Sveriges Riksbank Inflation Report March 1999

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Foreword

Monetary policy is targeted on keeping inflation at 2 per cent, with a tolerance of ± 1 percentage point for deviations from this level.

The purpose of the Inflation Report is to provide a basis for monetary policy decisions and to make the Riksbank's deliberations known to a wider public, so that monetary policy is easier to follow and understand. It is also intended to encourage a discussion of matters relating to monetary policy.

The amended Riksbank Act (1988:1385) requires that as of 1999 the Riksbank presents a written account of monetary policy to the Riksdag's Standing Committee on Finance at least twice a year (Chapter 6, Article 4). The Riksbank has chosen to use the Inflation Report for this purpose.

The arrangement of this Report is the same as previously. Chapter 1 deals with developments in prices and in financial markets since the previous Report. The assessment of inflation prospects in the coming twenty-four months is presented in Chapter 2, which is structured to follow a simple inflation model to clarify the main factors in this context. The Report's conclusions are presented in Chapter 3. The Report also contains a number of boxed texts, the purpose of which is to provide more detailed insights into matters of importance for inflation assessments and the formation of monetary policy. Some of the underlying statistical material is presented in an annex.

The Report reproduces the basic features of the presentations and discussions of monetary policy at the Executive Board meetings on 11 and 18 March 1999. It accordingly formed the background to the Board's monetary policy decision on 24 March 1999. The minutes of the Board meeting on 24 March will be published on 3 May 1999.

Stockholm, March 1999

Urban Bäckström Governor of Sveriges Riksbank

Summary

Since the December Inflation Report consumer prices and underlying inflation have both broadly followed the expected paths. In February 1999 the 12month change in the CPI was –0.2 per cent. It was mainly transitory effects and import prices that had a downward effect but the domestic price rise was also moderate.

This Report presents the Riksbank's appraisal of inflation up to and including 2001 Q2. In order to clarify the consequences for the formation of monetary policy, the analysis presupposes that the repo rate is left unchanged. This technical assumption underlies the man scenario for the path of inflation, accompanied by an assessment of uncertainties.

The main factors that condition inflation are:

International activity and inflation. International economic prospects have become marginally more subdued but the picture is not entirely uniform. In the euro area, which is highly important for Swedish exports, economic activity has tended to slow but in parts of Asia there are signs of a stabilisation and the strong trend in the United States is continuing. International price tendencies have been weaker than expected. External inflationary pressure, via import prices, is judged to be somewhat lower than envisaged in the December Report.

Demand relative to supply. The main scenario incorporates growth prospects that are still good. While the international slowdown is expected lead to somewhat slower economic growth in Sweden compared with 1998. A successive increase is foreseen in domestic demand, partly in view of comparatively low interest rates. Together with a gradual recovery of international activity, this points to GDP growth rates of

over 2 per cent in 1999 and approximately 2.5 per cent in 2000. Notwithstanding relatively good growth, even two years ahead the economy will probably still have unutilised resources, which indicates low underlying inflationary pressure. The annual rate of wage increases is judged to average 3.5 per cent.

Transitory effects. Altered indirect taxes and subsidies, together with declining house mortgage interest costs, are judged to have downward effects on the CPI of 0.5 percentage points twelve months ahead and 0.2 percentage points in twenty-four months time.

Inflation expectations, as manifested in financial market prices and survey data, have continued to fall and point to very low inflation in the coming twelve months. In the longer run the expectations indicate a rate of inflation that is well in line with the target.

■ In the main scenario, CPI inflation is judged to be below the 2 per cent target and amount to 1.1 per cent twelve months ahead and 1.4 per cent in twenty-four months time. The weak trend is partly a consequence of transitory factors that are not considered to have a lasting effect on inflation and therefore do not affect the formation of monetary policy. Excluding effects from changes in indirect taxes, subsidies and interest expenditure, the rate of inflation measured by UND1X is judged to be 1.7 per cent twelve months ahead and 1.8 per cent after twenty-four months.

■ The risk spectrum must also be considered in the formation of monetary policy. On the whole, the situation is about as difficult to assess as at the time of the December Report. The global financial market unrest has admittedly subsided but the development of international economic activity remains highly

uncertain and has grown, if anything, in the past month in connection with statistics showing strong activity in the United States. All in all, the inflation assessment is considered to contain some downside risk on account of an international trend that is weaker than envisaged in the main scenario.

■ The assessment leads to the conclusion that, after adjustments for transitory effects from indirect taxes,

subsidies and interest rates, the rate of inflation twelve to twenty-four months ahead will be somewhat below the Riksbank's target. In relation to the uncertainty associated with such assessments, however the deviation from the target is not sizeable. At the same time, the risk of inflation being somewhat lower than in the main scenario is judged to be greater than the risk of a higher rate.

Developments since the December Report

Economic developments since the previous report are discussed in this chapter, starting with the picture of inflation in recent months and concluding with an account of recent movements in interest rates, the exchange rate and various money and credit aggregates.

Prices

CONSUMER PRICES HAVE CONTINUED TO FALL The consumer price tendency since the December Report has been weaker than expected. In February 1999 the 12-month rate of CPI inflation was -0.2per cent (Fig. 1). A price fall for petroleum-related products that exceeded expectations contributed to this. Moreover, since the beginning of December the Riksbank has lowered the repo rate a total of 0.45 percentage points, which has had a downward effect on household interest expenditure. These changes have been largely offset by a stronger increase than expected in certain domestic prices, including a rise of over 21 per cent in dental charges in connection with a deregulation at the turn of 1998 (Fig. 2).

The consumer price tendency since the December Report has been weaker than expected, partly as a result of lower interest expenditure.

In the past six months the rate of inflation in Sweden has been lower than in most other EU countries. In

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



Note. UND1X is defined as the CPI excluding interest expenditure and direct effects of altered indirect taxes; UNDINHX is the CPI excluding interest expenditure, goods that are mainly imported and direct effects of altered domestic indirect taxes. The horizontal lines from 1995 onwards represent the Riksbank's tolerance interval for the annual change in the CPI. Source: Statistics Sweden.

February the annual change in the internationally harmonised index of consumer prices (HICP) was 0.2 per cent (Fig. 2). Declining import prices and indirect tax cuts in Sweden have neutralised the price rise for charges and miscellaneous services, which has been strong compared with other EU countries.

Underlying inflation, measured by UND1X, has broadly followed the path expected in the December Report; in February the 12-month change was 1.2 per cent. Prices for goods that are mainly imported have fallen somewhat more than assumed, while the domestic price rise has been somewhat stronger. The latter tendency is mirrored in the rate of underlying domestic inflation, UNDINHX, being somewhat higher than expected, mainly due to the higher dental charges. In February the 12-month change in UNDINHX was 2.3 per cent.

Underlying inflation has broadly followed the path expected in the December Report.

For goods that are mainly imported, the 12-month change in the price level excluding taxes was -1.3 per cent in February. The annual change has thereby been negative for more than a year. A closer look shows that prices are still weak for commodities, particularly crude oil, as well as for manufactured products (Annex: Fig. 9). On the other hand, prices to

producers for imported consumer goods show a comparatively strong tendency; however, the pass-through to consumer prices occurs with a considerable time lag and no such effects are yet discernible (Fig. 3).¹

The fall in house mortgage interest expenditure has been more marked than expected in December, mainly as a result of the Riksbank's repo rate cuts in recent months. In February, the decline in this expenditure had a total downward effect on the 12-month change in the CPI of 0.7 percentage points.

Transitory factors lowered the CPI change in February 1999 by a total of 1.3 percentage points.

In the past twelve months there have also been substantial changes in indirect taxes and subsidies. The net CPI effect of this in February was -0.6 per cent. Transitory factors, in the form decreased interest expenditure and changes to indirect taxes and subsidies, accordingly lowered the CPI change in February 1999 by a total of 1.3 percentage points.

To sum up, the consumer price tendency has been somewhat weaker than expected. This is partly because the downward impact of the transitory effects has been greater than assumed in December. Underlying inflation has broadly followed the assessment in the previous Report.

Figure 2.

HICP for Sweden, euro area and EU high and low. Percentage 12-month change



Note. Euro area inflation is represented by the ECB's target variable MUICP, which is a weighted aggregate of national HICPs. EU high and EU low show the highest and lowest current national figure, respectively, among the EU countries apart from Greece. Sources: Eurostat and Statistics Sweden.

WEAK PRODUCER PRICES

Export prices have gone on falling since the December Report. The 12-month change figures have been falling during the winter, with a rate of -1.9 in January. The fall has come mainly from commodity-related items, for example intermediate goods and energy products.

Prices to producers have continued to fall, mainly due to increasingly low prices for intermediate goods and energy-related products.

The fall in home market prices has continued, both on a 12-month basis and in recent months. In January the 12-month change was –1.5 per cent. This development is mainly explained by lower prices for intermediate goods and energy-related products. Prices for non-durable consumer goods have also declined but less than before. Rising prices have been noted, on the other hand, for consumer durables.

Prices to producers for consumer goods destined for domestic consumption suggest that consumer price increases for goods will remain moderate.

Import prices to producers show a marginal 12month increase of 0.1 per cent in January. The strong price rise for consumer goods (over 3 per cent) was offset by a further steep price fall for intermediate goods and energy products (-2.5 and -21 per cent, respectively). One explanation for the strong price rise for imported consumer goods is the krona's depreciation at the end of 1998. The appreciation since the turn of the year should contribute to a weaker price development in the coming months.

Prices for consumer goods destined for the home market rose in January at a 12-month rate of 1.1 per cent (Annex: Fig. 5).² This index, which has been a good indicator of consumer prices a month or two later, points to a continuation of moderate consumer price increases for goods.

The business tendency survey from the National Institute of Economic Research shows somewhat conflicting tendencies for pricing by manufacturers. According to these data, in 1998 Q4 there were further price cuts for intermediate and investment goods;³ at the same time, about one-fifth⁴ of the firms in the consumer goods industry planned to raise home market prices in 1999 Q1, the highest pro-

4~ This is the net figure; price increases were planned by 24 per cent of firms, price cuts by 4 per cent.





Figure 3.

¹ See Inflation Report 1998:4, box on pp. 27-28.

² Measured by the price index for the domestic supply of consumer goods, which is a weighted index of producers' import and home market prices.

³ The downward tendency was more marked for export prices than for domestic prices.

portion since 1995 Q1. Moreover, the price tendency in 1998 Q4 was comparatively strong in service industries.

RISING COMMODITY PRICES

During 1998 commodity prices fell markedly, by about 35 per cent, partly due to high production combined with continued weak global demand. The fall then continued up to the end of February 1999, contrary to the forecast in the December Report of some upward tendency at the end of 1998 and early this year. In the past month, however, the price of petroleum has risen markedly and the US dollar has strengthened against the krona. This has resulted in an almost 10 per cent rise in the overall level of commodity prices in Swedish kronor since the December Report.

Apart from any decisions to cut production, the future development of commodity prices will mainly depend on international demand. A World Bank report predicts that the weak global activity is tending to defer a recovery in commodity prices.⁵

Commodity prices have risen almost 10 per cent since the December Report partly as a result of rising oil prices. Prices for Sweden's main export commodities, for example pulp, steel and metals, have been weak since the December Report. In January 1999 the price of pulp was 16 per cent lower than a year earlier, accompanied by a smaller fall in export prices for metals.

To sum up, pressure from commodity and producer prices is still subdued, particularly as regards intermediate goods in manufacturing and energy-related products.

Interest rates, exchange rate and money supply

INTEREST RATES STILL FAVOURABLE DESPITE BOND RATE REBOUND

Long bond rates have been falling continuously for a number of years, in Sweden as well as abroad. The trend in Sweden has come not only from the declining level of international interest rates but also from the consolidation of government finances and growing confidence in the price stability policy and the lower inflation expectations as a result of this.

In the past year, the long bond rate tendency has been affected more directly by the global financial

Figure 4. Consumer and producer prices for goods. Percentage 12-month change



Sources: Statistics Sweden and the Riksbank.

unrest. During the summer of 1998 many investors closed their most risky equity positions, mainly in favour of interest-bearing securities. This caused a further drop in long-term interest rates, internationally as well as in Sweden.

The level of Swedish long bond rates is still historically low.

After the December Report, Swedish long bond rates went on falling. At times in the early part of 1999 the level was below 4 per cent. Recently, however, bond rates have been pushed up somewhat in Sweden as well as in the euro area. In Sweden, the upward tendency seems to be almost entirely a reaction to the rising rates in the United States, which seem to be occasioned in turn by signs of sustained economic strength. But the level of Swedish long bond rates is still historically low, around 4.5 per cent (Annex: Fig. 10). As long rates in Germany have not risen as much as in Sweden, the long-term interest rate differential with Germany was widened somewhat to about 0.4 percentage points (Annex: Fig. 11).

During the autumn, a further decline in international economic activity and inflation prospects had weakened the outlook for economic activity and inflation in Sweden. The expectations this raised of further interest rate cuts were subsequently fulfilled when the monetary stance was adjusted in a more expansionary direction. In December 1998 and February 1999 the repo rate was lowered in two steps, totalling 0.45 percentage points, to 3.15 per cent.

5 World Bank (1999), Global Commodity Markets.

MONETARY POLICY'S ECONOMIC IMPACT

The repo rate—the short-term rate for the private banks' deposits in and borrowing from the Riksbankis the Riksbank's main monetary policy instrument. Simplifying somewhat, the Riksbank influences other interest rates in Sweden by altering the repo rate. Via these market interest rates an influence is exerted in turn on economic activity, for example business investment and household consumption, and thereby ultimately on price formation. However, the effect of the Riksbank's actions is not the same for every type of interest rate. The rates with the shortest maturities are controlled by the repo rate more or less directly, while those with longer maturities are also strongly influenced by factors which the Riksbank does not control directly, for example the construction of fiscal policy, the development of international interest rates and the credibility of overall economic policy's commitment to price stability. It should also be noted here that households and most firms finance their procurements and consumption mainly at interest rates, that differ from the quoted market rates. The loans are usually provided by banks and house mortgage institutions at rates that also reflect credit risks and competition between different institutions.

Monetary policy also influences the course of inflation via the exchange rate because exchange rate movements have effects on, for example, demand and investment in the internationally oriented sector of the economy. Under normal conditions a repo rate increase, or expectations of this, leads to a stronger exchange rate because the higher interest rates make Swedish assets more attractive than equivalent interest-bearing investments in other currencies; this draws foreign capital to Sweden, with an increased demand for Swedish kronor. All else equal, a permanent weakening or strengthening of the exchange rate will affect demand via shifts in relative prices between Swedish and foreign goods. This in turn affects inflation. Inflation is also influenced directly by exchange rate movements in that these alter import prices.

Since the December Report the three-month rate has moved down approximately 0.3 percentage points and is currently about 3.2 per cent.

In December 1998 and February 1999 the repo rate was lowered in two steps, totalling 0.45 percentage points, to 3.15 per cent.

Survey data (Annex: Table 1) as well as money market pricing point at present to expectations of a little change in the repo rate in the near future.

In the December Report it was considered that the krona's exchange rate, as measured by the nominal TCW index, would remain weak initially in 1999 and then strengthen during the two-year forecast period, with a somewhat slower appreciation towards the end of the period. The index level up to the end of 1999 Q1 was judged to be about 128, followed by a gradual appreciation to around 121 in 1999 Q4 and around 118 in 2000 Q4.

Since then, however, the krona has appreciated and its effective exchange rate is currently about 2 per cent stronger than expected (Annex: Fig. 14). Against the euro the appreciation since the turn of 1998 amounts to about 6 per cent (Annex: Fig. 40). A variety of factors have no doubt contributed to this development. The depreciation up to the turn of the year mainly reflected the prevailing market unrest, with increased risk aversion among international investors and a flight of capital to assets perceived to be less risky. When the international financial markets then became less turbulent, the krona strengthened again. The move to Stage Three of EMU also generated some unrest over the possible impact on the krona. After the transition, this unrest subsided and the krona appreciated. It is conceivable, moreover, that the stronger exchange rate has been supported by increased expectations of future participation by Sweden in ERM and in EMU.

To sum up, a more expansionary monetary stance has caused the short-term interest rates to fall since the December Report. An upward tendency in international long bond rates, above all in the United States, has recently tended to pull up long bond rates in Sweden. The krona has appreciated and is somewhat stronger than expected.

Figure 5. Actual and expected repo rate indicated by forward interest rates Per cent



Source: The Riksbank.

REAL INTEREST RATE AT HISTORICALLY LOW LEVEL

The combined effect that the real interest rate and the real exchange rate are judged to exert on total demand has become somewhat more expansionary since the December Report. Compared with November 1998, in February 1999 the monthly level of the short real interest rate⁶ was 0.5 percentage points lower, at about 2.4 per cent (Fig. 6). This is primarily a result of the expansionary monetary stance, which has pressed the short nominal interest rates down.⁷

The long real interest rate⁸ has also fallen and is now about 1.9 per cent, which is approximately 0.5 percentage points lower than at the time of the December Report. This is entirely a consequence of lower nominal interest rates—since November the five-year inflation expectations have been broadly unchanged (1.8 per cent).

The real TCW exchange rate has strengthened since the December Report, which means that its effect on demand is less expansionary than before. The appreciation from November 1998 to February 1999 amounted to about 2 per cent.

To sum up, the level of both short and long real interest

rates is lower than at the time of the December Report. The real exchange rate has strengthened in this period. The monetary conditions are judged to be somewhat more expansionary than at the time of the previous Report.

INTEREST RATE SETTING WEAKENS MONETARY POLICY'S IMPACT

Borrowing by households and most Swedish firms is largely arranged with banks and other credit institutions. Investment financing directly in the money market is generally feasible only for very large companies. The spread that usually exists between rates charged by creditors and the money market rates mirrors differences in credit risks, competitive conditions and the creditors' pricing strategies. Changes in these margins tend to accentuate or counter monetary policy's impact on demand and inflation.

6 The nominal three-month T-bill rate adjusted for the CPI change that households expect in the coming twelve months.

7 Figures from Statistics Sweden show that the price change expected by households in the coming twelve months was 0.8 per cent in February 1999 or 0.1 percentage points less than in November 1998.

8~ The average quarterly level of the five-year T-bond rate adjusted for the rate of inflation five years ahead that financial investors expect according to Aragon's survey. The average for 1999 Q1 is based on the period up to 15 March.

Figure 6. Real 3-month and 5-year interest rates and real effective (TCW) exchange rate. Per cent and index:

18 November 1992=100



Source: The Riksbank.

During 1998 Q4 the average level of bank lending rates to households and firms fell but not to the same extent as the money market rates.⁹ In December the spread between lending rates to households and the money market rates was 0.2 percentage points wider than in September and the corresponding spread for corporate loans widened 0.3

percentage points. The registered lag before the creditors' lending rates respond to changes in the level of money market rates is fairly normal and means that monetary policy's impact on demand and inflation is somewhat delayed.

Households and firms are not always considered to be sufficiently creditworthy to borrow at the quoted rates. Creditors may fear that those who are prepared to borrow at higher rates will be less prone to repay the loans. A similar circumstance is that, if interest rates rise and demand is accordingly subdued, the expected profitability of firms declines, which weakens their propensity and ability to carry debt. Firms that cannot or do not wish to obtain credit have to curtail operations and postpone investments, which dampens demand. As regards the credit mechanism, lending rates as well as volumes are therefore informative in the assessment of inflation prospects.

HOUSEHOLD SECTOR BORROWING STILL GROWING STRONGLY

At the time of last autumn's financial turbulence the spread in international markets between corporate and T-bond rates widened sharply. A decreased supply of risk capital for private investors was cited as one of the greatest threats to continued global growth.

The 12-month change in total lending by banks and housing institutions to the resident non-bank sector (households, firms and local authorities) was 5.8 per cent in January 1999, a rate that is somewhat higher than at the time of the December Report (Annex: Fig. 16). Lending to households was rising in January at a 12-month rate of 6.7 per cent, which is much the same as at the time of the previous Report.¹⁰

Bank lending to the resident non-bank sector rose in January at a 12-month rate of 10.3 per cent, which was somewhat lower than previously. The falloff applied to household as well as corporate borrowing. This was accompanied by some acceleration of loans from housing intermediaries either for purchasing houses and tenant-owned dwellings or for increasing mortgages.

The supply of credit is judged to be good for households as well as firms.

All in all, the supply of credit is judged to be good for households and well as firms. A somewhat subdued flow of corporate credit was observed at the end of 1998 but this was judged to be demand driven and thus not a sign of credit supply problems in Sweden.

Inflationary pressure as mirrored in the money supply statistics is still low but shows a slight upward tendency. The narrow money supply (M0, defined as the resident non-bank sector's holdings of notes and coins) has been a good indicator of inflation about six months ahead. In January the 12-month rate of M0 growth was 5.9 per cent or somewhat lower than at the time of the December report (Annex: Fig. 18). The high M0 growth in the past six months has coincided with a comparatively rapid increase in retail turnover and suggests that the strong trend for private consumption is continuing.

The broader money supply (M3, which also includes the non-bank sector's bank deposits and certificates of deposit) is markedly affected by portfolio rearrangements between bank deposits and alternative assets that are not included in this aggregate. Even so, M3 is considered to be a useful indicator of inflation. In January the growth rate was 4.1 per cent, which is lower than at the time of the December Report (Annex: Fig. 18). The supply of credit is judged to be good for households as well as firms. For households the trend suggests that the strong development of retail trade and private consumption is continuing. The more subdued development of corporate lending may indicate a slackening of industrial activity. The picture of the money supply aggregates likewise points to a continuation of the strong development of retailing and private consumption. It also suggests that inflationary pressure is low but rising slightly. 9 *Financial Market Statistics 1, January 1999,* Sveriges Riksbank. The figures refer to the six-month T-bill rate.

10 Mortgage loans from housing institutions for owner-occupied and tenantowned dwellings, plus loans to the household sector from banks and other credit market companies.

CHAPTER 2

Inflation assessment

This chapter presents the assessment of price tendencies up to and including 2001 Q1. International factors are considered first, followed by a survey of demand relative to supply in the Swedish economy. Transitory effects that will be acting on consumer prices in the coming twenty-four months are then discussed, followed by inflation expectations. Finally, a comprehensive forecast of inflation is presented, together with an assessment of its uncertainties.

The present forecast, like those in earlier Inflation Reports, starts from an unchanged repo rate. This is a technical assumption and its primary purpose is educational—to clarify whether a repo rate adjustment is called for and, if so, in which direction. Thus, an inflation assessment which results in the conclusion that, at the time horizon of twelve to twenty-four months which is the Riksbank's primary concern, inflation will be above (below) the target rate, normally implies that there is reason to raise (lower) the repo rate. Note, however, that the Riksbank flanks its main inflation forecast with a number of risk scenarios for inflation prospects. This assessment of uncertainties is weighted into the foundation for monetary policy decisions.

DETERMINANTS OF INFLATION

Because of the time lag before monetary measures affect economic activity and inflation, policy has to be guided by an inflation *forecast*. With a time horizon of twelve to twenty-four months, the development of inflation is essentially determined by the following factors:

1) International activity and inflation

In that Sweden's economy is highly dependent on foreign trade, external economic developments are an important consideration in the assessment of inflation.

Economic activity in the rest of the world affects demand for Swedish exports and is therefore an important component in the assessment of total demand. *External inflation* affects the price of imported goods in foreign currency, while *exchange rate movements* condition the extent to which changes in world market prices pass through to *import prices* in Swedish kronor. An appreciation of the krona tends to reduce the impact on domestic inflation from a given external price rise. The effect on domestic inflation is also conditioned by the development of profit margins on imports. Moreover, changes in world market prices that are not countered by exchange rate movements affect the competitive position for Swedish exports and this can have repercussions on the rate of wage increases and other production costs in Sweden.

2) Demand relative to supply

Demand that exceeds long-term production capacity normally generates inflationary pressure. Monetary pol-

icy therefore has to be gauged so that demand is kept as close as possible to the development of production capacity. A variety of indicators can be used to obtain an overall picture of the inflationary pressure that is emanating from demand in relation to supply. One of these indicators is the National Institute's business tendency data on industrial *capacity utilisation*. Another is the *labour market situation*, where, for example, comparatively high wage increases despite high unemployment may indicate a limited possibility of enlarging total demand without incurring wage inflation. A third type of indictor is the *output gap*—an econometric estimate of the difference between GDP's registered and potential long-term levels.

The higher the level of demand relative to capacity, the greater the probability of capacity shortages arising in parts of the economy. The occurrence of bottlenecks can therefore be a sign that output is approaching its potential long-term level. A shortage of a particular category of labour may be such a sign. A complication here, however, is that high demand and high wage increases for a certain category of labour can also result from better productivity and profitability compared with other activities. In that case, such wage increases are not a direct inflationary threat, though they do call for efficient wage formation and labour market flexibility. Assessments must also allow for the fact that, in time, high investment, an increased labour supply or improved technology lead to increased production capacity.

Changes in demand do not, however, exert an influence on all prices through market mechanisms. Some prices are set by administrative decisions, based above all on the cost side or with a sizeable element of subsidy. Examples of fully or partly administered prices in Sweden are housing rents and charges for medical care and certain municipal services. One consequence for monetary policy is that for certain prices, the impact of interest rate adjustments is subject to particularly long lags. Monetary policy can influence these prices only through effects on the general development of costs, e.g. wages.¹¹

3) Other cost shocks and transitory effects

Inflationary impulses can also be generated by cost increases that are specific instead of stemming from a general increase in world market prices or strong domestic demand. A price movement for primary products as a consequence of supply-side shocks is one example. Similar impulses can come in the form of changes in indirect taxes and subsidies. Such inflationary impulses are normally transitory in the sense that they entail an immediate change in the general price level without necessarily affecting inflation's long-term trend. They may still have a lasting impact on the inflation process, for example via inflation expectations. In order to gauge trend inflation (inflation excluding transitory impulses), the Riksbank uses various indicators of underlying inflation.

4) Inflation expectations

High demand prompts producers to raise prices and employees to bargain for higher wages. But inflationary price and wage increases can also stem from high inflation expectations as such, because economic agents strive to maintain or increase their real income level. In this way, if confidence in monetary policy is lacking, inflation expectations are liable to be self-fulfilling.

When assessing the significance of inflation expectations for monetary policy, it must be born in mind that the expectations often relate to the prospect of a particular policy. The fact that inflation expectations are in line with the target does not therefore necessarily show that the monetary stance is well balanced—the expectations themselves may rest on a presumption that the instrumental rate is going to be adjusted.

The factors outlined above are those, which, according to accepted economy theory as well as practical experience, affect inflation. An analysis of these factors is accordingly an important component of the foundation for monetary policy decisions.

¹¹ For an account of administered prices in the CPI, see *Inflation Report 1997:3*, p. 8.

International activity and inflation

The Asian crisis is still at work in the global economy, accentuated by last autumn's crisis in Russia and the near failure of the US hedge fund Long Term Capital Management (LTCM). However, the situation in international financial markets does seem to have stabilised and most stock markets have recovered in the period since the December Report. Signs of an economic recovery are discernible in some parts of Asia but the uncertainty about many emerging markets is still considerable. Latin America, for example, is experiencing a more extensive economic crisis after Brazil's decision in the middle of January, following a period of massive currency outflows, to adopt a floating exchange rate. It seems that the global effects of the Asian and Russian crises have not yet materialised in full and the marked depreciation of the Brazilian real may generate contagious effects which, although fairly small to date, are not entirely foreseeable. All in all, the risks in the international prospects are still judged to be appreciable.¹²

In the light of weaker international demand, the monetary stance in most OECD countries has become more expansionary since the December Report. GDP growth in the OECD area in 1999 is judged to be slightly above 1.5 per cent. This is somewhat stronger than foreseen in December, even though growth is now expected to be appreciably lower in Japan and somewhat lower in the EU area. The upward revision is based entirely on stronger growth in the United States. In 2000 growth in the OECD area is judged to pick up to just under 2 per cent. This is somewhat weaker than envisaged in December, mainly because the recovery in Japan looks like being delayed.

RENEWED STRENGTH IN THE UNITED STATES

The continued strength of the US economy is favourable for the global economy in the short run. Although the Asian crisis subdued US exports and growth during 1998, it seems that lower import prices (mainly low commodity prices), declining interest rates and stock-market highs stimulated domestic demand in a way that made up for the loss of exports.¹³ A GDP growth rate of 3.9 per cent in 1998 was accompanied by strong productivity growth and continued falls in inflation and unemployment. Notwithstanding the weakened global economy, there are still only a few signs of a slowdown in the United States; instead, many confidence indicators are currently pointing upwards. Consumer confidence, for example, has strengthened in recent months after a dip in the second half of 1998. In the coming two years, however, it is probable that the US economy will tend to slacken. For one thing, the low level of household saving will probably impose a limit on future increases in private consumption.¹⁴ Some fall-off is also foreseen in the very high level of corporate investment, not least in IT equipment, in that profits have declined and show no signs of improving appreciably. Moreover, the rapid growth of consumption and investment has greatly weakened the balance on current account to a level that does not seem to be sustainable in the longer run.¹⁵ But in view of the recent strong growth and low inflationary pressure, the slowdown is not likely to occur before the beginning of 2000, which is later than was foreseen in the December Report.¹⁶

SLOWDOWN IN EURO AREA

Economic activity in the euro area became markedly slower towards the end of 1998. Persistently low international demand meant that manufacturing

¹² These risks are discussed more fully in the section: Uncertainties in the inflation assessment.

¹³ The contribution to GDP growth in 1998 from net exports was -1.1 percentage points.

¹⁴ In 1998 Q4 the saving ratio was negative, for the first time since the 1930s.

^{15~} The OECD predicts a 1999 current-account deficit at 3.1 per cent of GDP, the highest figure since 1987.

¹⁶ The uncertainty about US economic prospects is mirrored in the spread between forecasts by different observers; according to Consensus Forecasts in February 1999, for 2000 the growth forecasts range from under 1 per cent to over 3 per cent.

continued to weaken, with decreased output and poorer prospects for industrial firms. This has lowered the utilisation of manufacturing capacity and subdued the growth of investment. There is much to suggest, however, that the slowdown will be brief. The signs of lower activity that were observed in the external sector during the autumn and winter do not yet seem to have spread at all extensively to more domestically oriented sectors. Confidence in the retail and construction sectors continued to improve at the end of 1998, reflecting household optimism and low interest rates. The development of private consumption remained positive in the light of a better labour market situation. Rising real disposable income and a stable labour market development should provide a foundation for a consumptiondriven recovery in the euro area in the second half of 1999, with a continued upswing expected in 2000. Still, growth in the coming two years is judged to be somewhat lower than envisaged in the December Report. Moreover, the economic picture is indistinct, not least because of the major uncertainty that still applies to the global economy and the current divergence between confidence indicators for manufacturing and those for households.

In the United Kingdom, Denmark and Norway,

economic activity is expected to bottom out during 1999 and then recover during 2000.¹⁷ A slowdown was noted in these countries in the latter part of 1998 and this has been followed by interest rate cuts, above all in the United Kingdom. There are already signs that the British monetary policy measures are having a favourable influence on both business and consumer confidence, which strengthens the probability of the economy making a "soft landing".

DEEPER RECESSION IN JAPAN

The Japanese economy is in a deep recession. During 1998 investment and private consumption went on falling. Expectations in the manufacturing sector have continued to worsen and most indicators are pointing downwards. In spite of several stimulatory fiscal programmes, combined with vigorous measures to solve the bank crisis, household and business confidence has not yet begun to improve. Both producer and consumer prices for goods and services are falling and many observers fear that Japan may have difficulty in extricating the economy from what can be described as a deflationary spiral. Weak government finances put a restriction on the scope for an expansionary fiscal policy, while the low instrumental rates leave little room for monetary easing.¹⁸

Figure 7.

Producer and consumer prices in the OECD area and the euro area. Percentage 12-month change



Source: Ecowin.

The overall growth prospects have deteriorated since the December Report. GDP is now judged to fall in 1999 and a stabilisation is not foreseen until 2000.

WEAK PRICE TREND

Inflationary pressure in the OECD area has gone on easing, mainly in producer prices, for which the increases are the lowest since the early 1980s. This is particularly evident in the euro area. In the coming two years, the inflationary pressure is expected to be low in connection with weaker international demand, increased competition and overcapacity in many sectors. In 1999 the rate of inflation is judged to be just under 1.5 per cent and then rise to somewhat above 1.5 per cent in 2000. An increase in commodity prices is foreseen from the present low levels. A downward tendency is expected, on the other hand, for prices for manufactured exports in national currencies in 1999, when they are expected to fall by around 1 per cent, followed by an increase of 1.5 per cent in 2000.

 $18\;$ The Bank of Japan's targeted instrumental rate has been 0.15 per cent since 12 February 1999.

OVERVIEW OF ECB'S MONETARY POLICY STRATEGY

On 1 January 1999 the European Central Bank (ECB) assumed the responsibility for monetary policy in the euro area. The primary policy objective is the maintenance of price stability in the euro area. The main elements of the monetary policy strategy are a quantitative definition of price stability, a quantitative reference value for the growth of a broad monetary aggregate (M3) and a broadly based assessment of the outlook for

future price developments and the risks to price stability in the euro area as a whole.

The quantitative definition of the price stability objective that the ECB Governing Council has adopted is: "*price stability shall be defined as a year-on-year increase in the Harmonised Index of Consumer Prices (HICP) for the euro area of below 2 per cent*" This presumably means that an annual rate of increase between 0 and 2 per cent com-



 $^{17\;}$ Between them these three countries receive almost a quarter of Swedish exports.

plies with the ECB's price stability definition. Monetary policy's focus is on the euro area as a whole, not on developments in particular countries. The objective is to be fulfilled over the medium term, which acknowledges that short-run shocks which monetary policy neither can nor ought to counter may lead to inflation moving outside the interval. By focusing on the medium-term horizon, the ECB's monetary policy, like the Riksbank's, is to contribute to making such shocks transitory.

The reference value for M3 growth, which has been set at 4.5 per cent for 1999, is based on mediumterm assumptions of an annual real GDP growth trend of 2-2.5 per cent and an annual decline in M3's velocity of circulation of 0.5-1 per cent. Derived from the quantity equation,¹⁹ this gives an implied inflation target between 1 and 2 per cent. Note that a reference value is not the same as a target interval. The ECB is not committed by its reference value to correct deviations of monetary growth in the short term. In other words, deviations in M3 growth from the reference value will not automatically result in interest rate adjustments.

The analysis of monetary growth is accompanied by an overall assessment of the prospects for price stability. This assessment is based on a wide range of economic and financial indicators, including wages, exchange rates, interest rates, various measures of real activity, fiscal policy indicators and surveys of business and consumers. In the light of these variables, inflation forecasts are produced, though not published.

19 The quantity equation expresses the relationship between the change in the money supply (*M*) and the velocity of circulation (*V*) on the one hand and the change in real GDP (*Y*) and the price level (*P*) on the other: dM + dV = dY + dP. The data then give an implied inflation target between 4.5 - 1 - 2.5 = 1 and 4.5 - 0.5 - 2 = 2 per cent.

Interest rates and exchange rate

The development of interest rates and the exchange rate is of considerable importance for future inflationary pressure. To some extent, the Riksbank's assessment of future movements in these rates is conditioned in turn by the circumstance that the inflation forecast for the coming twenty-four months is based on the technical assumption of an unchanged repo rate. For market interest rates, the impact of the repo rate is crucially dependent on maturities-the shorter the maturity, the stronger the effect. The three-month rate is therefore presumed to be virtually stationary during the forecast period. Swedish long bond rates are assumed to rise around half of a percentage point up to the end of the forecast period. International long bond rates are likewise assumed to rise somewhat from today's historically low levels. The long-term interest rate differential with Germany is expected to become more or less stable around the current level.²⁰

In the December Report it was judged that in the coming two years the krona would appreciate. The krona was assumed to remain weak at first and then strengthen in the latter part of 1999 when the turbulence had subsided; the appreciation was then expected to slow down towards the end of the forecast period.

A gradual appreciation of the krona is foreseen in the forecast period.

The exchange rate assessment is broadly unchanged. In the longer run the krona is expected to appreciate in accordance with earlier assessments of the real exchange rate's path as the economy approaches both external and internal equilibrium.²¹ In an international comparison, Sweden's net external debt relative to GDP is relatively high. Continued current-account surpluses are therefore likely to be needed in the coming years, which points to a gradual adjustment of the exchange rate towards a sustainable equilibrium.

The nominal TCW exchange rate is judged to

appreciate by degrees in the forecast period, to an index level of approximately 121 in twelve months time and approximately 118 after twenty-four months.²² This means that, compared with the December assessment, the krona is judged to be stronger in the first half of 1999, followed by broadly the same path as envisaged earlier.

Short-term interest rates are assumed to be more or less stationary in the forecast period, given the underlying assumption of an unchanged repo rate. Longer Swedish bond rates are assumed to rise around half of a percentage point up to the end of the forecast period. As previously, the krona is judged to appreciate.

20 Since the period of unrest in connection with the outcome of the general election in Sweden in September 1998, this differential has narrowed from around one percentage point to approximately 0.4 percentage points, which can be interpreted as a stabilisation of confidence in the Swedish economy.

21 See Inflation Report 1998:3, box on pp. 27-29.

22 This assessment is largely in line with the expectations of money market investors (Annex: Table 1).

CURRENCY OPTION PRICES AS INDICATORS OF MARKET EXPECTATIONS

The krona has strengthened relatively rapidly since the turn of 1998, against the euro by about 6 per cent. The appreciation is natural in that last autumn's financial unrest, which contributed to a marked weakening of the krona, has now subsided. The recovery may have been aided by rising expectations that Sweden will join the euro area. Some market players have expressed fears that the appreciation has been unduly hasty, with some risk of a rebound. This prompts the question of whether such risks are included in market prices. Currency option prices provide an opportunity of investi-

gating this and to some extent of quantifying market uncertainty.

More specifically, the pricing of different combinations of currency options (FX options) can be used to form a picture of market perceptions of the degree of uncertainty and any asymmetries in risk assessments.²³

FX options are mostly traded in the over-thecounter (OTC) market, where combinations of out-ofthe-money call options and out-of-the-money put options are common.²⁴ Two very frequent combinations are known as strangles and risk reversals. These deriv-





Sources: Reuters and the Riksbank.

ative instruments with a maturity of one month for the SEK/DEM exchange rate²⁵ are studied here to illustrate the interpretation of option prices in terms of expectations.

Strangle—an indicator of large exchange rate movements

A strangle involves buying both a put and a call option that are out-of-the-money in the belief that price movements during their life will be pronounced—the call (put) option can only be exercised if the price of the underlying asset rises (falls) markedly.²⁶ A strangle is priced in the market as the difference between the average of the two options' implied volatility and the at-themoney volatility. The price therefore reflects the perception of the risk of outcomes that are extreme relative to the market's volatility forecast.²⁷

A time series of a strangle's price provides information about variations in market expectations of the probability of large exchange rate movements. The SEK/DEM exchange rate and strangle since the beginning of 1998 are shown in Fig. B2.

In the early autumn of 1998 Russia's difficulties with debt payments were accompanied by pronounced financial market turbulence. As investors transferred assets to larger currencies, the krona weakened. Fig. B2 shows that the price of an SEK/DEM strangle rose as the krona weakened against the German mark, which can be interpreted as market perceptions of growing uncertainty about the future exchange rate. Although the financial market unrest has subsided and the krona has recently strengthened, the strangle price has fallen only marginally. This suggests that the market is still uncertain about the krona's future path and considers that the risk of large exchange rate movements (beyond the expected volatility) is still relatively high.

Risk reversal—an indicator of asymmetries in the uncertainty

A risk reversal involves buying a call option and selling a put option, in both cases out-of-the-money. It is accordingly priced as the implied volatility spread between these two options. A risk reversal is bought in the belief that it is more likely that the call option will end up in-the-money, than that the put option will. In this case the investor perceives a greater probability of positive compared with negative returns from the underlying exchange rate (in the case of SEK/DEM, an assessment that the krona is more likely to depreciate than appreciate against the German mark). The price of a risk reversal may therefore indicate the market's perception of whether the exchange rate uncertainty is mainly on the upside or the downside.²⁸

The time series of the SEK/DEM exchange rate

and risk reversal are shown in Fig. B3. It will be seen that the exchange rate and the price of the risk reversal co-vary. When the krona weakens against the German mark, the price of the risk reversal tends to rise.

The curves show that when the krona weakened in the autumn of 1998, the price of the risk reversal rose sharply. Moreover, the price has clearly not fallen back in connection with the krona's recent appreciation against the euro. This suggests that, despite the krona's appreciation, the market still considers that a marked weakening of the krona is more probable than a marked strengthening.

In conclusion, option prices show that the market still considers that the uncertainty about the krona's future path is relatively high. The price of an SEK/DEM strangle indicates perceptions of a relatively large risk of marked exchange rate movements in the near future. Judging from the clearly positive price of an SEK/DEM risk reversal, moreover, the market seems to believe that a depreciation of the krona against the German mark (and hence the euro) is more probable than an appreciation. The market may conceivably consider that the krona's recent appreciation has been too hasty, which can be interpreted as the perception of a risk of a rebound in the near future. 23 For a more detailed discussion of the interpretation of information conveyed by option prices, see Aguilar, J & Hördahl, P. (1999), Option prices and market expectations, *Quarterly Review* 1, Sveriges Riksbank.

24 A SEK/DEM call option gives the holder the right to buy German marks for Swedish kronor in the future at an agreed price. An option is *out-of-themaney* when the exercise price of a call (put) option, that is, contracts to buy and sell, respectively, is above (below) the current forward price of the underlying asset (the asset on which the option is written); in the opposite case the option is *in-the-money*, options are *at-the-money* when the exercise price equals the forward price.

 $25\,$ The SEK/EUR rate is used after the turn of 1998. In the figures the SEK/DEM rate in 1999 has been derived from the DEM/EUR conversion rate.

26 In OTC markets for FX derivates, options are invariably priced in terms of implied volatility, not in money. The price to be paid on an option contract is derived from the agreed volatility, using the Black-Scholes model. This does not necessarily mean the market participants believe the model is valid; it simply serves as a formula for transforming volatility into prices and vice versa.

27 Thus, the price of a strangle is associated with the degree of kurtosis in the implied probability distribution of the underlying exchange rate. Kurtosis is a statistical measure of how peaked the probability distribution is and the fatness of its tail—the higher the value of a strangle, the higher will be the kurtosis in the distribution.

28 The price of a risk reversal is directly related to the skewness (asymmetry) of the implied probability distribution for the underlying exchange rate. A positive (negative) value of a risk reversal is associated with positive (negative) skewness, that is, a larger proportion of the total probability is in the right-(left-) hand tail.

Import prices

Import prices affect inflation in two ways. Changes in international export prices and the krona's exchange rate have a *direct* impact on consumer prices because a sizeable part of the CPI base consists of imported goods and substitutes for imports. Moreover, movements in international prices and the exchange rate affect inflation *indirectly* via effects on the relationship between domestic demand and supply.

The link between international price movements for commodities and manufactured products on the one hand and Swedish producer and consumer prices on the other is complex. The exchange rate is important for the prices to producers but the passthrough, particularly for manufactured goods, is liable to be incomplete and lagged. This is even more the case for the pass-through to consumer prices. Estimates suggest that the lag before consumer prices are affected by movements in international prices for manufactured products and the exchange rate may amount to several years.²⁹ The pass-through for commodity prices is considerably faster, probably because these items are homogeneous and priced in the world market (Fig. 8).

29 See Inflation Report 1998:4, box on pp. 27-28.

The consumer price tendency for imported goods is judged to be somewhat more subdued than envisaged in the December Report.

Since the December Report, the increase in international export prices for manufactured products has been adjusted downwards by a total of 1 percentage point. As mentioned earlier, the krona is judged to appreciate in the forecast period. Commodity prices are assumed to go on rising, though somewhat more slowly than foreseen in December because of weaker global demand relative to the volume of production. The expected level of international oil prices at the end of the forecast period has been adjusted down from US\$16 to US\$15 a barrel.

In view of the weak international price tendencies and a stronger exchange rate, compared with the December Report the forecast for the consumption-weighted development of manufactured import prices to producers in 1999 and 2000 has been adjusted downwards (Fig. 9).

The consumer price tendency for imported goods including commodities is judged to be somewhat more subdued than envisaged in the December Report. The total contribution to the CPI from import prices is expected to be about 0.2 percentage points in twelve months time and somewhat less after twenty-four months.

External price pressure seems to be somewhat weaker than expected in the December Report. The total contribution to the CPI from import prices is judged to be moderate both twelve and twenty-four months ahead.

Demand and supply

FOREIGN TRADE

The annual outturn for 1998 for the national accounts shows that both exports and imports were stronger than predicted in the December Report. Exports rose 7.3 per cent and imports 11.0 per cent.

Since December, however, short-run export prospects have deteriorated somewhat. The annual inflow of export orders in 1998 was 1 per cent down on the previous year. The fourth quarter inflow was 5.8 per cent (seasonally adjusted) lower than the third quarter. To date in 1999, however, the export order component of the purchasing managers index (ICI) has tended to rise, albeit from a very low level. According to the January business tendency survey from the National Institute of Economic Research, in recent months the inflow of export orders had been

Figure 8.

Propellants and domestic heating oil in CPI, excl. indirect taxes: import price for crude oil and petroleum products. Percentage 12-month change. 1999–2001 forecast



Note. Import price to producers.

Sources: Statistics Sweden and the Riksbank.

largely unchanged. Firms counted on further export price reductions and many forward indicators remain at low levels.

International price tendencies are judged to be subdued. In order to avoid more substantial losses of market share, Swedish firms will no doubt try to adapt to this. During 1999 the export firms will be under pressure from the combination of a calculated increase in unit labour costs in manufacturing and the prospect of falling international export prices and a stronger krona. During 2000 an increase is foreseen in relative unit labour costs, above all as a result of the krona's appreciation. All in all, some decline is expected in Sweden's competitive position, mainly during 2000.

The assessment of market growth in the OECD area is broadly the same as in the December Report. But a weaker development during 1999, above all the in euro area but also in Norway, is expected to dampen demand for Swedish exports. Some recovery is foreseen in 2000. All in all, export growth is judged to be somewhat lower than envisaged in December. All in all, exports of goods are judged to rise somewhat more slowly than envisaged in the December Report.

Imports of goods rose strongly during 1998. In this and the coming year, however, both domestic demand and exports are judged to rise more slowly than in 1998. Imports of goods are accordingly expected to be more subdued, too. Some downward revision has also been made to the forecasts for exports and imports of services, mainly in view of the somewhat weaker prospects for trade in goods. Services that are highly dependent on trade in goods include transportation, consultancy and service industries.

Export growth is judged to pick up from about 4 per cent in 1999 to over 5 per cent in 2000, accompanied by import growth rates of over 5 and about 6 per cent, respectively. The contribution to GDP growth from net exports in 1998 was somewhat less negative than assumed in the December Report. The contribution in 1999 is now judged to be slightly negative, followed by a slightly positive one in 2000.

Figure 9.

CPI for goods that are mainly imported excl. indirect taxes; consumption-weighted import prices.

Percentage 12-month change. 1999–2001 forecast



Note: Import prices to producers. Crude oil and petroleum products have been excluded from both series.

Sources: Statistics Sweden and the Riksbank.

PRIVATE CONSUMPTION

Since the mid 1990s private consumption has picked up gradually. Growth in 1998 came above all from consumer durables. According to the national accounts, private consumption in 1998 Q4 was over 3 per cent higher than a year earlier, which is a somewhat stronger increase than expected. But the annual outturn for 1998 was marginally weaker than assumed in the December Report. New statistics show a continued increase in new car registrations by households and rising housing prices. Retail turnover is also rising.

The growth of private consumption in recent years has been strong in relation to the development of household disposable income. Households' financial savings relative to disposable income has decreased, which may indicate that households are counting on a future improvement in real income. Many households have been in a position to finance purchases of durable goods in particular by borrowing; this makes disposable income less important for consumption's short-term path. Lending to the household sector has indeed risen strongly in recent years (Annex: Fig. 16). At the same time, for households that, for various reasons, are unable to borrow for consumption, the development of disposable income is a crucial factor.

During 1999 household consumption should be stimulated above all by rising real wages and employment, lower interest expenditure and some tax relief. Another factor that points to a strong consumption trend in this as well as future years is the good wealth position of households, partly due to the rapid increase in house prices.

Swedish households were notably optimistic during 1998, particularly about their personal economic prospects in the year ahead. Their assessments of prospects for the national economy did deteriorate, however, towards the end of the year, probably in the light of the increasingly weak international outlook. Although new statistics indicate some improvement, households still foresee rising unemployment in the coming twelve months (Fig. 10).

The fundamentals for private consumption still seem to be favourable.

A somewhat weaker macroeconomic trend may impair the future income of households or lower their expectations. Still, the basic assessment of the potential for consumption in the coming two years is the same as in the December Report.

Private consumption is now judged to rise almost

Figure 10.

Households' expectations of own economy, national economy and unemployment 12 months ahead. Net percentage



Note. For own and national economy the net percentage is the proportion responding 'better' less the proportion responding 'worse', while for unemployment it is 'higher' less 'lower', which means that a negative figure represents net expectations of rising unemployment. Source: Statistics Sweden.

3 per cent in both 1999 and 2000, which is some downward revision for this year and a corresponding upward revision for 2000.

FISCAL POLICY

The assessment of public consumption in the December Report still stands. The annual outturn for 1998 in the national accounts is broadly in line with the earlier forecast.

The growth of public consumption is expected to slow from 1998s comparatively high level. It is judged that public consumption would not be affected in the first place by any spending cuts. An important reason is that the activities in question, such as medical care, education and social care, have political priority.

At the same time, the assessment of the General Government net lending has been revised upwards since the December Report. The chief risk for fiscal policy is that, with an unchanged fiscal stance, the ceiling on central government spending will be exceeded. The very narrow budget margins mean that additional spending cuts may be necessary and that any easing of fiscal policy will have to be achieved in the first place with tax cuts. The main scenario assumes that the spending ceiling will not be exceeded.

Fiscal policy is judged to remain tight but its direct restriction of demand is expected to be smaller than in recent years.

The financial surplus in 1999 is expected to be smaller than in 1998, mainly because last year's surplus was greatly increased by non-recurrent measures, for example the corporatisation of the Pension Fund's real estate. This year, moreover, the easing of fiscal policy is expected to total SEK 26 billion or about 1.4 per cent of GDP. In 2000, further fiscal relief is foreseen for about 0.4 per cent of GDP. The greater part of these measures were approved by the Riksdag in 1998.

To sum up, fiscal policy's contractionary effect on demand is assumed to be smaller than during the budget consolidation in past years. Public consumption is judged to rise over 1 per cent in 1999 and under 1 per cent in 2000.

THE FISCAL STANCE

The direction of fiscal policy is highly relevant for monetary policy. Fiscal policy affects demand—and thereby inflationary pressure—both directly and indirectly, through the financial markets. This makes it important to have a good picture of the fiscal stance and its impact on the economy in general.

Fiscal policy also has long-term implications for the credibility of general economic policy. The sustainability of public finances is a major factor for variables, such as interest rates and the exchange rate, that are central for monetary policy.

In order to assess the long-term sustainability of public finances, the budget balance needs to be adjusted for cyclical factors. One way of gauging their effects is to estimate the budget balance as a function of some measure of resource utilisation, for example the output gap. The result of such an estimate can be said to represent the deficit's *cyclical* component. Subtracting this from the total deficit leaves what is known as the *structural* component; this represents what the total balance would be if the economy was in a neutral cyclical phase. As the output gap can be expected to average out to zero over a complete cycle, the structural component can indicate the path of the total balance given an unchanged fiscal stance. However, such a method raises problems. For one thing, purely statistical methods are incapable of distinguishing between automatic stabilisers and discretionary stabilisation policy, which nat-



urally also tends to follow the cyclical situation. As the structural deficit is calculated as a residual, all fluctuations in the total balance that do not follow the normal cyclical pattern are assigned to it. One such item in the present period is bank support.

Econometric estimates generally show that, compared with other OECD countries, public finances in Sweden tend to be more sensitive to cyclical effects. General government net lending is shown in Fig. B4, together with its cyclical and structural components. In the period 1991-94 the structural balance deteriorated sharply. This was partly because the 1991-92 tax reform was underfinanced by approximately SEK 25 billion, which was equivalent to 1.8 per cent of GDP³⁰ An even more important factor, however, was the massive increase in structural unemployment in the early 1990s.

After the acute crisis in the early 1990s the public finances were thoroughly consolidated. Estimates by the Finance Ministry show that in 1995-98 the convergence programme generated savings that totalled SEK 126 billion or 8 per cent of GDP.

As the measures of the convergence programme began to bite, the structural balance strengthened. During 1997 there were signs that public finances were improving more quickly than had been planned. This provided some scope for a successive easing of the fiscal stance in the period 1997-99. The fiscal easing that has been decided to date totals over SEK 50 billion up to 2000.³¹ The more expansionary fiscal stance is accordingly entailing some weakening of the structural balance in these years. But as of 1999, the level of the structural balance is still calculated to be in line with the Government target of a 2 per cent surplus on public finances over the medium term.

An important aspect of fiscal effects on demand is their impact on household disposable income and hence consumption. There are two mechanisms for this: decisions about public consumption and investment that affect household factor income directly and changes in taxes and transfers that affect disposable income.

One indicator of the latter effect is the difference between factor and disposable income, with household factor income defined as income before taxes and transfers, where income consists of unincorporated business income, wages, net interest income and dividends, and other factor income.

The ratio of disposable to factor income, which indicates the income share that accrues to households after taxes and transfers, can serve as a measure of the tightness of fiscal policy. Besides being a consequence of political decisions about rules, replacement levels and tax rates, the ratio is affected by economic development in the form of unemployment and income. Thus it does not distinguish between active fiscal policy and the automatic stabilisers. In an economic decline, decreased household income lowers tax revenue at the same time as increased unemployment raises spending on transfers.

The path of the disposable income ratio is shown in Fig. B5. The ratio rose steeply during the crisis of 1991-94, mainly due to effects of the automatic stabilisers. Factor and disposable income both fell in this period but the former more than the latter. The tax reform probably contributed, too, in that it involved direct tax cuts and increased indirect taxes. When public finances were consolidated in the period 1995-98, the curve took a downward turn.

In this and next year the ratio is expected to level out and turn slightly upwards. This indicates a less contractive fiscal stance, for which the main explanation is the above-mentioned easing of fiscal policy. Disposable income is calculated to develop more favourably than factor income, for the first time since 1994.

The considerably tighter fiscal policy in recent years can be said to have exerted a restrictive effect on demand and thereby enlarged the scope for easing monetary policy.

In the forecast period the fiscal stance is expected to be tight but its direct curb on demand is judged to be less marked than in recent years.

30 Source: 1998 Budget Bill, annex 6.

31 Source: Riksbank calculations based on the 1998 and 1999 Budget Bills and the 1997 and 1998 Spring Bills.



INVESTMENT AND STOCKBUILDING

The growth of gross capital formation in manufacturing in 1998 was somewhat lower than assumed in the December Report. Industrial activity has deteriorated more quickly than expected. The National Institute's business tendency surveys show that during the autumn, manufacturing firms became considerably less optimistic, probably in connection with the weaker international prospects.

There is therefore reason to believe that industrial investment will fall somewhat more and over a longer period than envisaged in the December Report. Lower interest rates should counter this to some extent.

In the non-manufacturing corporate sector, gross capital formation rose strongly during 1998. In 1999 and 2000, investment in the segments of this sector that are linked to manufacturing is likely to be impeded by weaker industrial activity. Residential investment, however, seems to be recovering as envisaged earlier. Gross investment by public authorities also appears to be following the earlier assessment.

Stockbuilding during 1998 made a contribution to GDP growth of 0.3 percentage points according to the national accounts. This largely confirms the assessment in the December Report. In the business tendency survey for manufacturing, the as-of-now judgements on stocks of finished goods at the end of 1998 showed much the same level as in the cyclical dip in 1996, while firms were less dissatisfied about surplus stocks of raw materials. All in all, stockbuilding is judged to have some negative effect on GDP growth in 1999 and 2000.

Gross fixed investment is expected to rise almost 4 per cent in 1999 and over 5 per cent in 2000. Stockbuilding's contribution to growth in the forecast period is expected to be slightly negative.

GDP

The picture of GDP shows a marginal negative change since the December Report. The somewhat weaker growth prospects for Swedish exports are largely balanced by lower interest rates, partly as a consequence of the Riksbank's repo rate cuts.

The international factor is judged to affect exports and domestic demand mainly during 1999 but to some extent also in 2000. It is primarily the prospects for manufacturing and industrial investment that have worsened. Some recovery is foreseen in 2000 on account of improve international activity. Conditions appear favourable for relatively good growth in 2001.

Figure 11. Gross fixed capital formation relative to GDP. Seasonally-adjusted volume, per cent



Source: Statistics Sweden.

All in all, GDP growth is judged to be 2.1 per cent in 1999 and 2.5 per cent in 2000, which for 1999 represents a marginal downward revision.

EMPLOYMENT AND PRODUCITIVITY

The general expansion of economic activity generated an increase in employment that is somewhat higher than assumed in the December Report. The number in employment rose appreciably both in private services and in the public sector. Employment in manufacturing did show signs of recovering in the early autumn but the annual increase in 1998 was modest.

The development of employment brought unemployment down to an annual average of 6.5 per cent for 1998, which is marginally lower than estimated in December.

With the somewhat weaker economic prospects, the increase in employment in the coming years may be smaller than assumed in the December Report.

Growth of the labour force since the summer of 1998 has also been stronger than expected earlier. This reflects the completion of the first round of the government educational programme and a return to the labour market of job seekers who had previously departed because of weak labour demand. Even so, the average size of the labour force in 1998 was 8,000 persons smaller than the year before.

With the somewhat weaker economic prospects, the increase in employment may be somewhat below the Riksbank's earlier assessment. During 1999 and 2000, growth of the labour force is expected to keep pace with the flow of unemployed persons from training programmes and non-participation. The unemployment rate is judged to be about 6.5 per cent in both 1999 and 2000, which is somewhat higher than expected in the December Report.

Good productivity growth is expected to continue in the forecast period.

Productivity growth is expected to be somewhat stronger than assumed in December. This assessment is supported by the continuation of good productivity growth in 1998. The rate is somewhat below the average for the period 1990-98 but above the average for the 1980s. The number in employment is judged to rise in the services sectors in particular. All in all, the assessments imply an increased employment-intensity in production and a slowing of productivity growth compared with recent years.

CAPACITY UTILISATION

Total capacity utilisation is judged to have become somewhat higher in 1998. The various estimates output gap range from 0.3 to -1 per cent.

In manufacturing, on the other hand, capacity utilisation as measured by Statistics Sweden (seasonally adjusted) fell 1.4 percentage points from 1998 Q3 to Q4 to a level of 88.7 per cent. The December business tendency survey by the National Institute shows an unchanged level of 85 per cent but other survey items point indirectly to a downward shift: a smaller proportion of firms cite the supply of production factors as a bottleneck and delivery times have shortened.

A capacity surplus will probably exist in the economy even twenty-four months from now.

Capacity in other sectors is restricted mainly by the supply of labour. In computer consultancy, where the shortage of personnel with special qualifications is very high, the National Institute's latest business tendency survey indicates some improvement. The proportion of construction firms reporting labour shortages has fallen, probably in part for seasonal reasons; labour supply in construction can be troublesome in the longer run.

All in all, the available information suggests that at present there is some surplus capacity in the economy as a whole. Growth in the coming two years as expected to broadly equal the potential rate, which means that at the end of the forecast period there will probably still be a capacity surplus.

WAGES AND UNIT LABOUR COSTS

The average overall rate of wage increases in 1998 was about 3.0 per cent and the rate in the private sector was about 3.7 per cent. The statistics now include a large proportion of the negotiated wage increases.³² The largest average wage increase, about 4.5 per cent, in 1998 was obtained by white-collar workers in the private sector, as against an average of about 3.0 per cent for private sector blue-collar workers.

In the forecast period it is judged that annual wage increases will average 3.5 per cent, which is in line with the earlier assessment. This presupposes that the somewhat weaker growth prospects are balanced by somewhat stronger productivity.

Annual wage increases are expected to average about 3.5 per cent

The development of unit labour costs is judged to be somewhat more favourably compared with the December Report. The slower increase mainly reflects the stronger productivity growth.

Transitory effects

No new decisions to alter indirect taxes and subsidies have been made since the December Report. In 1999 the main downward effects on the CPI are expected from the freeze on assessed values of owneroccupied housing, the indexing of energy taxes and the temporary cut in property tax on multi-family housing.³³ Upward effects come from the termination of the tax reduction for housing repairs, and the introduction of a tax on waste materials. The temporary cut in property tax is scheduled to end at the turn of 1999, which implies an increase from 1.3 to 1.5 per cent of the assessed value. It has been proposed that the freeze on assessed values will continue to apply for 2000. A return to indexing in 2001 is still an open question; the Riksbank has chosen to assume that it will not happen. The issue is important for CPI inflation because re-indexing would add about 0.4 percentage points to the level.

There have been no new decisions to alter indirect taxes and subsidies since the December Report but house mortgage interest expenditure is now judged to be lower.

House mortgage interest expenditure is judged to decrease even more than expected in December. The downward revision for 1999 is mostly a consequence of the Riksbank's recent repo rate cuts. For 2000 the adjustment mainly comes from the downward revision of the forecast for long bond rates.

Table 1.

Transitory effects: contribution to CPI change. Percentage points

	1999 Dec.	2000 March	2000 Dec.	2001 March
Altered indirect taxes and subsidies	0.1	0.2	0.0	0.0
Temporary freeze on residential property assessment	-0.1	-0.1	-0.1	-0.1
Change in interest expenditure	-0.7	-0.7	-0.4	-0.1
Total transitory effects	-0.7	-0.5	-0.5	-0.2

Note. The figures for altered indirect taxes and subsidies are the direct price effects. Due to rounding, columns may not sum to their totals. Source: The Riksbank.

Besides the impact of changes in indirect taxes, subsidies and house mortgage interest expenditure, the economy may be exposed to supply and costs shocks with effects on inflation that are wholly or partly transitory. Common examples of such shocks are changes in productivity and large fluctuations in commodity prices. There are various approaches to the estimation of inflation effects from supply and costs shocks. One involves looking directly at commodity-related items in the CPI. This shows that the price fall for coffee and energy-related products, for example, had a downward effect on inflation during 1998 of 0.4 percentage points. Another approach uses a macro model to estimate inflation effects of different cost shocks; this technique is presented in the box "Transitory Factors and other supply shocks: A Model Approach".

To sum up, changes in interest expenditure, together with altered indirect taxes and subsidies, are judged to have effects on CPI inflation twelve months ahead that total -0.5 percentage points, followed by -0.2 percentage points twenty-four months ahead.

32 The wage statistics for 1998 are still preliminary.

33 Statistics Sweden treats changes in the property tax on multi-family housing as an indirect effect; indirect effects of changes in indirect taxes and subsidies are included in Statistics Sweden's index of underlying inflation.

TRANSITORY FACTORS AND OTHER SUPPLY SHOCKS: A MODEL APPROACH

There are various ways of determining the extent to which consumer prices are affected by transitory factors. One takes price data for different CPI components and uses various methods to eliminate effects that can be expected to be transitory or which for some reason the central bank should disregard in monetary policy assessments. Another uses an empirical.macro model for the explicit identification of shocks that should not be countered.

The measures of underlying inflation that are used in the Inflation Report are examples of the former; another example is the exclusion of goods or groups of goods which display a pre-defined characteristic, such as being among the 5 per cent of the goods that have increased or decreased the most. Excluding such components reduces the risk that this measure of inflation is unduly affected by extreme price movements for individual products.

Indicators of underlying inflation based on data for CPI components have the advantage that the calculations are relatively easy to explain. A drawback is the difficulty in arriving at an explicit economic interpretation of the computed rate of underlying inflation, for instance in terms of changes from the supply or demand side, which is a problem in the analysis. Neither is it always clear just which CPI components or items it is appropriate to exclude. A change in the price of oil, for example, will presumably have an impact on the total index that exceeds the expected direct effect of the change in the component for propellants and heating oil. The reason for this is that oil price movements also affect other CPI components. Excluding just the direct impact would be liable to result in a picture of the CPI effect of such price movements that is misleading.

A further complication arises from the circumstance that inflation's adjustment after a particular shock or change may take quite some time. Besides affecting inflation in the same period, a change in the price of oil, for example, probably continues to exert an influence in subsequent periods. If one also wants the measure of underlying inflation to take such transitory "dynamic" effects into account, it is not enough to just exclude the immediate impact of the changed oil price on the CPI.

The other approach to the identification of shocks, using an empirical macro model, has the disadvantage of being more difficult to present in simple terms. An advantage is the possibility it affords of interpreting particular components of inflation in economic terms. This is important, not least for a central bank that targets inflation and, for its formulation of monetary policy, may need to understand why inflation rises or falls. An approach to the estimation of underlying inflation on the basis of a simple macro model has been developed at the Riksbank.³⁴ For this purpose, inflation is divided into three components: *(i)* long-term inflation, which can be assumed to depend on expected inflation, *(ii)* a cyclically generated component, and *(iii)* a component generated by various types of transitory factors and supply shocks, for example oil price movements and changes in indirect taxes and subsidies.

For monetary policy it seems reasonable to regard the first two components as most relevant because it is mainly via them that policy can influence inflation. The cyclical component of inflation can presumably be influenced, through the conventional transmission mechanism, by the central bank's use of its instrumental rate. Expected inflation can be assumed to depend on monetary policy's credibility and hence be particularly important for policy's long-term direction.

The path of CPI inflation is shown in Fig. B6 together with the sum of components *(i)* and *(ii)* as a representation of underlying inflation. Or alternatively, it can be expressed as CPI inflation less transitory factors and supply shocks, i.e. component *(iii)*. This links the approach to the Riksbank's above-mentioned clar-

ification of grounds for exceptions when inflation fluctuates on account of transitory effects or supply shocks.³⁵ For an indicator of underlying inflation, this construction seems reasonable on many counts. The underlying path has fluctuated considerably less than CPI inflation. The largest discrepancies between the series coincide with major supply shocks such as fluctuations in the oil price. Its level has also declined appreciably in the 1990s, which the model largely attributes to a downward revision of inflation expectations, that is, a fall in component *(i)*. In recent years, underlying inflation has been higher than CPI inflation, which indicates that the latter's exceptionally low level has come mainly from transitory effects.

The estimated measure of underlying inflation most resembles UNDINHX, published by Statistics Sweden: UNDINHX is CPI excluding contemporaneous effects of changed indirect taxes and subsidies, households mortgage costs and prices of mainly imported goods. Despite fundamentally different approaches, the differences between the series are surprisingly small.

Finally it should be noted that although the approach does permit a more detailed analysis of inflation's underlying process, using underlying inflation as a

Figure B6.

CPI and underlying inflation 1997 Q4 –1998 Q4. Percentage 12-month change



Note. CPI calculated from official index series. Sources: Statistics Sweden and the Riksbank. basis in practice still poses many problems. Here, too, for example, the variables with effects on inflation that are to be excluded have to be identified in advance (in this case the variables that are to represent transitory effects and supply shocks).³⁶

34 The approach is described in Apel, M. & Jansson, P. (forthcoming), *A Parametric Approach for Estimating Core Inflation and Interpreting the Inflation Process*, Sveriges Riksbank Working Paper. For a different type of model approach, see Blix, M. (1995), *Underlying Inflation—A Common Trends Approach*, Sveriges Riksbank Working Paper no. 23.

35 See: The Riksbank: Inflation Target—Clarification and Appraisal, Memorandum, 4 February 1999.

36 The specification used here allows 'transitory effects' to arise from changes in short-term nominal interest rates, the nominal oil price, nominal import prices and indirect taxes; 'supply shocks' are approximated as unexpected changes in the real oil price and productivity.

Inflation expectations

LOW EXPECTATIONS IN SHORT AS

WELL AS LONG TERM

Implied forward interest rates can indicate the future path of short-term interest rates. For the short as well as the medium term, the forward rate tendency can be said to reflect market expectations of future monetary policy and inflation. The long-term forward interest rates, on the other hand, mainly depend on confidence in general economic policy's commitment to price stability.

In connection with persistently low inflation expectations and the expansionary adjustment of the monetary stance, since the December Report the medium-term forward rates (maturities of one to two years) have moved down about 0.2 percentage points (Annex: Fig. 37).

Confidence in the inflation target policy is stable.

The long-term interest rate differential with Germany widened temporarily during last autumn's financial market turbulence but since the beginning of 1999 it has averaged around 0.2 percentage points (Annex: Fig. 39). This indicates stable confidence in the inflation target policy.

Long-term inflation expectations are low.

Another indication of inflation target credibility is provided by the long-term inflation expectations that can be derived from the difference between real and nominal forward bond rates (5-15 years).^{37 38} This difference is broadly the same as at the time of the December Report and is currently about 1.7 percentage points (Annex: Fig. 41), which suggests that long-tem inflation expectations are low.

> SURVEY DATA ALSO SHOW FALLING INFLATION EXPECTATIONS

The inflation expectations derived from surveys have fallen in the past year to levels that are historically low. The downward revisions are largest for inflation prospects twelve to twenty-four months ahead. In February, households expected a rate of 0.8 per cent for inflation in the coming twelve months, which is 0.6 percentage points below the latest available figure, from October 1998, in the December Report.

In the March survey by Statistics Sweden, carried out on behalf of the Riksbank, of inflation expectations among money market agents, labour market organisations and purchasing managers, the rates expected in the coming twenty-four months averaged 1.1-1.4 per cent and the average for the coming five years was 1.6-1.8 per cent. The implicit expectations for 3-5 years ahead were in line with the Riksbank's target (Table 2).

Lower inflation expectations are indicated for both the short and the long term by virtually all surveys.

³⁷ These rates are the nominal and real ten-year rates in current five-year contracts.

³⁸ For a further indicator of inflation target credibility, see Blix, M. (1998), Forecasting Swedish Inflation with a Markov Switching VAR, Sveriges Riksbank Working Paper no. 76.

Other surveys also show lower inflation expectations. Prospera's survey, which has a similar construction, shows a further fall in the February expectations. The two-year expectations averaged about 1 per cent and the average for the coming five years was approximately 1.5 per cent (Annex: Fig. 44).

Lower inflation expectations were reported in the February survey of money market agents from Aragon. The two-year had been revised downwards about 0.2 percentage points, while the five-year expectations were broadly unchanged. This gave a marginal increase in the implicit expectations of inflation 3-5 years ahead (Annex: Fig. 43).

Inflation expectations derived from financial market prices and survey data point to very low inflation one year ahead and a level below the Riksbank's tolerance interval in two years time. In the longer term, the inflation expectations indicate continued strong confidence in monetary policy and a level of inflation well in line with the target.

Inflation forecast: main scenario

The assessment of inflation starts from the technical assumption of an unchanged repo rate. Since the December Report, the real exchange rate has strengthened and real interest rates have fallen. The monetary conditions in the coming two years are accordingly judged to be somewhat more expansionary that assumed in the previous Report. As previously the krona is assumed to become stronger, accompanied by some increase in long bond rates. The combined effect of interest rates and the exchange rate is then judged to become less expansionary in the course of the forecast period.

Imported inflation is judged to be somewhat lower than foreseen earlier.

External inflation is judged to be somewhat lower than envisaged in the December Report. Somewhat lower commodity prices and a weaker export price

Table 2.Inflation expectations.Per cent

Annual change in CPI in:			
Category	1 year	2 years	5 years
Money market agents	0.7 (-0.2)	1.1 (-0.2)	1.7 (-0.1)
Employer organisations	0.9 (-0.3)	1.2 (-0.3)	1.6 (-0.3)
Employee organisations	1.1 (-0.1)	1.4 (-0.1)	1.8 (0.0)
Purchasing managers, industry	1.2 (-0.1)	1.4 (-0.3)	1.8 (-0.2)
Purchasing managers, trade	1.1 (-0.4)	1.4 (-0.3)	1.7 (-0.3)
Aragon: money and bond market		1.0 (-0.2)	1.8 (0.0)
Implicit inflation expectations:		1-2 years	3-5 years
Money market agents		1.5 (-0.2)	2.1 (0.0)
Employers organisations		1.5 (-0.3)	1.9 (-0.3)
Employees organisations		1.7 (-0.1)	2.1 (+0.1)
Purchasing managers, industry		1.6 (-0.5)	2.1 (-0.1)
Purchasing managers, trade		1.7 (-0.2)	1.9 (-0.3)
Aragon: money and bond market			2.3 (+0.1)

Note. The figures in parentheses are the change in percentage points from the preceding survey. Sources: Aragon's February survey, Statistics Sweden's March survey.

trend should subdue the rise of Swedish import prices.

Most things suggest that net exports and investment will be weaker than was envisaged in the previous Report. GDP growth would then be marginally lower. The surplus capacity at present will probably not be fully utilised in the coming twenty-four months.

As a consequence of the repo rate cuts and other factors, the average downward effect of interest expenditure on the CPI is judged to be 0.3 percentage points more than envisaged in the December Report. There are no new decisions about taxes and subsidies that give rise to additional transitory effects on the CPI. The forecast assumes that the property tax is not re-indexed for 2001.

Inflation expectations have decreased since the December Report. In the coming years inflation is expected to be below the targeted rate by a fairly wide margin. In the somewhat longer term the expectations are more in line with the inflation target.

Expectations of inflation twenty-four months ahead are clearly under the targeted rate.

All in all, the factors outlined above suggest that the rate of CPI inflation will rise more slowly than assumed earlier but that underlying inflation, measured as UND1X, will be approximately in line with the earlier assessment.

In the main scenario, based on an unchanged repo rate, the average rate of CPI inflation is judged to be somewhat lower in both 1999 and 2000 compared with the December assessment. The 12-month rate is estimated to be 1.1 per cent in March 2000 and 1.4 per cent in March 2001. The average level of underlying inflation, measured as UND1X, is calculated to be marginally lower in 1999 and 2000, with 12-month rates of 1.7 per cent in March 2000 and 1.8 per cent in March 2001.

Uncertainties in the inflation assessment

The inflation assessment in the main scenario is the path the Riksbank considers most probable. For various reasons, the forecasts for economic activity and inflation include elements of uncertainty. In the context of monetary policy it is therefore important that alternative paths for inflation are also considered. These alternative paths, together with the general uncertainty that invariably accompanies inflation assessments, can be visualised as intervals of uncertainty around the inflation forecast in the main scenario.³⁹

39 The method, described in *Inflation Report 1998:2*, starts from estimates of the uncertainties in variables that are most important for inflation and the perceived precision of the Riksbank's inflation assessments. The estimates include subjective judgements but are based on historical relationships. For a fuller description, see Blix, M. & Sellin, P. (1998), *Uncertainty Bands for Inflation Forecasts*, Sveriges Riksbank Working Paper no. 65.

Table 3.Inflation forecasts.Percentage change

	Annual rate		12-month rate	
	1999	2000	March 2000	March 2001
CPI	0.3	1.0	1.1	1.4
UND1X	1.3	1.8	1.7	1.8
UNDINHX	2.0	2.0	2.0	2.3
HICP	0.7	1.8	1.8	1.7

Source: The Riksbank.

The main scenario's inflation forecast and the uncertainty interval presume that the monetary stance is unchanged in the coming twenty-four months. In other words, the interval illustrates the uncertainty in the inflation forecast on which monetary policy is currently based.⁴⁰ There is less uncertainty, however, about the actual development of inflation because the monetary stance is continuously adapted in order to steer inflation in the desired direction.

The risk of the international economic trend being weaker than in the main scenario has been singled out as a risk in the assessment of inflation ever since the December 1997 Report. The risk lies in contagious effects of the Asian crisis being more extensive than allowed for in the main scenario. The somewhat poorer growth prospects in Europe for example, have contributed to an assessment of activity in Sweden that is somewhat more pessimistic in the main scenario compared with the preceding Report.

International prospects are still difficult to assess. One risk factor that could lead to weaker international activity is the situation in Japan, which may prove to be even poorer than in the main scenario. There is also a risk of a slowdown in the US economy that is even more marked than foreseen in the

main scenario. A slacker trend in the United States could result, from example, from decreased investment in response to a weak development of profits or from increased household saving to raise the historically low saving ratio. A slowdown could also be triggered by other factors, such as a recession in Latin America. A more dramatic decline, triggered by a share price fall, is also conceivable. On the other hand, a stronger trend in the global economy could come from robust growth in the US economy at the same time as growth in Europe exceeds expectations in connection with sustained consumer confidence and the stimulus from North America. All in all, the inflation assessment has a downside risk from an international trend that is weaker than in the main scenario.

The future path of the krona is likewise uncertain. Since the December Report the exchange rate tendency has been relatively strong. It is conceivable, however, that the recent appreciation has been so marked that there is a risk of a rebound.⁴¹In terms of traditional indicators of competitiveness, however, the krona is still undervalued. Under these circumstances, the probabilities of the krona's path being weaker and stronger than in the main scenario are judged to be equal.





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

The inflation assessment includes a downside risk which stems from the risk of international economic activity being weaker than in the main scenario. The uncertainty in the assessment is approximately as large as in the December Report.

All in all, the inflation assessment carries a downside risk steming from the risk of weaker international economic activity than in the main scenario. The downside risk for inflation is accordingly somewhat larger than the upside risk both twelve and twentyfour months ahead. This is evident from Fig. 12, which presents the Riksbank's assessment of uncertainties surrounding the main scenario's inflation forecast. The larger downside risk is represented by the uncertainty interval being somewhat broader below the forecast path than above it.

The width of the uncertainty interval is approximately the same as in the December Report. While the unrest in international financial markets has subsided, international economic prospects are difficult to assess, partly on account of the uncertainty concerning growth in the United States. The strong US economic statistics in the past few months have also influenced international bond and equity markets.

The picture of underlying inflation, measured as

the 12-month change in UND1X, also shows some asymmetric downside risk towards the end of the forecast period (Fig. 13).

Monetary policy is formed primarily on the basis of an assessment of price tendencies twelve to twenty-four months ahead. In the main scenario, the 12month rate of CPI inflation is expected to be 1.1 per cent in March 2000 and 1.4 per cent in March 2001. In that downside risks predominate, the mean assessments of inflation twelve and twenty-four months ahead are 0.1 and almost 0.2 percentage points, respectively, below the main scenario's forecast, which is approximately the same as in the December Report. The probability of inflation in March 2000 being lower than in the main scenario is judged to be 52 per cent and the probability of this in March 2001 is 54 per cent.

40 An upside interval that is broader (narrower) than the downside indicates a greater perceived risk of inflation being above (below) the target. In other words, the most probable outcome—the mode in the main scenario—is below (above) the mean outcome. What this amounts to is that asymmetries in the picture of uncertainties move the mean away from the mode; in the absence of asymmetry in the picture of risks, the upside and downside intervals are the same width. 41 See, for example, the box on p. 23.

Figure 13. UND1X with uncertainty interval. Percentage 12-month change



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

The probabilities of inflation twelve and twentyfour months ahead being inside certain intervals are presented in Table 4.⁴² There is little likelihood of CPI inflation being above 2 per cent in twelve months time and the probability of this twenty-four months ahead is somewhat greater. There is a considerable risk, on the other hand, of inflation, given an unchanged repo rate, being below the target in both twelve and twenty-four months time.

42 The Annex includes a corresponding table for UND1X.

Table 4.

12-month CPI inflation. Percentage probability

	CPI<1	1 <cpi<2< th=""><th>2<cpi<3< th=""><th>CPI>3</th><th>Total</th></cpi<3<></th></cpi<2<>	2 <cpi<3< th=""><th>CPI>3</th><th>Total</th></cpi<3<>	CPI>3	Total
2000 (March-March)	49	41	9	1	100
2001 (March-March)	41	29	21	9	100

Note. The figures denote the probability of inflation being below 1 per cent, between 1 and 2 per cent, between 2 and 3 per cent, and over 3 per cent. Source: The Riksbank.

CHAPTER 3

Conclusions

The discussion in this chapter concerns the conditions for Swedish monetary policy, for instance against the background of EMU, and also summarises the basic features of the Executive Board's assessment of inflation prospects.

THE INFLATION TARGET

After the deep economic crisis in Sweden in the early 1990s, a favourable export and investment trend has laid a foundation for a stable recovery. Private consumption has also made an increasing contribution to growth. Since the announcement of the inflation target in 1993, annual growth has averaged almost 3 per cent. Inflation in this period has been low, accompanied by declining inflation expectations and rising credibility in general economic policy, partly as a consequence of the consolidation of public finances.

The amended Riksbank Act that applies from the beginning of this year prescribes that the objective of the Riksbank's operations shall be to maintain price stability. A new Executive Board has also been instituted for the Riksbank, consisting of six full-time members who decide monetary policy independently. In January 1999 the Board decided that the formulation of the monetary policy target continues to apply. Monetary policy aims to keep the change in the consumer price index at 2 per cent in a somewhat longer, annual perspective, with a tolerance interval of ± 1 percentage point. In February, moreover, the Board explained that under certain circumstances the Riksbank will declare in advance that divergence from the inflation target twelve to twenty-four months ahead may be motivated.

EMU AND SWEDISH MONETARY POLICY Until further notice Sweden has chosen not to join the euro area. The new European Central Bank (ECB) assumed responsibility for monetary policy in the euro area from the beginning of 1999. The primary monetary policy objective in the euro area is price stability, defined as a year-on-year increase in consumer prices, as measured by the HICP, of below 2 per cent. The exact level of inflation at which the ECB aims has not been specified but some guidance is to be had from the reference value for growth of the money supply which the ECB has chosen to use. On this basis, calculations give a price norm for 1999 of 1.5 per cent. The difference between the target formulations of the Riksbank and the ECB is probably small in practice. The circumstance that the ECB and the Riksbank both consistently focus monetary policy on price stability should help to stabilise the krona's exchange rate with the euro.

Since the move to Stage Three of EMU the discussion about future participation by Sweden has grown. The countries that have already adopted the euro all participated in the European Exchange Rate Mechanism (ERM) and the central rates for their currencies in that mechanism served as the starting point for the conversion rates with the new single currency, the euro. The Riksdag, moreover, has stated that membership of the European Exchange Rate Mechanism can be seen as a preparatory stage to participation in the euro area. The decision about membership is a matter for the Government. Until such a decision is made, the Riksbank will continue to work with a flexible exchange rate for the krona and formulate monetary policy with reference to an inflation target. Were it clear that Sweden intended to adopt the euro in the near future, however there would be grounds for considering membership of ERM. A central rate for the krona against the euro in the context of ERM would probably be an effective contribution to a stabilisation of exchange rate expectations prior to joining the euro area. That in turn would facilitate the krona's conversion into euro that would then take place.

INFLATION PROSPECTS

The international price trend has been weaker than expected; producer prices in world markets have gone on falling, for example. The continued global economic repercussions of the Asian crisis, with weaker international demand, increased competition and surplus capacity in many sectors, suggest that inflation in the OECD area will remain low. External inflationary pressure via import prices is judged to be somewhat lower than was assumed for the December Report.

The picture of international economic prospects is not entirely uniform. There are signs of stabilisation in some parts of Asia but prospects for the Chinese economy have become somewhat worse and the Japanese economy is in a recession with no clear signs of a recovery. In the euro area, which is of highly importance for Swedish exports, economic activity has slackened during the winter. But there are no grounds for an appreciable downward revision of the forecast for the coming twenty-four months. An upswing driven by consumption still seems probable. An economic slowdown in the United States is likely in time but as the recent picture there has been of continued strength, a fall-off may not be imminent. Growth in the OECD area could then be somewhat stronger in 1999 than was envisaged in the December Report, while the prospects for 2000 have been subdued to some extent in the light of the slowdown in the euro area and the weak situation in Japan.

The krona has appreciated somewhat faster than was expected in the December Report. The decreased international unrest in financial markets has led to a natural reversal of last autumn's depreciation. It is reasonable to suppose that the krona will continue to strengthen when the economy approaches a situation with both external and internal equilibrium. Thus, the Riksbank's view of the krona's future path has not changed. From this it follows that the Riksbank's repo rate cuts since December are judged to contribute to a combined impact on demand from interest rates and the exchange rate in the coming twenty-four months that is somewhat more expansionary than assumed in December.

The past winter's shift towards somewhat weaker economic prospects for example in Europe, is expected to lead to a somewhat lower path for Swedish exports and investment. But the growth prospects in the main scenario for the coming years are still good. While the international slowdown is expected to slow growth in Sweden to some extent compared with 1998, a successive increase is foreseen in domestic demand, for instance in the light of comparatively low interest rates. Together with a gradual recovery of international activity, this means that GDP growth is expected to be above 2 per cent in 1999 and approximately 2.5 per cent in 2000. Notwithstanding relatively good growth, there will probably continue to be unutilised resources twentyfour months ahead, which points to low underlying inflationary pressure.

Fiscal policy is another important factor in the assessment of inflation prospects. In recent years monetary policy has been underpinned by a restrained fiscal policy. The marked improvement in public finances have enhanced confidence in general economic policy and stabilised the situation in financial markets. The tight fiscal stance has also tended to restrain domestic demand. All this has contributed to appreciably lower short-term and long-term interest rates. Fiscal policy's direct restrictive effect on demand is assumed to be less than during the budget consolidation in previous years.

Underlying inflation is judged to be below the target.

In the main scenario, CPI inflation is judged to be below the target, with rates of 1.1 per cent in twelve months time and 1.4 per cent after twenty-four months. The weak consumer price trend is partly a consequence of transitory factors that are not considered to have a lasting effect on inflation and therefore do not influence the formation of monetary policy. Altered indirect taxes and subsidies, together with falling house mortgage interest expenditure, are judged to exert a downward effect on the CPI of 0.2-0.5 percentage points. Underlying inflation, measured as UND1X, is judged to be somewhat below the target, with twelve and twenty-four month rates of 1.7 and 1.8 per cent, respectively. The path of consumer prices in these periods may also be affected by other types of transitory factor, for example price movements for imported goods and commodities. One of the assumptions in the Riksbank's forecast is some increase in commodity prices. At present, transitory effects of this kind do not seem to be of a magnitude that would make them significant for the formation of monetary policy.

The risk spectrum also need to be considered in the formation of monetary policy. On the whole, the situation is about as difficult to assess as at the time of the December Report. The global financial market unrest has admittedly subsided but the development of international economic activity remains highly uncertain and if anything the strong statistics from the United States have accentuated the uncertainty in the past month. This in turn has led to a global increase in long bond rates and also affected cyclical share prices.

A weaker international trend could be triggered by an abrupt slowdown in the United States. Prices on American stock markets are high, while household savings are low and the investments seem to be high in relation to expectations of business profits. If a slowdown in the United States were to coincide with a weakening of the domestic market in Europe and a continued negative growth in Japan, the consequences for the global economy could be serious. A stronger trend might develop, on the other hand, if activity in Europe, for example, were to be stronger than assumed in the main scenario, with strong consumer confidence and a pull from the US economy, and the recovery in Asia were to be quicker than expected. Higher inflation might be generated if commodity prices rise more rapidly than expected. At the same time, global inflation has been remarkably low in the 1990s, partly as a consequence of increased competition; this suggests that inflation may be lower. All in all, the inflation assessment is still considered to contain some downside risk from an international trend that is weaker than in the main scenario. This is also evident from the probability distribution that is presented in Chapter 2.

The assessments lead to the conclusion that, after adjustments for transitory effects from indirect taxes, subsidies and interest rates, the rate of inflation twelve to twenty-four months ahead will be somewhat below the Riksbank's target. In relation to the uncertainty associated with such assessments, however, the deviation from target is not sizeable. At the same time, the risk of inflation being somewhat lower than in the main scenario is judged to be greater than the risk of a higher rate.

INFLATION ASSESSMENTS AND MONETARY POLICY

The target for monetary policy is a 2 per cent annual change in the CPI, with a tolerance interval of ± 1 percentage point for derivations from this interval. Policy is constructed in the light of an assessment of price developments in the coming twelve to twenty-four months. In each Report the time perspective is shifted approximately one quarter into the future. This means that even if the Riksbank's appraisal of future economic activity and inflation is unchanged, different monetary policy conclusions may be called for because the period being assessed has shifted ahead. For the time being, monetary policy will be based primarily on an assessment of consumer price tendencies from 2000 Q2 up to and including 2001 Q1.

Monetary policy is sometimes described with a simple rule of thumb: if the inflation forecast in the main scenario (based on an unchanged instrumental rate) indicates that inflation will deviate from the target in twenty-four months time, then the instrumental rate should be adjusted accordingly. However, predicting future inflation is not straightforward. The Riksbank therefore also assesses the uncertainties in inflation's future path.

The overall picture of inflation prospects consists in practice of an assessment of probabilities. Together with a main scenario—the most probable outcome—a number of risk scenarios are weighted into the final assessment on which the formation of monetary policy is based. The uncertainty surrounding the main scenario is not necessarily symmetric. Upside risks predominate at times, while on other occasions it can seem more probable that inflation will be lower than in the main scenario. The assessment in the main scenario is supplemented by the appraisal of the risk spectrum, which can constitute an important argument for tightening or loosening the monetary stance. Another matter than may be worth mentioning here is that the formation of monetary policy can be influenced by the inflation assessment's uncertainty as such. A high degree of uncertainty can be a reason for a more cautious attitude, thereby avoiding excessively large shifts in interest setting and the formation of expectations.

There are two grounds for refraining at times from directing monetary policy so that the CPI target is fulfilled in twelve to twenty-four months time. One is that in the relevant time perspective consumer prices may be pressed up or down by a factor or factors with an effect on inflation that is not expected to be permanent. Examples of such factors are changes in interest expenditure and altered taxes and subsidies. The other ground from departing from the rule of thumb is that, after a major deviation, a rapid return to the targeted rate may be costly for the real economy. If either of these situations applies, the magnitude of the deviation from the CPI target that may be motivated twelve to twenty-four months ahead is clarified by the Riksbank in advance.

Annex

Figure 1.

CPI, HICP* and GDP deflator. Percentage 12-month change



*Harmonised index for international comparisons of consumer prices. Approximate data before 1996. Note. The horizontal lines from 1995 onwards represent the Riksbank's tolerance interval for the annual change in the CPI.

Sources: Statistics Sweden and the Riksbank.



Note. The figures in parentheses are the component's CPI weight in 1999. Sources: Statistics Sweden and the Riksbank.

6 5 4 3 3 2 2 0 0 -1 -1 1992 1993 1994 1995 1996 1997 1998 1999 - UNDINHX - CPI UND1X

Note. UND1X is defined as the CPI excluding interest expenditure and direct effects of changes in indirect taxes; UNDINHX is the CPI excluding interest expenditure, goods that are mainly imported and direct effects of changes in domestic indirect taxes. The horizontal lines from 1995 onwards represent the Riksbank's tolerance interval for the annual change in the CPI. Source: Statistics Sweden.

Figure 2. CPI components: goods and services. Percentage 12-month change

Figure 3.

CPI and underlying inflation. Percentage 12-month change

Figure 4.

CPI components: domestic and imported inflation. Percentage 12-month change



Note. The figures in parentheses are the component's CPI weight in 1999. Source: Statistics Sweden.

Figure 5. Producer and consumer prices for goods. Percentage 12-month change







Note. The figures in parentheses are the component's share of the 1999 Import Price Index excl. products from agriculture and forestry, hunting and fishing. Source: Statistics Sweden.

Figure 6. Import prices to producers. Percentage 12-month

Percentage 12-month change





Note. The figures in parentheses are the component's CPI weight in 1999. Series revised for altered tax calculations and definitions.

Sources: Statistics Sweden and the Riksbank.

Figure 8.

CPI: 1999 weights of main items. Per cent of CPI, including

indirect taxes and subsidies



Note. Services at administered prices, Housing rents and part of Owner-occupied housing excl. interest expenditure add up to the CPI item that is usually labelled Goods and services at administered prices.

Sources: Statistics Sweden and the Riksbank.

Figure 9.

Crude oil price index and import-weighted commodity price index excl. crude oil. Daily quotations, January 1996=100



Note. The commodity price index excl. crude oil covers aluminium, copper, nickel, zinc, gold, silver, lead and tin, each weighted for its annual share of total Swedish imports; the aggregate share is approximately 2 per cent, while the share for crude oil is about 3 per cent (1998). Sources: Ecowin, Statistics Sweden and the Riksbank.





Note. The ten-year T-bond rate refers for 1992 to the Swedish issue no. 1030, maturing on 15 June 2001, for 1993 to issue no. 1033, maturing on 5 May 2003, for 1994, 1995 and 1996 to issue no. 1035, maturing on 9 February 2005 (from end October 1996 to end 1996 to issue no. 1038, maturing on 25 October 2006), for 1997 to issue no. 1037, maturing on 15 August 2007, and for 1998 to issue no. 1040, maturing on 5 May 2008. Source: The Riksbank.



Long-term (10-year) interest rate differential with German treasury paper.

Daily and weekly quotations, respectively; percentage points



Table 1.

Interest rate and exchange rate expectations of money market agents in March 1999; expectations in November 1998 in parentheses. Median (per cent) and index: 18 November 1992 = 100

	In 3 months	In 1 year	In 2 years
Repo rate	3.00 (3.60)	3.00 (3.50)	3.50 (3.92)
Exchange rate index	124 (124)	120 (121)	120 (120)

Note. The survey data were obtained on 8 March 1999 and 9 November 1998 and represent expectations of rates 3, 12 and 24 months ahead. The exchange rate figures refer to the nominal TCW rate. Source: Statistics Sweden.



Figure 13.

per cent

Market expectations of repo

rate 6 months ahead.

Mean and 90 per cent

confidence interval;

Actual and expected Swedish and German repo rates. Daily quotations, per cent



Note. As of 1999 the German rate has been replaced by the ECB's instrumental rate. Source: The Riksbank.

10 10 9 9 8 8 7 7 6 6 5 5 4 4 3 3 2 2 Jan. '96 May '96 Sep. '96 Jan. '97 May '97 Sep. '97 Jan. '98 May '98 Sep. '98 Jan. '99 May '99

Note. The data are plotted on the date of the expectations and are estimated with the Longstaff-Schwartz equilibrium model, given the current money market rates and the volatility of the short-term interest rates (see Inflation Report 1998:3, pp. 15–16). Source: The Riksbank.



Figure 14. Effective nominal TCW exchange rate. Daily quotations, index: 18 November 1992=100



Figure 15.

Real effective exchange rate derived from export prices, consumer prices and unit labour costs in manufacturing. Index: 18 November = 100



Note. The real exchange rate is calculated as foreign prices/costs divided by Swedish prices/costs, all expressed in a common currency; an increase in the index accordingly stands for a depreciation of the krona's real exchange rate and thus a strengthened competitive position. Sources: IMF and the Riksbank.

Figure 16.

Lending by credit institutions to resident non-bank and household sectors; bank lending to resident non-bank sector. Percentage 12-month change



Note. The non-bank sector consists of households, firms and local authorities. From January 1995 onwards the figures include banks' repos with the non-bank sector. Lending by housing institutions has been adjusted for the transfer of state housing loans to this category in July 1995. Source: The Riksbank.



Note. The interest ratios show household gross interest expenditure relative to disposable income before and after tax relief; the debt ratio shows household debt relative to annual disposable income. Sources: Statistics Sweden and the Riksbank.

Figure 17. Household sectors' debt position. Per cent



Figure 19.

change

Inflation: European Union,

United States and Japan.

Percentage 12-month



Note. MO covers the resident household and corporate sectors' holdings of banknotes and coins; M3 covers M0 plus the non-bank sectors' bank deposits and certificates of deposit. Source: The Riksbank.



Source: Ecowin.



Figure 20. Consumer confidence: Sweden, euro area and United States. Seasonally adjusted, index: 1985=100 and net figure



Real GDP growth in Sweden and the OECD area. Annual percentage change



^{*1998} forecast.



Figure 22. Manufacturing confidence: Sweden, euro area and United States Net figures





Figure 23.

External debt and balance on current account. Year-end level and moving 4-quarter average, respectively, per cent of GDP



Note. External debt defined as net of all domestic sectors' foreign assets and liabilities. Source: The Riksbank.





Source: Statistics Sweden.

Figure 25.

Price index for owner-occupied housing (1981=100) and Stockholm Stock Exchange share price index (end 1979=100)



Note. Month-end share prices.

Sources: Statistics Sweden and Stockholm Stock Exchange.

Figure 26.

Implied distribution of OMX index returns. Calculated from 74-day option prices



Note. The implied risk-neutral probability distribution of the returns on the OMX index 74 days ahead, estimated on three occasions on the basis of listed market for 74-day options (see Inflation Report 1998:3). Source: The Riksbank. Figure 27. Private consumption and retail turnover. Volume, seasonallyadjusted quarterly data and moving 3-month average, respectively; index: 1991=100



Source: Statistics Sweden.

Figure 28.

Households' personal economic expectations and private consumption. Net figure and percentage 12-month change





Figure 29.

Government borrowing requirement: total and excluding interest expenditure. Moving 12-month total; SEK billion



Source: National Debt Office.

Figure 30. Unemployment and job vacancies. Seasonally-adjusted data; per cent and thousands, respectively



Sources: National Labour Market Board and Statistics Sweden.

Figure 31. Employment (persons). Seasonally-adjusted moving 3-month average; index: 1980 Q3=100





Sources: Association of Local Authorities, Federation of County Councils and Statistics Sweden.

Sectorwise wage formation. Annual percentage change

		Outcome 1995	1996	1997	1998*
Priva	ate sector	4.2	6.3	4.3	3.7
	manufacturing	4.8	7.5	4.5	3.7
	trade	3.9	5.2	4.3	3.6
	construction	4.1	4.0	3.0	3.2
Pub	lic sector	2.1	6.3	4.7	2.0
	Central government	3.9	7.0	4.1	1.3
	Municipalities	1.0	5.3	4.4	2.2
	County Councils	2.7	7.8	6.0	2.4
Tota	Total economy		6.3	4.4	3.0

* 1998 preliminary.

Note. The figures include retroactive wage payments but do not mirror inter-sector reassignments of activities. Sources: Association of Local Authorities, Federation of County Councils, Statistics Sweden and the Riksbank.

Figure 33. Unit labour costs (ULC) and labour productivity. Moving 4-quarter average; percentage 12-month change





Figure 34. Productivity: total economy and manufacturing. Annual percentage change

Source: Statistics Sweden.

Output gap calculated with three alternatives: Whittaker-Henderson filter (W-H), Unobserved Component method (UC) and production function approach (PF). Moving 4-quarter average Per cent



Note. The W-H filter is based on a projection of GDP, using the Riksbank's' forecast for 1999–2000. Source: The Riksbank.





Sources: National Institute of Economic Research and Statistics Sweden.



Source: The Riksbank.

Figure 38.

Implied forward interest rates: United States and Germany. Effective annual rate, per cent



Figure 39.

Forward 10-year interest rate differential with Germany and SEK/DEM exchange rate Weekly quotations; percentage points and SEK/DEM









Source: The Riksbank.





Note. Implicit inflation expectations are derived from the difference between implied 5–15-year real and nominal bond rates.

Sources: Aragon Fondkommission and the Riksbank.

Table 2.Inflation expectations.Per cent

1 year	2 years	5 years
0.7 (-0.2)	1.1 (-0.2)	1.7 (-0.1)
0.9 (-0.3)	1.2 (-0.3)	1.6 (-0.3)
1.1 (-0.1)	1.4 (-0.1)	1.8 (0.0)
1.2 (-0.1)	1.4 (-0.3)	1.8 (-0.2)
1.1 (-0.4)	1.4 (-0.3)	1.7 (-0.3)
	1.0 (-0.2)	1.8 (0.0)
	1-2 years	3-5 years
	1.5 (-0.2)	2.1 (0.0)
	1.5 (-0.3)	1.9 (-0.3)
	1.7 (-0.1)	2.1 (+0.1)
	1.6 (-0.5)	2.1 (-0.1)
	1.7 (-0.2)	1.9 (-0.3)
		2.3 (+0.1)
	1 year 0.7 (-0.2) 0.9 (-0.3) 1.1 (-0.1) 1.2 (-0.1) 1.1 (-0.4)	1 year 2 years 0.7 (-0.2) 1.1 (-0.2) 0.9 (-0.3) 1.2 (-0.3) 1.1 (-0.1) 1.4 (-0.1) 1.2 (-0.1) 1.4 (-0.3) 1.1 (-0.4) 1.4 (-0.3) 1.0 (-0.2) 1.5 (-0.2) 1.5 (-0.3) 1.7 (-0.1) 1.6 (-0.5) 1.7 (-0.2)

Note. The figures in parentheses are the change in percentage points from the preceding survey. Sources: Aragon's February survey, Statistics Sweden's March survey.

Figure 42.

CPI and inflation expectations of households and manufacturers. Percentage 12-month change



Note. The curves for expectations have been shifted twelve months into the future so that they coincide with the period to which the expectations refer. As of 1996, households' ten most extreme responses at either end are excluded; prior to 1996 the curve shows these responses in the range 0–15 per cent. The horizontal lines from 1995 onwards represent the Riksbank's tolerance interval for the annual change in the CPI.

Sources: Statistics Sweden and National Institute of Economic Research.

Figure 43.

Bond investors' expectations of inflation two and five years ahead.

Per cent

Figure 44.



Note. The implicit expected average inflation rate in the period from three to five years ahead has been calculated by the Riksbank. The horizontal lines from 1995 onwards represent the Riksbank's tolerance limits for the annual change in the CPI. Sources: Aragon Fondkommission and the Riksbank.

4 3 2 1 0 0 1994 1996 1997 1998 1999 2000 2001 2002 2003 2004 1995 - CPI Jan. '95 Feb. '96 Feb. '97 – - Feb. '98 ----- Nov. '98* ---- Feb. '99 Mar. '99*

*From Statistics Sweden (otherwise Prospera). Sources: Prospera Research AB and Statisics Sweden.

Money market agents' inflation expectations. Per cent Figure 45. Average of CPI forecasts from selected forecasters. Annual percentage change



Note. The time axis denotes the date of the forecast. The observations are unweighted averages of forecasts published by FöreningsSparbanken, Handelsbanken, Merita-Nordbanken, SEB, Unibank, Aragon, Hagströmer & Qviberg, Matteus Fondkommission, Ministry of Finance, National Institute of Economic Research, Swedish Post, Confederation of Professional Employees, Trade Union Confederation, and Wholesale & Resale Research Institute. Sources: Statistics Sweden and the Riksbank.





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.



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.



Percentage 12-month change

Table 4.		CPI<1	1 <cpi<2< th=""><th>2<cpi<3< th=""><th>CPI>3</th><th>Total</th></cpi<3<></th></cpi<2<>	2 <cpi<3< th=""><th>CPI>3</th><th>Total</th></cpi<3<>	CPI>3	Total
CPI inflation.	2000 (March-March)	49	41	9	1	100
Percentage probability,	2001 (March-March)	41	29	21	9	100
12-month figures	Note The figures show the	probability of CP	I inflation being in	the column's inter	val	

Note. The figures show the probability of CPI inflation being in the column's interv Source: The Riksbank.

Table 5.		UND1X<1	1 <und1x<2< th=""><th>2<und1x<3< th=""><th>UND1X>3</th><th>Total</th></und1x<3<></th></und1x<2<>	2 <und1x<3< th=""><th>UND1X>3</th><th>Total</th></und1x<3<>	UND1X>3	Total
UND1X inflation.	2000 (March-March)	15	51	31	3	100
Percentage probability	2001 (March-March)	28	31	27	14	100

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