported inflation is now judged to follow a weaker path in the forecast period. CPI inflation in the main scenario is assumed to be 2.2 per cent one year ahead and 2.4 per cent after two years. The corresponding forecast for UNDI<sub>X</sub> inflation is a rate of 2.2 per cent both one and two years ahead.

The risk spectrum is also relevant for the formulation of monetary policy. The uncertainty in the assessment has decreased but is still assumed to be somewhat greater than normal. There are, of course, numerous reasons why inflation could deviate from the assessment in the main scenario. The principal risk on this occasion is considered to lie in the path of domestic inflation. Wage and price increases that exceed expectations can be a sign that domestic inflationary pressure has been underestimated. Resource utilisation may be more strained than assumed for the main scenario. It is also conceivable that potential growth has been overestimated or that the increase in inflation in the past year becomes more entrenched than expected, for instance through effects on inflation expectations. Against this background, the balance of risks is considered to be somewhat on the upside for inflation both one and two years ahead. The risk-adjusted forecast is 0.1 percentage point higher than the assessment in the main scenario. UNDI<sub>X</sub> inflation is accordingly judged to be 2.3 per cent both one and two years ahead.

*The conclusion from the assessments presented here is that, given an unchanged repo rate of 3.75 per cent and excluding changes in indirect taxes, subsidies and interest rates, inflation will be somewhat above the 2 per cent target both one and two years ahead.*

## The main scenario

The international economic slowdown appears to have reached a low and a recovery this year seems probable. The expansionary economic policy, together with low oil prices, is helping to improve consumption and investment propensities in much of the OECD area.

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### **Highly expansionary fiscal and monetary policies provide a basis for a successive recovery in the United States during 2002.**

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In the United States, the latest statistics herald an end to the slackening of demand and a stabilisation of activity. The major reduction of stocks and increased optimism about the future also suggest that manufacturing output there may have reached a low. Moreover, household consumption towards the end of last year was more buoyant than had been expected. The strong productivity growth during most of the downward phase points to the slowdown being relatively limited. On the other hand, corporate profits have dropped markedly, for instance due to decreased capacity utilisation. Households and firms both have strained balance sheets. This raises questions about the strength of a recovery in consumption and investment. The uncertainty about consumption is heightened by a worsening of the labour market. So there are reasons for supposing that growth in the coming years will not be as strong as in the second half of the 1990s. Still, the markedly expansionary fiscal and monetary policy should provide a basis for a successive recovery during 2002.

In the euro area, various business and purchasing-manager indexes likewise suggest that manufacturing may have reached a low. But consumption has been weak and the labour market shows signs of a further deterioration. However, lower inflation in the course of the forecast period is assumed to benefit household income and ultimately consumption. In Germany – one of Sweden's main trading partners – the effects of the global slowdown have become increasingly clear, for instance in unexpectedly weak investment growth. In a number of the larger euro countries, a combination of product and labour market rigidities and limited scope for fiscal measures has also curbed growth.

All in all, growth in the OECD area is judged to average 1 per cent this year and then gradually strengthen to just under 3 per cent in 2003 and 2004, which is much the same picture as in December. In that international trade last year was weaker than expected, some downward adjustment has been made to world market growth in 2002.

Last year's weak international activity, together with low commodity prices, is contributing to a more subdued export price trend this year. But as growth picks up, prices are expected to rise more strongly than calculated earlier. Further ahead, an oil price increase is expected to accompany the international recovery, followed by some price fall when new production capacity is introduced at the end of the forecast period.

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**The krona has appreciated after political signals about Sweden's full participation in EMU and more favourable economic prospects.**

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The extent to which international price movements affect inflation in Sweden depends in part on the exchange rate. The path of the Swedish krona has been somewhat stronger than assumed in the December Report. Political signals about Sweden's full EMU participation are one explanation for this but the appreciation is presumably also a consequence of more favourable economic prospects and a rising short-term interest rate differential with the rest of the world. It is envisaged that the krona will continue to appreciate approximately as forecast in the December Report. Lower international prices and a stronger exchange rate are judged to have a downward effect on inflation in the forecast period.

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**Somewhat less unutilised resources in Sweden despite weak exports.**

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With the weak world market growth, Swedish exports in 2001 were slacker than expected. Another explanation for the decreased volume of exports is a disadvantageous product mix due to the declines for telecom products and vehicles. At the same time there are now clearer signals of a general recovery. Many leading indicators show that activity has probably also reached a low in Sweden (see the box on pp. 28–31). When external demand begins to rise more markedly, Swedish exports are judged to develop favourably in connection with a recovery in the telecom sector and an exchange rate that, even with the forecast appreciation, is still undervalued.

Household consumption towards the end of last year was also somewhat weaker than expected, presumably in part as a consequence of increased uncertainty in the wake of the terrorist attacks and falling stock markets. As previously, however, in connection with such factors as tax cuts, increased transfers and some improvement in asset prices, household real disposable income is expected to contribute to a renewed increase in consumption. With a comparatively favourable development of employment, moreover, there is a foundation for a substantial growth of consumption throughout the forecast period.

In a historical perspective, the current slowdown can be said to be moderate (see the box on pp. 41–47). The expansionary economic policy is considered to benefit consumption in particular. At the same time, the recovery is expected to be weaker than usual, mainly on account of lower international demand but also an appreciating exchange rate.

All in all, GDP growth is judged to be 1.6 per cent this year, 3 per cent in 2003 and 2.6 per cent in 2004. This means that, compared with the picture in the December Report, growth is now expected to be somewhat weaker this year and stronger in 2003. The main explanation for the fall-off in 2004 is a small contribution from net exports, partly on account of the krona's



appreciation.

Despite last year's weaker demand, employment has gone on rising strongly, accompanied by some reduction of unemployment. However, there are clear signs of a labour-market dichotomy, with a marked reduction of industrial employment and increases in the public sector and services. During the forecast period an increase is foreseen in total employment and some fall in unemployment.

The labour market is relatively tight; wage increases, for example, have been somewhat higher than expected, particularly in services and construction. Partly in view of a somewhat weaker development of employment, wage increases are expected to be somewhat lower this year than in 2001. But throughout the forecast period the average wage rise is judged to be 0.5 percentage points higher than foreseen in the December Report.

Despite slackening demand, employment has held up well, which means that productivity has been poorer than expected. When demand picks up, however, productivity growth is assumed to become more normal. Higher productivity growth in the latter part of the forecast period helps to hold back the increase in unit labour costs. Compared with the earlier forecast, however, unit labour costs are now judged to rise somewhat more both this year and next. The upward revision for the corporate sector in 2002 and 2003 amounts to 0.3 percentage points in each year.

There are a number of signs that in recent years average resource utilisation in Sweden has been higher than assumed in earlier Inflation Reports. It is conceivable, for instance, that during 2001 the expansion of potential output also slowed. The higher resource utilisation has been manifested in rising wage increases, mainly in domestic sectors, and increased underlying inflation. New output gap estimations also suggest that resource utilisation may be higher than assumed earlier. However, the different measurements of resource utilisation show some fall-off during 2001. But on the whole it does seem probable that during the forecast period resource utilisation will be more strained than was assumed in the December forecast.

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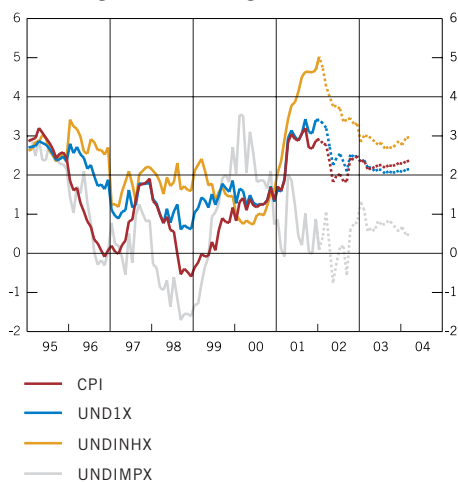
**Inflation is judged to be somewhat above the target.**

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A large part of last year's unexpectedly high inflation can be attributed to various supply shocks that pushed up prices for electricity, meat, fruit and vegetables. But even when these transitory price increases are excluded, the increase in inflation has exceeded expectations and in the past six months it is mainly more underlying inflation that has been surprisingly strong. It seems likely that with comparatively high resource utilisation, it has been possible to pass through rising costs to consumer prices to a greater extent than had been foreseen (see the box on pp. 14–17).

Inflation is judged to fall back in the early part of the forecast period as the transitory price increases disappear and productivity improves again. Even so, the price increases are assumed to be

**Figure 1. Inflation forecasts and outcomes.**  
Percentage 12-month change



Sources: Statistics Sweden and the Riksbank.

somewhat higher than allowed for earlier (Fig. 1). For 2002 this has to do with higher unit labour costs. Moreover, food prices and rents are assumed to rise somewhat more than assumed earlier. In the rest of the forecast period, inflation has been revised upwards mainly in view of somewhat more strained resource utilisation and higher unit labour costs. All in all, in the main scenario CPI inflation is judged to be 2.2 per cent one year ahead and 2.4 per cent after two years, while the corresponding forecast for UND1X inflation is 2.2 per cent both one and two years ahead (Table 1).

**Table 1. Inflation forecasts in the main scenario.**  
Percentage 12-month change

	Annual rate		12-month rate				Mar.04
	2002	2003	Mar. 02	Dec. 02	Mar. 03	Dec. 03	
CPI	2.3 (1.8)	2.2 (2.0)	2.7 (2.1)	2.4 (2.0)	2.2 (2.0)	2.3 (2.1)	2.4
UND1X	2.6 (2.1)	2.1 (1.9)	3.2 (2.7)	2.4 (2.0)	2.2 (2.0)	2.1 (1.9)	2.2
UNDINH	3.9 (3.0)	2.8 (2.4)	4.3 (3.6)	3.3 (2.5)	3.0 (2.5)	2.9 (2.4)	3.0
UNDIMPX	0.1 (0.4)	0.7 (0.9)	0.9 (0.8)	0.6 (1.1)	0.6 (1.1)	0.6 (0.9)	0.5

Note. The figures in parentheses are the forecasts in the December Report. UNDINH is the index for domestic inflation; UNDIMPX represents price changes for goods that are mainly imported, excluding direct effects of changes in indirect taxes and subsidies.

Source: The Riksbank.

## The risk spectrum

The inflation forecast in the main scenario represents the development of prices that the Riksbank considers to be most probable in the coming twenty-four months. In view of the uncertainties in the forecast, the Inflation Report usually includes some alternative paths for inflation. They are compiled as a spectrum of risks that have a bearing on the formulation of monetary policy.

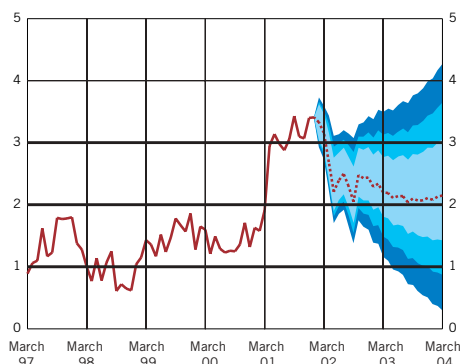
In the December Report it was judged that downside risks associated with economic developments internationally and in Sweden were balanced by the upside risk from an underestimation of inflationary pressure.

In the present Report it is considered that the international risks are balanced. There is now less risk of the slowdown being protracted. It is rather the case that new statistics point to an upturn in the near future, above all in the United States, that may be stronger than expected earlier. On the other hand, there is still a risk that in one way or another, the saving imbalances in the United States may limit the strength of an upswing in the future or even result in it being broken. Domestic inflation is now assessed more pessimistically in the main scenario but there is still a risk of pressure in this respect being underestimated.

Domestic inflation has continued to move up since the December Report. This is partly explained by price increases of a more transitory nature, mainly for food and electricity. But even excluding these transitory price increases, inflation has risen more than expected. Moreover, wage increases have exceeded expectations even though overall growth has slackened. The Riksbank has been drawing attention for some time to the questions this raises about the workings of the economy and underscored that to some extent the high inflation could conceivably be a sign that resource utilisation is more strained than has been assumed and that the relationship between growth and inflation in Sweden constitutes an upside risk for inflation. Some upward revision of resource utilisation has been made in this Report. However, there is still a possibility that resource utilisation is even more strained than allowed for in the main scenario. The sustainable growth trend may have been overestimated, for example, in connection with temporary improvements in productivity in the late 1990s. With high resource utilisation during 2000 and 2001, notwithstanding some slowdown, and an imminent upturn in activity, there is a risk of wage and price increases being somewhat higher than in the main scenario.

The labour market is clearly characterised by an increasing dichotomy, with declining industrial employment and increases in the services sectors. This pattern has been mirrored in wage growth, which has been stronger in many service industries. Together with weaker productivity growth, presumably due in part to slackening demand, this has meant that unit labour costs have risen relatively strongly in many services industries. There is a risk – particularly in industries with limited competition, such as construction, retail trade, banking and insurance – of the higher

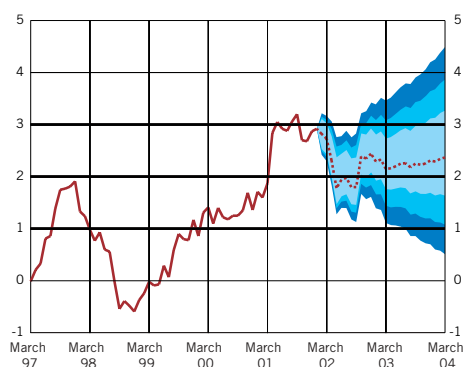
**Figure 2. UND1X with uncertainty intervals.**  
Percentage 12-month change



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 3. 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.

costs having a greater future impact on prices than the main scenario allows for.

Inflation may also persist for somewhat longer than the main scenario assumes, with possible consequences for the renegotiation of wage agreements, for example. If inflation expectations are affected, wage increases towards the end of the forecast period could also be higher than expected. To some extent, these risks would be countered if firms have somewhat more unutilised labour than the main scenario assumes, so that productivity growth could be somewhat stronger when activity picks up.

The overall balance of risks is accordingly considered to be somewhat on the upside for CPI as well as UND1X inflation both one and two years ahead. This is evident from Fig. 2, which shows the uncertainty around the forecast of underlying inflation, measured as the 12-month change in UND1X. The balance of risks in the forecast of CPI inflation is likewise on the upside (Fig. 3).

**All in all, the balance of risks is considered to be somewhat on the upside for CPI as well as UND1X inflation both one and two years ahead.**

The uncertainty in the assessment of both UND1X and CPI inflation is less pronounced than at the time of the December Report but continues to be somewhat greater than usual. To some extent the latter has to do with the uncertainty about the global economy but it primarily stems from the uncertainty about whether domestic inflationary pressure remains strong.

As monetary policy decisions are based primarily on an assessment of price tendencies twelve to twenty-four months ahead, it is the inflation prospects for this time horizon that are particularly relevant. Taking the risk spectrum (the Riksbank's weighted combination of the various risks for inflation) into account, UND1X inflation is expected to be 2.3 per cent both one and two years ahead (Table 2).

**Table 2. Inflation forecasts including the risk spectrum.**  
Per cent

	Annual rate		12-month rate	
	2002	2003	March 2003	March 2004
CPI	2.4 (1.8)	2.3 (2.0)	2.3	2.5
UND1X	2.7 (2.1)	2.2 (1.9)	2.3	2.3

Note. The table gives the mean values of the inflation assessment's probability distributions (see Figs. 2 and 3).

Source: The Riksbank.

**Table 3. UND1X inflation.**  
Percentage probability, 12-month rate

	UND1X<1	1≤UND1X<2	2≤UND1X≤3	UND1X>3	Total
2003 (March)	3 (10)	32 (40)	49 (40)	16 (10)	100
2004 (March)	15 (25)	27 (28)	31 (27)	27 (20)	100

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

Source: The Riksbank.

**Table 4. CPI inflation.**  
**Percentage probability, 12-month rate**

	CPI<1	1≤CPI<2	2≤CPI≤3	GPI>3	Total
2003 (March)	3 (10)	34 (40)	48 (40)	15 (10)	100
2004 (March)	11 (21)	24 (27)	32 (28)	33 (24)	100

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

Source: The Riksbank.

## Prospects beyond the forecast horizon

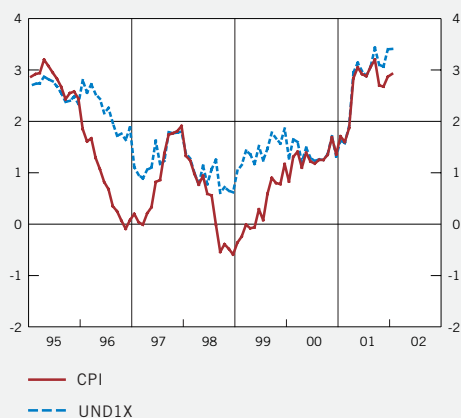
Monetary policy is normally directed at fulfilling the inflation target one to two years ahead. However, even developments in both the shorter and the longer run may be significant for monetary policy. A picture of inflation in a somewhat longer perspective is sketched below.

The main scenario envisages that demand in the OECD area recovers this year and is comparatively strong in the rest of the forecast period. However, partly in view of the saving imbalances in the United States and the assumption of comparatively weak growth in Europe, the upturn is judged to be relatively cautious. Beyond the forecast horizon it is conceivable that activity continues to strengthen. The saving imbalances may then have decreased, providing conditions whereby GDP growth can match or somewhat exceed the potential level. In such a scenario, resource utilisation rises from a level that is already high unless policy is adjusted so as to subdue demand or it transpires that the potential growth rate is higher than expected.

Another possibility is that the main scenario's assumption of a gradual consolidation of household and corporate balance sheets does not occur in orderly forms. Growth in the United States would then be stronger than allowed for, at least in the short run. If the saving imbalances are not adjusted during the forecast period, this might happen in connection with the next downturn. But it could also be triggered earlier, for example by renewed concerns about security.

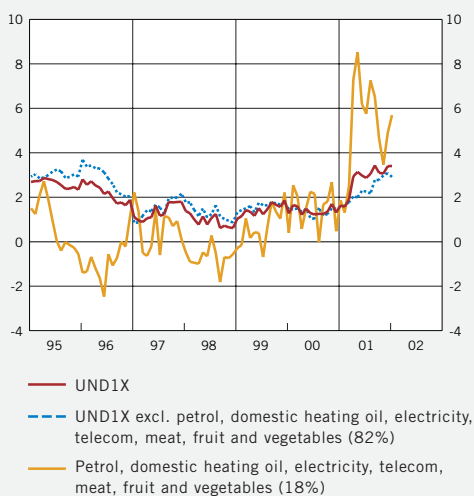
More troublesome scenarios are also conceivable, with labour market rigidities and excessively high wage increases in Europe or Sweden that already necessitate an appreciably more restrictive monetary policy in the forecast period, leading to a weaker development of output and employment. In such cases the rate of price increases would be higher even though growth in the preceding years has been comparatively low.

**Figure B1. Inflation indexes.**  
Percentage 12-month change



Source: Statistics Sweden.

**Figure B2. UND1X with and without more transitory price increases.**  
Percentage 12-month change



Sources: Statistics Sweden and the Riksbank.

## RECENT INFLATION

The rates of both CPI and UND1X inflation have risen appreciably in the past year; in January they were 2.9 and 3.4 per cent, respectively (Fig. B1). Domestic underlying inflation in January was 5.0 per cent, while imported inflation was low, 0.1 per cent. Domestic inflation was higher and imported inflation lower than had been foreseen in the December Inflation Report. The higher domestic inflation has come in part from higher food prices and an increase in services prices that was broader than expected. Imported inflation was held back above all by unexpectedly low prices for more manufactured goods (Table B1).

In last year's May Inflation Report it was noted that price movements in spring 2001 had come largely from a few items for which prices had risen for readily identified reasons that did not appear to be related to the general demand situation. Already at that time, however, it was observed that other prices were also rising (Fig. B2). The latter was judged to be connected with exchange rate developments, price increases for certain intermediate goods and the development of total resource utilisation. This 'analytical framework' is also relevant today.

Examples of price shocks that occurred during 2001 are the previous winter's low precipitation for hydroelectric power, livestock diseases and poor harvests in Sweden and southern Europe. There are good grounds for supposing that the price increases generated by these supply shocks are primarily of a transitory nature. The combined path of these prices has largely been as forecast in May 2001. When the development of prices for electricity, meat, fruit and vegetables, for example, become more normal, this should therefore contribute to an appreciable lowering of inflation during the spring. The notion that the high prices for meat, fruit and vegetables, for example, have to do with supply shocks and not with, for instance, Sweden's weak currency is also supported by the fact that the path of these prices in Sweden resembles that in the rest of Europe.

**Table B1. Contributions to UND1X inflation in January 2002.**  
Per cent and percentage points

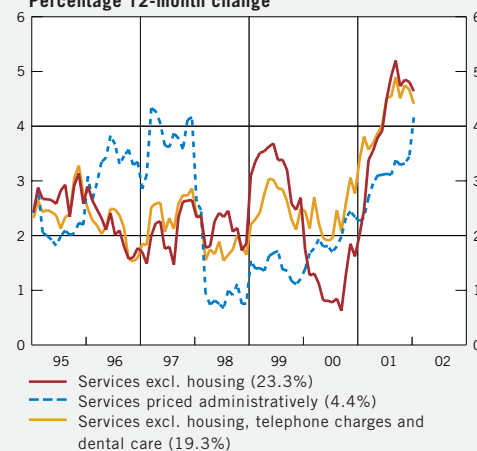
	12-month change	Contribution
Services excl. telephone charges	4.7	0.9
of which: Services priced administratively	4.2	0.2
Swedish goods excl. meat, fruit and vegetables	3.5	0.5
Meat, fruit and vegetables	14.5	0.7
Rents	2.6	0.5
Other housing expenditure	7.2	0.2
Electricity	14.4	0.3
Telephone charges	4.4	0.1
<b>Domestic inflation (UNDINH)</b>	<b>5.0</b>	<b>3.4</b>
Imported manufactured goods	1.3	0.3
Petroleum products, coffee, imported fruit and vegetables, etc.	-4.4	-0.3
<b>Imported inflation excluding taxes, total</b>	<b>0.1</b>	<b>0.0</b>
<b>UND1X</b>	<b>3.4</b>	<b>3.4</b>

Sources: Statistics Sweden and the Riksbank.

In addition to these supply-related price increases, however, prices have risen more than expected on a broad front. The tendency applies mainly to *domestic prices*, for services in particular (Figs. B3 and B4). Rapidly rising services prices is something that Sweden has in common with the rest of Europe, though the tendency here is rather more marked (Figs. B3, B5 and B21 on p. 57).

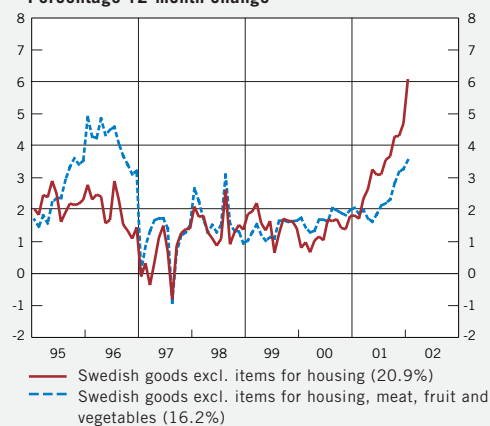
It is not exactly easy to determine what lies behind the strong domestic price trend but it is probably a question of a variety of factors acting in common. The favourable economic activity in recent years has entailed a comparatively rapid increase in resource utilisation that has probably been somewhat underestimated. This has been evident in, for instance, rising employment, above all in the services sector, and a faster rate of wage increases. Meanwhile, the recent fall-off in the growth of demand has had the customary downward effect on productivity. The combined result of all this was that unit labour costs rose comparatively rapidly during 2001. There is clear evidence of this in, for example, the hotel and restaurant sector, banking and insurance, and passenger transport by road and rail (Table B2). A similar tendency, with rising unit labour costs as a consequence of weaker productivity, has been seen in the rest of Europe, though the 2001 wage cost increase there seems to have been about 1–2 percentage points lower than in Sweden (Fig. B6). Besides the increasingly high unit labour costs, rising prices for certain intermediate products such as energy and food have probably also contributed to the higher path of costs in later stages of production. The higher costs have been countered to some extent by falling profit shares; this,

**Figure B3. Services excl. housing.**  
Percentage 12-month change



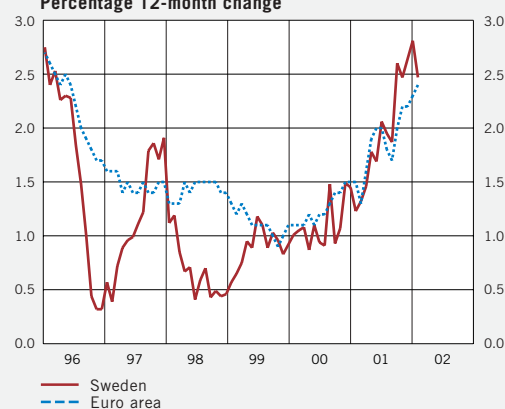
Note. UND1X weights in parentheses. The series are adjusted for effects of changes in indirect taxes and subsidies. Sources: Statistics Sweden and the Riksbank.

**Figure B4. Swedish goods excl. items for housing.**  
Percentage 12-month change



Note. UND1X weights in parentheses. The series are adjusted for effects of changes in indirect taxes and subsidies. Sources: Statistics Sweden and the Riksbank.

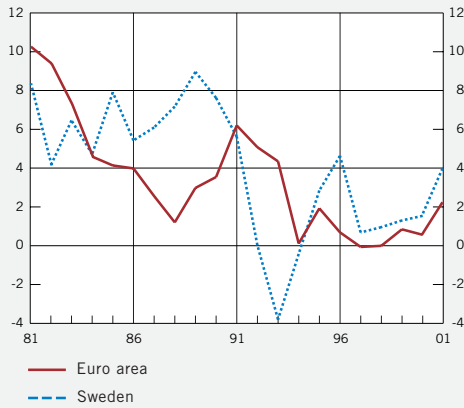
**Figure B5. Euro area and Sweden: HICP excl. food, energy, alcohol and tobacco.**  
Percentage 12-month change



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

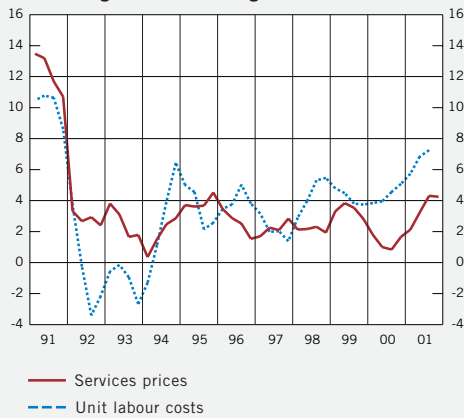


**Figure B6. Sweden and the Euro area: corporate sector unit labour costs. Percentage 12-month change**



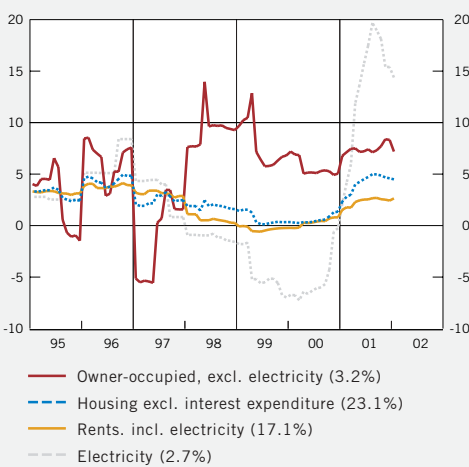
Sources: OECD and the Riksbank.

**Figure B7. Services sector: prices and unit labour costs. Percentage 12-month change**



Source: Statistics Sweden.

**Figure B8. Housing costs excl. interest expenditure. Percentage 12-month change**



Note. UNIDX weights in parentheses. The series are adjusted for effects of changes in indirect taxes and subsidies.

Sources: Statistics Sweden and the Riksbank.

however, has reduced the scope for further downward adjustments and it now looks as though a larger part of the increased costs has been passed through to consumer prices.

**Table B2. Hourly wage costs, labour productivity and unit labour costs in selected services sectors. Percentage annual change**

	1995	1996	1997	1998	1999	2000	2001
<b>Hotels and restaurants</b>							
Hourly wage costs	13.7	0.8	6.2	4.6	5.0	6.3	3.8
Productivity	-1.4	0.3	4.7	4.3	1.6	2.1	-2.1
ULC	15.1	0.5	1.5	0.2	3.4	4.3	5.9
<b>Banking and insurance</b>							
Hourly wage costs	-5.7	3.0	8.7	6.4	6.7	10.9	11.8
Productivity	15.5	4.2	13.2	0.9	1.7	9.9	-1.7
ULC	-21.2	-1.1	-4.5	5.5	4.9	1.0	13.5
<b>Passenger transport, road and rail</b>							
Hourly wage costs	-5.2	9.2	3.7	2.8	0.9	-8.6	9.6
Productivity	2.2	3.1	6.1	2.4	0.4	0.7	-4.9
ULC	-7.3	6.0	-2.4	0.4	0.5	-9.3	14.4

Note. Hourly wage costs calculated from national accounts data on wage bills and hours worked.

Source: Statistics Sweden.

An empirical analysis of sub-sectoral price developments shows that the increase in the rate of price increases for different services in 2001 can be explained relatively well in the first place by rising labour costs in the same sub-sector (Fig. B7). A 1 per cent increase in unit labour costs seems to be associated with a price rise of 0.3–0.9 per cent, depending on the sub-sector in question. The price effect of increases in wage costs seems to last a comparatively long time.

Another major item in household consumption is housing expenditure. During 2001 housing costs rose increasingly rapidly; this can be explained by, for example, rising labour costs and electricity prices (Fig. B8). Rents rose 1.8 per cent during the past year as against an annual average rate of 0.4 per cent in the period 1998–2000. To some extent, last year's increase can be seen as an adjustment to more normal levels, partly in that the interest expenditure of property owners, and thereby their capital costs, have stopped falling.

Compared with services, prices for goods are more susceptible to costs for intermediate products and somewhat less so to wage costs, as one would expect in that the labour input for goods is smaller than for services (Fig. B9). Altered wage costs seem to be most important for the food sector and somewhat less so for other goods produced in Sweden.

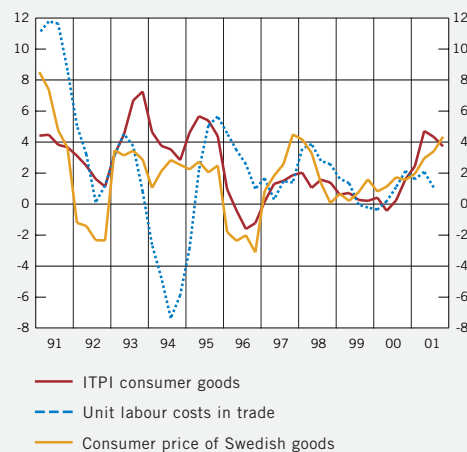


The rapid pass-through from wages to domestic prices may be an indication of inadequate competition.

*Imported inflation*, excluding the price increases that are considered to be more transitory, has also risen during the past year. The picture in terms of consumer prices is influenced by prices abroad, the exchange rate and processing costs in Sweden. In that external price developments have been subdued, it seems that the price rise is rather a consequence of the comparatively high resource utilisation in Sweden, which has made it feasible for firms to pass through increased costs (occasioned by the weak exchange rate and rising wage costs) to consumer prices.

The concept of underlying or core inflation lacks a clear-cut definition and is measured in various ways. One involves calculating CPI inflation excluding certain items, for instance those with effects on price developments that are judged to be transitory. UNDI<sub>X</sub> is an example of this approach. Another involves reducing the impact of items where prices fluctuate markedly. Both types of measurement show that during the past year the rate of underlying inflation has risen (Fig. B10).

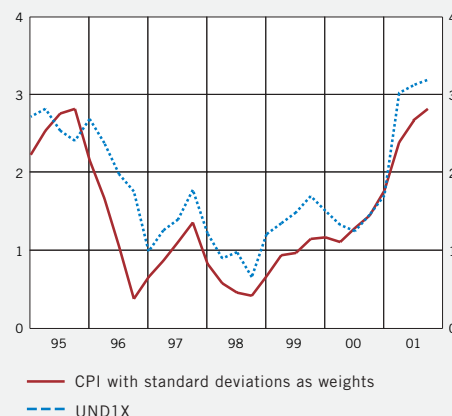
**Figure B9. Consumer price of Swedish goods, unit labour costs in trade, and ITPI for consumer goods. Percentage 12-month change**



Note. ITPI, a price index for domestic supply in the producer price index system, is a weighted combination of domestic market and import prices.

Source: Statistics Sweden.

**Figure B10. Alternative indicators of underlying inflation. Per cent**



Note. The CPI with standard deviations as weights is calculated with the CPI decomposed into 70 items and standard deviations estimated over 24 months; the series are based on quarterly data.

Source: The Riksbank.



# Determinants of inflation

*This chapter presents the assessments in the main scenario of inflation's principal determinants in the coming two years. International factors are considered first, followed by a review of interest rates, the exchange rate and economic developments in Sweden.*

## External economic activity and inflation

The international economic slowdown seems to have reached its low. Indicators for the United States as well as Europe suggest that activity is no longer weakening (Fig. 4). Effects of the expansionary fiscal and monetary policies on both sides of the Atlantic are becoming increasingly apparent, though there are constraining factors. The recovery is expected to be marginally stronger than foreseen in the December Report. Compared with the path after earlier slowdowns, it is judged to be somewhat more gradual.

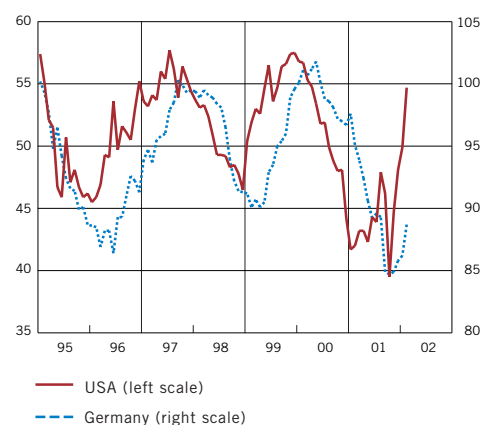
### **The recovery is expected to be more gradual than after earlier slowdowns.**

A relatively rapid international recovery is indicated by a number of factors. In the United States, the unusually strong productivity growth during the downturn is evidence of underlying strength and high corporate flexibility (Fig. 6). The involuntary build-up of stocks there in the early part of 2001 is beginning to be reversed (Fig. 7). In Europe it is foreseen that stock reductions will soon be complete. Moreover, the fall in investment that initiated the slowdown in the United States may have come to an end. In Europe, the level of investment has been below that in the United States for a long time, so the element of over-investment may also be smaller (Fig. 8). An upturn in manufacturing output in the United States, Europe and Asia, with a recovery in world trade, is expected in the course of this year.

### **The strong productivity in the United States during the slowdown points to an underlying flexibility in the corporate sector.**

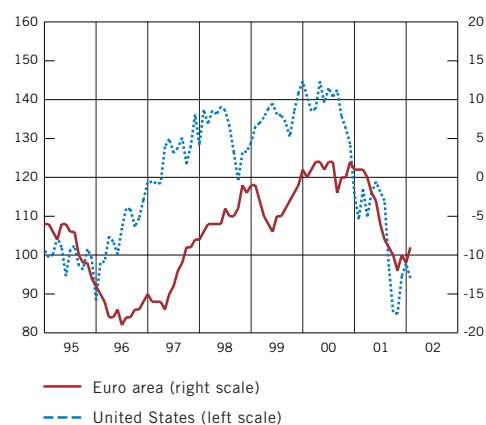
An upturn presupposes, however, that the expansionary fiscal and monetary policies are able to maintain private consumption in the United States after the sustained strength during 2001 and the early part of 2002. The Federal Reserve has reduced its instrumental rate to 1.75 per cent, the lowest level since the 1960s, and the Administration's new spending proposals include additional fiscal stimuli, including greatly increased public consumption for military and security purposes. Given that demand is supported by an expansionary fiscal and monetary policy, there is a risk that, compared with the main scenario, the recovery may be quicker.

**Figure 4. United States and Germany: business confidence. Index**



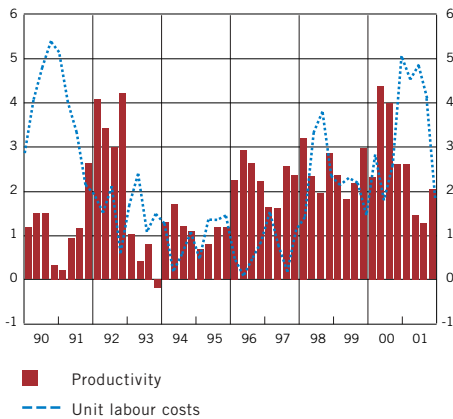
Sources: ISM and IFO.

**Figure 5. United States and euro area: consumer confidence. Index**



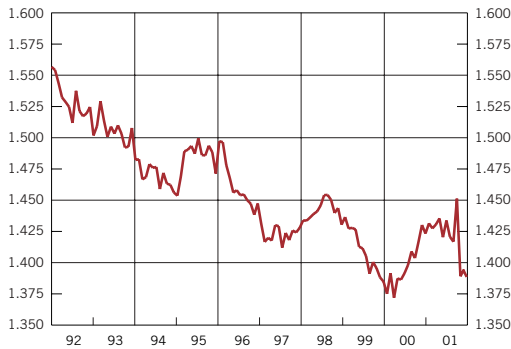
Sources: Conference Board and EU Commission.

**Figure 6. United States corporate sector: productivity and unit labour costs. Percentage 12-month change**



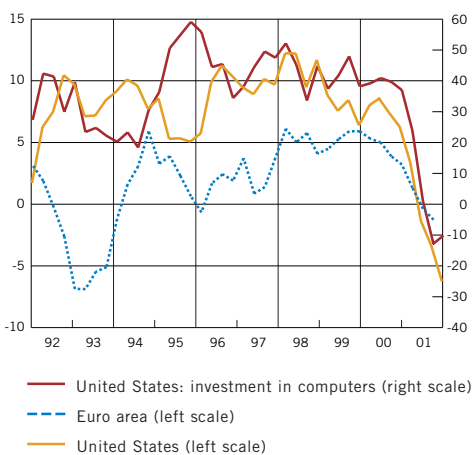
Note: Excluding agriculture.  
Source: Bureau of Labor Statistics.

**Figure 7. United States corporate sector: stocks ratio. Stocks/sales, per cent**



Source: U.S. Department of Commerce.

**Figure 8. United States and euro area: investment. Percentage 12-month change**



Sources: U.S. Department of Commerce and Eurostat.

**There is a risk of the recovery being quicker than foreseen in the main scenario.**

At the same time, a global upturn is being countered by other factors. The outlook for corporate profits is still subdued in the United States as well as Europe and a more marked increase in investment is not expected until profitability improves. Substantial loan losses and uncertainty about corporate balance sheets (for example in the wake of the collapse of the energy conglomerate Enron) also tend to counter increased investment. At the same time, effects of the expansionary economic policy are being dampened by the strong dollar. Moreover, last year's relatively limited slackening of private consumption in the United States means that the accumulated need to purchase durable goods is now not as great as after a traditional downward phase.

A number of factors are exerting pressure on American households to restrain consumption and step up saving from a low level. Employment has not yet recovered after the slowdown and an improvement is not expected until late in 2002 (Fig. 12). Household wealth in the form of equity has not recovered from last year's drop. At the same time, the deterioration of the previously strong public finances is expected to contribute to higher saving. For all these reasons, the main scenario envisages that in the coming years, the household saving ratio in the United States will become appreciably higher.

**There is also a risk of the recovery in the United States being even weaker.**

There is also a risk of the recovery in the United States being even weaker. Households may increase their saving even faster if wealth is eroded by weak prices for houses and shares. House prices may not continue to increase as steadily in the future, particularly if long-term interest rates go on rising. As share prices, according to some valuation models, are still highly valued in a historical perspective, they could also be hit by further corrections. Under such circumstances, investment growth in the United States would also be adversely affected.

**The recovery in the euro area looks like being subdued.**

In the euro area, which is particularly important for Swedish exports, it looks as though the recovery will be marginally weaker than expected earlier. Unemployment there, having bottomed out at a high level, is rising again (Fig. 12). The reasons for this are not self-evident. Problems with the government finances in the three largest euro countries – Germany, France and Italy – are limiting the possibility of stimulating demand with fiscal measures, as has been done in the United States as well as in Sweden. In certain euro countries, moreover, tax systems and labour market regulations may have dampened the propensity to invest and recruit labour. Productivity is generally weaker than in the United States, which may necessitate more restrictive demand policies

to hold inflation at the desired level and thereby lead to a weaker growth of production and employment when activity turns upwards.

From Sweden's point of view, however, it is foreseen that to some extent the weakness in the core euro countries will be countered by a stronger trend in the United Kingdom and a number of smaller European economies, including the Nordic countries. The telecom sector is expected to contribute to some recovery in Finland this year, though not back to the strong growth rates in the late 1990s. An upswing is expected in Denmark and Norway, partly thanks to expansionary economic policies.

The emerging markets are also beginning to recover as manufacturing levels out. Neither does the long-awaited crisis in Argentina seem to be generating sizeable contagion.

The global effect of the Japanese economy continues to be very difficult to assess. Further failures among banks and other businesses have renewed fears of a widespread collapse in Japan's financial system, with the possibility of negative effects on global activity. Outcome figures and indicators point to continued deflation, still higher unemployment and a continued drop in production. A return to positive growth is not expected before 2003 and Japan's contribution to global demand – and Swedish exports – will remain marginal.<sup>1</sup>

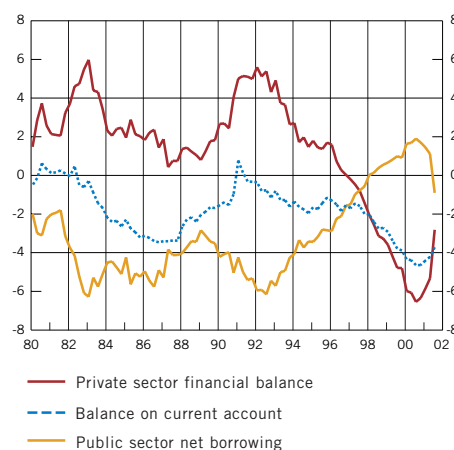
All in all, the international economic upturn is now expected to be somewhat stronger than foreseen in the December Report but still somewhat weaker than earlier recoveries. It looks as though activity had already reached a low at the end of last year and growth at a very moderate is expected for the early part of 2002. A more substantial upswing is not expected before the second half of this year, with potential growth not being reached in the United States and Europe until 2003 (Table 5). The strength indicated by new statistics, the expansionary economic policy and productivity growth point to an upside risk for the American economy but this is countered by uncertainties about the saving imbalances there and structural problems in the euro area.

### Total world market demand for Swedish exports in 2002 is expected to be moderate.

Total world market demand for Swedish exports is expected to be moderate in 2002, followed by a recovery in 2003. Very weak import growth in the United States and Europe in the closing quarter of 2001 is expected to leave its mark on the early part of this year. In addition, economic growth in the euro area is subdued initially and global telecom investments are delayed. Only in time is world trade judged to climb back to the high growth that characterised the late 1990s.

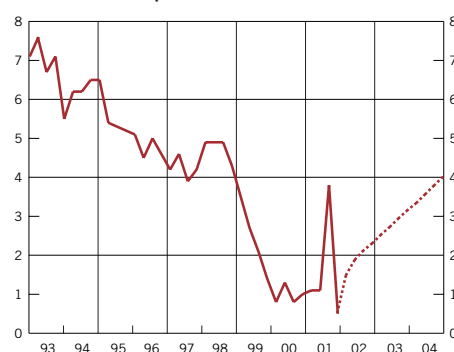
1 While Japan still accounts for over 10 per cent of the OECD area's aggregate GDP, its share of world trade has shrunk from almost 10 per cent in 1990 to little more than 6 per cent in 2001.

Figure 9. United States: saving.  
Per cent of GDP



Source: OECD.

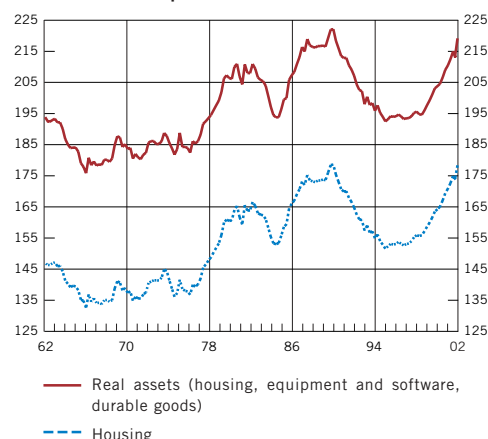
Figure 10. United States: household saving ratio.  
Per cent of disposable income



Note. Riksbank forecast 2001–04.

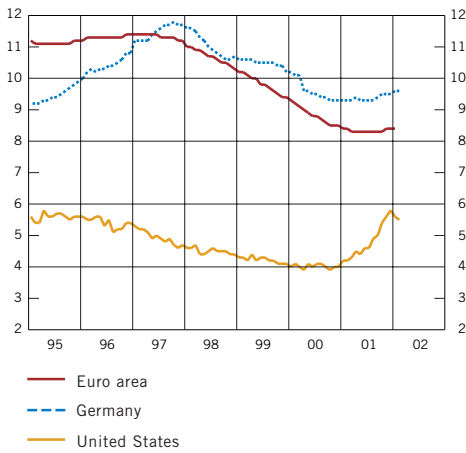
Sources: U.S. Department of Commerce and the Riksbank.

Figure 11. United States: households' real assets.  
Per cent of disposable income



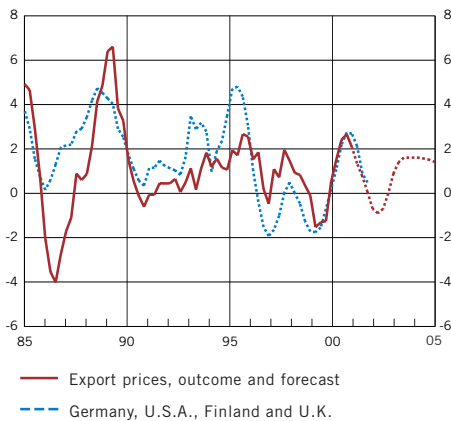
Source: U.S. Department of Commerce.

**Figure 12. United States, euro area, Germany: unemployment.**  
Per cent



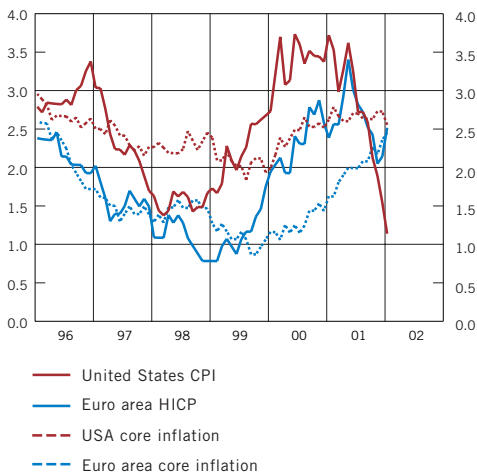
Sources: U.S. Bureau of Labor Statistics, Eurostat and Federal Labour Office.

**Figure 13. International export prices: outcomes and forecasts.**  
Percentage 12-month change



Note: Riksbank forecast 2001–04.  
Source: The Riksbank.

**Figure 14. United States and euro area: inflation.**  
Percentage 12-month change



Sources: U.S. Bureau of Labor Statistics and Eurostat.

**Table 5. International conditions.**  
Percentage annual change or annual level

	GDP					CPI				
	2000	2001	2002	2003	2004	2000	2001	2002	2003	2004
United States	4.1	1.2 (1.0)	1.6 (0.6)	3.5 (3.5)	3.5	3.4	2.8 (3.0)	1.4 (1.7)	2.1 (2.0)	2.3
Japan	2.2	-0.4 (-0.9)	-1.1 (-0.9)	0.8 (1.2)	1.5	-0.7	-0.7 (-0.8)	-0.7 (-0.7)	-0.5 (0.5)	0.5
Germany	3.2	0.7 (0.7)	0.8 (1.1)	2.2 (2.3)	2.0	2.1	2.4 (2.6)	1.3 (1.2)	1.4 (1.4)	1.6
France	3.6	2.0 (1.8)	1.6 (1.6)	2.5 (2.5)	2.2	1.8	1.8 (1.7)	1.5 (1.3)	1.6 (1.6)	1.6
United Kingdom	3.0	2.4 (2.2)	2.1 (2.1)	2.5 (2.5)	2.6	2.1	2.1 (2.2)	2.2 (2.3)	2.4 (2.4)	2.4
Italy	2.9	1.8 (1.8)	1.3 (1.4)	2.5 (2.5)	2.6	2.6	2.3 (2.7)	1.8 (1.8)	1.9 (1.9)	1.9
Denmark	3.0	1.2 (1.2)	1.6 (1.7)	2.2 (2.2)	2.2	2.7	2.3 (2.3)	1.9 (1.9)	2.1 (2.1)	2.2
Finland	5.6	0.7 (0.8)	1.7 (2.0)	2.7 (2.7)	3.1	3.0	2.7 (2.7)	1.6 (1.6)	2.0 (2.0)	2.1
Norway	1.7	1.0 (1.2)	1.6 (1.6)	2.2 (1.8)	2.0	3.1	3.0 (3.2)	1.6 (2.0)	2.5 (2.5)	2.5
<b>Euro 12</b>	3.4	1.5 (1.5)	1.4 (1.5)	2.5 (2.6)	2.5	2.3	2.5 (2.6)	1.5 (1.5)	1.7 (1.7)	1.9
<b>Sweden's TCW export markets</b>	3.2	1.5 (1.4)	1.4 (1.4)	2.5 (2.5)	2.6	2.3	2.3 (2.5)	1.5 (1.6)	1.8 (1.9)	2.0
<b>OECD 19</b>	3.5	1.1 (1.0)	1.2 (0.8)	2.7 (2.8)	2.8	2.3	2.1 (2.2)	1.2 (1.3)	1.6 (1.7)	1.9
	2000	2001	2002	2003	2004					
Market growth for Swedish exports	10.8	0.5 (2.6)	2.5 (4.2)	7.6 (7.5)	7.5					
OECD area export price in national currency	1.2	0.4 (0.5)	-0.2 (0.2)	1.5 (0.7)	1.4					
Crude oil price, (USD/barrel, Brent Blend)	28.4	24.5 (24.4)	21.5 (20.0)	22.9 (22.2)	22.0					

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

Source: The Riksbank.

Prices for manufactured products in Sweden's export markets are expected to fall marginally during 2002, followed by an annual increase of around 1.5 per cent in 2003 and 2004 (Fig. 13). This assessment mainly reflects the prospect of very low global capacity utilisation in the production of these items in 2002, with the situation not becoming somewhat more strained until 2003 and 2004.

**The low capacity utilisation in the rest of the world in the production of manufactured goods is holding prices down.**

Otherwise, in the years ahead price pressure in Europe and the United States is assumed to remain moderate. Underlying inflation has been stable in the United States at just over 2.5 per cent since the autumn of 2000. In the euro area, on the other hand, the rate is rising in the same way as has been observed in Sweden (Fig. 14). One reason for the rising core inflation in the euro area and Sweden could be that prices for certain services have followed last year's price increases, mainly for energy but also for meat, fruit and vegetables. When these secondary effects fade during 2002, underlying inflation is expected to slacken in the euro area. Another partial explanation may be that unit labour costs have

risen in the euro area in the past year but they, too, are expected to slacken somewhat in the future.

**In the euro area as well as Sweden, prices for certain services have followed last year's price increases for energy and food.**

At the same time, commodity and energy prices remain low. However, in view of signs in recent months of greater cohesion among oil producers as regards restrictions on supply, the oil price is expected to be somewhat higher than forecast earlier. A somewhat higher oil price is likewise foreseen in 2003 on account of OPEC's output restrictions and problems with capacity in other oil-producing countries, together with rising global demand. After that, new production capacity, above all in non-OPEC countries, should lead to a higher oil supply and some downward effect on prices.

Total world market demand for Swedish exports is expected to be moderate in 2002.

### Interest rates and exchange rate

Bond rates have risen in the United States, the euro area and Sweden since the time of the December Report (Fig. 17). During this period both the Swedish and international bond markets have been coloured by expectations of a cyclical upturn. In December, signals of more favourable economic prospects in the United States were followed by rising bond rates abroad as well as in Sweden. After the Enron affair, however, the mood became less optimistic around the turn of the year. Sweden's long-term interest rate differential with Germany has been relatively stable since the December Report at around 0.4 percentage points.

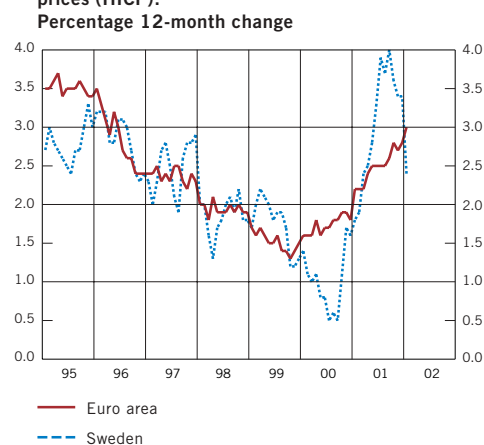
The Swedish yield curve has shifted upwards since the time of the December Report. The rates for short maturity bonds have risen in particular and this tendency is somewhat more marked than in the rest of the world. It presumably mirrors expectations of a higher repo rate in view of higher inflation outcomes and the Riksbank's signals.

The rising interest tendency since the December Report has prompted an upward adjustment of the long rates compared with the assessment at that time. The ten-year treasury bond rate is now judged to average 5.4 per cent in 2002, 5.6 per cent in 2003 and 5.9 per cent in 2004.

**Expectations of a tighter monetary policy.**

The Riksbank's decision to leave the repo rate unchanged in February had been expected by the market. Compared with the situation at the time of the December Report, the combination of high inflation outcomes, growing hopes of an economic recovery and statements from the Riksbank has contributed to expectations of a tighter monetary policy. Implied forward interest rates point to a repo rate increase of almost 1.5 percentage

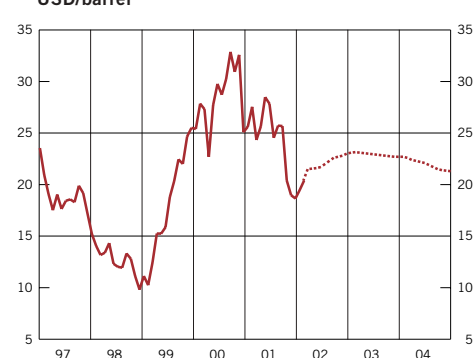
**Figure 15. Euro area and Sweden: services prices (HICP).**



Note. HICP is a harmonised EU index and differs from Sweden's CPI.

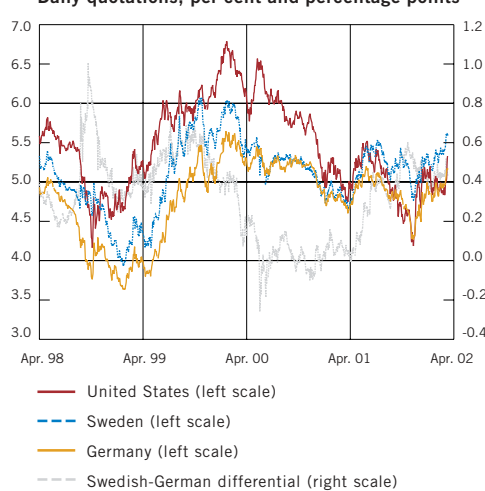
Source: The Riksbank.

**Figure 16. Crude oil price (Brent).**



Sources: IPC and the Riksbank.

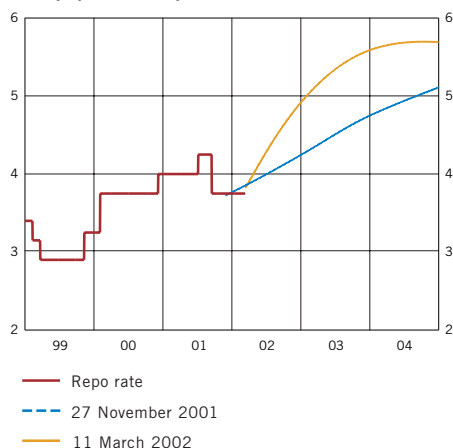
**Figure 17. Ten-year government bond rates in Sweden, Germany and the United States and the Swedish-German differential.**



Source: The Riksbank.

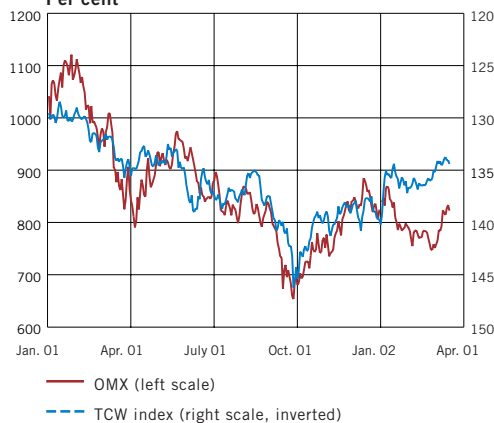


**Figure 18. Repo rate and expected rate implied by forward interest rates.**  
Daily quotations, per cent



Source: The Riksbank.

**Figure 19. OMX share price index and the Swedish krona's TCW index.**  
Per cent



Source: The Riksbank.

points in the coming year, followed by a further 0.5 percentage points in the year after that (Fig. 18).

Surveys of market participants point, however, to expectations of repo rate increases that are somewhat smaller. The responses to Prospera's survey indicate a monetary policy tightening of about 0.75 percentage points in the coming two years.<sup>2</sup>

### **M0 and M3 growth still rising.**

The 12-month increase in the broad money supply (M3) has continued to rise, to 6.2 per cent in November, while the increase for notes and coins (M0) was almost unchanged at just over 7 per cent. The growth of lending to the resident non-bank public seems to have slackened since the middle of last year. This applies, for example, to both corporate and household borrowing from banks. However, the strong increase in household borrowing from mortgage institutions that was noted in the December Report has continued and is probably explained, as before, by the high activity in the property market.

### **Marked stock exchange fluctuations.**

The relatively strong recovery in international stock markets after the terrorist attacks was broken after the turn of the year and the price level on these bourses is now much the same as at the time of the December Report. Morgan Stanley's world index has risen 2.3 per cent, while in Sweden the OMX index has fallen 2.2 per cent. Stock markets, in Sweden as well as elsewhere, have fluctuated relatively widely in this period. A mixture of positive macro statistics, increased uncertainty about future corporate profits and questions about corporate accounting practice in the wake of the Enron affair have contributed to this.

### **The Swedish krona has strengthened somewhat more than expected.**

The path of the krona has been somewhat stronger than foreseen in the December Report. Political signals about the possibility of Sweden's full participation in EMU have contributed to a relatively marked appreciation. Other factors with a similar effect are favourable economic prospects and the growing short-term interest rate differential with the rest of the world. It is worth noting that the krona's appreciation since the December Report has been accompanied by a stock market fall (Fig. 19), a pattern that has been unusual in the past two years.

The Riksbank considers that the krona is still undervalued. An appreciation is foreseen in the short run in connection with the beginning of an economic recovery. In the somewhat longer run a return to more reasonable long-term levels is expected in the light of such fundamentals as the current-account surplus, relative growth and economic policy's credibility. The krona's appreciation is judged to follow much the same path as foreseen in the Decem-

<sup>2</sup> The survey date was 20 February 2002.

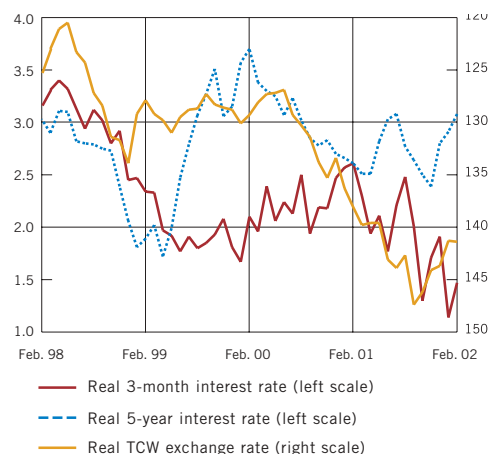


ber Report, with average TCW exchanges rates in the main scenario of 133.5 for this year, 127.2 for 2003 and 123.7 for 2004.

**Higher interest rates and a stronger exchange rate.**

The combined real economic impact of interest rates, the exchange rate and share prices has shifted somewhat in a restrictive direction since the time of the December Report (Fig. 20). Both short- and long-term real interest rates have risen, accompanied by a strengthening of the real exchange rate. In a historical perspective, however, the monetary conditions are still expansionary. Given the prevailing inflation expectations, the prospect of an economic recovery points to a restrictive shift in the forecast period in the form of rising interest rates and an appreciating exchange rate.

**Figure 20. Real interest and exchange rates.**  
Per cent, index: 18 Nov. 1992=100



Source: The Riksbank.

## Demand and supply

In the period 1998–2000 annual GDP growth in Sweden averaged about 4 per cent. The main driving forces in these three years were consumption and investment. During 2001 the growth of consumption became markedly lower. Gross fixed investment also rose considerably more slowly and the GDP contribution from stockbuilding became negative. Exports of goods decreased as a result of subdued demand in the rest of the world, particularly for telecom products, but as imports also fell, the GDP contribution from net exports was positive.

**Table 6. Demand and supply.**  
Percentage annual volume change

	2000	2001	2002	2003	2004
Household consumption	4.6	0.2 (0.8)	2.3 (2.1)	2.5 (2.1)	2.5
Public authorities consumption	-0.9	1.4 (0.8)	1.0 (0.9)	0.9 (0.9)	1.1
Gross fixed capital formation	5.0	1.5 (1.7)	0.7 (0.7)	4.5 (6.5)	6.5
Stockbuilding	0.5	-0.5 (-0.3)	-0.1 (-0.1)	0.2 (0.0)	0.0
Exports	10.3	-1.4 (0.3)	3.2 (4.5)	6.2 (6.1)	5.3
Imports	11.2	-3.9 (-1.1)	2.9 (4.0)	5.8 (6.0)	6.3
GDP	3.6	1.2 (1.2)	1.6 (1.8)	3.0 (2.4)	2.6

Note. 2002–04 forecast; the figures in parentheses are the assessments in the December Report. Stockbuilding is represented by the contribution to GDP growth in percentage points.

Sources: Statistics Sweden and the Riksbank.

During 2002 some improvement in world market growth is expected to lead to a recovery of exports. There are now signs of an upturn in the first place for the U.S. economy and a number of indicators, including business tendency data, suggest that manufacturing output in Sweden has stopped falling.<sup>3</sup> The markedly negative development of telecom exports is also assumed to level out gradually, though there are still no clear signs of an upturn. Moreover, increased household consumption is foreseen in connection with a strong trend for disposable income. Another factor here is the prospect of some increase in household wealth when stock markets stabilise. Some increase in public consumption is likewise assumed in the years ahead. An appreciable improvement in investment growth is also expected in 2003 and 2004. The cyclical path outlined here implies a comparatively shallow dip during 2001 and 2002, followed by a moderate upturn (see the box on pp. 41–47).

The strong growth in recent years has involved rising labour demand and increasingly high employment, mainly in the services sectors. The number of persons in employment went on rising during 2001. The increasingly favourable labour market in services sectors has also been evident in wages increases that have been higher than expected.

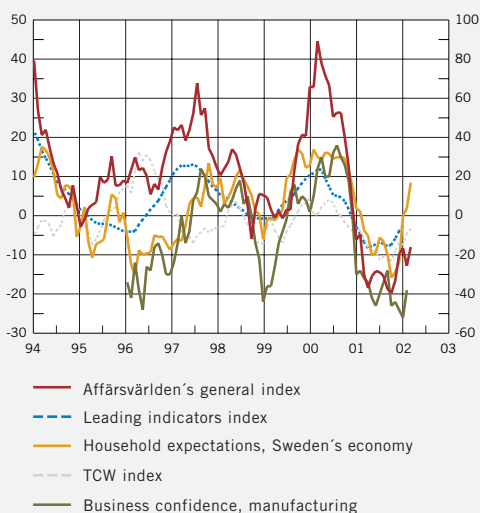
The fact that wage increases during 2001 exceeded earlier forecasts suggests that resource utilisation may have been higher than calculated earlier. The extent to which firms can carry these

<sup>3</sup> See the box on pp. 28–31.

wages without raising prices more substantially depends in part on productivity and initial profit margins. During the past year, profitability in the production of services was comparatively weak, which means that unit labour costs rose comparatively rapidly. This is a normal cyclical pattern and therefore not surprising but it does constitute a problem for firms, particularly as profit margins were relatively low initially. However, as demand and output begin to grow more markedly towards the end of this year, productivity growth is expected to normalise so that unit labour costs rise more slowly.

Although a number of indicators point to a recent fall in resource utilisation and some further decline in the near future, there are reasons for supposing that when the recovery begins, the labour market will be comparatively strained. Together with the assessment of the cyclical position, such indicators as discharge notices and new job vacancies point to the number in employment falling to only a limited extent this year. Even if the increase in unemployment, from 4.0 per cent in 2001 to 4.4 per cent in 2002, does tend to subdue wage increases, the effect on labour supply is not substantial. The downward effect on wage increases will therefore be only marginal and mostly dependent on how negotiated wage increases are spread over the duration of agreements. If inflation expectations were to become entrenched at a higher level, that could drive wage increases. In the coming round of wage negotiations, moreover, the relatively large differences in wage developments for different groups in recent years could give rise to demands for compensation. All in all, the upward effect on inflation from labour costs is judged to be somewhat larger than foreseen in the December Report.

Figure B16. Leading indicators in Sweden.  
Monthly change



Source: EcoWin.

## LEADING INDICATORS POINT TO A RECOVERY

Last year's economic slowdown in Sweden was unexpectedly marked. The GDP forecasts that had been presented in 1999 and 2000 averaged 3.4 and 2.3 per cent, respectively.<sup>4</sup> There is nothing unusual about this; forecasters frequently miss turning points in the economic cycle.

The difficulty in predicting slowdowns has stimulated interest in leading indicators, that is, in variables that contain information about the probable future path of some other variable.<sup>5</sup> The issues considered here are whether leading indicators predicted cyclical turning points and whether they now signal that a recovery is imminent.

There are a number of reasons for giving credence to the notion of leading indicators. *Firstly*, the economic cycle has some recurrent patterns. Changes in people's expectations about the future tend to be mirrored sooner in some GDP components than in others (see the box on pp. 41–47). A slackening of GDP growth and employment is often preceded by, for example, downward tendencies in exports, overtime and the consumption of durable goods and an accumulation of stocks. *Secondly*, there is a time lag before the monetary conditions affect demand. Partly for this reason, interest rates, the exchange rate and the money supply can be assumed to lead the paths of consumption and investment. *Thirdly*, fluctuations in growth may be discernible in surveys that mirror expectations. Examples are the National Institute of Economic Research's business tendency surveys of households, firms and purchasing managers. *Fourthly*, asset prices and other financial variables can point to an imminent turning point in that the pricing of shares, bonds and currencies, for example, is influenced by expectations of the future.

However, the significance of these leading indicators should not be exaggerated. All the categories – real variables, monetary conditions, surveys of expectations

4 Blix, M., Wadefjord, J., Wienecke, U. & Ådahl, M. (2001), How good is the forecasting performance of major institutions?, *Sveriges Riksbank Economic Review* 3, pp. 38–68.

5 See e.g. Chin, D., Geweke, J. & Miller, P. (2000), Predicting turning points, *FRBM Research Department Staff Report* 267; Del Negro, M. (2001), Turn, turn, turn: predicting turning points in economic activity, *FRBA Economic Review* 2; Estrella, A. & Mishkin, F.S. (1998), Predicting US recessions: financial variables as leading indicators, *Review of Economics and Statistics* 80, pp. 45–61; or Hopwrey, P. (2001), The predictive power of the index of consumer sentiment, *Brookings Papers on Economic Activity*, pp. 175–215.

and financial variables – are associated with problems of interpretation.

One difficulty with leading GDP components is that economic shocks of various types probably do not affect every sector in the same way. The impact of an oil price rise, falling share prices or a bank crisis does not necessarily follow the same pattern as, for example, a productivity shock driven by technology.

A problem with the forecasting performance of survey data is that the participants base their responses on the available economic information. In certain surveys the future expectations reported by households and firms can be explained almost entirely in terms of other underlying variables such as the actual development of unemployment, share prices, GDP growth or household disposable income.<sup>6</sup>

In the case of asset prices it has been pointed out that the forecasting ability may not be stable over time. Financial indicators may perform well in certain periods and countries but it is difficult to detect any general patterns.<sup>7</sup>

There are no grounds for supposing that leading indicators in general would predict economic development more satisfactorily than more sophisticated models or that they can replace the latter.

A simple evaluation of some leading indicators for GDP in Sweden is presented here. The target variable is growth, measured as the percentage annual change in GDP ( $DI$ ). The predictive expressions are simple, consisting of one indicator ( $DI$ ), its time lag and a constant.<sup>8</sup>

6 See e.g. Roberts, I. & Simon, J. (2001), What do sentiment surveys measure?, *Reserve Bank of Australia Research Discussion Paper*, pp. 2001–09.

7 Stock, J.H. & Watson, M.W. (2000), Forecasting output and inflation: the role of asset prices, in *Asset Prices, Exchange Rates, and Monetary Policy, FRBSF Conference Papers*.

8 Most of the indicators are estimated on the period 1970 Q1 – 2001 Q3. All variables except interest rates, discharge notices and job vacancies are calculated as the percentage change from the corresponding period the previous year. The forecasting performance of the indicators is assessed outside the sample with simulated recursive forecasts. To cover the period with the inflation-targeting policy, the assessments begin at 1993 Q1. The forecast horizon is one year, that is, the models predict the annual GDP growth rate four quarters ahead. When a forecast has been obtained, an observation is added to the sample and the model is re-estimated to obtain a further forecast. In this way, only information that was available at the time of the historic forecast is used. With the generated forecasts, the expected changes in the direction of the growth rate can be studied to determine how often the model can predict whether annual GDP growth one year ahead will be higher or lower than at present.

$$\Delta Y_{t+4} = \alpha + \beta_1 \Delta I_t + \beta_2 \Delta I_{t-4} + \varepsilon_{t+4}$$

The simple approach has the advantage of making it easy to interpret and compare the results. A drawback is that only some information is used, for instance because each indicator is considered separately. The indicators should therefore be seen as such, not as full-blown forecasts. The indicators are arranged in Table B5 in categories. Some major indicators with a forecasting performance (based on historical errors) that is relatively good are the OECD's leading indicators, the Swedish krona's effective exchange rate, households' expectations of the Swedish economy, stock market prices, confidence among manufacturing firms and a money supply aggregate (Table B3).<sup>9</sup> Briefly, it can be said that:

- The forecasting error is large and the confidence interval broad for all indicators (Table B3). However, the forecasting errors are smaller than for a 'naive' or a 'random walk' forecast.<sup>10</sup>
- A sizeable number of indicators are seemingly capable of predicting whether growth will strengthen or weaken.<sup>11</sup>

These two conclusions are in line with results from other studies.<sup>12</sup> Leading indicators are an uncertain guide to the level of growth in the coming period but appear to provide some support in the prediction of changes in growth's direction.

#### TWO OF THE LAST THREE

#### UPTURNS WERE PREDICTED

It may be worth taking a brief look at the signals some indicators provided in connection with turning points in the 1990s. These estimations suggest that a majority

9 The OECD's leading indicators have successfully predicted rising or falling growth almost 9 times out of 10 and accordingly attract interest in this context. As they consist of many different variables (e.g. hours worked, discharge notices, order inflow, manufacturing output, the money supply, commodity prices, share prices and interest rates) and are revised to agree as far as possible with GDP growth, they are not comparable with the other variables.

10 A random walk is based on the latest outcome.

11 Note, however, that the evaluated period covers only two economic cycles and the growth path displays a high degree of serial correlation. In general, this should increase the accuracy of the directional forecasts.

12 See surveys of the literature in e.g. Chin, D., Geweke, J. & Miller, P. (2000), Predicting turning points, *FRBM Research Department Staff Report 267* and Del Negro, M. (2001), Turn, turn, turn: predicting turning points in economic activity, *FRBA Economic Review 2*.

of the indicators signalled both the slowdown in 1995 and the upswings in 1994 and 1997. However, they also signalled a slackening of demand during 1998, approximately two years before this actually happened, and missed the high activity in the next two years.<sup>13</sup> These leading indicators accordingly predicted two of the last three cyclical upturns.

#### WHERE ARE THE INDICATORS POINTING NOW?

According to a majority of the leading indicators, a cyclical low has been passed and growth is going to strengthen. The exchange rate, household confidence in the future and the money supply, for example, suggest that four quarters from now, GDP growth will be above the 2001 Q4 rate of about 1 per cent. The fact that most indicators point in this direction makes the interpretation somewhat more reliable.

On the other hand, the OECD's leading indicators, the stock market, job vacancies and discharge notices point to a weakening of growth prospects in the coming year.

13 The indications of a slowdown may have been connected with the crises in Asia in 1997 and Russia in 1998.

Table B3. An evaluation of growth indicators.

Rank	Category	Root mean square error (RMSE) (per cent)	Direction: growth up or down (1993-2001)	Prediction		
				GDP-growth 1 year ahead (per cent)	Confidence interval (90 per cent)	Change (2002Q4-2001Q4)
<b>Expectations</b>						
3	Manufacturing confidence (KI)	1.6	0.72	1.1	(-1.6) – (3.7)	Unchanged
4	Household expectations own economy (HIP)	1.7	0.69	1.4	(-1.4) – (4.1)	Up
2	Household expectations Sweden's economy (HIP)	1.5	0.68	1.2	(-1.2) – (3.7)	Up
<b>Financial aggregates<sup>14</sup></b>						
4	Narrow money supply (M0)	1.7	0.72	2.6	(-0.1) – (5.3)	Up
3	Broad money supply (M3)	1.6	0.66	2.2	(-0.4) – (4.9)	Up
7	Lending <sup>15</sup>	2.2	0.59	2.8	(-0.9) – (6.4)	Up
<b>Asset market</b>						
2	Stock market <sup>16</sup>	1.5	0.69	0.4	(-2.1) – (2.9)	Down
6	House prices	1.9	0.78	1.1	(-2.1) – (4.2)	Unchanged
3	Repo rate	1.6	0.65	2.0	(-0.6) – (4.6)	Up
4	Money market rate	1.7	0.66	2.3	(-0.4) – (5.0)	Up
4	Bond rate	1.7	0.66	2.0	(-0.7) – (4.8)	Up
6	Yield curve	1.9	0.69	2.0	(-1.0) – (5.1)	Up
2	Effective exchange rate	1.5	0.59	3.4	(0.9) – (5.8)	Up
<b>Real variables</b>						
1	OECD's leading indicators	1.2	0.88	0.5	(-1.6) – (2.5)	Down
5	No. of job vacancies	1.8	0.69	0.1	(-2.9) – (3.2)	Down
6	No. of discharge notices	1.9	0.69	-0.6	(-3.6) – (2.4)	Down
8	Random walk	2.8	—	1.1	(-3.5) – (5.7)	—

Note. *KI*: National Institute of Economic Research; *HIP*: household purchasing plans.

14 All financial aggregates and prices are calculated in real terms (deflated with the CPI).

15 Lending by credit institutions to the Swedish non-bank public.

16 *Affärsvärlden's* general index.



## Demand

### Recovery in exports.

Exports of goods fell last year, partly because world market growth was weak, even in relation to GDP growth in the rest of the world, but also because the export product mix was disadvantageous (Fig. 21). The picture since the mid 1990s suggests that short-run changes in Swedish export prices relative to those of other countries may have had less effect on the volume of exports than in earlier periods. This may have led to some overestimation of the positive effect on exports of goods from Sweden's weak exchange rate and favourable level of costs. Last year's development of Swedish exports of goods would then be less remarkable, although a large part of the fall must be attributed to the crisis in the telecom industry.

Market growth is expected to turn upwards during 2002 and then become gradually stronger in 2003 and 2004. Swedish exports are then judged to turn upwards, too, though the krona's expected appreciation tends to dampen this. Still, the future development of world trade is highly uncertain and so is both the impact of relative prices on the volume of exports and the specific prospects for the Swedish telecom industry.

Imports also fell in 2001 in connection with the decreased exports as well as the weak growth of consumption and investment. The krona's sizeable depreciation and decreased tourist travel from Sweden lowered household consumption and reduced imports. Even so, the fall in imports was remarkably large. In 2002 imports are expected to turn upwards in connection with rising private consumption, increased travel abroad and a growing need to import intermediate goods for the production of exports. Later in the forecast period, an upturn for gross fixed investment is also expected to strengthen demand for imports.

### An expansionary fiscal policy leads to a strong increase in household disposable income.

The public sector financial surpluses have paved the way for certain tax cuts, for example to compensate households for earlier increases in employee-paid social security contributions. As a result of existing tax cuts and the economic slowdown, however, the surpluses this year and next are now calculated to be smaller.

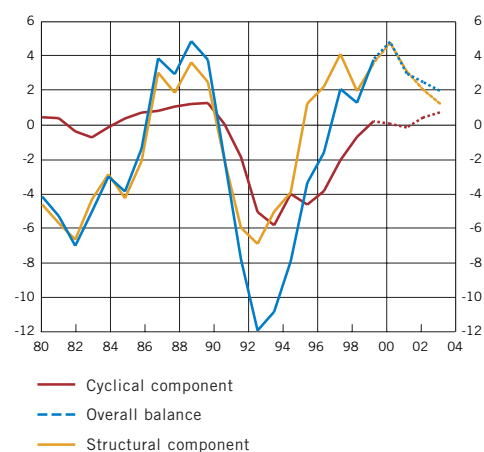
With the tax cuts and increased spending that have been approved or announced, fiscal policy is tending to boost total demand; an illustration of this is the decreased structural component of the financial balance in 2003 (Fig. 22).<sup>17</sup> Measured as the change in the financial balance's structural component, the fiscal realignment in Sweden is more substantial than in the euro area or the United States. Changes in taxes and transfers are equivalent

17 It is assumed, as in the December Report, that the fourth step in the income tax cuts that are designed to compensate for earlier increases to employee-paid social security contributions, will be implemented in 2003.

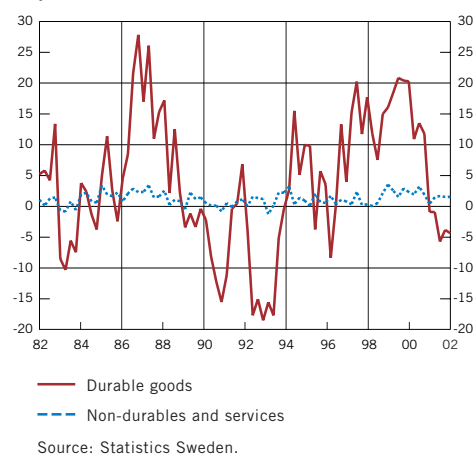
**Figure 21. Total imports to nine major trading partners and total Swedish exports. Seasonally-adjusted volume index, 1995:1=100**



**Figure 22. Consolidated public sector financial balance. Per cent of GDP**



**Figure 23. Household consumption expenditure. Percentage 12-month change, constant (1995) prices**

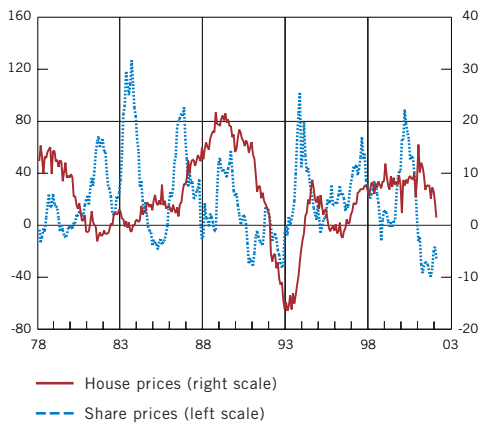


**Figure 24. Household saving and post-tax interest expenditure.**  
Per cent of disposable income



Note. The saving ratio shown here is based on the earlier definition. See footnote 19.  
Sources: Statistics Sweden and the Riksbank.

**Figure 25. Share and house price indexes.**  
Percentage 12-month change



Sources: Stockholm Stock Exchange, Statistics Sweden and the Riksbank.

to approximately half of this year's increase in household disposable income (Table 7). While fiscal policy measured in this way can be said to be expansionary, its total effect on aggregate demand can still be described as restrictive as long as there is a public sector financial surplus.<sup>18</sup>

**Table 7. Public sector financial balance.**  
Change as a percentage of GDP

	2001	2002	2003	2004
Financial balance	1.0	-1.8	-0.5	-0.5
From discretionary policy	-1.7	-1.7	-1.2	-0.4
of which: Direct effect on household disposable income	-1.2	-1.4	-0.9	0.0
Automatic stabilisers	-0.4	-0.2	0.6	0.3

Note. In the calculations the Riksbank assumes that the fourth and final stage in the compensation for employee-paid contributions to the pension system is implemented in 2003. Periodisation effects of taxes etc. are not shown. The size of the automatic stabilisers has been calculated by multiplying budget elasticity (assumed to be 0.75) by the change in the output gap.

Sources: Finance Ministry and the Riksbank.

### Household income strong but weak increase in wealth.

Household expenditure on consumption rose rapidly in 1999 and 2000. A fall-off in 2001 had been expected but turned out to be surprisingly marked, with virtually no increase during the year. The consumption of durable goods follows a cyclical pattern (Fig. 23); this is very much the case for household purchases of cars, which fell sharply last year. The stock market dropped more than 30 per cent last year; in that a large proportion of households now own shares or units in mutual funds, they are increasingly dependent on stock market trends. However, rising property prices dampened the weakening of household wealth. Foreign travel decreased markedly, due perhaps to the weak exchange rate and concern about the events of 11 September, and lowered household consumption 0.6 per cent. During 2001 households also became more worried about unemployment as well as generally more pessimistic.

In the forecast period consumption growth is expected to pick up, aided by a stock market stabilisation, successively less concern about economic developments and an upturn for consumption of durables. The estimated average increase in household real disposable income is expected to be 3 per cent year. The increase is particularly marked in 2002, when real disposable income is estimated to rise more than 4 per cent. A large part of this increase comes from tax relief and higher transfers. The continuation of relatively high employment also holds disposable income up. All in all, in 2002–04 the growth of income is judged to contribute to higher consumption growth as well as an increased household saving ratio (Fig. 24).

<sup>18</sup> Note, however, that the public sector financial balance includes the balances of the national supplementary pension system.

### Increases in saving as well as consumption.

Some fall in household real wealth is foreseen this year, followed by an increase in 2003–04 as a result of stock-market stabilisation, a falling debt ratio, lower inflation and lower real interest rates. The outlook for household wealth and income, together with a comparatively satisfactory development of employment, accordingly points to the growth of consumption in the forecast period being relatively high. In the coming decade, however, large cohorts born in the 1940s will be retiring and this points to increased saving in the years ahead. Against this background, the saved share of household income is judged to rise in the forecast period.<sup>19</sup>

### Subdued increase in public consumption.

Public spending on consumption fluctuated during the course of 2001 but the annual level rose 1.4 per cent from the previous year.

In the forecast period, the level of consumption by central government authorities is judged to be virtually unchanged. Growth is subdued by cutbacks in defence. Other factors that tend to restrain the volume of consumption are the spending ceiling and the relatively high public sector wage increases.

In the local government sector the economic situation is balanced on the whole and an annual increase in consumption of around 1 per cent is judged to be feasible from 2002 to 2004. The prospect of increased consumption in the forecast period mainly has to do with the introduction of the maximum day nursery charge as of this year, directed central government grants and demographic changes.

Total public consumption is expected to rise slightly in real terms during the forecast period, though it falls as a percentage of GDP.

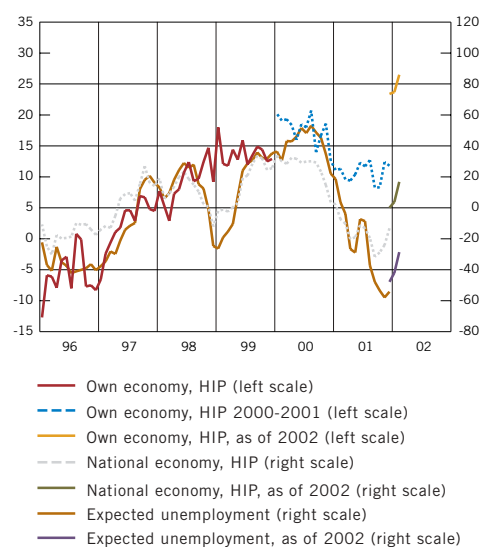
### Investment picks up in 2003 and 2004.

Gross fixed investment rose 1.5 per cent in 2001. As there is usually a lag before investment adjusts to demand, the weak demand trend last year and early in 2002 is judged to have a downward effect on investment activity in 2002. This influence is likely to be reinforced by the stock market fall. Looking ahead, a stabilisation of share prices, low real interest rates and rising demand are expected to strengthen the corporate investment propensity in 2003 and 2004.

Manufacturing investment fell in 2001 and the decline is continuing, so it is not until after this year that an increase is foreseen. This negative development is offset, however, by investment in the telecom sector and an investment propensity

19 Saving according to the new definition rises from about 5 per cent in 2001 to almost 8 per cent in 2004; with the earlier definition, this is equivalent to an increase from just under 1 per cent in 2001 to almost 4 per cent in 2004.

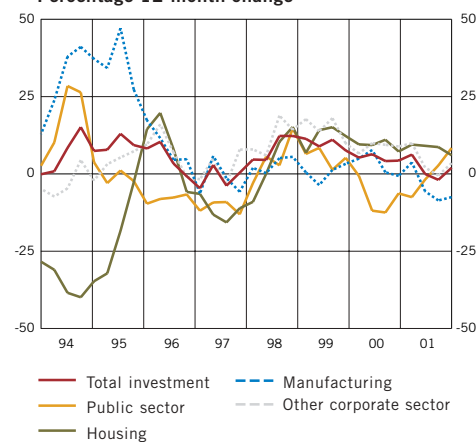
**Figure 26. Households' expectations of their own economy, Sweden's economy and unemployment.**  
Net balance



Note. The sampling procedure for the HIP survey was changed as of 2000 and again as of 2002, making it difficult to interpret the levels.

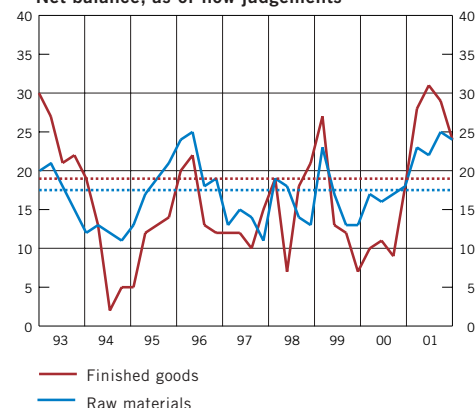
Source: Statistics Sweden.

**Figure 27. Gross fixed capital formation.**  
Percentage 12-month change



Source: Statistics Sweden.

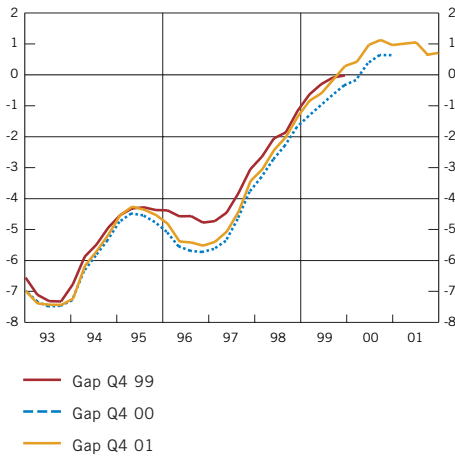
**Figure 28. Manufacturing stocks of raw materials and finished goods.**  
Net balance, as-of-now judgements



Note. The broken lines are the historical averages for 1964–2001.

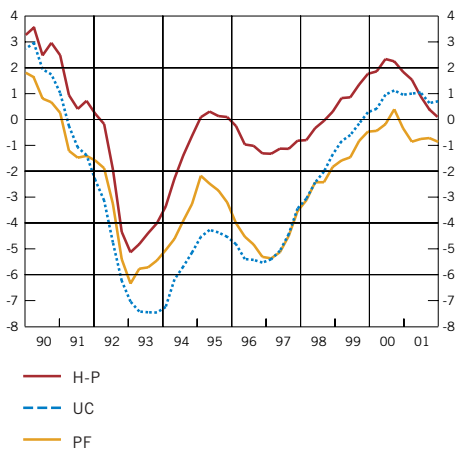
Source: National Institute of Economic Research.

**Figure 29. Output gap estimated with the Unobserved Components method, using the latest Q4 outcomes from 1999, 2000 and 2001.**  
Per cent of potential GDP



Sources: Statistics Sweden and the Riksbank.

**Figure 30. Econometric estimates of the output gap.**  
Per cent of potential GDP



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

**Figure 31. Industrial capacity utilisation.**  
Per cent, seasonally adjusted



Source: Statistics Sweden.

that is still favourable in other parts of the corporate sector. A continued increase is also foreseen for residential investment. Public sector investment has fallen in recent years but an increase is expected in the forecast period, partly due to various infrastructure projects.

Industrial stocks of both intermediate and finished goods are still reported to be too large according to the business tendency surveys from the National Institute of Economic Research (Fig. 28). This points to a downward adjustment of these stocks during 2002. Some increase in stocks is then foreseen as demand picks up. In 2003 the GDP contribution from stockbuilding is therefore judged to be slightly positive, followed by a neutral effect in 2004.

**RESOURCE UTILISATION**

The picture of resource utilisation is not clear-cut. The revised national accounts indicate that output in 1999 and 2000 was higher than earlier data suggested. Growth in 2001 was relatively low but the slackening of productivity may imply that there has also been some fall-off in the expansion of potential output. The growth has occurred in sectors, such as services and the public authorities, where productivity is weak, while manufacturing output fell last year. Moreover, absenteeism from work rose in 2000 and 2001 by the equivalent of almost 1 and about 0.5 per cent of the labour force. Partly for this reason, the increase in the number of persons in employment has just levelled out, despite the weak GDP growth, and unemployment has remained low. Moreover, both the rate of wage increases and underlying inflation have been high. Together with new output gap estimates, all this suggests that total resource utilisation in the Swedish economy in 2000 may have been higher than assumed earlier (Fig. 29).

**Resource utilisation falls but only briefly.**

In manufacturing and other parts of the corporate sector, a clear fall-off in resource utilisation is indicated by the National Institute's business tendency surveys as well as by surveys from Statistics Sweden. The shortages in manufacturing, for example the proportion of firms primarily restricted by the supply of production factors, have fallen back to much the same levels as when the 1996 slowdown bottomed out. Labour shortages in construction clearly decreased during 2001. Capacity utilisation and shortages of specialised labour have also fallen back in some services industries. At present it seems that labour shortages primarily exist in the public sector.

Econometric estimations as well as business tendency data accordingly show that resource utilisation fell in the course of 2001. An uncertain factor, however, is the amount of unutilised resources initially. The fact that average hours worked and labour productivity have fallen suggests that firms may have a certain amount of unutilised resources at their disposal. However, the supply of unutilised resources in the form of job-seekers is relatively limited.

All in all, the main scenario implies that after some fall this year, resource utilisation rises. At the end of the forecast period the situation in this respect will be comparatively strained.

### Weak productivity growth.

Although demand was rather weak during 2001, employment rose strongly and unemployment fell. The increase in employment occurred mainly in private services, while industrial employment declined.

However, the number of persons at work<sup>20</sup> did not match the increase in employment (Fig. 34); the latter amounted to 1.9 per cent in 2001 as against only 1.1 per cent for the number at work. Absenteeism accordingly increased, mainly in the form of sick leave. Average hours worked fell in 2001, partly due to the rising absenteeism but also because both overtime and regular hours<sup>21</sup> fell. Some wage agreements include a reduction of working hours in 2001 as well as in 2002 and 2003. However, the tendency towards shorter average working hours is expected to cease in the coming years, mainly as a result of increased overtime when activity picks up again.

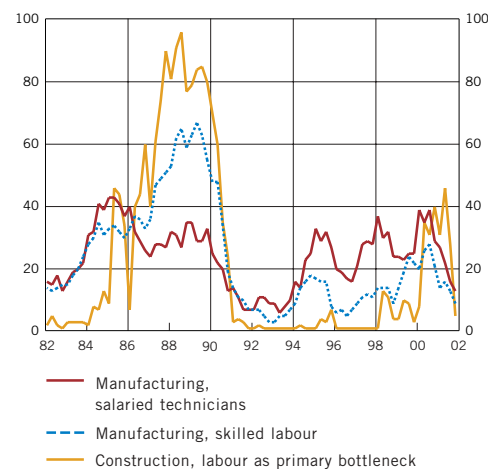
Productivity growth in 2001 was weak, which is normal in the prevailing cyclical phase. The rate in the corporate production of goods was 1.6 per cent. In the production of services, however, where employment rose strongly, measured productivity growth was actually negative. So when activity picks up again, firms should have some unutilised capacity at their disposal. Productivity is therefore judged to follow a more normal path in the coming years.

One explanation for the pro-cyclical pattern that average labour productivity generally displays is labour hoarding. In the initial phase of a slowdown, when demand begins to fall, firms usually respond by adjusting working hours, for example by reducing overtime. It is only later that they normally resort to lay-offs and discharges. This is because, in addition to wages, labour costs include fixed expenditure on such items as recruitment and training. Such considerations are probably more frequent in knowledge-intensive activities involving highly educated labour, for example the services sectors. Changes in employment also tend to lag behind fluctuations in production simply because firing and hiring labour take time. In recent years, moreover, it has become more possible to vary working hours, particularly in manufacturing. Wage agreements have, for example, given employers more influence over work schedules. Given greater flexibility in working time, to a higher extent than before employers can choose to reduce average hours worked instead of the average number of employees.

20 The number in employment less absentees.

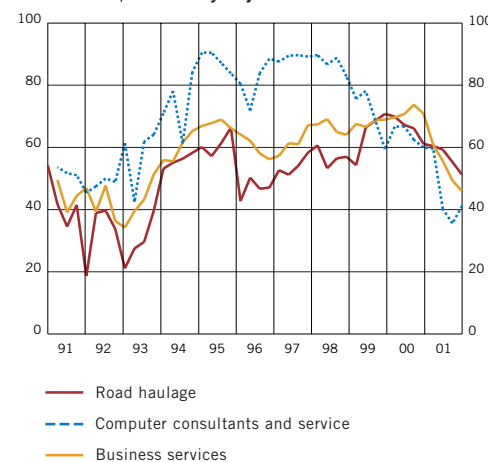
21 The working hours agreed by employers and employees.

**Figure 32. Labour shortages in manufacturing and construction.**  
Per cent



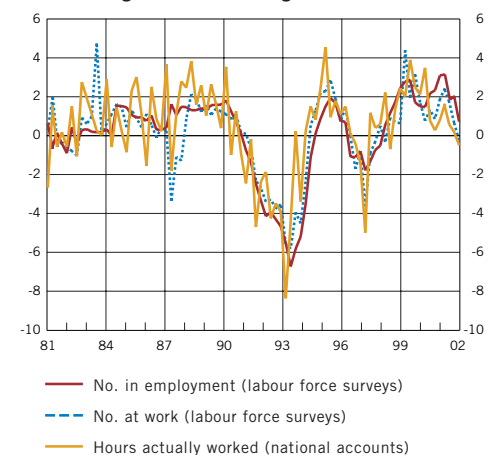
Source: National Institute of Economic Research.

**Figure 33. Services firms reporting full capacity utilisation.**  
Per cent, seasonally adjusted



Source: National Institute of Economic Research.

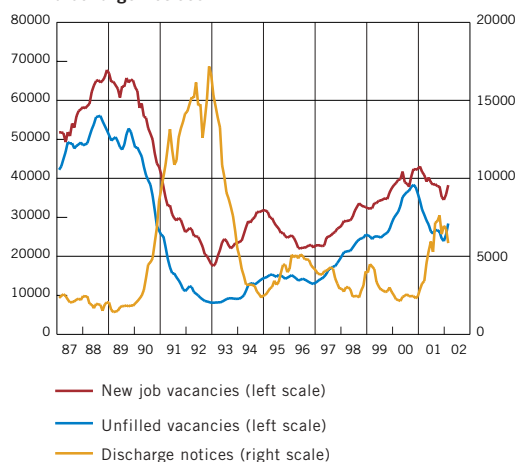
**Figure 34. Number in employment, at work and hours actually worked.**  
Percentage 12-month change



Source: Statistics Sweden.



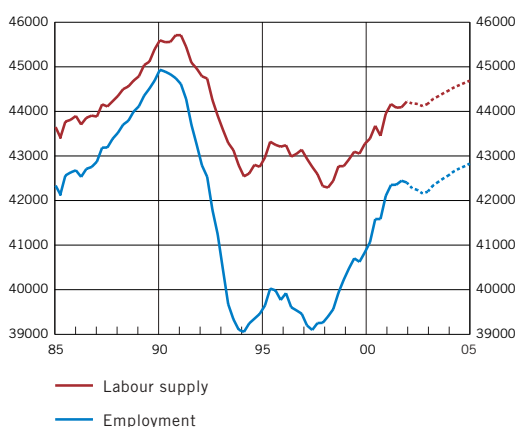
**Figure 35. New and unfilled job vacancies with a duration of more than 10 days, and discharge notices.**



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

Source: National Labour Market Board.

**Figure 36. Labour supply and employment. Hundreds of persons**



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

Sources: Statistics Sweden and the Riksbank.

### Employment is falling marginally this year but the labour market remains tight.

The situation in the labour market is expected to become somewhat weaker this year. The registered number of new job vacancies fell last autumn, accompanied by an increased number of discharge notices. Almost half of the discharge notices in 2001 came from manufacturing. In recent months, however, it seems that these tendencies have been broken (Fig. 35). In the National Institute's latest business tendency survey a majority of manufacturing sectors still count on a future reduction of employment. The number of discharge notices has also risen, albeit from a low level, in the private services sectors, above all in banking, insurance and business services.

The poorer labour market prospects are also expected to contribute to an end to the increase in labour supply. An increase in latent job-seekers<sup>22</sup> is foreseen, along with a decreased labour supply among students. There is also the prospect of high participation in labour market programmes. The age structure of the active population, with a marked increase in the younger and older age groups, can also lead to increases in the number of students, long-term invalids and early retirement.

All in all, a marginal fall in employment is foreseen in the coming years and some increase in unemployment. As a result of lower demand, the expected development of employment during 2002 is somewhat weaker than assumed in the December Report. In 2003 and 2004, however, employment is expected to pick up again, while unemployment falls (Fig. 36). The number of public sector employees rises throughout the forecast period. Private services do not make an appreciable contribution to this year's increase in employment. The contributions from employment in manufacturing and construction are negative, though in these two sectors there is a recovery during 2003. Compared with earlier slowdowns, this year's forecast increase in unemployment is slight. In the coming years the situation in the labour market is accordingly expected to remain comparatively tight.

### Wages are rising more strongly than expected earlier.

The wage statistics that have been published since late last autumn show that the average wage outcome in 2001 was higher than expected. The rate of wage increases moved up during 2001 for most groups in the labour market. This applies to construction workers, local government employees, and both blue- and white-collar employees in wholesale and retail trade, hotels and restaurants. There are, however, other categories, for example industrial workers, for whom wage increases last year were weaker than the year before.

On the whole, the differences in wage developments are a relatively good reflection of the situation in different parts of the

22 Persons who are capable of working and wish to do so but have not searched for a job.

labour market. The average rate of wage increases for 2001 is judged to be 4.3 per cent.

For 2002 the rate of wage increases is expected to be marginally lower than last year. Besides some weakening of the labour market, this has to do with the time profile of multiannual agreements that started to apply as of 2001.<sup>23</sup> Wage agreements are due to be concluded this year for about half a million full-time employees, for instance in the transport sector, central government, IT and telecom industries. The outcomes may be influenced by inflation being high and the labour market still tight. The annual rate of wage increases this year is judged to be 4.0 per cent, which is 0.5 percentage points higher than foreseen in the December Report.

In 2003 and 2004 there is the prospect of a successive improvement in the labour market, while inflation is judged to be lower. There is a risk, however, that relatively high wage outcomes for certain groups may lead to demands for compensation from other groups. The overall rate of wage increases is expected to become somewhat higher. The average annual wage increases in 2003 and 2004 are judged to be 4.1 and 4.3 per cent, respectively. In relation to the development of productivity there is reason to count on in the coming years, these rates appear to be high.

With the revised wage and productivity forecasts, the increase in unit labour costs – a factor of crucial importance for inflationary pressure – is judged to be somewhat higher than foreseen in the December Report. However, the better productivity growth that is assumed as economic activity picks up helps to hold back the increase in unit labour costs during the forecast period.

**Table 8. Labour market forecast in the main scenario.**  
Percentage annual change and per cent of labour force

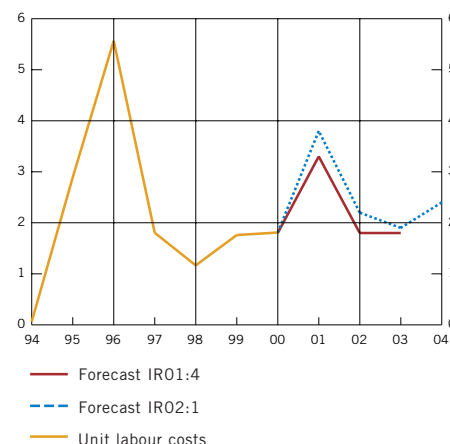
	2000	2001	2002	2003	2004
Nominal wage	3.6	4.3	4.0 (3.5)	4.1 (3.6)	4.3
Labour productivity	2.1	0.7	1.8 (1.7)	2.2 (1.8)	1.9
Unit labour costs	1.9	3.8	2.2 (1.8)	1.9 (1.8)	2.4
Number employed	2.2	1.9	-0.4 (-0.2)	0.6 (0.4)	0.7
Hours worked	1.5	0.5	-0.2 (0.0)	0.8 (0.6)	0.7
Open unemployment (level)	4.7	4.0	4.4 (4.4)	4.3 (4.3)	4.2
Labour market programmes (level)	2.5	2.5	2.5 (2.3)	2.3 (2.1)	2.1

Note. Forecast 2002–04; the figures in parentheses are the assessments in the December Report.

Sources: Statistics Sweden and the Riksbank.

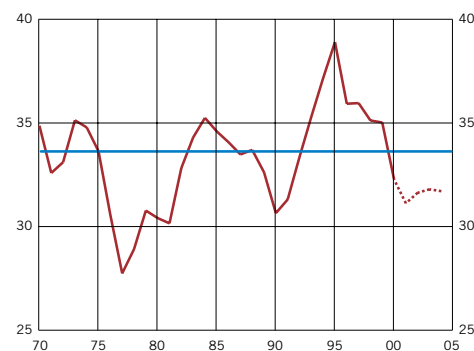
<sup>23</sup> That is, the negotiated wage increases are higher in the early part of the period covered by the settlements.

**Figure 37. Unit labour costs.**  
Percentage change



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

**Figure 38. Profit share.**  
Per cent of GDP at factor values



Note. The horizontal line is the historical average for 1970–2000. 2001–04 forecast.

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

The corporate sector profit share<sup>24</sup> has been falling since the mid 1990s (Fig. 38). In 2001, corporate sector productivity rose only 0.4 per cent, while wages are judged to have risen 4.2 per cent. Profit shares have accordingly been pushed down. A firm's ability to cope with increased costs is, of course, impaired when the profit share is low. Unit labour costs are now expected to rise somewhat more than assumed earlier and this is likely to show up in prices. Although some improvement in the profit share is assumed for 2002 and 2003, the level is calculated to be historically low.

24 The gross operating surplus (that is, before capital allowances) as a percentage of value added at factor prices.



## PERSPECTIVES ON A RECOVERY

How and when demand will recover are key issues for the formation of monetary policy. This can warrant a comparison of earlier experiences with the recovery that is assumed to occur during 2002.

Since 1970 there have been five slowdowns in the Swedish economy, in 1971, 1977, 1981, 1993 and 1997 (Fig. B11).<sup>25</sup> The usual characteristics of a slowdown – many different economic variables moving in a similar pattern and the level of activity deviating from the trend for a considerable period – were evident in those years.<sup>26</sup>

### HISTORICAL PATTERNS

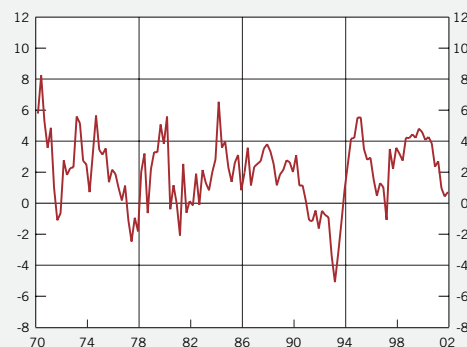
The cyclical slowdowns in the past three decades have differed in their causes as well as their paths.<sup>27</sup> So it is hardly surprising that they lack a cyclical pattern that is repeated mechanically. Neither have the different slowdowns come from the same GDP components. And

25 Some signs of a slowdown were also discernible in 1974 and 1985–86 but they have not been included in the present comparison because there was no permanent deviation from trend GDP (growth was 3.3 and 2.0 per cent, respectively) and a number of major GDP components were unaffected (in 1974 consumption growth was very strong and unemployment fell, while manufacturing output, net exports and investment slowed; in 1985–86 consumption was strong and unemployment fell, while manufacturing output and net exports slowed).

26 See e.g. Diebold, F.X. & Rudebusch, G.D. (2001), Five questions about the business cycles, *FRBSF Economic Review*, pp. 1–15; Bergman, M. Bordo, M. & Jonung, L. (1998), Historical evidence on business cycles: the international experience, in Fuhrer, J.C. & Schuh, S. (ed.), *Beyond shocks: what causes business cycles?* *FRBB Conference Series* 42; Espinosa-Vega, M.A. & Gau, J.-I. (2001), On business cycles and countercyclical policies, *FRBA Economic Review* 4, pp. 1–11; Perry, G.L. & Schultze, C.L. (1993), Was this recession different? Are they all different?, *Brookings Papers on Economic Activity*, pp. 145–211; or Zarnowitz, W. (1985), Recent work on business cycles in a historical perspective: a review of theories and evidence, *J. of Economic Literature* 23, pp. 523–581.

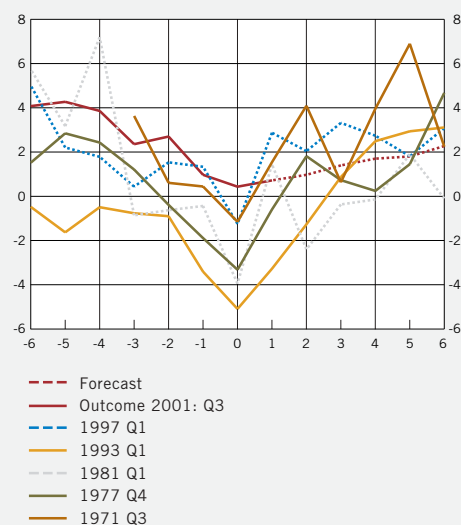
27 Cyclical developments in Sweden are discussed in e.g. Englund, P., Persson, T., Svensson, L.E.O. (1992), Swedish business cycles: 1861–1988, *J. of Monetary Economics* 30, pp. 343–371; Englund, P., Vredin, A. & Warne, A. (1994), Macroeconomic shocks in an open economy: a common trends representation of Swedish data, 1871–1990, in Bergström, V. & Vredin, A. *Measuring and Interpreting Business Cycles*, Clarendon Press; Finansdepartementet (2001), *Finans- och Penningpolitiska Beslut för 1990-talet* (Sweden's Finance Ministry, Fiscal and monetary policy account for the 1990s), annex 5 to Government Bill 2000/01:100; Hassler, J., Lundvik, P., Persson, T. & Söderlind, P. (1994), The Swedish business cycle: stylised facts over 130 years, in Bergström, V. & Vredin, A. *idem*; Jonung, L. (1999), *Med Bakspeglarna som Kompass – om Stabiliseringspolitiken som Läroprocess* (With the rear mirror as a compass – stabilisation policy as a learning process), Ds 9; Lindbeck, A. (1998), *Det Svenska Experimentet* (The Swedish experiment), SNS Förlag; or Vredin, A. (1991), *Vad är konjunkturcykeln?* (What is the business cycle?), in Bergman, L. et al., *Ekonomi och Samhälle 2: Ekonomiskt Tillväxt och Utveckling* (Economy and society 2: economic growth and development), SNS Förlag. Reports from the National Institute of Economic Research on the economic situation 1970–2000 have also been used.

Figure B11. Sweden's GDP growth 1970–2001.  
Per cent year-on-year



Sources: Statistics Sweden and the Riksbank.

Figure B12. Sweden's GDP growth in the six quarters before and after cyclical lows.  
Per cent year-on-year



Note. Seasonally-adjusted series. The curves show the growth rates in the six quarters before and after the low for the slowdown in question; see the text for further information.

Source: The Riksbank.

**Table B4. The 1971 slowdown.**

	High	Low	Trend	High
GDP, y/y %	-4	71:3	+2	+6
Private cons., y/y %	-4	71:1	+2	+4
Investment, y/y %	-4	71:2	+2	+3
Net exports, contr. %	—	70:1	+4	+4
Unemployment, level %	-7	72:1	+8	+13
Inflation, %	-5	72:1	+6	+20
Real eff. exchange rate, y/y %	—	71:3	+8	+10

Source: The Riksbank.

**Table B5. The 1977 slowdown.**

	High	Low	Trend	High
GDP, y/y %	-11	77:4	+2	+7
Private cons., y/y %	-8	77:4	+4	+6
Investment, y/y %	-8	76:1	+2	+3
Net exports, contr. %	-11	75:3	+7	+9
Unemployment, level %	-10	78:3	+3	+6
Inflation, %	-4	79:1	+3	+7
Real eff. exchange rate, y/y %	-5	76:1	+2	+3

Source: The Riksbank.

**Table B6. The 1981 slowdown.**

	High	Low	Trend	High
GDP, y/y %	-4	81:1	+7	+11
Private cons., y/y %	-2	80:4	+5	+24
Investment, y/y %	-7	81:4	+4	+10
Net exports, contr. %	-6	79:2	+5	+7
Unemployment, level %	-7	78:3	+3	+7
Inflation, %	-7	80:4	+4	+20
Real eff. exchange rate, y/y %	-12	83:1	+4	+5

Source: The Riksbank.

**Table B7. The 1993 slowdown.**

	High	Low	Trend	High
GDP, y/y %	-21	93:1	+4	+8
Private cons., y/y %	-24	93:1	+5	+7
Investment, y/y %	-18	93:4	+3	+7
Net exports, contr. %	-15	89:4	+4	+10
Unemployment, level %	-17	93:3	+18	+31
Inflation, %	-11	90:3	+4	+8
Real eff. exchange rate, y/y %	-18	93:3	+5	+9

Source: The Riksbank.

**Table B8. The 1997 slowdown.**

	High	Low	Trend	High
GDP, y/y %	-6	97:1	+1	+10
Private cons., y/y %	-2	97:1	+1	+14
Investment, y/y %	-6	97:1	+4	+6
Net exports, contr. %	-3	96:1	+1	+6
Unemployment, level %	-9	97:1	+4	+15
Inflation, %	-7	97:1	+2	+3
Real eff. exchange rate, y/y %	-6	97:2	+4	+4

Source: The Riksbank.

as there have been only five downturns in a period when both the composition of stabilisation policy and the functioning of the economy have changed substantially, it would be hazardous to draw conclusions about the future.

The courses of the slowdowns studied here are presented in Tables B4 – B9. With the low as the reference quarter, the tables show the number of quarters between this and other features of the cycle (– and + indicate before and after). The interval between high and low refers to the variable in question; for investment, for example, the number of quarters is measured between the investment cycle's high and low, not the GDP cycle's. The numbers under High indicate the quarter in which growth (measured as the change from the same quarter a year earlier) was strongest in the period before or after the slowdown, while those under Low are the quarter in which growth was weakest.<sup>28</sup> The numbers under Trend show how many quarters it took for GDP, consumption, investment and so on to climb back to the average growth rate for the period 1970–98.<sup>29</sup>

In the five slowdowns, growth in the quarter when demand was weakest averaged –2.5 per cent from the same quarter a year earlier (–1.7 per cent if 1993 is excluded). The slowdowns also entailed negative growth over a number of quarters (ranging from 11 in 1993 to 1 in 1997). In the slowdowns in Sweden since the 1970s, growth has been negative for an average of 4 quarters (2.5 quarters if 1993 is excluded).

A look at the cyclical paths of the main GDP components shows that on several occasions net exports initiated the upturn, often several quarters before GDP growth had reached its low. In all these cases a weakening of the exchange rate contributed to the strengthening of demand. However, the devaluations coincided with or occurred after the GDP low and also came after net exports had bottomed out.

Consumption and GDP follow much the same pattern (1971, 1977, 1993 and 1997), but while consumption's contribution to growth was large after

28 Cyclical highs and lows can also be defined in other ways, for example in terms of the output gap or changes in this. In order to provide for comparisons with the Riksbank's forecasts for 2002–03, slowdowns are characterised here from non-trend adjusted series. For unemployment, a cyclical peak is represented by the lowest quarterly rate as a percentage of the labour force and a trough as the highest rate.

29 The trend for net exports is defined as the average contribution to GDP growth in the period 1970–98. For unemployment, inflation and the real effective exchange rate the trends are the average for the latest 12 quarters.

the slowdowns in 1971, 1977 and 1997, it was smaller after 1981 and 1993. The pattern for investment is less clear but on some occasions the reaction has come after a longer lag (1981, 1993 and 1997). Investment's contribution to the recovery was strongest after the slowdowns in 1970 and the 1990s and weaker on the other occasions.

On a number of occasions inflation fell to its lowest level about two to four quarters after the GDP low (1971, 1977 and 1981). Otherwise there is no recurrent pattern in inflation, no doubt partly because policy in this respect has changed appreciably.

A number of the slowdowns after periods characterised by major imbalances, such as impaired competitiveness for exports, high inflation, current-account deficits and budget deficits, naturally took a more serious turn (1977, 1981 and 1991).

Deviations from the 'normal' pattern are liable to be considerable. In 1971, for instance, consumption and investment were strong but net exports remained weak. The upswing after the crisis in the early 1980s continued for the rest of the decade. After the crisis in 1993 there was an unusually long period before consumption picked up, partly because fiscal as well as monetary policy was highly restrictive for a long time.

On most occasions (the exceptions are the crises in 1981 and 1993), GDP and consumption climbed back to their trends comparatively quickly. On some occasions, growth was in line with the long-term average only one to two quarters after the low (1971, 1977 and 1997).

#### THE RECOVERY IN 2002

The cyclical upturn that the main scenario assumes will occur during 2002 has some characteristics in common with earlier recoveries. The forecast implies that the lows for GDP and consumption occur about six quarters after the previous high (as in 1977, 1981 and 1997) and that the next GDP high comes about eight quarters after the low (as in 1970, 1977, 1993 and 1997). Growth returns to the trend rate after about three quarters (as in 1971, 1977 and 1997).

In other respects the upturn according to the main scenario differs from earlier recoveries. The most marked difference is perhaps that the downward and upward phases are both expected to be less pronounced than the historical pattern. There is no quarter during the slowdown in 2001 when growth is assumed to be negative. In other words, growth bottoms out at a higher

**Table B9. The 2001 slowdown.**

	High	Low	Trend	High
GDP, y/y %	-6	2001:4	+3	+8
Private cons., y/y %	-5	2001:3	+2	+5
Investment, y/y %	-11	2002:3	+2	+8
Net exports, contr. %	-4	2000:1	+2	+5
Unemployment, level %	-4	2002:4	+1	+9
Inflation, %	-4	2002:3	+1	+7
Real eff. exchange rate, y/y %	-4	2001:2	+4	+6

Source: The Riksbank.

level than in the recent slowdowns. The reason for this is not that growth was higher before the slowdown; the high (4.8 per cent in 1999 Q3) was somewhat less than the average of such peaks (in 1977 Q1, 1974 Q3, 1980 Q1, 1984 Q1, 1987 Q4, 1995 Q3 and 1999 Q3).

The moderate fall-off is explained instead by paths for consumption, investment and net exports that are more favourable than the historical pattern. One reason for this is that real interest rates have been notably low in a historical perspective.<sup>30</sup> Another reason is that real disposable income is rising 3.0 and 4.3 per cent in 2001 and 2002, respectively, whereas it fell in 1981, 1993 and 1997 and rose only slightly in 1971 and 1977. To some extent this has to do with fiscal policy's appreciable contribution to household purchasing power without there being a rapidly growing budget deficit that makes households uneasy about the sustainability of the government finances in the longer run, as was the case on a number of occasions in the past (1977, 1981 and 1991). Neither is the labour market deteriorating appreciably in connection with the current slowdown, partly thanks to the strong employment trend in domestic sectors. The upward shift in unemployment amounts to less than 0.5 per cent of the labour force, whereas the increases associated with earlier slowdowns averaged 2 per cent (1.2 per cent if 1993 is excluded).

The fall in investment is countered by the limited drop in aggregate demand. Moreover, the forecast assumes that in certain sectors (e.g. telecom infrastructure, housing and services) investment continues to develop favourably. The forecast on this occasion presupposes that, in contrast to some earlier slowdowns, investment activity does not go on weakening for one to two quarters after the GDP low.

The paths of the exchange rate and net exports also deviate markedly from the historical pattern. On this occasion the exchange rate weakened unusually early in the cycle. In previous slowdowns, the exchange rate low (measured as the change in the real effective rate) coincided with or occurred some years after the GDP low (1971, 1981, 1993 and 1997), whereas the depreciation this time was greatest two quarters before the GDP low. This may be one explanation for the appreciably higher level at which net exports have bottomed out compared with earlier slowdowns even though

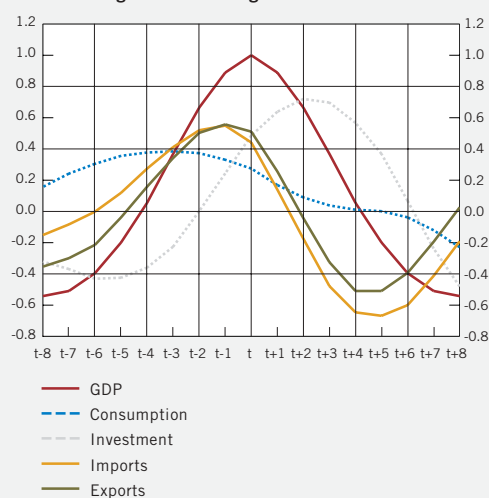
30 A comparison with the 1970s and '80s is complicated in that the fixed interest market was controlled at that time and the tax system was different. There is also a lack of comparable series for inflation expectations.

the depreciation during 2001 was smaller than on those occasions.

On the whole, moreover, the expected upturn 2002–03 looks comparatively cautious. Growth reaches a high of just over 3 per cent towards the end of 2003. The main driving force comes from domestic demand. Characteristics of the upward phase are a normalisation of consumption, a positive GDP contribution from stock-building and an upswing for investment. Opposing factors include the krona's less marked depreciation compared with earlier slowdowns and the appreciation that is assumed during the recovery. Moreover, the assumed appreciation this year and next is larger than in several earlier recoveries (1971, 1977, 1981 and 1997).

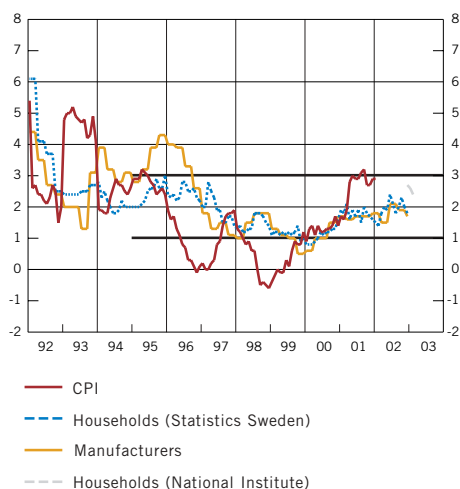
A major factor behind the assessment that the present slowdown will be less pronounced than usual in recent decades is economic policy's stabilising influence on this occasion. Real interest rates have been low, the exchange rate weakened early in the downturn and fiscal policy has been expansionary. Moreover, the slowdown started with a slackening of external demand and on this occasion the Swedish economy has not been burdened by appreciable imbalances in the form of household or corporate debt, public sector deficits or a persistent erosion of competitiveness. Against this background, households and firms have not had cause to fundamentally alter their view of either the future development of incomes and profits or how the economy is functioning. That means that more self-stabilising forces in the economy (e.g. household saving or the automatic stabilisers in the government finances) have been in a position to counter the cyclical fluctuation.

**Figure B13. Correlations between GDP components in the economic cycle.**  
Percentage annual change 1993–2001



Source: The Riksbank.

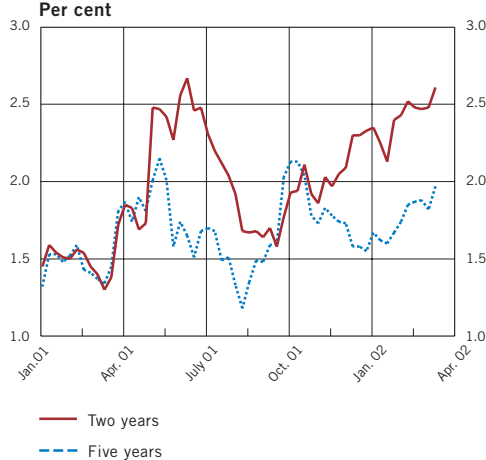
**Figure 39. CPI and inflation expectations of households and manufacturers.**  
Per cent



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

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

**Figure 40. Expectations of inflation two and five years ahead derived from implied forward interest rates.**  
Per cent



Source: The Riksbank.

## Inflation expectations

Inflation expectations among households and firms are an important factor in the Riksbank's monetary policy analysis because they affect price and wage formation and thereby inflation. Changes in inflation expectations can stem from various factors, including the Riksbank's signals about future monetary policy.

### The picture of inflation expectations is still mixed.

The January business tendency survey from the National Institute of Economic Research shows that manufacturing firms have adjusted their expectations of inflation one year ahead 0.2 percentage points downwards to 1.7 per cent (Fig. 39). However, inflation expectations in services industries were unchanged at 1.8 per cent. Thus, the expectations expressed in these surveys are still in line with the inflation target.

Among households, expectations of inflation one year ahead were adjusted downwards from January to February 2002 by 0.2 percentage points to 2.4 per cent (Fig. 39).<sup>31</sup> This was the second consecutive month in which these expectations fell.

The latest survey from Prospera shows that the inflation expectations of all the surveyed groups are virtually unchanged, for the short as well as the longer term, compared with the survey in November 2001 (Table 9). Expectations among money market players continue to be just above the target for all time horizons, while the expectations of other groups exceed the target by rather more than 0.5 percentage points.

31 Due to a methodological change at the turn of 2001, the recent data on households' inflation expectations as measured by the National Institute of Economic Research are difficult to compare with earlier series from Statistics Sweden; the Institute considers that the shift in level is a consequence of the change and will be examining this more closely during 2002.

**Table 9. Expected rate of CPI inflation.  
Annual rate, per cent**

<b>Expected inflation 1 year ahead</b>		
Money market agents	2.3	(0.1)
Employer organisations	2.6	(-0.2)
Employee organisations	2.8	(-0.1)
Purchasing managers, trade	2.6	(-0.1)
Purchasing managers, manufacturing	2.7	(0.0)
Households (February (January) HIP)	2.4	(-0.2)
Manufacturing firms (January (October) business tendency survey)	1.7	(-0.2)
Services firms (January (October) business tendency survey)	1.8	(0.0)
<b>Expected inflation 2 years ahead</b>		
Money market agents	2.2	(0.0)
Employer organisations	2.5	(-0.1)
Employee organisations	2.7	(0.0)
Purchasing managers, trade	2.7	(0.1)
Purchasing managers, manufacturing	2.7	(0.0)
<b>Expected inflation 5 years ahead</b>		
Money market agents	2.1	(0.0)
Employer organisations	2.3	(-0.1)
Employee organisations	2.6	(0.1)
Purchasing managers, trade	2.5	(0.2)
Purchasing managers, manufacturing	2.6	(0.0)

Note. At the Riksbank's request, Prospera now presents expectations in the form of percentage 12-month change figures instead of the previous average annual rate; the questions in the survey are put in the same way as they have been since 1995. The data are based on Prospera's survey in March 2002 unless indicated otherwise. The figures in parentheses are the change in percentage points from the previous survey; the results on that occasion have been converted to make them comparable with the new presentation.

Sources: National Institute of Economic Research, Prospera Research AB and Statistics Sweden.

Expectations derived from market prices (using implied forward interest rates) differ somewhat from the survey data and point to an upward tendency (Fig. 40). Expectations of inflation two years ahead are currently about 0.5 percentage points higher than the levels at the time of the December Report and exceed the inflation target. The increase in forward interest rates occurred mainly in connection with the publication of higher inflation outcomes. Expectations of inflation five years ahead are in line with the target, which is, for example, an indication of confidence in economic policy.

## Deregulations, political decisions and transitory effects

No new proposals involving changes in indirect taxes and subsidies have been presented since the time of the December Report. The assessment of CPI effects from changes announced earlier is therefore the same as at that time. The January outcome of tax changes decided earlier was broadly in line with earlier assessments. The lower VAT for books was almost fully reflected in consumer prices; from December to January, prices of books and popular magazines fell 13 and 10 per cent, respectively. The contribution to the CPI was  $-0.13$  percentage points. The electricity tax increase raised the CPI 0.1 percentage point in January.

The National Post & Telecom Agency has decided that as of March this year Telia must make a cut of about 6 per cent in its interconnection charge for the mobile network (the charge for forwarding calls from other operators). The reduction is judged to have a downward effect on domestic inflation of not quite 0.1 percentage point.

The EU Commission has proposed new rules for car sales when the current block exemption expires at the end of next September. This exemption permits manufacturers and dealers to agree on exclusive sales and selective distribution because the positive effects for consumers were considered to be more weighty than the competitive drawbacks. Over a year ago the Commission published an assessment of the exemption which concluded that it did not comply with the Commission's goals, for example that the recommended sales price for a particular model must not be more than 12 per cent above the lowest price.<sup>32</sup> Moreover, the exemption impedes parallel imports and leads to higher consumer prices. The Commission's new proposals include measures for enhancing competition among car dealers. If, for example, the proposals were to result in a 5 per cent price fall for new and second-hand cars, the effect on the CPI and UNDI<sub>X</sub> would be about  $-0.1$  percentage point.

**Table 10. Direct CPI effects from indirect taxes, subsidies and interest expenditure. Percentage points**

	March 2002	March 2003	March 2004
Indirect taxes and subsidies	-0.3 (-0.3)	0.1 (0.1)	0.1
House mortgage interest expenditure	0.0 (-0.1)	0.2 (0.1)	0.3
Total direct effect	-0.3 (-0.4)	0.2 (0.2)	0.4

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

Source: The Riksbank.

32 Differences in the pre-tax prices of new cars in the European Union are studied twice a year by the Commission; the latest study, published in July 2001, showed that for small and medium-sized cars the price spread was 25–30 per cent.



## FORECASTING INFLATION WITH A RISING REPO RATE

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

The survey data show expectations of an unchanged repo rate of 3.75 per cent three months ahead, followed by increases to 4.25 per cent after one year and to 4.50 per cent after two years.<sup>33</sup> Here it is assumed that the short-term market interest rates will broadly follow the repo rate, while the pass-through to the longer rates is smaller. Compared with the main scenario, the short rates are judged to be approximately 50 basis points higher one year ahead and 75 basis points higher after two years, while the average effect on long rates stops at about 10 basis points. To some extent, the higher level of interest rates also points to a strengthening of the exchange rate; during the forecast period the TCW index is accordingly judged to be somewhat stronger than in the main scenario.

A path for the repo rate that follows market expectations accordingly means that the combined effect on demand from interest rates and the exchange rate is judged to be somewhat less expansionary than in the main scenario. All in all, it is considered that this would lead to somewhat lower GDP growth in the forecast period. Moreover, the somewhat stronger exchange rate dampens import prices (Table 12).

33 These are the median values of the expectations; there are, however, individual money market players who foresee a repo rate increase in connection with the March Inflation Report.

**Table B12. Modified inflation forecast, incorporating the interest rates expected by the money market.****Percentage change and percentage points**

	Annual rate 2002	Annual rate 2003	12-month rate March 2003	12-month rate March 2004
CPI	2.3 (0.0)	2.4 (0.1)	2.3 (0.1)	2.3 (-0.1)
UND1X	2.7 (0.0)	2.1 (-0.1)	2.1 (-0.1)	2.0 (-0.2)

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

Source: The Riksbank.

A smaller output gap and a stronger exchange rate have some downward effect on UND1X inflation one and two years ahead. CPI inflation, on the other hand, is somewhat higher one year ahead and unchanged from the main scenario after two years because the effects of the smaller output gap and stronger exchange rate are countered by the impact of higher house mortgage interest expenditure.

# Material for assessing monetary policy 1999–2001

## Introduction

This appendix describes and evaluates the monetary policy the Riksbank has implemented in the period 1999–2001 in relation to the target of holding CPI inflation at 2 per cent with a tolerance for deviations up to  $\pm 1$  percentage point.

The purpose of the account is to provide a foundation for the Parliamentary Finance Committee's annual assessment of monetary policy. The March Inflation Reports from the last two years contain assessments of the development of inflation in 1997–99 and 1998–2000, respectively. The following is the corresponding discussion of the period 1999–2001, with the main emphasis on inflation during 2001.

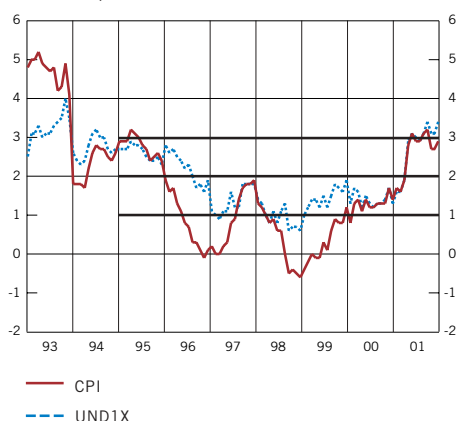
In that about one to two years normally elapse before instrumental rate adjustments exert their full effect on inflation, the focus here is on the deliberations and monetary policy decisions that were made during 1999–2000. The conduct of monetary policy in 2001 will be related in the same way in the future primarily to inflation outcomes in 2002–03.

The Riksbank's target is formulated in terms of the CPI. During the period considered here, however, monetary policy was based on assessments of UNDI<sub>X</sub> inflation. This measure of inflation is not affected by either house mortgage interest expenditure or changes in indirect taxes and subsidies. Although the effects of these items on the CPI have often been substantial, they have been judged to be transitory, giving rise in the first place to one-off changes in the price level. Normally, therefore, they should be accorded less importance in the formulation of monetary policy.<sup>34</sup>

The rule of action normally used by the Riksbank is briefly as follows. If forecast inflation, based on an unchanged repo rate, is above/below 2 per cent one to two years ahead, the repo rate shall normally be raised/lowered so as to fulfil the target. It should be underscored that the rule is not applied mechanically. One example is when transitory effects on inflation are judged to disappear without generating contagious effects on other prices or inflation expectations. Another is if a rapid return to the inflation target after a sizeable deviation would entail large macroeconomic costs. There may also be grounds for assigning some weight to developments before as well as after the target horizon of one to two years.

34 See "The Riksbank's inflation target – clarifications and evaluation", Sveriges Riksbank memorandum 1999-00351 DIR, 4 February 1999.

Figure B17. CPI and UND1X inflation 1993–2001.  
Per cent, 12-month rate



Source: Statistics Sweden.

Simplifying somewhat, by adjusting the repo rate the Riksbank influences other interest rates in the Swedish market. Via these market rates there is an influence in turn on economic activities such as corporate investment and household consumption and thereby ultimately on price developments. Monetary policy may also affect inflation via the exchange rate in that exchange rate movements influence demand and investment in activities that are dependent on foreign trade and also impinge on the prices of imported goods and services.

The tolerance interval of  $\pm 1$  percentage point primarily serves to clarify that deviations from the target are probable. At the same time, the interval expresses the Riksbank's ambition to limit such deviations.

Like other predictions, the inflation forecasts that guide monetary policy contain elements of uncertainty. The assessment of economic activity and inflation in the main scenario is therefore accompanied by a regular appraisal of uncertainties in the forecast. In the Inflation Report this is illustrated, for instance, with an uncertainty interval for different inflation outcomes. The uncertainties and risks in the assessment are likewise of central importance for monetary policy. If the uncertainty is unusually great, for instance, there may be stronger grounds for formulating monetary policy more cautiously.

### Inflation in relation to the target

In the period 1970–92 annual inflation in Sweden averaged about 8 per cent, which was high compared with the rest of the world. Since the introduction of the inflation target, average inflation has stayed inside the tolerance interval. In the period 1993–2001 CPI and UND1X inflation averaged 1.8 and 2.2 per cent, respectively. The corresponding averages since January 1995, when the target became formally operational, are 1.3 and 1.8 per cent.

During 2001, CPI and UND1X inflation averaged 2.6 and 2.8 per cent, respectively (Fig. B17). These average outcomes are 0.6 and 0.8 percentage points, respectively, above the 2 per cent target.

The deviations from the target raise a number of important issues. What were the forecasts in 1999–2000 on which the Riksbank based its policy at that time? What were the prevailing arguments about economic developments? Was there any information that ought to have led the Riksbank to a different assessment of inflation and thereby a different monetary policy? Some key forecasts and the accompanying monetary policy decisions are summarised in Table B13; the UND1X inflation forecasts in 1999–2000 are shown in Fig. 18.

**Table B13. The Riksbank's monetary policy decisions and selected forecasts.**

Date of decision	UND1X inflation forecast, main scenario (annual average 2000; 2001)	GDP growth forecast, main scenario (1999; 2000; 2001)	Uncertainty in inflation assessment	Risk-adjusted inflation forecast (annual average 2000; 2001)	Repo rate	Repo rate adjustment
1999-01-24					3.40	0
1999-02-11					3.15	-0.25
1999-02-25					3.15	0
1999-03-24	1.8 ; 1.8	2.1; 2.5; n.d.	Somewhat more than normal	1.7 ; 1.6	2.90	-0.25
1999-04-08					2.90	0
1999-04-22					2.90	0
1999-05-06					2.90	0
1999-05-20					2.90	0
1999-06-02	1.8 ; 1.9	2.5; 3.0; 3.0	Somewhat more than normal	1.8 ; 1.9	2.90	0
1999-06-17					2.90	0
1999-07-01					2.90	0
1999-08-12					2.90	0
1999-08-26					2.90	0
1999-10-05	1.8 ; 1.9	3.6; 3.8; 3.0	Normal	1.9 ; 2.0	2.90	0
1999-11-11					3.25	0.35
1999-12-08	1.8 ; 2.1	3.4; 3.7; 3.3	Normal	1.9 ; 2.2	3.25	0
2000-02-03					3.75	0.50
2000-03-22	1.6 ; 1.8	n.d.; 4.0; 3.5	Normal	1.6 ; 1.8	3.75	0
2000-05-04					3.75	0
2000-06-07	1.2 ; 1.6	n.d.; 4.3; 3.5	Normal	1.2 ; 1.7	3.75	0
2000-07-06					3.75	0
2000-08-16					3.75	0
2000-10-09	1.4 ; 1.5	n.d.; 4.0; 3.7	Normal	1.5 ; 1.7	3.75	0
2000-12-06	1.4 ; 1.7	n.d.; 3.9; 3.4	More than normal	1.6 ; 2.1	4.00	0.25

Note. Forecasts during the period were published only in the Inflation Report, which is issued four times a year, while monetary policy meetings are normally held eight times a year. For motivations of repo rate adjustments, see the text below. n.d. = no data.

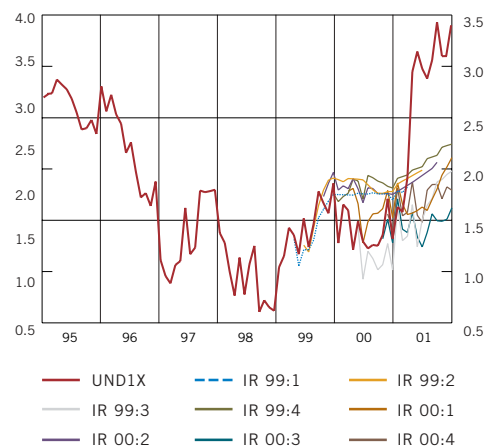
## Assessments behind monetary policy 1999–2000

At the monetary policy meetings in February and March 1999 the Executive Board found that inflation prospects motivated a repo rate cut of 0.25 percentage points on both occasions. The forecast of UND1X inflation one to two years ahead was somewhat below the Riksbank's target. At the meetings from April to October the Board judged that inflation was moving in line with the target.

In November 1999 the monetary policy meeting concluded that new information pointed to inflation being marginally higher than forecast in the October Inflation Report, where the main scenario had pointed to UND1X inflation two years ahead being 2.1 per cent; with the risk spectrum taken into account, the mean value was judged to be 0.1 percentage point higher. The upside risk had to do with shortages in the labour market that were liable to lead to higher wage increases and thereby higher inflation than in the main scenario. The Executive Board considered that the Swedish economy was in a broad upward phase with successively rising resource utilisation and this was judged to imply higher

**Figure B18. The Riksbank's UND1X forecasts and outcomes.**

Per cent, 12-month rate



Note. For a discussion of the forecasts prior to 1999, see the March 2000 and March 2001 Inflation Reports.

Sources: Statistics Sweden and the Riksbank.

inflation than foreseen in the Inflation Report. Against this background, the Board decided to rise the repo rate 0.35 percentage points. The Board also announced that the interest rate would probably not be adjusted at the next monetary policy meeting; the Riksbank wished to avoid adding to the financial market uncertainty about IT systems, for example, in connection with the millennium transition.

At the new millennium's first monetary policy meeting it was noted that during the end of 1999 import and home market prices had risen somewhat more than expected. The Board accordingly considered that the rising producer prices could lead to inflationary pressure being somewhat stronger than foreseen in the December Inflation Report. Moreover, the development of oil prices during the past year had contributed to the higher inflation. This raised the question of whether it was a case of supply shocks that should carry less weight in the formulation of monetary policy as opposed to an increase occasioned by higher international demand. The Board finally concluded that the effect of the oil price on general price developments could not be entirely disregarded. Moreover, the strong trend in the United States called for an upward revision of growth there compared with the assessment in the Inflation Report. The Board's overall conclusion was that the expansionary direction of monetary policy was contributing to a risk of inflation exceeding the target. On this basis, the Board raised the repo rate 0.5 percentage points.

In the light of the current inflation forecasts, at the monetary policy meetings from March to October 2000 the Executive Board decided to leave the repo rate unchanged. On these occasions a majority of the Board members concurred with the picture of a stable and strong upward phase in the Swedish economy, with unutilised resources being brought into production to a growing extent. A number of members underscored that this pointed to a future need to raise the repo rate. In the July minutes it was noted that the wage trend was in line with the latest Inflation Report. The August minutes stated that the Board found that new information since the Inflation Report supported the picture of a strong upward phase but that growth in the current year could turn out to be somewhat lower than envisaged earlier, partly in view of a somewhat weaker first-half outcome and the poor Q2 performance of the Stockholm stock exchange. The October minutes again asserted the picture of a strong domestic upswing. Inflation was not forecast to be higher because the Board considered that the degree of unutilised resources in the economy seemed to be somewhat greater than allowed for earlier.

Autumn 2000 was characterised by financial unrest and more subdued international prospects. At the monetary policy meeting in December 2000 the Board found that new statistics confirmed that global activity was slackening as expected. But it was also noted that oil prices and the exchange rate were now increasingly clear upside risks for inflation in the coming years. A majority of Board members also considered that wage developments

constituted an upside risk that was countered to only some extent by the risk of weaker activity abroad. The overall upside risk for inflation two years ahead was judged to be about 0.4 percentage points, giving a risk-adjusted forecast of UNDI<sub>X</sub> inflation of 2.3 per cent or somewhat above the target. Against this background, the Board decided to raise the repo rate 0.25 percentage points.

To sum up, a strong upward phase abroad and in Sweden characterised 1999 and 2000. The appraisal of external activity was coloured by the robust trend in the United States. At the same time, the Board pointed out that the imbalances in the American economy constituted risks that had been weighted into the assessments of developments in Sweden. Not until the autumn of 2000 did signs begin to appear that the American economy was moving into a slowdown and it was not until the spring of 2001 that most forecasters began to revise their assessments of GDP in the United States.

The strong growth trend in the United States up to the end of 2000 was accompanied by subdued price tendencies abroad as well as in Sweden. Although the Swedish krona's TCW index was weak for much of the period, imported inflation was low. This raised difficult questions both about the relationship between the degree of unutilised resources and inflation and about the exchange rate's impact on inflation, questions that the Board had to consider in its monetary policy deliberations. Inflation was repeatedly lower than had been forecast earlier. This prompted a marginal positive revision of the Board's view of the relationship between growth and inflation in a wide sense. Similar revisions had been made on a number of occasions since the mid 1990s in the light of new information about economic developments in Sweden.

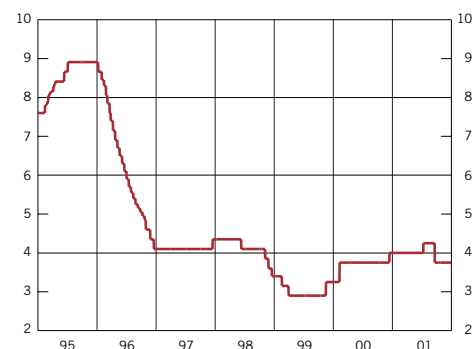
All in all, from November 1999 to December 2000 the repo rate raised was raised by a total of 1.1 percentage points (Table B13, Fig. B19).

### Evaluation of forecasting errors for 2001

During 2001 both CPI and UNDI<sub>X</sub> inflation were about 1 percentage point higher than had been predicted by forecasts presented in 1999 and 2000 on the basis of the normal assumption of an unchanged repo rate. In the period 1999–2000 the repo rate was adjusted five times (Table B13). The formulation of monetary policy was based, as mentioned above, on an assessment of inflation prospects one to two years ahead in the main scenario. In the formulation of monetary policy, the risk spectrum was also taken into account.

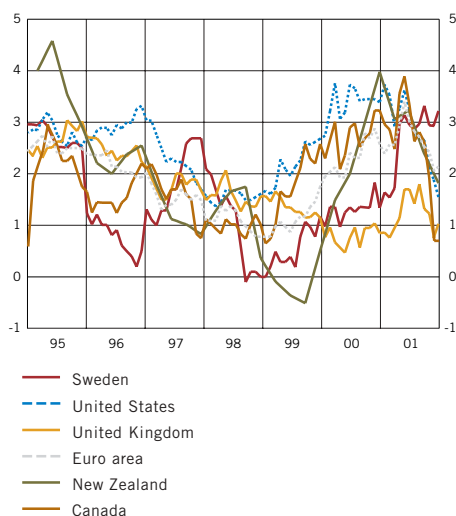
When inflation rose unexpectedly strongly in spring 2001 it was considered that to a large extent this had to do with factors of a transitory nature, for example shocks connected with supply. Meat prices rose sharply as a result of livestock diseases; electricity prices also increased markedly, partly as a normalisation after the major price cuts the year before when the electricity market was deregulated but also because, for example, unusually little

**Figure B19. The Riksbank's repo rate.**  
Per cent



Source: The Riksbank.

Figure B20. Inflation in selected countries  
1995–2001.  
Per cent



Note. HICP inflation for EU countries, otherwise CPI.

Source: Hansson & Partners AB.

snow the previous winter led to a shortage of water for hydroelectric power. Moreover, problems with production at oil refineries resulted in rapidly rising petrol prices.<sup>35</sup> The weather in Europe last autumn pushed up prices for fruit and vegetables. The development of prices for these items is presented separately in Fig. B2.

It was noted as early as in May 2001, however, that even with a correction for these supply shocks, the outcome for inflation was higher than the forecasts that had been published in 1999 and 2000. Against this background it was observed that the Riksbank's appraisal of the relationship between growth and inflation in a wide sense in the preceding years may have been somewhat too optimistic. One approach to assessing the forecasting errors involves analysing the forecasts for other variables that are considered to be important for inflation: domestic and international GDP growth, the exchange rate, unit labour costs, oil prices and so on.

#### RESOURCE UTILISATION

Resource utilisation's main effect on inflationary pressure is assumed to be lagged one year. This means that for the assessment of inflation in 2001 it was the appraisal of resource utilisation (the output gap) in 1999 and, above all, 2000 that was most relevant. Can the explanation for the high inflation in 2001 stem from a misjudgement of resource utilisation in these two years?

The GDP growth forecasts that were presented during 1999 underestimated the 2000 outcome by an average of about 0.4 percentage points. Compared with the historical forecasts for Sweden's GDP, this is a small error. This underestimation of GDP growth can explain one or two tenths of a percentage point of the error in the forecast of UNDI<sub>X</sub> inflation in 2001. The GDP forecasts for 2000 that were presented in the course of 2000 amounted instead to an overestimation of about 0.5 percentage points, which means that these forecasting errors had the wrong sign to explain the erroneous forecast of inflation in 2001.

But even if misjudgements of growth in the years in question do not seem to account for the errors in forecasting inflation, it is conceivable that the explanation lies in the assessments of resource utilisation. This could be a consequence of the potential growth rate actually being lower than calculated earlier and/or of the economy early in 1999 already being closer to the capacity utilisation that entails a risk of accelerating inflation. It is still too early to express more than a preliminary opinion about this. But there are some signs that it could be so, apart from the increase in underlying inflation excluding transitory effects. Wage increases during 2001, for example, were comparatively high.

35 For a more detailed discussion of effects from deregulations, rents and meat prices see *Inflation Report* 2001:2 and 2001:4, box on pp. 27–28 and 6–7, respectively.



## INTERNATIONAL PRICES

Inflation was low internationally in the period 1996–2000 and the level in Sweden was below that in many of the largest OECD countries (Fig. B20). In 2001, however, the picture was reversed and inflation in Sweden exceeded the rate in the euro area, for example. Still, as the figure shows, the paths of inflation have some things in common. In the United States, the euro area and Sweden the upward tendency has come mainly from rising prices for services (Fig. B21). In the case of goods, the price rise in Sweden has been more or less below that in the euro area and the United States ever since the end of 1998 and up to the second half of 2001 (Fig. B22). During 2001 Swedish prices for goods were pushed up by, for example, electricity prices (see the box on pp. 14–17). All in all, the increase in inflation occurred later in Sweden and was more pronounced than elsewhere when the downward price effects of the deregulations of electricity and telecom markets gradually had less damping effects on price movements.

## EXCHANGE RATE

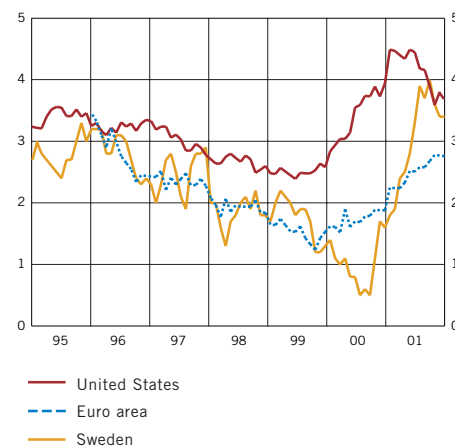
The Swedish krona's TCW exchange rate has been weaker than was assumed in the Inflation Reports that were published in 1999 and 2000. Some estimation results indicate that in the first year after the shock, about 17 per cent of a temporary exchange rate movement is passed through to consumer prices for goods that are mainly imported.<sup>36</sup> Most of the Riksbank's forecasts in 1999 and 2000 envisaged, however, that the krona would become permanently stronger; the highest expected appreciation amounted to 6 per cent, though a depreciation of 1 per cent was forecast in Inflation Report 2000:4. The outcome during 2001 was a depreciation of 9.3 per cent. However, the forecasting error due to the weak exchange rate's effect on import prices was partly countered by an unexpectedly favourable development of oil prices and international export prices. Moreover, the exchange rate pass-through to consumer prices may have been smaller than the above-mentioned estimation implies. All in all, therefore, the forecasting error for import prices makes just a small contribution to the total error in forecasting inflation.

## UNIT LABOUR COSTS

Since the early 1990s the rate of wage increases in Sweden has been adjusted to levels that are more reasonable for the longer run. Still, wage increases have been higher than what the Swedish economy can probably cope with in the longer run without pushing price pressure up. They have also been higher than for a number of Sweden's trading partners. In 2000 unit labour costs were generally somewhat lower than had been foreseen earlier. Unit labour costs in 2001, on the other hand, were underestimated, mainly because productivity turned out to be unexpectedly weak but also because wage outcomes exceeded expectations.

36 See *Inflation Report* 2001:3, box on pp. 8–11.

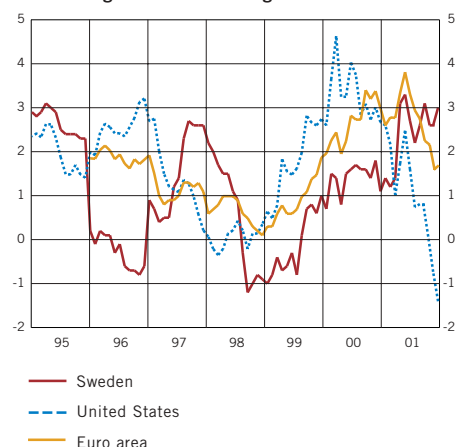
Figure B21. Services prices.  
Percentage 12-month change



Note. HICP for the euro area and Sweden.

Sources: Eurostat and U.S. Bureau of Labor Statistics.

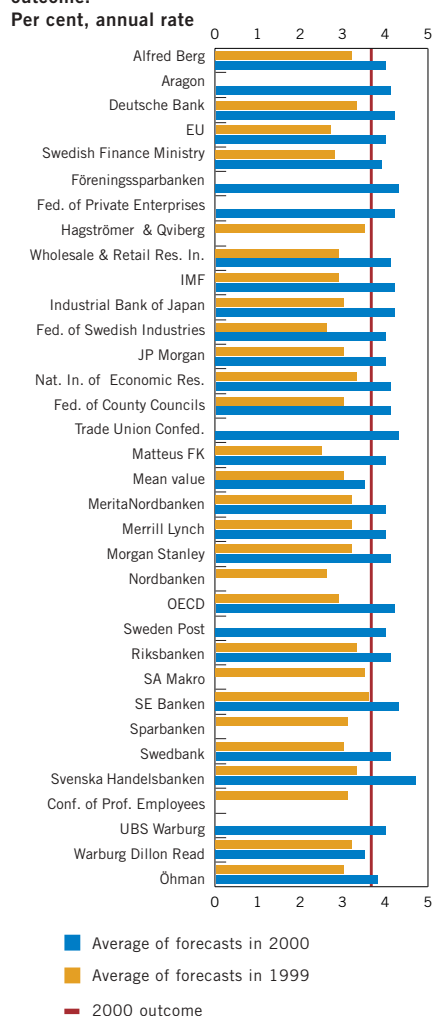
Figure B22. Goods prices.  
Percentage 12-month change



Note. HICP for the euro area and Sweden.

Sources: Eurostat and U.S. Bureau of Labour Statistics.

**Figure B23. Average of the GDP forecasts for 2000 that the Riksbank and other forecasters presented in 1999 and 2000, and the 2000 outcome.**



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

To sum up, a substantial part of the increase in inflation during 2001 can be explained by transitory supply-related factors that could hardly have been predicted. But even when these factors are excluded, the increase in inflation is surprisingly rapid. There is no simple explanation for this. It seems probable that in recent years the Swedish economy has been closer to full capacity utilisation. At the same time the exchange rate has been weaker than expected. Together with relatively depressed profits, this has probably entailed upward pressure on inflation from costs. Meanwhile, demand – particularly for domestic services – has been such that price increases have been feasible.<sup>37</sup>

### Other forecasters

An additional way of examining whether the Riksbank ought to have predicted the relatively high inflation in 2001 is to look at whether other forecasts differed from those of the Riksbank. As will be seen from Fig. B23, the forecasting corps predicted 2000 GDP growth fairly uniformly. The forecasts that were presented in 1999 and 2000 were only a few tenths of a percentage point above or below the outcome. This means that with few exceptions, other forecasters' picture of growth prospects was not essentially different from that of the Riksbank.

Inflation in 2001 was underestimated by virtually every forecaster (Fig. B23). The Riksbank's inflation forecasts during 2000 were somewhat below the average for other forecasters.<sup>38</sup> The general picture is that forecasters did not predict the increase in inflation during 2001 until after it had happened (Fig. B25).

In an international perspective the errors in the Swedish inflation forecasts are not remarkably large.<sup>39</sup> In a number of major OECD countries the errors in inflation forecasts during the whole of the 1990s average from 0.5 to 1.0 percentage points.<sup>40</sup> The forecasting error for 2001 inflation in Sweden is actually somewhat smaller than the historical average for a large number of forecasters in the period 1995–2000.

37 Another approach would be to use econometric models. For example, a simple model-based forecast (see *Inflation Report* 2001:4, box on pp. 38–41) does not provide an explanation for the 2001 inflation outcome, which provides further support for the interpretation that it had to do, at least to some extent, with unforeseeable shocks. See also the box on pp. 14–17 in this Report.

38 The 2000 forecast from SEB and the 2001 forecast from the Federation of Swedish Industries are fairly close to the outcome. An accurate prediction in a single year does not necessarily imply a good forecasting ability over a longer period. A study found that the best performer in the period 1995–2000 was Aragon Fondkommission but they were not particularly close to the mark in 2001 (see the next note).

39 Blix, M., Wadefjord, J., Wienecke, U. & Ådahl, M. (2001), How good is the forecasting performance of major institutions?, *Sveriges Riksbank Economic Review* 3, pp. 38–68.

40 Measured as the root mean square error (RMSE), which is based on the root of a mean of squared forecasting deviations.

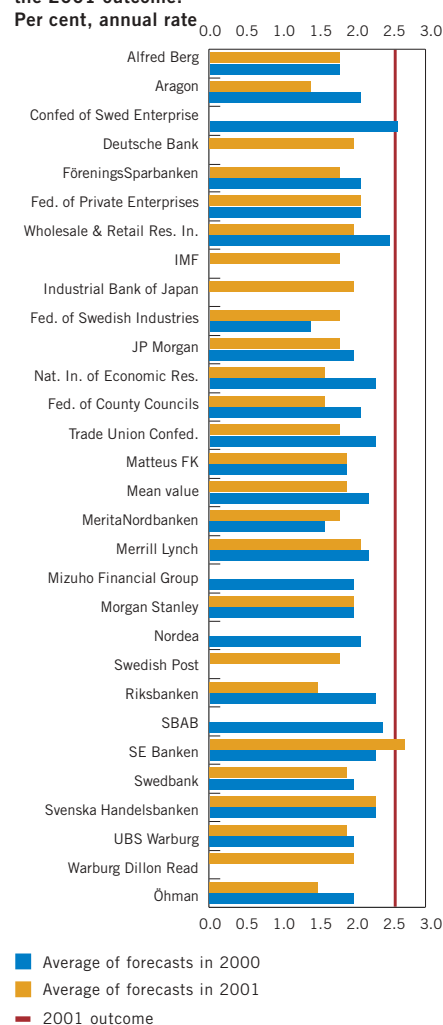
## Forecasts for 2000

The forecasts and assessments that guided monetary policy in 1999, with the subsequent effect on inflation in 2000–01, were discussed at length in the March 2001 Inflation Report. The information that has become available since then does not provide grounds for altering the conclusions about 2000. The general picture is that the forecasting errors for 2000 are historically small.

## Summary

Some conclusions can be drawn from this evaluation. Inflation in 2001 was underestimated in the Riksbank's forecasts. One reason for this is presumably that resource utilisation in the period was somewhat higher than the Riksbank counted on; together with a weaker exchange rate, this generated higher price pressure. To a large extent, however, the forecasting errors were occasioned by a series of unfavourable supply shocks. With few exceptions, other forecasters did not present an appreciably different picture of inflation prospects. Neither did inflation expectations among households and manufacturing firms indicate higher inflation, which in itself shows a high degree of confidence in the inflation target (Fig. 39 on p. 46). Both CPI and UNDI<sub>X</sub> inflation exceeded the target but in spite of the supply shocks their average rates have been inside the tolerance interval. Rule-based estimations (see the box on pp. 60–64) show that the Riksbank has acted symmetrically and has not deviated appreciably from its behaviour in recent years.

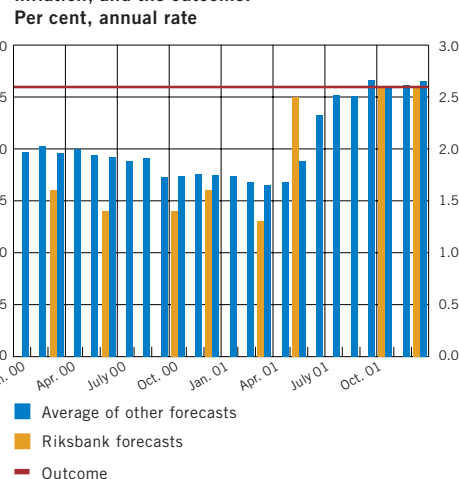
**Figure B24. Average of the inflation forecasts for 2001 that the Riksbank and other forecasters presented in 2000 and 2001, and the 2001 outcome.**



Note. The number of published forecasts varies between the institutions.

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

**Figure B25. The Riksbank's forecasts and the average of other institutions' forecasts of 2001 inflation, and the outcome.**



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

## MONETARY POLICY AND SIMPLE RULES

During the past decade it has become increasingly common for central banks to have an explicit target for monetary policy. In Sweden, the Riksbank has targeted a 2 per cent rate of annual CPI inflation since January 1993.<sup>41</sup> For several reasons, however, deviations from such targets are inevitable.

For one thing, monetary policy is incapable, at least in the short run, of keeping inflation exactly at a particular level. An economy is constantly being hit by shocks whereby price movements affect the CPI before the Riksbank has time to counter them. Secondly, even if it were possible to hold inflation at a given level all the time, this would not be desirable. This is often illustrated in terms of an economy's reaction to oil price increases. The latter lead to higher inflation, at least in the short run, at the same time as they may tend to subdue output and employment. If monetary policy were to concentrate on eliminating the upward effect on inflation by raising the interest rate, this would exacerbate the downward effects on output and employment. Such problems can be taken into account by adjusting monetary policy gradually with a view to fulfilling the inflation target in the coming year or two. The same applies to other supply shocks, including those that lead to lower inflation (e.g. deregulations that result in lower prices).<sup>42</sup> Thirdly, our knowledge of monetary policy's exact effects is incomplete. Thus, in retrospect one can say that an alternative path for the interest rate could have resulted in inflation being closer to the target.

The extent to which the Riksbank's monetary policy can be described by an econometric estimation of a simple rule of thumb is studied here, along with conceivable interpretations in the light of the interest rate policy during 2000.

An evaluation of monetary policy requires access to details concerning the nature of the policy target, the information available to the central bank and other policy considerations. That is one reason why the Riksbank and other central banks with an explicit inflation target invest considerable resources in explaining how

41 The target was announced in January 1993 but was not operational before 1995. It is accompanied by a tolerance interval of  $\pm 1$  percentage point in recognition of the fact that deviations from the target have to be accepted.

42 The conditions under which deviations from the inflation target are deliberately permitted have been discussed, for example, in a clarification that was published early in 1999 ("The Riksbank's inflation target – clarifications and evaluation", Sveriges Riksbank memorandum 1999-00351 DIR, 4 February 1999).

monetary policy is conducted (e.g. in the publication of inflation reports, minutes of meetings and forecasts).

An increasingly common approach to the analysis of monetary policy in different countries is to compare actual policy with the application of simple rules for setting the interest rate. This is done most often with a so-called Taylor rule, which states that at a given point in time the interest rate is set in the light of current inflation and an indicator of the prevailing level of capacity utilisation (usually the output gap, that is, GDP's deviation from the estimated trend).<sup>43</sup> Besides its simplicity, a Taylor rule has become popular for other reasons. One is that it appears to be a relatively good approximation of monetary policy in many countries, at least when allowance is made for some rigidity in the path of the interest rate. The fact that the interest rate at a given time is explained not just by current inflation and actual capacity utilisation but also by the interest rate in the previous period is usually interpreted as an indication that central banks prefer to avoid large interest rate fluctuations.<sup>44</sup> Another reason is the theoretical grounds for believing that a Taylor rule gives good outcomes.<sup>45</sup> Provided the central bank reacts to actual inflation systematically and sufficiently strongly, the inflation target should be fulfilled. Taking capacity utilisation into account can be justified both by its influence on future inflation and because the central bank may consider that a stable economic development is intrinsically worthwhile. However, the simplest type of Taylor rule also has drawbacks because it does not use all the information about future inflation that a central bank can include in its basis for monetary policy.<sup>46</sup>

The Riksbank customarily states that in simple terms its monetary policy is governed by a rule of thumb that differs somewhat from a Taylor rule. The Riksbank's inflation forecasts refer to the coming one to two years.

43 Taylor, J.B. (1993), Discretion versus policy rules in practice, *Carnegie-Rochester Conference Series on Public Policy* 39, pp. 195–214.

44 A problem here is that many studies of how well a Taylor rule can explain actual policy start from information (e.g. revised data) that differs from what was available to the central bank when it made its decisions; see e.g. Orphanides, A. (2001), Monetary policy rules based on real time data, *American Economic Review* 91, pp. 964–985.

45 Woodford, M. (2001), The Taylor Rule and Optimal Monetary Policy, Michael Woodford's homepage: [www.princeton.edu/~woodford/](http://www.princeton.edu/~woodford/), January 2001.

46 This is also an important reason for a central bank to publish clear inflation forecasts in inflation reports. For a discussion of Taylor rules and other more forward-looking rules, see e.g. Svensson, L.E.O. (2001), What is wrong with Taylor rules? Using judgement in monetary policy through targeting rules, *Princeton University Working Paper*.

If forecast inflation one to two years ahead is above the targeted rate, the repo rate is normally raised and vice versa. Such a forecast-based rule avoids some of the drawbacks of the simple Taylor rule.

In formal terms, the Riksbank's rule of thumb can be expressed as the following equation for deciding the repo rate:

$$i_t = a + bi_{t-1} + c(\pi_{t+1}^F - 2) + d(\pi_{t+2}^F - 2) + e_t, \quad (1)$$

where  $i_t$  is the repo rate in period  $t$ ,  $\pi_{t+1}^F$  and  $\pi_{t+2}^F$  are the Riksbank's forecasts of inflation one and two years ahead and  $e_t$  is the degree of the Riksbank's deviation from the rule in period  $t$ . An estimation of this rule on data for the repo rate and the Riksbank's forecasts from 1993 Q1 to 2001 Q2 gives the following results:<sup>47</sup>

$$i_t = 1.29 + 0.66i_{t-1} + 0.50(\pi_{t+1}^F - 2) + 0.26(\pi_{t+2}^F - 2) + e_t, \quad (2)$$

(0.24)      (0.05)      (0.19)      (0.19)

where the repo rate in the preceding quarter has been included as an additional explanatory variable. The regression can explain 98 per cent of the repo rate's variation. The repo rate's actual path is compared in Fig. B26 with the adjustments that would have occurred if the Riksbank had applied the rule mechanically. Thus, the differences between the actual path and the 'offshoots' represent the estimated residuals  $e_t$ . For clarity's sake the residuals are presented separately in Fig. B27. Considering the rule's simplicity, the deviations from it must be said to be small. Another point worth noting is that the picture of how closely a simple rule can explain the Riksbank's behaviour largely holds even when the rule is specified differently, using other forecasts from the Riksbank's Inflation Report. The results are much the same when, for instance, the forecast of inflation one year ahead is replaced by the GDP growth forecast for the current year, or when forecast inflation two years ahead is replaced by forecast GDP growth one year ahead.<sup>48</sup> This has to do with the strong correlations between the different forecasts.<sup>49</sup>

47 The regression is done with the natural logarithm of  $(1+R/100)$ , where  $R$  is the repo rate in percentage points. The inflation forecasts refer to inflation per calendar year (December–December). The figures in parentheses are the estimated standard error. The explanatory value of the regression ( $R^2$ ) is 0.98.

48 This rule is estimated in Jansson, P. & Vredin, A. (2000), Forecast-based monetary policy in Sweden 1992–1998: a view from within, *Sveriges Riksbank Working Paper* 120; the paper also includes a more detailed discussion of various statistical and methodological problems.

49 This is also a conceivable explanation for the two-year forecast's lack of significance in (2).

The notion that the estimated rule (2) can be seen as expressing the Riksbank's interest rate decisions raises the question of whether the deviations from the rule are simply random as opposed to representing a deliberate choice in monetary policy. In an evaluation of monetary policy in recent years it is particularly interesting to consider the negative deviation in 2000 Q2.<sup>50</sup> Why did the Riksbank raise the interest rate by less in this quarter than the simple rule proposed?

A general explanation for deviations may be that since the introduction of the inflation target, the Riksbank's policy has undergone minor shifts. The rule presented above has been estimated on data for the whole period 1993–2001 but it is well-known that in the early years with the new regime, monetary policy was conducted somewhat differently compared with recent years. The problem of credibility was primarily bound up initially with the government finances and the exchange rate. Moreover, inflation expectations derived from bond prices were clearly above the target. Furthermore, monetary policy in those days was not based so explicitly on inflation forecasts. Consequently, forecast-based rules estimated on data for the entire period from 1993 onwards may give a misleading picture of actual policy, both its systematic component and the so-called deviations.

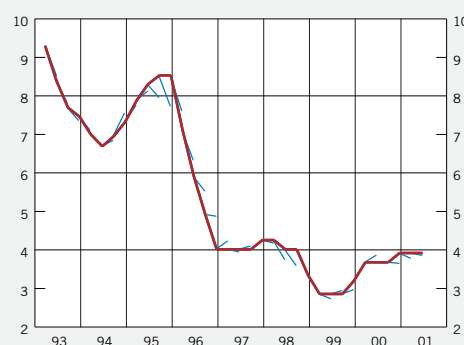
The Riksbank's approach to analysing and reacting to inflation has also changed over time for other reasons. Today, inflation is regularly forecast on a monthly basis for the coming two years, whereas earlier it was forecast only per calendar year, which is why the latter forecasts have been used for estimating the rule.

At the time of Inflation Report 2000:2 it was judged that inflation in 2002 as a whole (December–December) would amount to 2.7 per cent but in June the forecast rate of inflation 24 months ahead was close to 2 per cent.<sup>51</sup> This may be one reason why the simple rule, estimated on calendar-year forecasts, points to a policy that is tighter than was actually the case in 2000 Q2. At the same time, even when forecast inflation two years ahead is replaced by forecast GDP growth one year ahead, the estimations indicate that policy was actually somewhat less restrictive than implied by the rule for both Q2 and Q3 in 2000.

50 The deviations during 1999 might be relevant, too, but unlike those during 2000 they turn out to be rather different for alternative and equally plausible specifications of the interest rate rule.

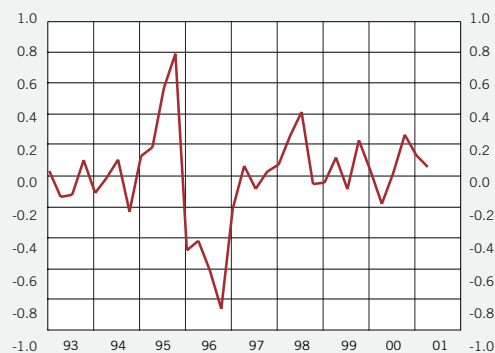
51 The data used here refer to CPI forecasts. At the time of this Report the CPI forecast for December 2002 was affected by an assessment of interest expenditure. The corresponding forecast for UNDI<sub>X</sub> was just over 2 per cent.

**Figure B26. The repo rate and the deviations from the forecast-based rule.**  
Per cent



Source: The Riksbank.

**Figure B27. Deviations from the forecast-based rule.**  
Percentage points



Source: The Riksbank.

Furthermore, a review of inflation reports and minutes of the Executive Board's monetary policy meetings from June to October 2000 shows that arguments were put forward in favour of a more contractive policy than was actually implemented. The question was not so much whether to raise the repo rate as when.

Thus, there are a number of conceivable explanations for the Riksbank not raising the interest rate during 2000 as much as the simple rule suggested. The account above shows both that simple rules can be useful in an analysis of actual monetary policy and that it is also important to consider details in the basis for monetary policy decisions that the simple rules cannot catch.